Oregon
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March 1, 2017

Via Electronic Filing

OREGON PUBLIC UTILITY COMMISSION
ATTENTION: FILING CENTER
PO BOX: 1088
SALEM OR 97308-1088

RE: Docket No. UG 325 – In the Matter of
AVISTA CORPORATION, dba AVISTA UTILITIES,
Request for a General Rate Revision.

Enclosed for electronic filing are Certificate of Service, UG 325 Service List and the following Staff Exhibits:

Exhibits 100 – 106, Pages 3 and 4 of Exhibit 100 are confidential
Exhibits 102, 103 and 104 has electronic attachments

Exhibits 200 – 211
Exhibit 207 Pages 2, 4, and 5 are confidential
Exhibit 211 is confidential and provided in electronic format

Exhibits 300 – 303
Exhibits 302 (pages 1 to 5) and 303 are provided in electronic format

Exhibits 400 – 403, Page 2 is confidential
Exhibit 402 is confidential

Exhibits 500 – 502,
Exhibit 502 has Attachments A to E and are provided in electronic format

Exhibit 600 – 609

Exhibits 700 – 708,
Exhibit 703 is confidential
Exhibit 705, page 17 is confidential

Exhibits 800 – 807, Page 9 is confidential
Exhibit 805 and Exhibit 807 are provided in electronic format
Exhibit 806 is confidential and provided in electronic format

Exhibits 900 – 910

Exhibits 1000 – 1002

Exhibits 1100 – 1105, Pages 6 & 7 of Exhibit 1100 are confidential
Exhibit 1102, Page 2 to 5 are provided in electronic format
Exhibit 1103 is confidential
Exhibit 1105 is confidential and provided in electronic format

Exhibits 1200 – 1204, Pages 3 to 10 and 12 of Exhibits of 1200 are confidential
Exhibit 1202 – Page 2 is confidential
Exhibit 1203 – Pages 2 to 21 are confidential

Exhibits 1300 – 1308, Pages 6 to 8 of Exhibit 1300 are confidential
Exhibit 1302 and Exhibit 1305 are confidential and

Exhibits 1400 – 1403

Confidential pages and exhibits will be mailed to parties who have signed Protective Order no. 16-460.

/s/ Kay Barnes
Kay Barnes
PUC- Utility Program
(503) 378-5763
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CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 100

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Marianne Gardner. I am a Senior Revenue Requirement Analyst employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my witness qualification statement, which is found in Exhibit Staff/101.

Q. What is the purpose of your testimony?

A. I am the revenue requirements summary witness for the Public Utility Commission of Oregon Staff (Staff) in this proceeding. I introduce Staff-sponsored adjustments and issues regarding Avista Corporation's (Avista or Company) filing in this docket, identified as UG 325. As such, I verify Avista's proposed revenue requirement utilizing Staff's revenue requirement model. This model is also used to calculate Staff's modified revenue requirement after incorporating Staff's proposed adjustments to Avista's revenue requirement.

Additionally, I provide background regarding specific issues I reviewed, my analysis, and my recommendations.

Q. Will other Staff witnesses submit testimony regarding the issues they reviewed?

A. Yes. Each Staff assigned to Docket UG 325 is submitting separate testimony. In Part 1 of my testimony, I introduce the Staff witnesses and their respective assignments, and estimate the revenue requirement impact of Staff recommended adjustments to the Company's initial filing. These are the issues identified to date. Staff's recommendations and issues may change after reviewing testimony and analysis by other parties.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

Exhibit 101	Witness Qualification Statement
Exhibit 102	Uncollectibles – Associated Avista workpaper and Responses to Staff Data Requests
Exhibit 103	Wages, Salaries and Incentives – Associated Staff workpaper and Avista Responses to Staff Data Requests
Exhibit 104	Property Taxes – Associated Avista Responses to Staff Data Requests
Exhibit 105	SIT, FIT and ADIT – Associated Avista workpaper and Responses to Staff Data Requests
Exhibit 106	Escalation – Excerpt from Consumer Price Index – All Urban Consumers for the U.S., published by OEA (released November 16, 2016)

Q. How is your testimony organized?

A. My testimony is organized as follows:

PART 1. REVENUE REQUIREMENT

Q. Please provide a list of the rate case topics that Staff reviewed and introduce the responsible Staff.

A. I have provided a listing of rate topics in Table A.

TABLE A			**Company filed Incremental Revenue Requirement**	**$8,539**
Opening Testimony Exhibit No.	**Staff Witness**	**Adj. No.**	**Proposed Staff Adjustments**	**Revenue Requirement Effect**
100	Marianne Gardner	S-1	Uncollectible rate	($48)
100	Marianne Gardner	S-1	Uncollectible Expense	(263)
100	Marianne Gardner	S-1.2	OPUC & Franchise Fees	(143)
100	Marianne Gardner	S-2	Interest Synchronization	373
100	Marianne Gardner	S-3	Working Capital	(327)
100	Marianne Gardner	S-4	Wages & Salaries	(970)
100	Marianne Gardner	S-5	Property Taxes (placeholder)	-
100	Marianne Gardner	S-6	Amortization (placeholder)	-
100	Marianne Gardner	S-7	Income Taxes & ADIT (placeholder)	-
100	Marianne Gardner	S-8	Regulatory Expenses (Acct 928)	(183)
100	Marianne Gardner	S-9	Escalation	-
200	Matt Muldoon	S-10	Cost of Capital	(2,998)
200	Matt Muldoon	S-11	Pension/Retirement	(263)
200	Matt Muldoon	S-12	AFUDC	-
300	Lisa Gorsuch	S-13	Gas Storage in Rate Base	-
300	Lisa Gorsuch	S-14	Underground Storage	(21)
300	Lisa Gorsuch	S-15	Other Gas Supply Expense	(118)
400	Judy Johnson	S-16	Insurance, D&O Insurance	[redacted]
500	Ming Peng	S-17	Depreciation expense & Reserves (placeholder)	-
600	Max St. Brown	S-18	Load Forecast	(369)

Opening Testimony Exhibit No.	Staff Witness	Adj. No.	Proposed Staff Adjustments	Revenue Requirement Effect
600	Max St. Brown	S-19	Sales & Transportation Revenues	25
600	Max St. Brown	S-20	DSM-Lost Revenues	-
700	Lance Kaufman	S-21	Information Technology & General Plant	(775)
700	Lance Kaufman	S-22	Cost Allocations /Affiliated Interests	(972)
800	Mitch Moore	S-23	Utility Plant in Service	(925)
800	Mitch Moore	S-24	General Plant Maintenance	-
900	Rose Anderson	S-25	Other Revenues - Misc. Revenue	(94)
900	Rose Anderson	S-26	Atmospheric Testing	(66)
900	Rose Anderson	S-27	Customer Service & Informational Sales Expenses; Advertising; Promotional Activities	(20)
1000	Abdoulaye Barry	S-28	Distribution O&M	(37)
1000	Abdoulaye Barry	S-29	Customer Accounting	(113)
1000	Abdoulaye Barry	S-30	Various A&G; Prepaid Expenses	(4)
1000	Abdoulaye Barry	S-31	Memberships, Dues & Donations	(50)
1000	Abdoulaye Barry	S-32	Meals & Entertainment, Gifts, Travel, Awards	(236)
1100	Scott Gibbens	S-33	Medical Benefits	(238)
1100	Scott Gibbens	S-34	Workforce Levels & FTE; Outside Services	-
1200	Geoff Ihle	S-35	Hedging	-
1300	Phil Boyle	S-36	Fee Free Bankcard	(45)
1400	Kathy Zarate	S-37	Property Sales	-
1400	Kathy Zarate	S-38	Material and Supplies - Non-fuel	(12)
			Total Staff-Proposed Adjustments (Base Rates):	[redacted]
			Staff-Calculated Revenue Requirement Change (Base Rates):	[redacted]

PART 2. SPECIFIC ISSUES

Q. **What areas of Avista's filing are you primarily responsible for reviewing?**

A. I reviewed the portions of the filing related to uncollectible expense, wages and salaries, incentives, amortization expense, other taxes, state income tax (SIT), federal income tax (FIT), accumulated deferred income taxes (ADIT), working capital allowance, inflation factor, and rate case costs. In order to gain additional insight, I reviewed the Company's responses related to Staff's standard Data Requests (DRs), issued approximately 48 additional DRs, and reviewed the Company's responses.

ISSUE 1. UNCOLLECTIBLES and REVENUE SENSITIVE FEES (S-1)

Q. Please provide a summary of the Commission's historical treatment of uncollectible expense, the Company's filed proposal, and Staff's analysis of the issue.

A. It is a long-standing policy of the Commission Staff to apply a three-year average methodology to determine the test year uncollectible expense for a utility's revenue requirement.[1] However, Commission Staff also examines other

[1] *See, e.g.*, *In the Matter of Avista Corporation*, OPUC Docket UG 246, Order No. 14-015 at 3 (January 21, 2014) and *In the Matter of Avista Corporation*, OPUC Docket UG 186, Order No. 09-422, Appendix A at 4 (October 26, 2009) (adopting stipulations for Avista general rate increase with uncollectible expense in revenue requirement based on three-year average); *but see In the Matter of Idaho Power Company*, OPUC Docket UE 167, Order No. 05-871 (January 28, 2005) (adopting stipulation for Idaho Power Company general rate increase with uncollectible expense based on four-year average) and In the Matter of Cascade Natural Gas Corporation, OPUC Docket UG 287, Order No. 15-412 (December 28, 2015) (adopting stipulation for Cascade Natural Gas general rate increase with uncollectible expense based on three-year average, removing an anomalous year).

evidence to determine whether this approach results in a reasonable forecasted test year result.

In this case, the Company's base year June 30, 2016 uncollectible amount is $823,000. According to Ms. Smith, the Company adjusted the base year uncollectible amount based on a three-year average of actual write-offs.[2] However, the net write-off amounts of $942,040, $529,256 and $990,206 in Smith's uncollectibles adjustment workpaper[3] differed significantly from the actual net write-off amounts provided by the Company in response to DR No. 208(a) of $479,550, $650,793, and $569,529, respectively.[4] Staff also notes that the uncollectible rate of 1.098 percent is nearly double the 0.5496 percent uncollectible rate recorded last year in the final order to Avista's Docket UG 288 general rate case.

Staff discussed the discrepancy between the net write-off amounts provided in the filed workpapers versus the amounts provided in response to DR No. 208(a) with the Company witness. Following an investigation and the issuance of additional DRs 419-421, the Company provided Staff with the following data from the accounting system on a calendar basis and for a twelve month period ending in June.[5] This information is inserted below.

[2] UG 325/Avista/500, Smith/37 at lines 8-12.
[3] Staff/102 at 1, Smith Workpapers "2016 Uncollectible Expense.xlsx", tab "UA-1".
[4] Staff/102 at 3, Avista Response to Staff DR No. 208(a).
[5] Staff/102, Gardner/7-12.

Net Write-Offs on Calendar Year Basis

FERC Acct	FERC Acct Desc	2013	2014	2015	2016
144200	Accumulated Retail Write-offs	$972,588	$891,425	$674,365	$574,702
144600	Accumulated Retail Reinstatement	$234,402	$(213,385)	$(12,853)	
144700	Accumulated Retail Recoveries	$193,777	$(198,490)	$(10,719)	
Grand Total		$544,409	$479,550	$650,793	$574,702

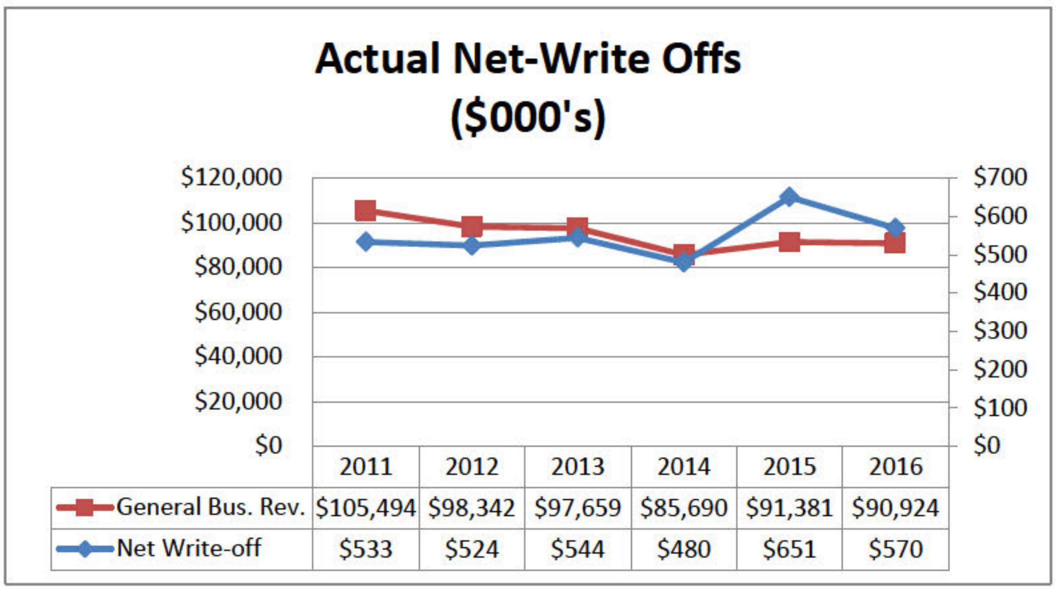
Net Write-Offs on a Twelve Month Basis ending June 30.

ERC Acct	FERC Acct Desc	12 ME June 2014	12 ME 2015	12 ME 2016
144200	Accumulated Retail Write-offs	$942,040	$427,748	$990,206
144600	Accumulated Retail Reinstatement	$(221,185)	$(150,986)	
144700	Accumulated Retail Recoveries	$(191,599)	$(109,789)	
Grand Total		$529,256	$166,973	$990,206

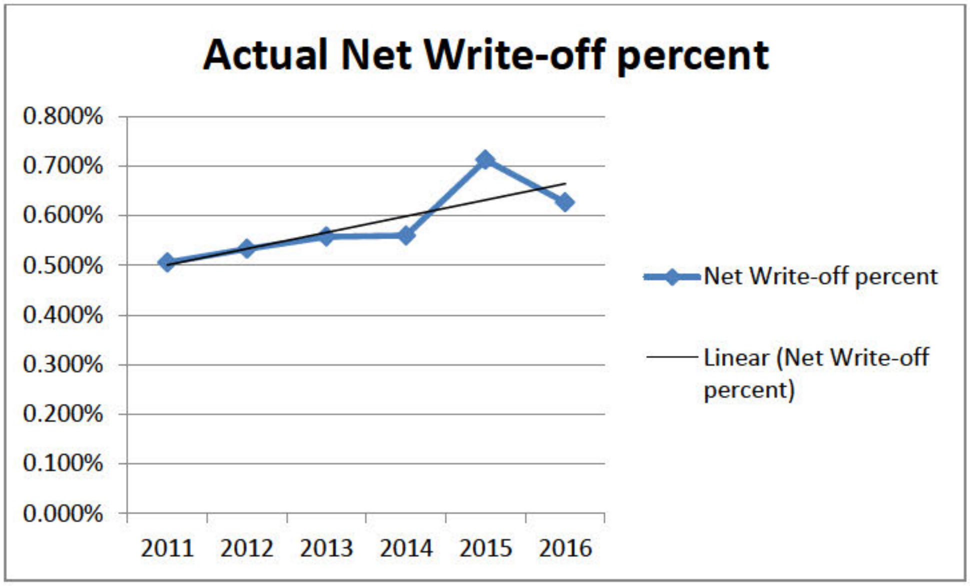
The Company further provides the following background: Commencing February 2015, due to the cut-over to the new Customer Care and Billing System (CC&B), FERC accounts 144600 and 144700 are no longer utilized. Instead, the transactional data is now recorded solely in FERC account 144200. The cut-over to the new system caused a shifting in the net write-offs reported. This is due to the Company’s suspension of its write-off and collection process starting in February 2015. The process was not reinstated until August 2015. As shown above, the effect is net write-offs for the 12 months ending (ME) June 30, 2015 are understated and net write-offs for the 12 ME June 30, 2016 are overstated. Additionally, Avista explains that the

2015 net write-off amount in UA-1 is incorrect and should be $427,747 rather than $529,256.

Staff has just received the Company's responses to SDR Nos. 419-422[6], and is in the process of reviewing these responses. At this time, Staff believes that the Company's test year uncollectible amount and the related uncollectible rate are both overstated and do not represent the actual trend based on the data provided in the Company response to DR 208(a) as shown in the graphs below.



[6] Staff/102, Gardner/7-12.



As can be seen in the above graph, the 2015 net write-off percent is an anomaly.

Q. What is Staff's recommendation?

A. Due to the conflicting data provided by the Company, Staff proposes using the uncollectible rate of 0.5496 set in Docket UG 288 for the calculation of the revenue sensitive conversion rate and adjusting the June 30, 2016 base year uncollectible expense based on this rate pending Staff's review of further information from the Company and other parties' opening testimony. The impact of the rate change is to decrease the Company's test year uncollectible expense by $303,000 and reduce the test year net-to-gross factor by from 1.5961 to 1.5871. The adjustment can be found in Staff workpaper, UG 325 Uncollectible Adj S-1 MG.xlsx.

Q. Does Staff have any adjustments for other revenue sensitive accounts?

A. Yes. Staff trued up the expenses for Taxes Other - Franchise and Resource Supplier Fees (Franchise Fees). Staff recommends a reduction to the Company's proposed test year expense for Franchise Fees and OPUC Fees of $51,000 and $87,000, respectively. The rates remained unchanged from the Company's proposed 2.2402 percent and 0.2750 percent for Franchise Fees and OPUC Fees, respectively. Adjusting the expense amount ensures that that the test year fees are a function of the General Revenues multiplied by the pertinent revenue sensitive rate. This adjustment can be found in Staff workpaper, UG 325 Uncollectible Adj S-1 MG.xlsx.

ISSUE 2. INTEREST SYNCHRONIZATION (S-2)

Q. Please provide a summary of the Commission's historical treatment of interest synchronization, the Company's filed proposal, and Staff's analysis of the issue.

A. According to long-standing Commission policy, for ratemaking purposes, Staff routinely synchronizes interest expense to reflect changes in the regulated utility's cost of capital as initially filed in a general rate case. This is consistent with the treatment in Avista's last general rate case, UG 288. The interest synchronization adjustment depends on Staff Witness Matt Muldoon's proposed adjustments to cost of capital (CoC) in this docket. Mr. Muldoon has recommended in his testimony an adjustment to the Company's filed cost of capital, of which the weighted cost of debt is a component. Because interest expense on long-term debt is tax deductible, Mr. Muldoon's proposed cost of long-term debt impacts income tax expense for ratemaking purposes. The cost of long-term debt proposed in Avista's direct testimony is 5.75 percent.[7] Staff, as supported by Mr. Muldoon's testimony, recommends a 5.095 percent cost of debt and a weighted cost of long-term debt of 2.604 percent.[8]

Q. What is Staff's recommendation?

A. As the Revenue Requirement Summary witness, I recommend synchronizing the interest expense for the income tax calculation to reflect a weighted cost of debt of 2.604 percent. Based on the Company's test year rate base of $243,424,000 and weighted cost of long-term debt of 2.880 percent,[9] Staff's proposes to reduce interest expense by $672,000 = ($243,424,000*(2.604% - 2.880)). This recommendation may change depending on other parties' opening testimony and other Staff recommendations regarding net rate base.

The amount is calculated on the test year as follows:

+ Net Rate Base

X Staff's Recommended (or Authorized) Weighted Cost of Debt

= Allowable Interest Deduction

- Company's Reported Interest Deduction

= Interest Coordination Adjustment

This adjustment can be found in Staff workpaper, UG 325 Interest Synchronization S-2 MG.xlsx.

[7] UG 325/Avista/200, Thies/2 at 11.
[8] UG 325/Staff/200, Muldoon/2 at Table 3.
[9] UG 325/Avista/501, Smith/2.

ISSUE 3. WORKING CAPITAL (S-3)

Q. Please provide a summary of the Commission's historical treatment of working capital, the Company's filed proposal, and Staff's analysis of the issue.

A. Commission Staff's long-standing policy has been to exclude working capital from rate base for gas utilities. In Avista's recent rate cases, Dockets UG 201, UG 246, UG 284, and UG 288, Staff's position has been that the natural gas and electric industries are sufficiently different, which compromises the accuracy of the Working Capital allocation to Oregon. In Avista's three most recent rate cases, UG 246, UG 284, and UG 288, Staff stipulated to allowing Avista to include rate base materials and supplies in inventory costs. The Commission adopted those stipulations.[10]

Avista proposes to increase working capital by $3,356,000 in adjustment 2.10 G-FWC. Referring to Ms. Smith's testimony, Avista/500, Smith/35 at lines 3-13, Ms. Smith states "Column (2.10), entitled Working Capital, increases total rate base for the Company's working capital adjustment." She also notes, "Working capital represents investor supplied funds that are properly included in the Company's rate base for ratemaking purposes." "[...] The Company has calculated its working capital in this proceeding using the Investor Supplied Working Capital (ISWC) method."

Q. What is Staff's recommendation?

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[10] OPUC Docket UG 246, Order No. 14-015 at 3; *In the Matter of Avista Corporation*, OPUC Docket UG 284, Order No. 15-109 at 3 (April 9, 2015); *In the Matter of Avista Corporation*, OPUC Docket UG 288, Order No. 16-076 at App. A, page 3 (February 29, 2016).

A. Staff recommends disallowing Avista's $3,356,000 addition to rate base for working capital based on the ISWC method. This recommendation conforms to Staff's existing policy. This adjustment can be found in Staff workpaper, UG 325 Working Capital S-3 MG.xlsx.

ISSUE 4. WAGES, SALARIES and INCENTIVES (S-4)

Q. Please provide a summary of the Commission's historical treatment of wages, salaries and incentive expense, the Company's filed proposal, and Staff's analysis of the issue.

A. The Commission typically uses Staff's three-year wage and salary model to estimate expenses for non-union wages and salaries.[11] The increases in payroll from the historic base year should be tied to the rate of inflation using the All-Urban CPI.[12] Rather than using All-Urban CPI for union wages, the Commission in the past has ordered that union payroll increases be tied to negotiated wage increases as set forth in the union contract.[13] Staff applied this model to the information the Company provided in its filing and responses to Staff data requests.

For incentives, Commission policy traditionally disallows 100 percent of officers' bonuses, which are typically based on earnings.[14] It is also

[11] See e.g., *In the Matter of PacifiCorp*, OPUC Docket UE 116, Order No. 01-787 at 40 (September 7, 2001).

[12] See Order 01-787 at 40; In the Matter of Northwest Natural, OPUC Docket UG 132, Order No. 99-697 at 43 (November 12, 1999); *In the Matter of PGE*, OPUC Docket UE 102, Order 99-033 at 61 (January 27, 1999); *In the Matter of PGE*, OPUC Docket UE 88, Order No. 95-322 at10 (March 29, 1995).

[13] See Order No. 99-697 at 43.

[14] See Order No. 99-033 at 62; *In the Matter of the Application of US West*, OPUC Docket UT 125, Order No. 97-171 at 74-76 (May 19, 1997).

Commission policy to disallow 75 percent of performance-based bonuses (because they are generally focused on increased earnings and, therefore, bring more benefit to shareholders) and disallow 50 percent of merit-based bonuses (because they equally benefit shareholders and ratepayers). Union bonuses are treated in the same manner as non-union bonuses.[15]

The Company proposes including in the test year approximately $9 million in wages and salaries, $0.84 million in overtime, and $0.97 million in incentive compensation. These amounts are found in the Company's workpapers 3.03 and 2.12. According to its testimony, the Company has also included $0.109 million in restricted stock units (RSUs).[16] The Company asserts in testimony, the RSUs are provided to Executives and Non-Executive employee leaders

> …to provide incentive for these employees to continue their employment with the Company.
> The Restricted Stock Unit portion of the plan is included in retail ratemaking, because customers benefit from long-term leadership with a vested interest in the efficient operation of the Company and high customer satisfaction.

Q. What is Staff's recommendation?

A. Staff is still in discussion with the Company regarding a few discrepancies between the filed workpapers and the Company's responses to Staff data requests. Based on the data in the Company's filing, Staff recommends adjustments based on Staff's three-year wage and salary model.[17] Staff proposes adjustments to wages, salaries and overtime primarily based on the

[15] See Order 99-697 at 44-45; Order 99-033 at 62.
[16] UG 325/Avista/500, Smith/21 at 20, 22, and 23 at 1.
[17] See Staff workpapers, "UG 325 Wage Salaries & Incentives S-4 workpaper MG".

difference in Staff's and the Company's escalation factors. Staff proposes an adjustment to incentive compensation in accordance with Commission policy to disallow 100 percent of officers' incentives and 50 percent of employees' merit-based bonuses. Additionally, Staff proposes the removal of 100 percent of the RSUs since these are incentives paid to officers and certain employee leaders, and appear to be based primarily on performance.

The test year impact of these adjustments is to reduce wages and salaries by $0.179 million with $0.152 million allocated to O&M and $0.027 million allocated to capital. The overtime adjustment is a decrease of $0.238 million allocated $0.186 million to O&M and $0.052 million to capital. The incentive adjustments are a $0.496 million reduction to O&M.[18] According the Company's response to Staff DR No. 366, the Company excluded from rate base 50 percent of capitalized employees' incentives from Oregon Plant in Service. Conversation with Avista indicated that no officer incentives have been capitalized in rate base.[19] The flow-through effect of these adjustments is to reduce payroll taxes by approximately $89,000 and to reduce depreciation expense by $2,000.[20] The overall total of these adjustments decreases O&M by $0.933 million and capital decrease by $0.079 million.

ISSUE 5. PROPERTY TAXES (S-5)

[18] Staff/103, Gardner/1.
[19] Id. at 20.
[20] Id. at 1.

Q. Please provide a summary of the Commission's historical treatment of property tax expense, the Company's filed proposal, and Staff's analysis of the issue.

A. The Company proposes approximately $3.220 million of property taxes for inclusion in its test year expense. This was based on an estimated property tax rate of 0.01317 applied to a tax base of approximately $243.3 million. The Company forecasted the property tax rate by escalating the base year estimated property tax rate of 0.01265 by 2 percent. According to Ms. Smith's workpaper, 2016 Forecast Property Tax Adjustment.xlsx, supporting the adjustment 2.03 G-FPT, the base year tax rate was calculated by dividing the property tax expense accrued for the 12 months ending June 30, 2016 by the Oregon Department of Revenue's (ODOR's) assessed value for the 2015/2016 tax year.

Staff requested the historical property tax information from 2004 through 2016.[21] In preparing its response, Avista discovered that adjustment 2.03 G-FPT was miscalculated and included a correction in its response.[22] This correction increases the Company's estimate of the 2016/2017 and 2017/2018 assessed value. As stated in the Company's response, the 2016/2017 assessed value was "revised to reflect the actual state taxable value of our plant balances, as well as including plant additions, which had previously been excluded. The revision increases the expected property tax expenses by

[21] Staff/104, Gardner/1.
[22] Id.

$225,964, from $550,714 to $776,678, for an increase in revenue requirement of approximately $234,000”.[23]

Q. What is Staff’s recommendation?

A. Staff is pursuing additional discovery regarding the assessed value and tax rate. Currently, Staff has received responses from the Company to DR Nos. 423-426 in the afternoon of February 22, 2017 and is in the process of reviewing these responses.[24] Therefore, Staff does not propose an adjustment at this time. However, as the Revenue Requirement Summary Witness, I will update the test year property tax expense to reflect adjustments sponsored by other Staff witnesses to plant.

ISSUE 6. AMORTIZATION EXPENSE AND ACCUMULATED AMORTIZATION (S-6)

Q. Please provide a summary of the Commission’s historical treatment of amortization expense and accumulated amortization, the Company’s filed proposal, and Staff’s analysis of the issue.

A. The Company did not include any narrative testimony regarding amortization in its initial filing. According to Avista/502, Smith/3 at 137, $2.791 million of amortization is included in the test year. According to Mr. Machado’s workpaper, 1) Cap Summary OR.xlsx, the new intangible additions are amortized at 20 percent per year. I verified with Ming Peng, OPUC Senior

[23] Id.
[24] See Exhibit Staff/104, Gardner/14-17.

Economist, that the 20 percent rate and the accumulated amortization amount are correct.

Q. What is Staff's recommendation?

A. As the Revenue Requirement Summary Witness, I will update the test year amortization expense and reserves to reflect adjustments sponsored by other Staff witnesses to intangible plant. Therefore, while I do not propose any adjustment at this time to amortization expense or to the reserve account, I may have an adjustment to the final revenue requirement contingent upon other Staff witnesses' discovery and analysis.

ISSUE 7. SIT, FIT and ADIT (S-7)

Q. Please provide a summary of the Commission's historical treatment of federal income tax, state income tax and accumulated deferred income tax, the Company's filed proposal, and Staff's analysis of the issue.

A. The Company's proposal for the test year federal income tax (FIT) expense is \$6.933 million.[25] Avista has included no state income tax for the test year since it anticipates offsetting all of its state income tax (SIT) liability for the 2018 tax year with a net operating loss (NOL) carryforward and Business Energy Tax Credits (BETCs). Accordingly, Avista has based the revenue sensitive amount for state and federal income tax at 0 percent for SIT and 35 percent for FIT, the statutory rate.[26] The resulting conversion factor or net-to-gross factor is used to calculate the incremental revenue requirement. As

[25] UG 325/Avista/501, Smith/1 at line 30, column e.
[26] UG 325/Avista/500, Smith/8 at lines 1-14.

confirmed through subsequent data requests, the amount of income taxes included in the June 30, 2016 base year are estimated taxes based on the Results of Operations on an average of monthly averages basis for the 12 months period ending June 30, 2016.[27]

Consistent with Internal Revenue Code (IRC) Sections 168(f)(2) and 168(i)(9), Normalization Rules for Public Utilities, the Commission requires that public utilities normalize federal income taxes for revenue requirement purposes. According to IRC Sec. 168(i)(9)(A):

> In order to use normalization method of accounting with respect to any public utility property for purposes of subsection (f)(2)—
> (i) the taxpayer must, in computing its tax expense for purposes of establishing its cost of service for ratemaking purposes and reflecting operating results in its regulated books of account, use a method of depreciation with respect to such property that is the same as, and a depreciation period for such property that is no shorter than, the method and period used to compute its depreciation expense for such purposes; and
> (ii) if the amount allowable as a deduction under this section with respect to such property (respecting all elections made by the taxpayer under this section) differs from the amount that would be allowable as a deduction under section 167 using the method (including the period, first and last year convention, and salvage value) used to compute regulated tax expense under clause (i), the taxpayer must make adjustments to a reserve to reflect the deferral of taxes resulting from such difference.

Also, ORS 757.269 (1) states "[s]ubject to subsections (2) and (3) of this section, amounts for income taxes included in rates are fair, just and reasonable if the rates include current and deferred income taxes and other

[27] Staff/105, Gardner/1 and UG 325/Avista/Smith workpapers/1.00 Results of Operations Reports/12A-2016.06 ROO.xlsx.

related tax items that are based on estimated revenues derived from the regulated operation of the utility." According to subsection (3):

> During a ratemaking proceeding conducted under ORS 757.210 for an electricity or natural gas utility that pays taxes a part of an affiliated group, the Public Utility Commission may adjust the utility's estimated income tax expense based upon: (a) Whether the utility's affiliated group has a history of paying federal or state income taxes that are less than the federal or state income taxes the utility would pay to units of government if it were an Oregon-only regulated utility operation; (b) Whether the corporate structure under which the utility is held affects the taxes paid by the affiliated group; or (c) Any other considerations the commission deems relevant to protect the public interest.

Q. Did the Company normalize taxes for federal income tax purposes?

A. The Company did not include any narrative in its testimony specifically addressing the normalization of federal income tax. However, Staff did confirm, through data requests, that the Accumulated Deferred Federal Income Tax (ADFIT) amount of $69.805 million included in the test year rate base incorporates a depreciation timing difference arising from expected bonus depreciation taken or forecasted for each of the years 2015, 2016, 2017 and 2018, as well as, the Oregon share of bonus depreciation taken by the Company on Federal income tax returns filed as of January 30, 2017.[28] Also, Mr. Machado's workpapers filed with the rate case do include the bonus depreciation impact to ADFIT for the incremental plant additions to the test year rate base.[29]

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[28] Staff/105, Gardner/2-9.
[29] UG 325/Avista/Machado Workpaper "1)CAP SUMMARY OR.xlsx".

Q. Did Staff inquire of the Company regarding why the bonus depreciation percentages utilized in Mr. Machado's supporting workpapers do not align with the bonus depreciation rates extended in the 2015 Protecting Americans from Tax Hikes (PATH) Act?

A. Yes. In the Company's response to Staff DR No. 324[30], the Company explained the bonus depreciation percentage of 45 percent used for assets added in 2016 and through September 30, 2017 was based on a system wide estimate since all plant added is not eligible for bonus depreciation. For the assets added from October 1, 2017 through September 30, 2018, the Company used a weighted average of the bonus deprecation rates in effect for that time period.

Q. What is Staff's recommendation?

A. As the Revenue Requirement Summary Witness, I will update the test year amortization expense, depreciation expense, reserves and ADFIT to reflect adjustments sponsored by other Staff witnesses to plant. Therefore, while I do not propose any adjustment at this time related to taxes or ADFIT, I may have an adjustment to the final revenue requirement contingent upon other Staff witnesses' discovery and analysis.

ISSUE 8. REGULATORY EXPENSE (S-8)

Q. Please provide a summary of the Commission's historical treatment of regulatory expense, the Company's filed proposal, and Staff's analysis of the issue.

[30] Staff/105, Gardner/7.

A. The Company's test year proposal for FERC Account 928 –Regulatory Expense is $657,000. Upon review of FERC Account 928-Regulatory Expense, excluding Oregon Commission regulatory fees, Staff noticed an increase in the Base Year expense as compared to years 2013 through 2015 actual expense.

Q. What is Staff's recommendation?

A. Staff proposes to use a three-year average of 2013, 2014 and 2015 actual labor and non-labor portion of this expense, excluding regulatory fees. Adoption of this methodology results in a decrease of $177,356 to the test year expense for FERC account 928. The supporting calculations for this adjustment can be found in Staff's workpapers, UG 325 Regulatory Expense S-8 MG.xlsx.

ISSUE 9. INFLATION FACTOR/ESCALATION

It is Staff policy to use the Consumer Price Index – All Urban Consumers for the U.S. (CPI, Urban U.S.) as published by the State of Oregon Office of Economic Analysis (OEA) for year over year escalation. The most recent release was the December 2016 report, released November 16, 2016. According to Appendix A of this report, the percentage change for CPI for 2016 to 2017 and 2017 to 2018 is 2.5 percent, and 2.4 percent, respectively.[31] To forecast the September 30, 2018 test year expenses, according to the Company's testimony, the Company has proposed to escalate the base year non-labor O&M and A&G expenses by "the use of a CPI of 2.5 percent and 2.4 percent

[31] Staff/106, Gardner/8.

year over year for 2016 and 2017 respectively."[32] Staff reviewed the Company's supporting workpapers for adjustment 2.0 G-FE[33] and noted the Company used the CPI change from Appendix A. Although the Company used an earlier publication, the CPI for the years in question remains unchanged.

Q. What is Staff's recommendation?

A. Staff proposes to use the CPI, Urban U.S. from the most recent publication. Also, Staff would normally recommend prorating the CPI change for the base year and the test year, however the difference is de minimis. At this time, Staff does not have an adjustment to the Company's escalation adjustment. However, Staff's recommendation is dependent on other Staff's adjustments to these expense accounts.

Q. Does this conclude your opening testimony?

A. Yes.

[32] UG 325/Avista/500, Smith, 13 at 21-23 and 14 at 1-4.

[33] UG 325/Avista/Smith Workpapers 1)"2016 – TP Expense Adjustment.xlsx" and 2) "OR.gov report.pdf".

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 101

Witness Qualifications Statement

March 1, 2017

ITNESS QUALIFICATION STATEMENT

NAME:	Marianne Gardner
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Revenue Requirement Analyst Energy Rates, Finance and Audit Division
ADDRESS:	201 High Street SE., Suite 100 Salem, OR. 97301
EDUCATION:	Master of Business Administration Oregon State University, Corvallis, Oregon Bachelor of Science in Accounting Montana State University, Bozeman, Montana CPA, Oregon

EXPERIENCE:

I have been employed by the Public Utility Commission of Oregon since March 2013, with my current position being a Senior Revenue Requirement Analyst, in the Energy - Rates, Finance and Audit Division. My responsibilities include research, analysis, and recommendations on a range of cost, revenue and policy issues for electric and natural gas utilities. As the revenue requirement summary witness, I have provided testimony in dockets UE 263, UG 246, UE 283, UE 294, UG 284, UG 287, UG 288, and UG 305.

I have approximately 20 years of professional accounting experience, including:

- Thirteen years as a cost accountant with responsibilities including cost accounting, budgeting, product costing, and the preparation of management reports;
- Four years experience in public accounting working in the areas of audit, tax and financial accounting for individual and small business clientele; and,
- Three years experience in non-profit accounting for an agency administrating funds under the Federal Job Training Partnership Act.

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 102

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA UTILITIES
Oregon Jurisdiction
Twelve Months Ending June 30, 2016
Uncollectible Accounts

Purpose: This adjustment revises the 2016 base year level of accrued expense included within the Company's Results of Operations, to the historical three-year average of actual net write-offs.

Uncollectible Accounts per Results Reports-904.xx		**$823,333**
3 Year Average Uncollectibles at 06/30/16 Revenue	(90,218,258 x .90996%)	820,953
Increase (Decrease) in Uncollectible Accounts		**($2,380)**

	12 ME June	Net Write-Offs	Operating Revenue (1)	% of Revenue
Actual Net Write-Offs				
Three Year Average Calculation	2014	942,040	92,212,008	1.02%
	2015	529,256	88,075,305	0.60%
	2016	990,206	**90,218,258**	1.10%
Three Year Average Uncollectibles as Percent of Revenue		$820,500.53	$90,168,523.67	0.90996%

Oregon Jurisdiction /Gross Write-offs, Reinstatements, & Recoveries - (DR) Acct. 144.200	UA-2	**990,206**
Actual Net Write-offs		**$990,206**

(1) Excludes Sales for Resale

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	1/18/2017
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Lisa Garrett
TYPE:	Data Request	DEPT:	Customer Service
REQUEST NO.:	Staff – 208	TELEPHONE:	(509) 495-7994
		EMAIL:	lisa.garrett@avistacorp.com

REQUEST:

For each calendar year 2011 through 2016, please provide, for the gas operations on both a total company and Oregon-allocated basis:

a. Total actual net write-off related to uncollectible customer accounts, the related general business revenues by FERC account numbers and the uncollectible rate;
b. The commercial and residential net bad debt percentages;
c. The amount of energy assistance applied to customers' accounts (e.g., low-income energy assistance program and other public funds, outside agency funds, internal company funds of shareholder/customer voluntary funds, other, etc.); For each of the energy assistance sources, please identify whether the funding source is ratepayer, shareholder, or governmental agency.
d. Total amount of funds received by Avista for energy assistance. Please include the FERC account number(s), account title, account description, and GL account to which said funds were recorded;
e. Total number of non-payment disconnections by commercial and residential and indicate average amount due at the time of disconnection;
f. The annual FERC account 904 uncollectible expense;
g. The amount that was turned over to a collection agency;
h. The amount eventually recovered by Avista through the use of a collection agency; and,
i. The collection agencies fees charged to and paid by Avista, and average percent of recoveries paid as fees.

RESPONSE:

The Company has limited ability to separate electric and natural gas customer information that are dual fuel in Washington and Idaho. This information was not available prior to the Customer Information System (CIS) conversion in 2015. When available, total company gas only information is provided. If unavailable, the information provided is Oregon specific only.

a. Total actual net write-off related to uncollectible customer accounts, the related general business revenues by FERC account numbers and the uncollectible rate;

Net YTD Write Off Amounts by Year		General Business Revenues
2011	$ 533,434	$ 105,493,975
2012	$ 524,105	$ 98,342,326
2013	$ 544,409	$ 97,658,985
2014	$ 479,550	$ 85,689,523
2015	$ 650,793	$ 91,381,018
2016*	$ 569,529	$ 90,924,157

* These numbers are through November 2016, as the December information is not yet available.

b. The total business and residential net bad debt percentages are shown below.

Oregon Net Write Off to Revenue % by Year			
	Residential	Non-Residential	Combined
2011	0.70%	0.19%	0.51%
2012	0.72%	0.20%	0.52%
2013	0.76%	0.22%	0.55%
2014	0.82%	0.20%	0.58%
2015	1.02%	0.15%	0.59%
2016	0.91%	0.17%	0.56%

All States - Gas Only Net Write Off to Revenue % by Year			
	Residential	Non-Residential	Combined
2011*	0.67%	0.16%	0.38%
2012*	0.64%	0.13%	0.35%
2013*	0.74%	0.12%	0.40%
2014*	0.87%	0.08%	0.46%
2015	0.56%	0.14%	0.41%
2016	0.69%	0.13%	0.50%

* Gas only information is not available. Percentage shown includes gas and electric

c. The amount of energy assistance applied to customer's accounts:

	Energy Assistance Applied to Customer Accounts
2011	$ 1,275,335
2012	$ 884,327
2013	$ 882,799
2014	$ 843,635
2015	$ 647,695
2016	$ 755,798

Funding source by energy assistance type:

- LIHEAP – Government
- LIRAP – Ratepayer
- Project Share – Donation based (Company, employees, customers)
- Miscellaneous – Various local non-profit agencies

d. Customer funds received for energy assistance are recorded in liability FERC Account 232.700. Avista Corp. dollars donated to project share are expensed to FERC Account 426.140. Avista's Low Income Rate Assistance Program (LIRAP) funds are recorded in FERC Account 242.770, Low Income Energy Assistance.

	Oregon Project Share Contributions	
2011	$	52,102.07
2012	$	53,013.91
2013	$	48,976.85
2014	$	46,559.95
2015	$	51,172,22
2016	$	49,836.19

	Oregon LIRAP Contributions	
2011	$	220,359
2012	$	207,342
2013	$	219,613

2014	$	197,644
2015	$	168,307
2016	$	187,700

e. The total non-payment disconnections by business and residential and average amount due:

Oregon Total Nonpayment Disconnections and Average Amount Due by Year				
	Residential		**Non-Residential**	
	Number of Disconnections	**Ave Amount Due**	**Number of Disconnections**	**Ave Amount Due**
2011	5,011	$ 187.93	145	$ 347.19
2012	4,650	$ 178.07	154	$ 443.24
2013	3,368	$ 188.29	122	$ 487.40
2014	4,792	$ 177.81	147	$ 288.91
2015*	1,444	$ 305.14	83	$ 699.96
2016	3,757	$ 213.81	115	$ 417.21

Total Company Gas Nonpayment Disconnections and Average Amount Due by Year **				
	Residential		**Non-Residential**	
	Number of Disconnections	**Ave Amount Due**	**Number of Disconnections**	**Ave Amount Due**
2011	24,145	$ 252.94	575	$ 526.30
2012	23,446	$ 231.80	527	$ 499.90
2013	24,734	$ 224.22	474	$ 621.16
2014	21,548	$ 269.78	494	$ 639.54
2015*	1,723	$ 314.88	96	$ 722.08
2016	4,473	$ 219.40	144	$ 464.01

* Collection activity was limited in 2015 due to system conversion
** In Washington and Idaho Avista primarily services electric or dual service customers and typically disconnects the electric meter. Gas collection disconnects are very limited outside of Oregon. Data from 2011- 2014 includes gas and electric disconnections. 2015-2016 are gas only disconnections.

f. Annual FERC account 904 uncollectible expense:

	FERC Account 904 - Uncollectible Account
	Oregon Allocation

2011	$	704,560
2012	$	568,255
2013	$	675,746
2014	$	732,316
2015	$	806,667
2016	$	840,000

g. Amount turned over to a collection agency:

	Dollars Assigned to Collection Agency	
2011	$	856,466
2012	$	880,741
2013	$	939,466
2014	$	826,272
2015	$	707,935
2016	$	782,402

h. Amount recovered by Avista through the use of a collection agency:

	Dollars Recovered from Collection Agency	
2011	$	142,662
2012	$	151,887
2013	$	174,809
2014	$	151,504
2015	$	129,663
2016	$	161,204

i. Collection agency fees charged and paid by Avista, and average percent of recoveries paid as fees:

	Agency Fees Charged and Paid by Avista per Year		**Average Percent of Recoveries Paid as Fees to Collection Agency**
2011	$	24,557	17%
2012	$	20,199	17%
2013	$	30,102	17%
2014	$	32,175	18%
2015	$	27,530	19%
2016	$	37,351	19%

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/15/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Lisa Garrett
TYPE:	Data Request	DEPT:	Customer Service
REQUEST NO.:	Staff – 419	TELEPHONE:	(509) 495-7994
		EMAIL:	lisa.garrett@avistacorp.com

REQUEST:

Please provide the annual amounts recorded in the FERC accounts 144200,144600,144700 in an Excel spreadsheet for each of the 12 month periods as shown in the tables below and provide a narrative explanation in each instance where a year to year variance is greater than +/-15 percent. Additionally, please provide the general revenues for each period.

Net-Write Offs by Calendar Year

Ferc Acct	Ferc Acct Desc	2011	2012	2013	2014	2015	2016
144200	ACCUMULATED RETAIL WRITE-OFFS						
144600	ACCUMULATED RETAIL REINSTATEME						
144700	ACCUMULATED RETAIL RECOVERIES						
Grand Total							

Net-Write Offs by 12 Months ended June 30

Ferc Acct	Ferc Acct Desc	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016
144200	ACCUMULATED RETAIL WRITE-OFFS					
144600	ACCUMULATED RETAIL REINSTATEME					
144700	ACCUMULATED RETAIL RECOVERIES					
Grand Total						

RESPONSE:

Please see Staff_DR_419, Attachment A for the annual amounts recorded in the FERC accounts 144200,144600,144700 in an Excel spreadsheet for each of the 12 month periods as shown in the tables above, as well as the General Business Revenues.

Year to year variances greater than +/-15 percent for both the Calendar Year & Twelve Months Ended June 30, occurred from 2014 to 2015 for the reason below:

In February 2015 the Company installed its new Customer Care & Billing (CC&B) system. In preparation for the installation of CC&B, the Company stopped the collections processes. Beginning in December 2014, the Company stopped writing off balances and stopped referring any balances to collection agencies. In February 2015 the Company stopped all collection processes until August of 2015. Because there were no collections processes occurring between December 2014 and July of 2015, the net write-offs for 2015 were significantly lower than prior years, as seven months of collections activity was missing. In August 2015, the Company reinstituted the collection process again, beginning with transactions from December of 2014 through July of 2015, resulting in a very large gross write off balances in both August and September of 2015. These balances were first sent to collection agencies in late September 2015.

In 2015 reinstatements were lower than past years and same is true for 2016. Any balance written off prior to the conversion to CC&B was not converted. Only balances written off after August 2015 could be reinstated.

Collection agency recoveries were reduced in 2015 as the collection agencies were not getting new debt to collect on for ten months.

Year to year variances greater than +/-15 percent for both the Calendar Year & Twelve Months Ended June 30, occurred from 2015 to 2016 for the reason below:

In February 2015 the Company installed its new Customer Care & Billing (CC&B) system. The Company no longer records write-offs, reinstatements, and recoveries into separate FERC accounts so this information is not available for 2016 and future years.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/14/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Lisa Garrett
TYPE:	Data Request	DEPT:	Customer Service
REQUEST NO.:	Staff – 420	TELEPHONE:	(509) 495-7994
		EMAIL:	lisa.garrett@avistacorp.com

REQUEST:

Referring to Avista's Excel workpapers, "2016 Uncollectible Accounts", contained in Ms. Smith's adjustment file 3.00 G-UE:

a. Please provide a narrative explaining why the actual net write-offs for the 12 months ending June 30th for June 30, 2014, June 30, 2015 and June 30, 2016 vary significantly from the net write-offs reported for the calendar years 2014, 2015 and 2016 even though general business revenues reported for the time periods are fairly consistent?
b. Staff has included the data for the years under comparison below. Please update the data below under the SDR No. 208 a. heading to include December 2016. Additionally, please correct any other data as necessary to base the response on the most accurate data.

UG 325 Avista Workpapers\UG-___ Smith WP (Avista)(Dec2016)\Smith\3.00 G-UE\2016 Uncollectible Accounts			
12 ME June	Actual Net Write-Offs	General Revenues	% of Revenue
2014	942,040	92,212,008	1.022%
2015	529,256	88,075,305	0.601%
2016	990,206	90,218,258	1.098%
Three year Average	820,501	90,168,524	0.910%
UG 325 Avista Response to SDR No. 208 a.			
Calendar Year	Actual Net Write-Offs	General Revenues	% of Revenue
2014	479,550	85,689,523	0.560%
2015	650,793	91,381,018	0.712%
2016*	569,529	90,924,157	0.626%
Three year Average	566,624	89,331,566	0.634%
* These numbers are through November 2016, as the December infomration is not yet available.			

RESPONSE:

a. Please see the Company's response to Staff_DR_419.

b. The information provided in the Company's response to Staff_DR_208 for the 12 months ending June 30th of each year was Accumulated Retail Write Offs rather than net write offs. Please see the updated data below.

12 ME June	Actual Net Write-Offs	General Revenues	% of Revenue
2014	$ 529,256	$ 92,212,008	0.574%
2015	$ 166,973	$ 88,075,305	0.190%
2016	$ 990,206	$ 90,218,258	1.098%
Three Year Average	$ 562,145	$ 90,168,524	0.623%

Calendar Year	Actual Net Write-Offs	General Revenues	% of Revenue
2014	$ 479,550	$ 85,689,523	0.560%
2015	$ 650,793	$ 91,381,018	0.712%
2016	$ 574,702	$ 92,075,201	0.624%
Three Year Average	$ 568,348	$ 89,715,247	0.634%

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/14/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Lisa Garrett
TYPE:	Data Request	DEPT:	Call Center
REQUEST NO.:	Staff – 421	TELEPHONE:	(509) 495-7994
		EMAIL:	lisa.garrett@avistacorp.com

REQUEST:

Referring to the Company's response to Staff Data Request No. 208 b., please provide a narrative explaining:

a. Why the Oregon combined uncollectible percentages are significantly lower than those reported by the Company for each of the years 2014, 2015 and 2016 as compared to the above table included in SDR No. 420.

b. Why the Oregon combined net write-off percent is higher than the All States – Gas Only combined write-off percent for each of the given years.

Oregon Net Write Off to Revenue % by Year			
	Residential	**Non-Residential**	**Combined**
2011	0.70%	0.19%	0.51%
2012	0.72%	0.20%	0.52%
2013	0.76%	0.22%	0.55%
2014	0.82%	0.20%	0.58%
2015	1.02%	0.15%	0.59%
2016	0.91%	0.17%	0.56%

All States - Gas Only Net Write Off to Revenue % by			
	Residential	**Non-Residential**	**Combined**
2011*	0.67%	0.16%	0.38%
2012*	0.64%	0.13%	0.35%
2013*	0.74%	0.12%	0.40%
2014*	0.87%	0.08%	0.46%
2015	0.56%	0.14%	0.41%
2016	0.69%	0.13%	0.50%

RESPONSE:

a. The Oregon Net Write Off to Revenue % by Year in Staff_DR_208 part (b) includes recoveries made towards Oregon accounts written off prior to system conversion in February 2015. The recoveries reduced the combined net write off percentages. These recoveries are not accounted for in the response for Staff_DR_420.

b. The Company has not conducted any studies to determine why the Oregon net write off percent is higher than the All States net write off percent.

Following attachments to Exhibit 102

are provided in electronic format

UG 325 Exhibit 102 Gardner_DR_419, Attachment A S-1.xlsx
UG 325 Exhibit 102 Gardner_DR_422, Attachment A S-1.xlsx

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 103

Exhibits in Support
Of Opening Testimony

March 1, 2017

Avista Utilities UG 325
Test Year Ended 09/30/2018
000's

See Staff Opening Testimony, Staff/100, Gardner.

Description/ Account No.		OR-Allocated Company Filing	Staff	O&M Adjustment	Capital Adjustment	OR-Allocated O&M Adjustment	Capital Adjustment
Wages & Salaries		$ 9,265	$ 9,086	$ (152)	$ (27)	$ (152)	$ (27)
FTE Adjustment	*	$ 9,086	$ 9,086	$ -	$ -	$ -	$ -
Overtime		$ 841	$ 603	$ (186)	$ (52)	$ (186)	$ (52)
Bonus & Incentives		$ 970	$ 583	$ (387)	$ -	$ (387)	$ -
Restricted Stock Units		$ 109	$ -	$ (109)		$ (109)	
					Total OR - Allocated Adjustments	**$ (834)**	**$ (79)**

	Oregon-Allocated			
Payroll Taxes	$ 572	$476	$ (96)	**$ (96)**

Depreciation O&M Adjustment Associated with Capital Adjustment **$ (2)**

Staff Initiator:

Marianne Gardner

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 352	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Referring to the attached file titled UG 325 DR 352 Attachment A, Staff notes this file was originally provided informally to Staff by Avista as Excel file, "Oregon Only Restate Wages Adjustment.xlsx". Please:

a. Review the calendar year 2015 Avista source data in the response and indicate whether or not it conforms to the 2015 data provided in the Company's response to the above SDR 351;
b. Review the test year Avista source data in the attachment to ensure it conforms to the test year data provided in the above SDR 351, and the labor included in Avista/501, Smith/1, column c;
c. Update the attachment for any necessary adjustments; and
d. If updates are made, resubmit the attachment in the Company's response to this SDR.

RESPONSE:

The data provide in the file "Oregon Only Restate Wages Adjustment.xlsx" represents 12-months ending September 30, 2015[1] and 12-months ending September 30, 2018 (there is no calendar year 2015).

The file provided as attachment, "UG 325 DR 352 Attachment A" conforms to the data as explained in the Company's response to Staff_DR_351. Please see part c. of the Company's response to Staff_DR_351 for additional information.

No additional adjustments are necessary.

[1] September 30, 2015 was provided per the "Restate Wage and Salary" adjustment format which requires calculation beginning with the test year (September 30, 2018) and going back 3 years prior.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 353	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to Avista/500, Smith/18, lines 4-5, please, for each of the years 2011 through 2016:

a. Provide the allocation percentages for executives' base pay between utility and non-utility operations;
b. Explain in detail how utility/non-utility labor allocation was determined; and
c. Explain any year to year change in methodology employed and the reasons for the change.

RESPONSE:

a. The allocation of between utility and non-utility operations (system) for 2011 through 2016 is as follows:

	Utility	Non-Utility
2011	89%	11%
2012	86%	14%
2013	82%	18%
2014	83%	17%
2015	89%	11%
2016	91%	9%

b. Executive allocations are based on actual timesheet data for the 12-months ending June 30, 2016. This is based on the actual proportion of time each executive spent on utility vs. non-utility tasks. The timekeeping system contains data related to various projects (which include service and jurisdiction) and associated tasks (by FERC account) and description. Every two weeks employees, including executives, enter their actual time related to the previous two weeks activities. Special attention is paid to the utility/non-utility allocation to ensure appropriate shareholder/customer and jurisdiction split. In the event the executive chooses to use a set time allocation by project, this allocation is verified no less than quarterly to assure the appropriate split between projects.

c. There have been no changes in the Company's timekeeping methodology or system. The total utility/non-utility allocation percentages listed in the table above varies each year based on the actual amount of time each executive officer spent during that year on non-utility operations. The primary contributor to the reduction in the utility allocation percent for 2013 and 2014 is due to the purchase of one subsidiary and sale of another during this period. On July 1, 2014 Avista Corporation purchased the Alaska Energy and Resource Company (AERC) and Alaska Electric Light and Power Company (AEL&P). In addition, the Company sold ECOVA, our biggest subsidiary on July 1, 2014. The due diligence required for these types of transactions began in early 2013 resulting in a higher proportion of executive time being allocated to non-utility operations. This continued throughout 2014 as systems, programs and efficiencies were evaluated and put in place between Avista Utilities and AEL&P. In 2015, procedures and policies were in place which no longer required the level of executive oversight required during the previous two years resulting in the decrease in overall non-utility allocation.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 354	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Referring to Avista's Excel workpapers, "2016 Restate Salaries and Wages", supporting Ms. Smith's adjustment 3.03 G-SW, please explain the increase in the average number of FTEs by employee category for the 12 months ending September 2015 and the 12 months ending September 2018 on both a System basis and Oregon jurisdictional basis.

RESPONSE:

The increase in FTEs employees in adjustment 3.03 G-SW between 12-months ending September 2015 and 12-months ending September 2018 is summarized on a System and Oregon only jurisdictional basis as follows:

	System	Oregon
Executive Officers	0	0
Exempt Employees	46	(3)
Non-Exempt	9	2
Union	11	3
Total	66	2

Executive Officers
There were no change in executive officers on either a system or Oregon only basis.

Exempt Employees
On a system level the increase in exempt employees is primarily due to 20 additional FTEs related to CWIP[1] accounts, 19 additional FTEs related to various administrative and general functions (security systems, financial systems, integration systems, AP/AR remittance, etc.), and 6 additional FTEs related to customer service (construction area representatives and call center representatives).

[1] FTE is calculated as the sum of CWIP and O&M labor hours (regular and actual paid time off) divided by 2080 hours correspond to O&M expense and CWIP costs. Please see the Company's response to Staff_DR_351 for additional information concerning CWIPs relation to Rate Base.

On an Oregon only basis, a decrease of 5 FTEs for directly assigned projects (primary related to distribution and advertising) was offset by an increase of 2 FTEs for Oregon's portion of system exempt employees, resulting in a net decrease of 3 FTEs.

Non-Exempt Employees
On a system basis, the increase of approximately 9 FTEs is primarily related to temporary employees located within our customer service centers.

On an Oregon-only basis, the increase of 2 FTEs are Oregon's allocated portion of system FTEs.

Union Employees
On a system basis, the increase in union FTEs is a result of 7 additional Capital FTEs and 4 additional O&M union employees. Capital FTEs are related to CWIP accounts, and the remaining 4 FTEs represent increases in craft employees for projects throughout the Company.

On an Oregon-only basis, the increase of 3 Oregon only FTEs are primarily related to CWIP accounts on a directly assigned basis.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/04/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 355	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to the Company's Excel workpapers, "2016 Restate Salaries and Wages", please explain why the Oregon Jurisdictional O&M and Capital FTEs on both tabs G-SW-02 (cell L35) and G-SW-03 (cell L34) are greater than the total FTEs in the cell for each tab that includes the FTEs calculated for overtime and non-utility FTEs, cell L33 on tab G-SW-02 and cell L34 on G-SW-03.

RESPONSE:

On the Company's Excel workpapers "2016 Restate Salaries and Wages" tabs G-SW-02 (cell L31) and G-SW-03 (cell L30) were inadvertently hardcoded. The calculated FTEs (O&M and Capital FTEs) and the basis for the Company's 3.02 Restate Wage and Salaries adjustment are correct.[1]

When formula is corrected, the subtotal on G-SW-02 (cell L31) is 91, which is higher than the O&M and Capital FTEs Total (cell L35) of 89. On tab G-SW-03, when the formula is in place is 90 (cell L30), which is higher than the O&M and Capital FTEs total (cell L34) of 87.

[1] This formula error can be corrected by copying the formula on the same line from the "System" section into the "Oregon" section. This error had no impact on adjustment 3.02 Restate Wage and Salaries or data provided in response to Staff_DR_092 or Staff_DRs_351/352.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 356	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

What is the Company's forecasted payroll tax amount included in the proposed revenue requirement for the 2018 test year (system and Oregon allocated)?

RESPONSE:

The amount of payroll tax included in the Oregon proposed revenue requirement for the 2018 test year is approximately $572,000 ($552,000 O&M expense). The system amount of payroll tax O&M expense is approximately $6,773,000 (all jurisdictions, all services).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/04/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 357	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to Company Workpaper Smith 2.12, tab "G-IP-01," please break down the test year incentives by officer, exempt, union, and non-exempt. Please also do the same for the years 2005 through 2015. If records do not extend back to 2005, please provide the response back to the next earliest year for which the Company has records.

RESPONSE:

Please see Staff_DR_357 Attachment A

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/07/2016
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 358	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to the Company's response to SDR No. 92, please provide a narrative description explaining the year over year increase in Overtime pay as a percentage of Base Wages/Salaries and Overtime for each of the years 2012 through 2016 by employee category.

RESPONSE:

The primary contributor to increases in overtime for each of the years 2012 through 2014 is related to various construction work in progress (CWIP) projects specific to Washington and Idaho jurisdictions such as storm rebuilds (Washington only), and electric hydro operations and electric steam preventative maintenance. On a system-level additional expenses were also related to the development of a new natural gas control dispatch center per PHMSA requirements.

From 2014 to 2015, the biggest contributor to overtime was the 2015 November windstorm (approximately $5 million). A severe windstorm struck Avista's Eastern Washington service area, resulting in more customer outages than in any time in the Company's 126 year history. At the peak of the outage, Avista had approximately 180,000 of its total 372,000 electric customers out of service. This storm was the primary contributor to the increase in overtime. The cost of the storm was directly assigned to Washington customers. This amount is reflected in the Base Year 12 ME 06.2016 system amounts.[1]

Specific to the Oregon jurisdiction, the Company does not centrally track all of the drivers, both Capital and O&M, which cause overtime. Generally, the Company has overtime costs associated with general natural gas operations, and credit and collections. Over the 2012-2016 time period, the average annual cost associated with these activities is approximately $250,000. Some of the other drivers in overtime from 2012 through Base Year 12 ME 06.2016 is as follows:

[1] This amount was carried forward to the 12 ME 09.2018 Test Period on Staff_DR_092. Taking out the impact of this storm would reduce this number by approximately $5.4 million. The "system" amount provided in this response was not utilized in the Company's filed Case. Please see Staff_DR_351 for overtime amounts assigned to Oregon only.

	Amount	Change	Primary Contributor
2012	$322,471		
2013	$443,906	$121,435	New Natural Gas Control Center
2014	$418,467	($25,439)	Continuation of Natural Gas Control Center, CWIP meter changes, relocates, and new gas mains.
2015	$597,000	$178,533	CWIP related to the Bonanza Gate Station and Ladd Canyon Gate Station
12 ME 06.2016	$608,334	$11,334	CWIP related to the Bonanza Gate Station and Ladd Canyon Gate Station

The actual amount of Overtime included in the Company's case is $458,122.[2]

[2] This represents the amount of O&M overtime included in the case. The amount of Overtime related to CWIP is embedded within the various capital projects. Please see adjustments 2.05-2.07 for Capital Projects.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/09/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 359	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to Avista/500, Smith/22, lines 1-3, 13-15 the Company states "The purpose for this portion of the plan is to provide an incentive for employees to remain with the Company." And "the Restricted Stock Unit portion of the plan is <u>included</u> in retail ratemaking, because customers benefit from long-term leadership with a vested interest in the efficient operation of the Company and high customer satisfaction." Is it the Company's belief that shareholders also benefit from employee retention and long-term leadership?

RESPONSE:

As explained in response to Staff Request No. 363, the Restricted Stock Units are not extra pay over and above the competitive market. If RSUs were eliminated, base pay would need to be increased in order for the overall cash component to be competitive.

Compensation to employees is a necessary utility cost to enable Avista to provide safe, reliable service to its customers. One could argue that almost all utility operating expenses provide some benefit to customers and shareholders. For example, the expenses associated with envelopes and postage enable the receipt of payments from customers, which result in revenues to provide the return on investment to shareholders. It is not appropriate to apportion necessary utility operating costs between customers and shareholders based on some determination of benefits to each. In exchange for providing safe reliable service to customers, Avista should have the opportunity to recover the necessary, reasonable and prudent operating costs, and a fair return on its investment. Apportioning necessary utility operating costs to shareholders would not allow the Company the opportunity to earn a fair return.

Further, the Company believes the inclusion of restricted stock as part of retail rates meets the requirements set forth by the Commission in OPUC Order No. 97-171 which states:

> "If in future rate cases USWC submits employee incentive plan with goals that benefit both ratepayer and shareholders, *we will include those expenditures in revenue requirement.*"[1] (emphasis added)

Restricted Stock unit grants, are based exclusively on time vesting (not earnings, financial performance, etc.) and therefore should be recovered in retail rates.[2]

[1] OPUC Order No 97-171, p. 74

[2] The Long Term Incentive Plan (LTIP) is comprised of 75% performance shares and 25% restricted shares. The performance shares portion is based on shareholder metrics and therefore are not included in the revenue requirement. In addition, since there is a performance trigger for the CEO's restricted shares, they also are not included.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 360	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Referring to Avista's Excel workpapers, "2016 Restate Salaries and Wages", in Ms. Smith's adjustment folder 3.03 G-SW, please provide a narrative explaining how the hours provided in tab G-SW-02 are derived.

RESPONSE:

The hours provided in Avista's Excel workpapers "2016 Restate Salaries and Wages" in Ms. Smith adjustment 3.03 G-SW represent regular time and actual paid time off hours. Hours are not tracked on an Oregon-specific basis and therefore have been estimated based on the ratio of Oregon labor expense relative to System labor expenses.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 361	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Please explain the methodology or mechanics regarding how Salaries or Wages and Overtime dollars are populated into the Oregon jurisdictional FERC accounts. In the response, please provide both a detailed narrative and flowchart. If the process or software varies for different employee categories, please explain and flowchart the different processes. The explanation and flowchart should:

i. Begin with the employee entering their time in the time and reporting system. Please explain whether any employee does not enter their own time;
ii. Include all steps involved in populating the labor hour statistical field;
iii. Include all steps involved in populating labor dollars into the GL accounts and FERC accounts both on a System and Oregon jurisdictional basis;
iv. Detail how the labor hour statistical field is used in the process of allocating labor dollars;
v. Include the GL account numbers and account descriptions to which the payroll system posts directly;
vi. Explain in detail whether any of the labor dollars are allocated within the payroll system or another software module before posting to the GL; and,
vii. Explain in detail any other allocation methodology utilized to allocate or charge labor dollars to both the System accounts and the Oregon jurisdictional accounts.

RESPONSE:

Bi-weekly each employee enters hours by day into the Company's timekeeping system "Ultipro" using the time code (work, one-leave, holiday, overtime, etc.) and project-task level for all employees[1]. The project-task is specific to a given project, task (FERC) service (gas, electric or common) and jurisdiction. Checks are in place to ensure exempt employees do not charge over 80 hours. All employees enter their own time or specify their time, which is then input by others.

The data housed in Ultipro is exported to the Company's payroll system where dollars are calculated based on each employee's hourly wage. Exempt employee "hourly" wage is based on annual salary amount divided by 2080 hours. During the closing process, the data in the payroll system is exported to Oracle financials where all allocations for the general ledger occur. Hours are maintained at the general ledger account level, but are not allocated by service and jurisdiction.

[1] Union employees utilize "workorder" which is specific to a given service and jurisdiction.

A full description of the accounting process, including allocations and various system integrations are provided in the Company's response to Staff_DR_077. A flow chart is provided on page 7 of this attachment, followed by several pages of explanation. While this attachment is not specific to labor, labor allocations follow the same methodology.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 362	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Referring to Avista's Excel workpapers, "2016 Restate Salaries and Wages", in Ms. Smith's adjustment folder 3.03 G-SW, please explain why the Oregon jurisdiction received a larger proportion of executive pay for O&M as compared to the System executive pay to total System O&M. For clarity, Staff has provide the detail in the below table.

Labor Costs-Total O&M	Tab G-SW-02		Tab G-SW-03	
	12 Mos. Base Year ending 6/30/2016		12 Mos. ending 9/30/2015	
	System	Oregon	System	Oregon
Officers	3,876,623	337,058	3,830,887	341,099
Total O&M	85,011,582	51,835	79,221,027	7,090,996
Percentage	**4.56%**	**5.34%**	**4.8%**	**5.61%**

RESPONSE:

The data provided above on Tab S-SW-02, 12 Months Base Year ending 06/30/2016 should read Officers "388,893" (instead of 337,058) and Total O&M "7,278,671" (instead of 51,835). Amounts are analyzed based on this corrected data.

The difference in System vs. Oregon only executive officer labor as a percent of total is a reflection of directly assigned vs. allocated labor costs. Oregon has a higher percentage of directly assigned labor dollars relative to overall system O&M.

In Oregon, the primary contributor to executive officer directly assigned costs is due to rates and regulatory oversight.[1] The regulatory processes in Oregon require a disproportionate level of involvement and oversight, as compared to Avista's other jurisdictions, as evidenced, in part, by the mere extensive procedural schedule, and the level and extent of discovery, workshops, etc. If we were to remove the impact of these costs from the calculation, the result for 12-Months Base Year ending 06/30/2016 is as follows:

12 Months Base Year Ending 06/30/2016: System 4.33% vs. Oregon 4.43%,
12 Months Year Ending 09/30/2015: System 4.66% vs. Oregon 4.84%

[1] For example, during 2015 and 2016 the Company had general rate case activities, as well as UM1633 and UM1722 Commission investigations commencing which involved certain executive officers.

Please see the Company's response to Staff_DR_351 for additional information on allocations.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO.:	UG 288	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 364	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to Smith WP 2.12, please describe how the Company determined that six years is the appropriate amount of time to average incentive payouts (as opposed to 3, 5, 7, or some other number).

RESPONSE:

The company utilizes a six year average in the other jurisdiction it operates in. The purpose of the six year average is to smooth the incentive expense. In order to remain consistent, a six year average was chosen for the incentive calculation in Oregon.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO.:	UG 288	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 365	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

With regard to Workpaper Smith 2.12, "2016 Incentive Adjustment", what is the amount of capitalized incentive compensation included in the Company's proposed September 30, 2018 test year revenue requirement (System and Oregon allocated)?

RESPONSE:

Workpaper 2.12, "2016 Incentive Adjustment" represents only O&M incentive expense. No capitalized incentive is included in this adjustment. Please see the Company's response to Staff_DR_366 for additional information concerning capitalized incentive.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/05/2017
CASE NO.:	UG 288	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 366	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Please explain whether the Plant capitalized in the Company's September 30, 2018 test year rate base includes amounts for performance-based incentives. If Plant does include any amounts for performance-based incentives, please estimate the amount. If Plant does not include any amounts for performance-based incentives, please explain how the Company ensures performance-based incentives are excluded from capitalization.

RESPONSE:

In accordance with guidance provided in UG288, Order 16-109, page 15, the Company excludes 50% of the estimated incentive for Plant in Service on an Oregon jurisdictional basis on its monthly financial statements. The expense associated with this incentive amount is borne by shareholders.

The total amount of incentive compensation related to Plant in Service is approximately $604,141, of which $302,070 is allocated to non-utility and not included in the Company's revenue requirement.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/10/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 372	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Referring to Avista's Excel workpapers, "2016 Restate Salaries and Wages", contained in Ms. Smith's adjustment file 3.03 G-SW, please provide a narrative explanation regarding how reported labor hours exceeding 40 hours in a week for an exempt employee or an officer are taken into account when allocating labor dollars supporting jurisdictional utility activities and non-utility activities. Please include, all allocation methodologies utilized, such as, cost pools, burden rates, estimates, labor hours, statistical hours, and direct charges.

RESPONSE:

Hours exceeding 40 hours per week are not recorded in the timekeeping system for exempt employees. Please see the Company's response to Staff_DR_361 for information regarding labor allocations.

Following attachments to Exhibit 103

are provided in electronic format

UG 325 Exhibit 103 Gardner_DR_100 Attachment A S-4.xlsx
UG 325 Exhibit 103 Gardner_DR_351 Attachment A S-4.xlsx
UG 325 Exhibit 103 Gardner_DR_357 Attachment A S-4.xlsx

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 104

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 215	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

With regard to the Company's Workpapers Smith 2.05, please provide property tax rates (*see* line 167 of tab "G-PFT-3") from assessment year 2006 through 2016. If records do not extend back to 2006, please provide the response back to the next earliest year for which the Company has records.

RESPONSE:

Please see Staff_DR_215 Attachment A, for assessment year 2006 through 2016.

Also, please see Staff_DR_215, Attachment B, for a revision to property tax adjustment 2.05, which has been revised to reflect the actual state taxable value of our plant balances, as well as including plant additions, which had previously been excluded. The revision increases the expected property tax expenses by $225,964, from $550,714 to $776,678, for an increase in revenue requirement of approximately $234,000.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 216	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

With regard to the Company's Workpapers Smith 2.05, please provide a worksheet showing the property taxes assessed versus the property taxes actually paid by the Company from 2006 through 2016. If records do not extend back to assessment year 2006, please provide the response back to the next earliest year for which the Company has records.

RESPONSE:

Please see the Company's response to Staff_DR_215 Attachment A.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 217	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

With regard to the Company's Workpapers Smith 2.05, please provide the underlying calculations for the Oregon – Gas "Estimated State Value" (*see* line 156 of tab "G-PFT-3") for each period 15/16, 16/17, 17/18, and 18/19 in an Excel spreadsheet. Additionally, please provide:

a. Documentation that supports the Oregon – Gas Estimated State Value for each period; and,
b. A narrative explanation of the Company's assumptions involved in the Company's derivation of the Oregon – Gas Estimated State Value for each period.

RESPONSE:

a. Please see Staff_DR_217, Attachment A for the "Gas Estimated State Value", for the 15/16 and 16/17 periods, which are provided by the Oregon State Department of Revenue. The 17/18 and 18/19 Estimates are not yet available.
b. The "Gas Estimated State Value" is provided to the Company by the Oregon State Department of Revenue.

Oregon
John A. Kitzhaber, MD, Governor

Department of Revenue
955 Center St NE
Salem, OR 97301-2555
www.oregon.gov/dor

May 23, 2014

AVISTA CORP. DBA AVISTA UTILITIES
DANIEL LOUTZENHISER
1411 E MISSION AVE
SPOKANE, WA 99202-1902

CENTRALLY ASSESSED PROPERTIES
NOTICE OF PROPOSED ASSESSMENT

The assessed value of your GAS property subject to assessment by the Department of Revenue for the 2014-2015 tax year is:

$184,700,000

The proposed assessment will become final and non-appealable if you do not deliver a request for a conference with the Director by June 16, 2014. Your request for a conference can be delivered in the following manner:

Mail: Director's Review Conference Request
Director's Office
Oregon Department of Revenue
955 Center St. NE
Salem, OR 97310-2501

Fax: Attn: Director's Review Conference Request
(503) 945-8737

E-mail: utility@oregon.gov

E-mailing your request is an acceptable form of delivering your request for a conference, however the department cannot guarantee the safe delivery of an e-mail transmission. You will receive a return e-mail confirmation from the department that your conference request has been received. If you do not receive an e-mail acknowledgement from the department prior to 3:00 pm, on June 16, 2014 (the filing deadline), then you must presume the department did not receive your request and you will need to fax a second request in.

In order for your conference with the Director to be as productive as possible, your request should include the reason(s) for your request (please be specific), and the value you are requesting.

(OVER)

Oregon

Kate Brown, Governor

Department of Revenue
955 Center St NE
Salem, OR 97301-2555
www.oregon.gov/dor

May 22, 2015

GAS

AVISTA CORP. DBA AVISTA UTILITIES
DANIEL LOUTZENHISER
1411 E MISSION AVE
SPOKANE, WA 99202-1902

CENTRALLY ASSESSED PROPERTIES
NOTICE OF PROPOSED ASSESSMENT

The assessed value of your GAS property subject to assessment by the Department of Revenue for the 2015-2016 tax year is:

$209,500,000

The proposed assessment will become final and non-appealable if you do not deliver a request for a conference with the Director by June 15, 2015. Your request for a conference can be delivered in the following manner:

Mail: Director's Review Conference Request
Director's Office
Oregon Department of Revenue
955 Center St. NE
Salem, OR 97310-2501

Fax: Attn: Director's Review Conference Request
(503) 945-8737

E-mail: utility@oregon.gov

E-mailing your request is an acceptable form of delivering your request for a conference, however the department cannot guarantee the safe delivery of an e-mail transmission. You will receive a return e-mail confirmation from the department that your conference request has been received. If you do not receive an e-mail acknowledgement from the department prior to 3:00 pm, on June 15, 2015 (the filing deadline), then you must presume the department did not receive your request and you will need to fax a second request in.

In order for your conference with the Director to be as productive as possible, your request should include the reason(s) for your request (please be specific), and the value you are requesting.

(OVER)

150-800-075 (Rev. 03-15)

Oregon

Kate Brown, Governor

Department of Revenue
955 Center St NE
Salem, OR 97301-2555
www.oregon.gov/dor

May 25, 2016

AVISTA CORP. DBA AVISTA UTILITIES
DANIEL LOUTZENHISER
1411 E MISSION AVE
SPOKANE, WA 99202-1902

CENTRALLY ASSESSED PROPERTIES

NOTICE OF PROPOSED ASSESSMENT

The assessed value of your GAS property subject to assessment by the Department of Revenue for the 2016-2017 tax year is:

$243,300,000

The proposed assessment will become final and non-appealable if you do not deliver a request for a conference with the Director by June 15, 2016. Your request for a conference can be delivered in the following manner:

Mail: Director's Review Conference Request
Director's Office
Oregon Department of Revenue
955 Center St. NE
Salem, OR 97310-2501

Fax: Attn: Director's Review Conference Request
(503) 945-8737

E-mail: utility@oregon.gov

E-mailing your request is an acceptable form of delivering your request for a conference, however the department cannot guarantee the safe delivery of an e-mail transmission. You will receive a return e-mail confirmation from the department that your conference request has been received. If you do not receive an e-mail acknowledgement from the department prior to 3:00 pm, on June 15, 2016 (the filing deadline), then you must presume the department did not receive your request and you will need to fax a second request in.

In order for your conference with the Director to be as productive as possible, your request should include the reason(s) for your request (please be specific), and the value you are requesting.

(OVER)

Oregon
Kate Brown, Governor

Department of Revenue
955 Center St NE
Salem, OR 97301-2555
www.oregon.gov/dor

2016-2017 Assessed Value (Measure 50) Template

Company Name:	AVISTA CORP. DBA AVISTA UTILITIES	Key to Abbreviations and Acronyms:
Category:	45	AV - Assessed Value
Company ID #:	1799	RMV - Real Market Value CPR - Change Property Ratio
Appraiser:	Scott Smith	MAV - Maximum Assess Value

This spreadsheet calculates your assessed value for the current year under Measure 50 guidelines. The process begins by compiling prior and current years' data from a variety of sources (lines 1-16). Most of this data will be used to compute the maximum assessed value (lines 8-35). The maximum assessed value is an upper limit of value for assessment purposes. It is computed by adding the "base" maximum assessed value for property assessed in the prior year to the assessed value of improvements made in the prior year. The base amount is the larger of two numbers: The prior year's assessed value increased by 3% (lines 21-23) or the prior year's actual maximum assessed value (line 26). The improvement amount is "converted" from market value to assessed value (lines 31-33) by means of the "change property ratio" (CPR) which is calculated from current year's data. Their sum is the new maximum assessed value (MAV) found on line 35. Once the MAV is calculated, the assessed value (AV) is determined by taking the lesser of the MAV or the property's real market value drawn from the appraisal (lines 37-41).

Line #	Data Items:	Amounts		Explanation & Applicable Statute
1	From Prior Year's Data:			
2	Prior Year's Assessed Value (AV):	209,500,000	(AV)	From 2015-2016 Roll
3	Prior Year's Maximum Assessed Value (MAV):	271,753,600	(MAV)	From 2015-2016 M50 Template
4				
5	From 2016-2017 Appraisal Data:			
6	Current Year's Real Market Value (RMV):	243,300,000	(RMV)	
7				
8	Net Improvement Value:			
9	Net Improvements 1-1-2015 to 1-1-2016 at Cost:	30,187,165	(1)	
10	Depreciation %:	1.85 %	(2)	
11	Depreciated Improvements	29,628,702	(3)	(1) x [100% - (2)]
12	Market Ratio	0.9820	(4)	
13	Net Improvements @ RMV	29,095,400		(3) x (4)
14				
15	From Current Year's Roll Data:			
16	Change Property Ratio (CPR):	1.00		Input = 1.00 for Tentative Roll
17				& Calculated % for Final Roll
18	Current Year M50 Computations:			
19	Calculation of 2016 Base MAV:			
20	(A) MAV Base Method #1: Prior Year's AV x 1.03			
21	Prior Year's Assessed Value:	209,500,000		Line 2
22	Statutory Annual Increase	3%		ORS 308.146(1)
23	Calculated MAV, rounded:	215,785,000	(A)	
24				
25	(B) MAV Base Method #2: Apply Prior Year's MAV			
26	Prior Year's MAV:	271,753,600	(B)	Line 3; ORS 308.146(1)
27				
28	MAV Base Amount:	271,753,600	(5)	Greater of (A) or (B; ORS 308.146(1)
29				
30	Calculation of Net Improvements			ORS 308.153(1)
31	Value of Net Improvements	29,095,400		Line 13; ORS 308.149
32	x Change Property Ratio:	1.00		Line 16; ORS 308.149
33	= Net Improvements to Add	29,095,400	(6)	
34				
35	Total 2016 MAV (Base + Net Improvs)	300,849,000		(5) + (6); ORS 308.153(1)
36				
37	Calculation of 2016 Assessed Value:			
38	(C) Current Year's MAV:	300,849,000	(C)	Line 35
39	(D) Current Year's RMV:	243,300,000	(D)	Line 6
40				
41	2016-2017 Assessed Value:	243,300,000	AV	Lesser of (C) or (D); ORS 308.146(2)

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 218	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

With regard to the Company's workpapers Smith 2.05, please explain if the Base Year Expense (*see* line 10 of tab "G-PFT-1") is solely based on property sited in Oregon or if it also includes property tax expense for properties located in other states or properties servicing jurisdictions other than Oregon. If the latter, please provide a narrative explanation and a supporting schedule in an Excel spreadsheet with a breakdown of the expense by state, jurisdiction, and utility type (gas or electric).

RESPONSE:

The balance on line 10 of tab "G-PFT-1", is the property tax expense paid during the base year. In each of its jurisdictions, property taxes are assigned to the jurisdiction where the tax is incurred (situs).

In Oregon, for natural gas distribution property that is used to serve natural gas customers in Oregon the Company receives property tax statements from all of the counties in which Oregon customers reside. Those costs are first assigned to Oregon natural gas as the situs because the costs are related to natural gas and the property is located in Oregon. 100% of these costs are also assigned to Oregon natural gas for rate making purposes.

In addition, a portion of the property taxes paid for the Jackson Prairie facility located in Washington is allocated to Oregon for the portion used by Oregon customers. Please see Staff_DR_218, Attachment A for a brief memo, regarding the allocation of the Jackson Prairie costs, including property tax.

Subject: Allocation of Jackson Prairie Storage Project O&M and capital costs between Washington/Idaho and Oregon.

To: Kevin Christie
Don Falkner
Yvonne Cook
Rich Stevens
Craig Bertholf
Theresa Melvin
Annette Brandon
Cameron Dunlop

Date: 07/19/2010

With the assignment of a portion of Jackson Prairie capacity and deliverability to Oregon it is necessary to allocate some of the ongoing O&M and capital costs from Washington/Idaho to Oregon.

On October 31st, 2009 Avista completed its one third participation in the injection of gas for the Capacity Expansion that has been ongoing since August of 2002. This expansion leaves Avista with an increase of 1,456,000 Dth of cushion gas and 2,184,000 Dth of working gas.
The capacity expansion that has been allocated to Oregon customers since July 1, 2007 results in 174,964 Dth of cushion gas and 262,446 Dth of working gas capacity.
The remainder of the capacity expansion 1,281,036 Dth of cushion gas and 1,921,554 Dth of working gas is held by Avista Energy (AE). AE also holds 1,109,111 Dth of working gas and 104,000 Dth of deliverability from an earlier expansion.
There will be ongoing water lifting costs, which will be assigned to AE, while the other two partners finish their portion of the expansion because the contract requires equal sharing throughout the project.

On November 1st the Deliverability expansion which included ten new wells, a new Solar Taurus compressor and other station enhancements went into service. This expansion increased Avista's daily deliverability by 104,000 Dth per day. Twenty-five percent of this expansion is being allocated to Oregon customers with the balance allocated to WA/ID customers. This gives Avista a total daily withdrawal of 398,670 Dth/d less the 104,000 held by AE, or 294,670 Dth/d net withdrawals.

The allocation of costs will occur in two phases. O&M costs will be allocated to Washington/Idaho, Oregon and AE based on the capacity held by each of the participants using Avista's one third share of available capacity. Capital costs will be allocated to Washington/Idaho & Oregon based on the capacity held after the 5/01/2011 transfer of capacity from AE because none of the ongoing. The allocation percentages are as follows.

1/1/2009 through 4/30/2011 O&M	Dth (thousands)	Allocation %
JP WA & ID (AN)	5,234.666	61.38%
JP OR	262.446	3.08%
AE Capacity leased to Shell	3,030.901	35.54%
	8,528.013	100.00%

1/1/2009 through 4/30/2011 Capital	Dth (thousands)	Allocation %
JP WA & ID (AN)	7,704.676	90.35%
JP OR	823.337	9.65%
AE Capacity leased to Shell. Capital is directly assigned.	-	0.00%
	8,528.013	100.00%

Post 4/30/2011 O&M & Capital	Dth (thousands)	Allocation %
JP WA & ID (AN)	7,704.676	90.35%
JP OR	823.337	9.65%
AE Capacity leased to Shell	-	0.00%
	8,528.013	100.00%

Please use these allocation percentages as appropriate for property tax, insurance, and any other costs that should be split between the various jurisdictions.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 219	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

With regard to the Company's workpapers Smith 2.05, please explain the purpose or relevance of the 2 percent tax rate (*see* column D of tab "G-PFT-3").

RESPONSE:

The 2 percent located in column D of tab "G-PFT-3", is a 2 percent escalation factor. This escalation factor is used to calculate the 16/17 and 17/18 Estimated tax rates.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Don Falkner
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – 423	TELEPHONE:	(509) 495-4326
		EMAIL:	don.falkner@avistacorp.com

REQUEST:

Referring to the Company's response to Staff DR (SDR) No. 217 Attachment A, page 1, the State of Oregon Department of Revenue's (ODOR's) letter for Notice of Proposed Assessment for Centrally Assessed Properties states, "The proposed assessment will become final and non-appealable if you do not deliver a request for a conference with the Director by June 16, 2014". For any of the tax years 2010/2011 through 2016/2017, inclusive, please provide the information in the table below regarding the ODOR's assessment of property tax. Additionally, for each ODOR assessment appealed, please provide a copy of the appeal, a narrative explaining the grounds for the appeal, and the status of the appeal, e.g. pending, denied, granted.

	ODOR Assessed Value 2010/2011	ODOR Assessed Value 2011/2012	ODOR Assessed Value 2012/2013	ODOR Assessed Value 2013/2014	ODOR Assessed Value 2015/2016	ODOR Assessed Value 2016/2017
Total Assessed Value						
Tax Liability/Due - Per Initial ODOR Assessment (after discount)						
Assessment Appealed with ODOR (Y or N)						
Status of Appeal						
Final Assessed Value (after appeal)						
Actual Tax Liability/Due - (after appeal and any discount)						

RESPONSE:

Avista did not file any appeals for the years 2010/2011 through 2016/2017.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Don Falkner
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – 424	TELEPHONE:	(509) 495-4326
		EMAIL:	don.falkner@avistacorp.com

REQUEST:

Please explain whether the Company's UG 325 2018 test year includes property tax expense other than that levied by the ODOR. If so, please provide a narrative explanation and for each of the tax years 2010 through 2017, inclusive, the UG 325 base year, and the UG 325 test year provide:

a. A description of the property;
b. The assessed value;
c. The average levy;
d. Tax paid (after discount); and,
e. The allocation of the total system amount by Electric, Gas, Jurisdiction, Non-Utility, FERC account number and account description.

RESPONSE:

a.-e.
Please refer to the Company's response to Staff_DR_218. For test year purposes that are beyond the current period, the only amount added to the ODOR actual assessments are estimated capital expenditures expected to be assigned to the Oregon jurisdiction.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Don Falkner
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – 425	TELEPHONE:	(509) 495-4326
		EMAIL:	don.falkner@avistacorp.com

REQUEST:

Referring to the Company's response to Staff DR No. 215 and attachment Staff_Dr_215, Attachment B, tab G-PFT-3, please provide all detail that supports the Company's revision to property tax adjustment 2.05. In the response, please include:

a. All documentation to support the estimated state value. This includes correspondence from the ODOR that substantiates the assessed value, Company estimates, and all underlying computations.
b. The supporting detail for the "Net ADDs to Plant (Oregon Only) by project number or other descriptors and reconcile these additions to Company testimony, Company data responses, and/or filed workpapers for UG 325 capital additions.

RESPONSE:

a. Please refer to the Company's response to Staff_DR_217 Attachment A for the actual ODOR statements for the 2015/16 and 2016/17 periods. The following two periods, 2017/18 and 2018/19 utilize the last received ODOR assessment as its base, and then utilizes forecasted transfer to plant to estimate property valuations that would approximate the impact of added fixed assets in our Oregon natural gas properties.
b. Please see Staff_DR_425 Attachment A for estimated transfers (NET ADDS) to plant for 2016 and 2017.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Don Falkner
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – 426	TELEPHONE:	(509) 495-4326
		EMAIL:	don.falkner@avistacorp.com

REQUEST:

Please provide Form 150-303-122 filed with the ODOR for each of the years 2013, 2014, 2015, 2016, and 2017 in an Excel workbook. If the form is unavailable in Excel for any of these years, please explain and provide as an Adobe PDF.

RESPONSE:

Please see Staff_DR_426 Attachments A-D for the requested files. The 2016 report to be filed in 2017 is not currently available.

Following attachments to Exhibit 104

are provided in electronic format

UG 325 Exhibit 104 Gardner_DR_215, Attachment A S-5.xls
UG 325 Exhibit 104 Gardner_DR_215, Attachment B S-5.xlsx
UG 325 Exhibit 104 Gardner_DR_217, Attachment A S-4.pdf
UG 325 Exhibit 104 Gardner_DR_425, Attchment A S-5.xlsx
UG 325 Exhibit 104 Gardner_DR_426, Attachment A S-5.zip
UG 325 Exhibit 104 Gardner_DR_426, Attachment B S-5.zip
UG 325 Exhibit 104 Gardner_DR_426, Attachment C S-5.zip
UG 325 Exhibit 104 Gardner_DR_426, Attachment C S-5.zip

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 105

Exhibits in Support
Of Opening Testimony

March 1, 2017

RESULTS OF OPERATIONS	Report ID:
FEDERAL INCOME TAXES--GAS	**OR-FIT-12A**
For Twelve Months Ended June 30, 2016	
Average of Monthly Averages Basis	

AVISTA UTILITIES

Ref/Basis	Description	Oregon
	Calculation of Taxable Operating Income:	
OR-OPS	Operating Revenue	148,519,229
OR-OPS	Operating & Maintenance Expense	115,671,891
OR-OPS	Senate Bill 408 (net)	(1,503)
OR-OPS	Book Deprec/Amort and Reg Amortization	10,071,155
OR-OTX	Taxes Other than FIT	6,074,594
	Net Operating Income Before FIT	16,703,092
OR-INT	Less: Interest Expense	5,432,560
OR-SCM	Add: Schedule M Adjustments	(19,317,050)
	Taxable Net Operating Income	(8,046,518)
	Tax Rate	35.00%
	Total Federal Income Tax	(2,816,281)
OR-DTE	Deferred FIT	7,047,696
	Total FIT/Deferred FIT	4,231,415

Print Date-Time: 2/23/2017 4:17 PM

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/30/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Tara Knox
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 321	TELEPHONE:	(509) 495-4325
		EMAIL:	tara.knox@avistacorp.com

REQUEST:

Referring to Exhibit No. 501, Avista/501, Smith/1 at line 38, column c, please explain if the Accumulated Deferred FIT (ADFIT) amount of ($69.805) million includes a depreciation timing difference arising from bonus depreciation taken or forecasted for any of the years 2015, 2016, 2017, or the 2017/2018 test year. If not, please explain why not. If so, please explain how bonus depreciation was incorporated into the rate case for each of the above mentioned years.

RESPONSE:

Yes, the test year Accumulated Deferred Federal Income Tax amount referenced above includes depreciation timing differences arising from expected bonus depreciation for the years 2015, 2016, 2017 and 2018.

The explanation for how bonus depreciation was incorporated in the rate case by year follows:

1. The Results of Operations Report (ROO) for June 30, 2016 (AMA basis) was the starting point for the rate case. ADFIT was ($52.982) million. This amount includes two components.
   a. First, the ADFIT balance at 12/31/2015 includes an estimate of bonus depreciation for 2015 using actual transfers to plant for 2015. (The Company's 2015 tax return was prepared in September 2016 when the final amounts of ADFIT for 2015 was calculated and indicates that the estimate recorded in December 2015 was materially appropriate. The difference is discussed below.)
   b. Second, an estimate of bonus depreciation was recorded for the six months ended June 30, 2016.

2. The ROO June 30, 2016 AMA amount was adjusted to an end-of-period (EOP) December 31, 2016 amount with Adjustments 2.06 and 2.07. These adjustments calculated ADFIT using planned transfers to plant in 2016 with estimated bonus depreciation and other tax assumptions. This balance is ($62.615) million, as follows:

ADFIT June 30, 2016 AMA (per ROO)	($52.982) million
ADJ 2.06 Adjust 6/30/2016 AMA to EOP	(2.271) million
ADJ 2.07 Adjust to 12/31/2016 EOP	(7.362) million
ADFIT December 31, 2016 EOP – per GRC	($62.615) million

3. The EOP December 31, 2016 ADFIT balance of ($62.615) million was then adjusted for planned plant additions for the period January 1, 2017 through September 30, 2018 with Adjustments 2.08 and 2.09. ADFIT was calculated on these planned additions using bonus depreciation and other tax assumptions.

In December 2016, the Company calculated deferred taxes using actual transfers to plant in 2016. Oregon's share at December 31, 2016 is ($417,222) more than the amount that was included in the rate case. Please see Staff DR_321-Attachment A for the calculation of this variance. A summary follows:

ADFIT December 31, 2016 (EOP) – per GRC	($62.615) million
Additional ADFIT	(0.417) million
ADFIT December 31, 2016 – per G/L	($63.032) million

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/30/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Tara Knox
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 322	TELEPHONE:	(509) 495-4325
		EMAIL:	tara.knox@avistacorp.com

REQUEST:

Please explain whether the amount of ADFIT in rate base for the base year ending June 30, 2016 is based on Oregon's share of the actual plant in rate base at 2015 and the incremental amount of plant that was transferred to rate base between January 1, 2016 and June 30, 2016.

RESPONSE:

Please see response to Staff_DR_321.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/31/2017
CASE NO.:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Gardner	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 323	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Referring to Mr. Machado's native format workpaper, "1)CAP Summary – OR.xlsx", please modify the Tab, "G-CAP SUMMARY", and, pro forma the change in Plant related accounts from December 31, 2015 to June 30, 2016, similar to the format for the columns under the heading "2016 Adjustment #2". Please provide the supporting workpapers and cross-reference to the summary tab.

RESPONSE:

Please see Staff_DR_323 Attachment A for the requested modification to the "1)CAP Summary – OR.xlsx" workpaper. Staff_DR_323 Attachment A begins with capital plant in service and depreciation balances as of December 31, 2015 per Avista's Results of Operations Reports and adjusts these results forward to the June 30, 2016 balances per Avista's Results of Operations Reports. This adjustment is called "2016 Adjustment #0" in Staff_DR_323 Attachment A.

With regard to the workpapers included in Avista's direct-filed case, these workpapers, and the capital investment adjustments (Adjustments 2.07, 2.08, and 2.09) included the impact of ADFIT on assets placed in service during the first six months of 2016 (January 1, 2016 through June 30, 2016). The tax-related journal entries during the first six months of 2016 had not fully reflected the ADFIT associated with the capital investment additions for the first six months of 2016; thus, the Results of Operations reports for Oregon did not reflect the associated ADFIT. In order to appropriately reflect the ADFIT associated with the capital investment additions during the first six months of 2016, Adjustment 2.07 (which generally adjusted from EOP plant as of June 30, 2016 to EOP plant as of December 31, 2016) also included the ADFIT associated with capital investment additions from the first six months of 2016.

Within Staff_DR_323 Attachment A, to reflect the ADFIT associated with capital additions for the first six months of 2016 as of June 30, 2016, one half of the full year ADFIT (which was originally included in Adjustment 2.07) was reflected in "2016 Adjustment #0." The remaining half continues to be reflected within Adjustment 2.07 ("2016 Adjustment #2").

Staff_DR_323 Attachment A contains workpaper references that continue to reference Mr. Machado's native format workpapers.

Making the updates as requested by PUC Staff does not change the end result of the "1)CAP Summary – OR.xlsx" workpaper. In both the direct-filed case and this response, the ending AMA balance of net plant, after ADFIT for the twelve-months ended September 30, 2018 (the rate-effective period) is $235,021,000. The sole difference between the direct-filed workpaper and Staff_DR_323 Attachment A is the balance of EOP ADFIT as of June 30, 2016, which has been updated to $(56,976,000), from $(55,253,000) in the direct-filed case (an increase of $1,723,000). This $1,723,000 is not incremental—instead, it was only shifted from Adjustment 2.07 ("2016 Adjustment #2") to the "2016 Adjustment #0" added to the workpaper in response to this request—thus resulting in no change to the ending balance for the rate year.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/31/2017
CASE NO.:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff-Gardner	RESPONDER:	D. Machado/K.Schuh
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 324	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Referring to the Mr. Machado's native format workpaper, "1)CAP Summary – OR.xlsx", please explain how the bonus depreciation percentage was calculated or derived for each of the supporting tabs included in this worksheet. In the response, please explain why the percentages do not align with the following bonus depreciation rates extended in the 2015 Protecting Americans from Tax Hikes (PATH) Act:

1. January 1, 2012 December 31, 2017 50 percent, and
2. January 1, 2018 December 31, 2018 40 percent.

RESPONSE:

The bonus depreciation percentage of 45% used in the supporting tab "CAP16a (6.30.-12.31.16), CAP16b ADFIT 1.1.16-6.30.16, and CAP17 (1.1-9.30.17)" for assets added in 2016 and 2017, was calculated based on the percentage of assets eligible for bonus depreciation in 2015 on a <u>system basis</u>. Since bonus depreciation is <u>not</u> applied to all assets added on a system level (e.g. some IT projects, new revenue capital additions), the Company's overall expected effective bonus depreciation percentage on a system basis for capital investment in 2016 and 2017 is less than 50% (i.e., 45%). While this percentage is less than 50%, it accounts for the fact that all assets are not necessarily eligible for bonus depreciation in these years.

The bonus depreciation percentage of 41.25% from October 1, 2017 through September 30, 2018 on tab "CAP18 (10.1.17-9.30.18)" was derived by taking the weighted average of bonus depreciation rates over the rate effective year (i.e., three months (25%) of the 2017 rate of 45%, which has been discussed above, and nine months (75%) of the 2018 rate of 40%) to arrive at 41.25%. This 25/75 weighted average was used to capture the appropriate bonus depreciation percentage over a rate-effective year that includes portions of two calendar years (i.e., October 1, 2017 through September 30, 2018).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/30/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Tara Knox
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 325	TELEPHONE:	(509) 495-4325
		EMAIL:	tara.knox@avistacorp.com

REQUEST:

Referring to Exhibit No. 501, Avista/501, Smith/1 at line 38, column a, please explain whether the ADFIT amount of ($52.982) million included in the UG 325 2016 base year rate base includes a share of all deferred taxes related to bonus depreciation deductions or deductions under Section 179 of the Internal Revenue Code taken by the Company on Federal income tax returns filed to date. In the Company's response, please:

a. Explain how Oregon's jurisdictional December 31, 2015 share was calculated; and,
b. Explain how Oregon's jurisdictional June 30, 2016 share was calculated; and,
c. Explain if the Company's system ADFIT 2015 and 2016 balances include deferred taxes related to bonus depreciation deductions or Section 179 deductions, which were not allocated to Oregon. If not, please explain why not.

Please provide both narrative explanations and any supporting calculations in Excel format in the response to Staff's request. This request is ongoing for tax years subsequent to 2015.

RESPONSE:

Please see response to Staff_DR_321. All ADFIT directly assigned to Oregon and all system ADFIT allocated to OR has been included in the case. There is no system ADFIT that should have been allocated to OR and was not.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/30/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gardner	RESPONDER:	Tara Knox
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 326	TELEPHONE:	(509) 495-4325
		EMAIL:	tara.knox@avistacorp.com

REQUEST:

Referring to UG 325 Avista/501, Smith/1 at lines 28 – 29, please explain whether Avista has reduced the UG 325 2018 test year rate base by the full Oregon share of its deferred income tax account balance. In the Company's answer, please address how Avista treats any tax carryforwards available to Avista, such as, for example, net operating loss "carryforwards", in calculating the UG 325 2018 test year ADFIT or deferred state income tax.

RESPONSE:

The full Oregon share of plant-related accumulated deferred income taxes reduced the UG 325 2018 test year rate base as shown on line 38 of UG 325 Avista/501, Smith/1. As the items giving rise to other temporary tax differences are not included in rate base, neither are their associated accumulated deferred income taxes. The Oregon net operating loss "carryforward" was considered in the determination of the expected state income tax expense of $0 as shown on UG 325 Avista/501, Smith/1 at lines 29 and 19 in the 2018 rate year, however there is no rate base impact. Oregon state income tax is a flow through item so there is no deferred state income tax.

CASE: UG 325
WITNESS: MARIANNE GARDNER

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 106

Exhibits in Support
Of Opening Testimony

March 1, 2017

APPENDIX A: ECONOMIC FORECAST DETAIL

Table A.1 – Employment Forecast Tracking

Total Nonfarm Employment, 3rd quarter 2016
(Employment in thousands, Annualized Percent Change)

	Preliminary Estimate		Forecast		Forecast Error		Y/Y Change
	level	% ch	level	% ch	level	%	% ch
Total Nonfarm	1,832.1	1.6	1,842.5	2.7	(10.4)	(0.6)	2.6
Total Private	1,524.2	1.5	1,534.0	2.7	(9.7)	(0.6)	2.7
Mining and Logging	7.6	(3.4)	7.8	2.1	(0.3)	(3.4)	(0.4)
Construction	89.6	1.2	89.8	2.3	(0.3)	(0.3)	7.8
Manufacturing	186.7	(3.5)	187.2	(2.1)	(0.5)	(0.3)	(0.2)
Durable Goods	129.8	(5.2)	130.6	(3.3)	(0.8)	(0.6)	(0.9)
Wood Product	22.5	(2.3)	23.2	(1.2)	(0.7)	(3.0)	0.1
Metals and Machinery	36.3	(2.9)	36.7	(0.3)	(0.4)	(1.0)	(1.6)
Computer and Electronic Product	37.8	(10.0)	38.0	(8.9)	(0.2)	(0.5)	0.0
Transportation Equipment	11.8	(7.7)	12.6	4.1	(0.8)	(6.0)	(6.8)
Other Durable Goods	21.3	(1.7)	20.1	(4.5)	1.2	6.1	1.4
Nondurable Goods	56.9	0.4	56.7	0.6	0.3	0.5	1.3
Food	29.4	2.7	29.1	0.2	0.3	1.2	3.4
Other Nondurable Goods	27.5	(2.0)	27.6	1.0	(0.1)	(0.3)	(0.9)
Trade, Transportation & Utilities	342.0	1.6	344.4	3.1	(2.4)	(0.7)	1.6
Retail Trade	205.5	0.8	208.2	3.5	(2.7)	(1.3)	1.1
Wholesale Trade	75.6	1.6	75.8	2.1	(0.2)	(0.2)	2.0
Transportation, Warehousing & Utilities	60.8	4.5	60.3	3.2	0.4	0.7	3.0
Information	33.7	2.5	34.2	3.5	(0.6)	(1.6)	1.8
Financial Activities	95.0	0.3	95.8	2.8	(0.7)	(0.8)	0.4
Professional & Business Services	239.3	4.0	243.5	6.2	(4.2)	(1.7)	4.5
Educational & Health Services	266.7	2.7	267.2	3.1	(0.5)	(0.2)	2.7
Educational Services	36.0	5.0	35.7	0.9	0.3	1.0	0.4
Health Services	230.7	2.4	231.5	3.5	(0.8)	(0.4)	3.1
Leisure and Hospitality	200.0	2.1	200.6	3.3	(0.6)	(0.3)	4.0
Other Services	63.8	2.2	63.4	(0.5)	0.4	0.6	4.3
Government	307.9	2.0	308.5	2.4	(0.6)	(0.2)	2.2
Federal	27.9	(2.8)	28.2	0.7	(0.3)	(1.0)	0.7
State	89.1	1.6	89.6	2.1	(0.4)	(0.5)	2.0
State Education	33.8	1.8	33.8	0.5	0.1	0.3	2.0
Local	190.9	2.9	190.8	2.7	0.1	0.0	2.5
Local Education	99.7	5.7	98.8	2.2	0.9	0.9	3.1

Table A.2 – Short-Term Oregon Economic Summary

Oregon Forecast Summary

	Quarterly					Annual					
	2016:3	2016:4	2017:1	2017:2	2017:3	2015	2016	2017	2018	2019	2020
Personal Income ($ billions)											
Nominal Personal Income	186.1	188.5	190.7	193.2	195.8	176.4	185.0	194.6	205.8	217.4	229.2
% change	5.2	5.1	4.8	5.3	5.6	6.5	4.9	5.2	5.8	5.7	5.4
Real Personal Income (base year=2005)	167.9	169.1	170.5	171.8	173.3	161.1	167.1	172.7	179.2	185.4	191.5
% change	3.8	3.0	3.5	3.0	3.7	6.2	3.7	3.4	3.8	3.4	3.3
Nominal Wages and Salaries	97.9	99.5	100.9	102.5	104.2	91.1	97.1	103.4	109.9	116.1	122.3
% change	6.7	6.8	6.1	6.5	6.7	7.1	6.6	6.5	6.3	5.7	5.3
Other Indicators											
Per Capita Income ($1,000)	45.5	45.9	46.3	46.7	47.1	43.8	45.3	46.9	49.0	51.1	53.1
% change	3.3	3.7	3.5	3.8	3.9	5.1	3.3	3.7	4.3	4.3	4.1
Average Wage rate ($1,000)	52.8	53.4	53.9	54.4	55.0	50.7	52.6	54.7	56.9	59.3	61.9
% change	4.2	4.8	3.4	4.0	4.3	3.8	3.6	4.1	4.0	4.2	4.3
Population (Millions)	4.1	4.1	4.1	4.1	4.2	4.02	4.08	4.15	4.20	4.26	4.31
% change	1.8	1.4	1.3	1.5	1.7	1.3	1.5	1.5	1.4	1.3	1.3
Housing Starts (Thousands)	19.3	19.7	20.5	21.1	21.7	16.0	19.1	21.4	22.9	23.1	23.8
% change	19.2	8.8	17.3	12.8	11.0	2.6	20.0	11.6	7.3	1.0	2.9
Unemployment Rate	5.4	5.5	5.4	5.3	5.3	5.8	5.1	5.3	5.3	5.4	5.4
Point Change	0.8	0.1	(0.1)	(0.1)	0.0	(1.1)	(0.7)	0.3	(0.0)	0.0	0.1
Employment (Thousands)											
Total Nonfarm	1,832.1	1,844.7	1,856.5	1,867.6	1,878.4	1,779.4	1,829.8	1,873.2	1,914.3	1,942.2	1,961.4
% change	1.6	2.8	2.6	2.4	2.3	3.3	2.8	2.4	2.2	1.5	1.0
Private Nonfarm	1,524.2	1,533.9	1,544.1	1,554.0	1,563.5	1,478.9	1,522.4	1,559.0	1,595.5	1,619.3	1,633.0
% change	1.5	2.6	2.7	2.6	2.5	3.6	2.9	2.4	2.3	1.5	0.8
Construction	89.6	90.4	91.1	91.4	91.6	83.2	89.5	91.6	92.8	93.1	93.6
% change	1.2	3.9	2.9	1.3	1.3	3.9	7.5	2.4	1.3	0.3	0.5
Manufacturing	186.7	185.8	185.2	185.3	185.5	186.1	187.5	185.4	187.2	189.0	190.7
% change	(3.5)	(1.9)	(1.4)	0.2	0.5	3.6	0.8	(1.1)	0.9	1.0	0.9
Durable Manufacturing	129.8	128.9	128.2	128.2	128.3	130.4	130.6	128.3	129.4	130.6	131.7
% change	(5.2)	(2.7)	(2.3)	0.1	0.3	3.3	0.1	(1.8)	0.9	0.9	0.9
Wood Product Manufacturing	22.5	22.5	22.5	22.6	22.7	22.5	22.6	22.7	22.8	22.9	23.0
% change	(2.3)	(0.6)	1.0	1.2	1.4	2.2	0.6	0.2	0.8	0.3	0.3
High Tech Manufacturing	37.8	37.0	36.4	36.3	36.2	37.8	38.1	36.3	36.3	36.3	36.3
% change	(10.0)	(7.6)	(6.3)	(1.1)	(1.2)	3.3	0.8	(4.6)	0.0	(0.1)	0.0
Transportation Equipment	11.8	11.9	11.7	11.7	11.6	12.5	12.1	11.6	11.8	11.9	12.1
% change	(7.7)	3.1	(6.0)	(1.7)	(2.5)	8.3	(3.1)	(3.7)	1.2	1.5	1.7
Nondurable Manufacturing	56.9	56.9	57.0	57.1	57.2	55.6	56.9	57.2	57.8	58.4	59.0
% change	0.4	(0.2)	0.6	0.6	1.0	4.3	2.2	0.5	1.0	1.1	1.0
Private nonmanufacturing	1,337.5	1,348.1	1,358.9	1,368.7	1,378.0	1,292.8	1,334.9	1,373.6	1,408.3	1,430.3	1,442.3
% change	2.2	3.2	3.3	2.9	2.8	3.6	3.3	2.9	2.5	1.6	0.8
Retail Trade	205.5	206.4	207.5	208.3	208.8	202.4	205.5	208.6	212.3	214.6	216.5
% change	0.8	1.7	2.1	1.6	0.9	3.1	1.5	1.5	1.8	1.1	0.9
Wholesale Trade	75.6	76.2	76.6	76.7	76.9	73.9	75.6	76.8	77.3	77.8	78.5
% change	1.6	3.2	1.7	0.8	0.8	1.9	2.2	1.6	0.7	0.7	0.8
Information	33.7	33.9	34.1	34.3	34.5	33.0	33.6	34.4	35.2	35.6	35.7
% change	2.5	3.0	2.4	2.1	1.9	2.4	1.9	2.4	2.2	1.4	0.0
Professional and Business Services	239.3	242.6	246.1	249.8	253.6	228.7	238.7	251.7	263.8	272.3	276.7
% change	4.0	5.6	5.8	6.2	6.2	4.1	4.4	5.5	4.8	3.2	1.6
Health Services	230.7	232.7	234.8	236.9	238.9	222.7	230.2	237.8	244.7	248.5	251.8
% change	2.4	3.5	3.7	3.5	3.5	4.2	3.4	3.3	2.9	1.6	1.3
Leisure and Hospitality	200.0	202.3	204.3	205.6	207.0	191.7	199.7	206.3	211.8	214.6	214.7
% change	2.1	4.6	4.0	2.6	2.7	4.8	4.2	3.3	2.6	1.3	0.0
Government	307.9	310.8	312.4	313.7	314.9	300.5	307.4	314.2	318.8	322.9	328.4
% change	2.0	3.8	2.0	1.7	1.6	2.2	2.3	2.2	1.4	1.3	1.7

Table A.3 – Oregon Economic Forecast Change

Oregon Forecast Change (Current vs. Last)

	Quarterly					Annual					
	2016:3	2016:4	2017:1	2017:2	2017:3	2015	2016	2017	2018	2019	2020
			Personal Income ($ billions)								
Nominal Personal Income	186.1	188.5	190.7	193.2	195.8	176.4	185.0	194.6	205.8	217.4	229.2
% change	1.2	1.1	0.8	0.7	0.4	1.7	1.3	0.5	0.1	(0.1)	(0.3)
Real Personal Income (base year=2005)	167.9	169.1	170.5	171.8	173.3	161.1	167.1	172.7	179.2	185.4	191.5
% change	1.1	1.1	0.9	0.7	0.5	1.7	1.2	0.6	0.1	(0.2)	(0.3)
Nominal Wages and Salaries	97.9	99.5	100.9	102.5	104.2	91.1	97.1	103.4	109.9	116.1	122.3
% change	0.1	0.2	0.0	(0.1)	(0.4)	0.2	0.1	(0.3)	(0.5)	(0.3)	(0.3)
			Other Indicators								
Per Capita Income ($1,000)	45.5	45.9	46.3	46.7	47.1	43.8	45.3	46.9	49.0	51.1	53.1
% change	1.0	0.8	0.5	0.3	0.2	1.7	1.0	0.2	(0.3)	(0.5)	(0.7)
Average Wage rate ($1,000)	52.8	53.4	53.9	54.4	55.0	50.7	52.6	54.7	56.9	59.3	61.9
% change	0.6	0.9	0.8	0.7	0.5	0.3	0.6	0.6	0.2	0.2	0.2
Population (Millions)	4.09	4.11	4.12	4.1	4.2	4.02	4.08	4.15	4.20	4.26	4.31
% change	0.2	0.2	0.3	0.4	0.2	0.1	0.2	0.3	0.3	0.4	0.4
Housing Starts (Thousands)	19.3	19.7	20.5	21.1	21.7	16.0	19.1	21.4	22.9	23.1	23.8
% change	3.6	1.1	0.0	(0.0)	0.0	(0.1)	1.3	(0.0)	(0.2)	0.1	0.1
Unemployment Rate	5.4	5.5	5.4	5.3	5.3	5.8	5.1	5.3	5.3	5.4	5.4
Point Change	0.4	0.5	0.4	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0
			Employment (Thousands)								
Total Nonfarm	1,832.1	1,844.7	1,856.5	1,867.6	1,878.4	1,779.4	1,829.8	1,873.2	1,914.3	1,942.2	1,961.4
% change	(0.6)	(0.6)	(0.6)	(0.7)	(0.8)	(0.0)	(0.4)	(0.7)	(0.7)	(0.5)	(0.4)
Private Nonfarm	1,524.2	1,533.9	1,544.1	1,554.0	1,563.5	1,478.9	1,522.4	1,559.0	1,595.5	1,619.3	1,633.0
% change	(0.6)	(0.7)	(0.8)	(0.9)	(1.0)	0.0	(0.4)	(0.9)	(0.8)	(0.6)	(0.5)
Construction	89.6	90.4	91.1	91.4	91.6	83.2	89.5	91.6	92.8	93.1	93.6
% change	(0.3)	0.1	0.1	0.1	0.1	(0.1)	(0.1)	0.1	0.2	0.2	0.2
Manufacturing	186.7	185.8	185.2	185.3	185.5	186.1	187.5	185.4	187.2	189.0	190.7
% change	(0.3)	(0.2)	(0.4)	(0.6)	(0.7)	0.1	(0.2)	(0.6)	(0.3)	(0.0)	0.2
Durable Manufacturing	129.8	128.9	128.2	128.2	128.3	130.4	130.6	128.3	129.4	130.6	131.7
% change	(0.6)	(0.5)	(0.7)	(0.9)	(1.1)	0.1	(0.4)	(1.0)	(0.6)	(0.2)	0.0
Wood Product Manufacturing	22.5	22.5	22.5	22.6	22.7	22.5	22.6	22.7	22.8	22.9	23.0
% change	(3.0)	(3.0)	(3.0)	(3.0)	(3.0)	0.0	(2.8)	(3.0)	(3.0)	(3.0)	(3.0)
High Tech Manufacturing	37.8	37.0	36.4	36.3	36.2	37.8	38.1	36.3	36.3	36.3	36.3
% change	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	0.0	(0.3)	(0.5)	(0.5)	(0.5)	(0.5)
Transportation Equipment	11.8	11.9	11.7	11.7	11.6	12.5	12.1	11.6	11.8	11.9	12.1
% change	(6.0)	(5.3)	(6.2)	(6.2)	(6.8)	0.2	(3.6)	(6.6)	(5.4)	(4.1)	(3.6)
Nondurable Manufacturing	56.9	56.9	57.0	57.1	57.2	55.6	56.9	57.2	57.8	58.4	59.0
% change	0.5	0.5	0.4	0.3	0.2	0.1	0.3	0.3	0.4	0.5	0.6
Private nonmanufacturing	1,337.5	1,348.1	1,358.9	1,368.7	1,378.0	1,292.8	1,334.9	1,373.6	1,408.3	1,430.3	1,442.3
% change	(0.7)	(0.8)	(0.8)	(0.9)	(1.0)	(0.0)	(0.4)	(0.9)	(0.9)	(0.7)	(0.6)
Retail Trade	205.5	206.4	207.5	208.3	208.8	202.4	205.5	208.6	212.3	214.6	216.5
% change	(1.3)	(1.7)	(2.0)	(2.5)	(3.0)	(0.0)	(0.9)	(2.7)	(3.1)	(2.6)	(2.4)
Wholesale Trade	75.6	76.2	76.6	76.7	76.9	73.9	75.6	76.8	77.3	77.8	78.5
% change	(0.2)	0.3	0.2	0.2	0.2	(0.1)	(0.0)	0.2	0.0	(0.1)	(0.1)
Information	33.7	33.9	34.1	34.3	34.5	33.0	33.6	34.4	35.2	35.6	35.7
% change	(1.6)	(1.7)	(1.8)	(1.8)	(1.9)	0.4	(1.2)	(1.9)	(2.1)	(2.3)	(2.3)
Professional and Business Services	239.3	242.6	246.1	249.8	253.6	228.7	238.7	251.7	263.8	272.3	276.7
% change	(1.7)	(1.7)	(1.7)	(1.3)	(1.0)	0.1	(1.2)	(1.2)	(1.0)	(0.4)	(0.5)
Health Services	230.7	232.7	234.8	236.9	238.9	222.7	230.2	237.8	244.7	248.5	251.8
% change	(0.4)	(0.4)	(0.5)	(0.5)	(0.4)	(0.0)	(0.2)	(0.5)	(0.1)	0.2	0.5
Leisure and Hospitality	200.0	202.3	204.3	205.6	207.0	191.7	199.7	206.3	211.8	214.6	214.7
% change	(0.3)	(0.3)	(0.3)	(0.6)	(0.9)	(0.0)	(0.2)	(0.7)	(0.4)	(0.3)	(0.4)
Government	307.9	310.8	312.4	313.7	314.9	300.5	307.4	314.2	318.8	322.9	328.4
% change	(0.2)	0.2	0.1	0.1	0.1	(0.0)	(0.1)	0.1	0.1	0.1	0.1

Table A.4 – Annual Economic Forecast

Dec 2016 - Personal Income

(Billions of Current Dollars)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Personal Income*												
Oregon	165.6	176.4	185.0	194.6	205.8	217.4	229.2	240.1	251.7	263.4	275.6	288.4
% Ch	6.7	6.5	4.9	5.2	5.8	5.7	5.4	4.8	4.9	4.6	4.6	4.6
U.S.	14,809.8	15,458.5	15,979.7	16,686.0	17,507.0	18,382.8	19,274.5	20,173.5	21,144.7	22,160.7	23,193.6	24,253.5
% Ch	5.2	4.4	3.4	4.4	4.9	5.0	4.9	4.7	4.8	4.8	4.7	4.6
Wage and Salary												
Oregon	85.1	91.1	97.1	103.4	109.9	116.1	122.3	128.0	134.1	140.2	146.6	153.5
% Ch	6.1	7.1	6.6	6.5	6.3	5.7	5.3	4.7	4.8	4.5	4.6	4.7
U.S.	7,476.3	7,854.8	8,154.0	8,561.1	8,989.5	9,431.4	9,882.3	10,358.7	10,882.0	11,429.5	11,982.1	12,542.0
% Ch	5.1	5.1	3.8	5.0	5.0	4.9	4.8	4.8	5.1	5.0	4.8	4.7
Other Labor Income												
Oregon	19.7	21.1	22.3	23.2	24.3	25.4	26.7	27.9	29.1	30.3	31.7	33.0
% Ch	0.9	7.0	5.5	4.2	4.5	4.9	4.8	4.5	4.3	4.3	4.4	4.2
U.S.	1,229.8	1,270.5	1,325.5	1,375.2	1,416.0	1,467.1	1,520.5	1,573.3	1,629.3	1,690.0	1,754.3	1,820.9
% Ch	2.6	3.3	4.3	3.8	3.0	3.6	3.6	3.5	3.6	3.7	3.8	3.8
Nonfarm Proprietor's Income												
Oregon	12.2	13.3	14.0	14.6	15.4	16.1	16.8	17.6	18.5	19.4	20.3	21.3
% Ch	8.8	8.9	5.4	4.1	5.4	4.7	4.3	4.7	5.1	5.0	4.7	4.9
U.S.	1,269.2	1,336.8	1,383.6	1,453.3	1,526.9	1,586.9	1,647.0	1,721.5	1,806.0	1,893.2	1,982.5	2,079.3
% Ch	6.0	5.3	3.5	5.0	5.1	3.9	3.8	4.5	4.9	4.8	4.7	4.9
Dividend, Interest and Rent												
Oregon	32.9	34.1	34.8	36.0	38.0	40.4	43.0	45.1	47.1	49.2	51.0	52.9
% Ch	8.0	3.4	2.2	3.4	5.5	6.4	6.4	4.9	4.5	4.4	3.8	3.7
U.S.	2,833.1	2,913.5	2,967.4	3,052.8	3,205.4	3,396.6	3,594.1	3,753.8	3,912.5	4,077.0	4,230.5	4,381.7
% Ch	8.0	2.8	1.8	2.9	5.0	6.0	5.8	4.4	4.2	4.2	3.8	3.6
Transfer Payments												
Oregon	33.5	35.7	36.8	38.7	40.9	43.2	45.5	47.8	50.4	53.1	56.1	59.3
% Ch	8.9	6.4	3.2	5.0	5.8	5.6	5.3	5.0	5.5	5.4	5.8	5.7
U.S.	2,487.2	2,619.5	2,731.5	2,858.3	2,999.2	3,159.3	3,326.8	3,503.8	3,693.0	3,885.1	4,088.9	4,303.7
% Ch	4.3	5.3	4.3	4.6	4.9	5.3	5.3	5.3	5.4	5.2	5.2	5.3
Contributions for Social Security												
Oregon	15.0	15.9	16.8	17.7	18.8	19.9	20.9	22.1	23.2	24.4	25.7	26.9
% Ch	5.9	5.6	5.7	5.7	6.0	5.7	5.4	5.3	5.0	5.4	5.1	5.0
U.S.	607.6	635.7	661.8	695.0	730.2	765.4	802.1	841.6	883.3	928.3	973.2	1,019.0
% Ch	5.1	4.6	4.1	5.0	5.1	4.8	4.8	4.9	5.0	5.1	4.8	4.7
Residence Adjustment												
Oregon	(3.5)	(3.9)	(4.1)	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)	(4.6)	(4.8)	(4.9)
% Ch	(1.1)	11.5	5.2	2.2	2.3	2.0	1.9	1.8	1.7	1.9	2.5	2.7
Farm Proprietor's Income												
Oregon	0.6	0.9	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3
% Ch	1.7	46.6	(9.0)	(21.9)	(18.4)	(16.9)	(12.3)	(5.4)	(13.1)	(3.4)	0.3	2.0
Per Capita Income (Thousands of $)												
Oregon	41.7	43.8	45.3	46.9	49.0	51.1	53.1	55.0	57.0	59.0	61.2	63.4
% Ch	5.5	5.1	3.3	3.7	4.3	4.3	4.1	3.5	3.7	3.5	3.6	3.6
U.S.	46.4	48.0	49.2	51.0	53.1	55.3	57.5	59.8	62.2	64.7	67.2	69.7
% Ch	4.4	3.6	2.6	3.6	4.1	4.2	4.0	3.9	4.0	4.0	3.9	3.8

* Personal Income includes all classes of income minus Contributions for Social Security

Dec 2016 - Employment By Industry
(Oregon - Thousands, U.S. - Millions)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Nonfarm												
Oregon	1,722.0	1,779.4	1,829.8	1,873.2	1,914.3	1,942.2	1,961.4	1,973.2	1,986.5	1,999.8	2,015.9	2,035.5
% Ch	2.9	3.3	2.8	2.4	2.2	1.5	1.0	0.6	0.7	0.7	0.8	1.0
U.S.	138.9	141.8	144.3	146.0	147.2	148.7	150.0	151.2	152.8	154.5	156.0	157.2
% Ch	1.9	2.1	1.7	1.2	0.9	1.0	0.9	0.8	1.0	1.1	1.0	0.8
Private Nonfarm												
Oregon	1,428.1	1,478.9	1,522.4	1,559.0	1,595.5	1,619.3	1,633.0	1,642.9	1,652.6	1,662.8	1,675.6	1,691.4
% Ch	3.1	3.6	2.9	2.4	2.3	1.5	0.8	0.6	0.6	0.6	0.8	0.9
U.S.	117.1	119.8	122.2	123.8	125.0	126.3	127.3	128.6	130.1	131.6	133.0	134.1
% Ch	2.2	2.4	1.9	1.4	0.9	1.0	0.8	1.0	1.2	1.2	1.0	0.8
Mining and Logging												
Oregon	7.7	7.8	7.6	7.7	7.8	7.8	7.9	7.9	8.0	8.0	8.0	8.1
% Ch	1.8	0.4	(1.5)	0.3	1.5	1.0	0.8	0.4	0.4	0.6	0.4	0.3
U.S.	0.9	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9
% Ch	3.2	(7.9)	(14.7)	0.2	4.4	2.6	3.4	2.9	2.1	2.6	1.9	0.6
Construction												
Oregon	80.1	83.2	89.5	91.6	92.8	93.1	93.6	94.2	95.0	96.0	96.6	97.5
% Ch	8.0	3.9	7.5	2.4	1.3	0.3	0.5	0.7	0.8	1.0	0.7	0.8
U.S.	6.1	6.4	6.7	6.8	6.9	7.1	7.2	7.4	7.6	7.8	7.9	8.0
% Ch	5.0	4.8	3.3	1.7	2.1	2.4	2.2	2.2	2.5	2.4	2.0	1.5
Manufacturing												
Oregon	179.6	186.1	187.5	185.4	187.2	189.0	190.7	191.8	192.8	193.5	194.4	195.5
% Ch	2.6	3.6	0.8	(1.1)	0.9	1.0	0.9	0.6	0.5	0.4	0.5	0.6
U.S.	12.2	12.3	12.3	12.3	12.4	12.6	12.8	12.9	12.9	13.0	13.0	13.0
% Ch	1.4	1.1	(0.2)	0.1	0.8	1.6	1.2	0.7	0.5	0.4	0.2	0.3
Durable Manufacturing												
Oregon	126.3	130.4	130.6	128.3	129.4	130.6	131.7	132.4	132.8	133.0	133.4	133.9
% Ch	2.4	3.3	0.1	(1.8)	0.9	0.9	0.9	0.5	0.4	0.1	0.3	0.4
U.S.	7.7	7.8	7.7	7.7	7.8	8.0	8.1	8.2	8.3	8.3	8.4	8.4
% Ch	1.7	1.1	(0.9)	0.3	1.3	2.0	1.7	1.1	0.9	0.7	0.4	0.6
Wood Products												
Oregon	22.0	22.5	22.6	22.7	22.8	22.9	23.0	23.1	23.3	23.3	23.3	23.5
% Ch	4.0	2.2	0.6	0.2	0.8	0.3	0.3	0.8	0.6	0.1	0.2	0.5
U.S.	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
% Ch	5.2	2.1	0.7	4.8	6.3	4.1	4.4	3.7	3.5	3.6	2.7	1.9
Metal and Machinery												
Oregon	35.9	36.8	36.5	36.2	36.9	37.6	38.3	38.6	38.8	39.1	39.5	39.9
% Ch	1.5	2.5	(1.0)	(0.7)	1.8	2.1	1.7	0.9	0.5	0.6	1.0	1.1
U.S.	3.0	3.0	2.9	2.9	2.9	3.0	3.1	3.2	3.2	3.3	3.3	3.4
% Ch	1.6	(0.2)	(2.8)	0.3	1.5	2.7	2.3	1.9	2.2	2.1	1.4	0.9
Computer and Electronic Products												
Oregon	36.6	37.8	38.1	36.3	36.3	36.3	36.3	36.1	36.1	35.9	35.8	35.7
% Ch	(0.1)	3.3	0.8	(4.6)	0.0	(0.1)	0.0	(0.4)	(0.2)	(0.5)	(0.3)	(0.3)
U.S.	1.0	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
% Ch	(1.5)	0.1	(1.1)	(0.7)	2.4	1.1	0.7	0.6	0.7	0.5	0.6	0.4
Transportation Equipment												
Oregon	11.5	12.5	12.1	11.6	11.8	11.9	12.1	12.3	12.3	12.2	12.1	12.1
% Ch	6.0	8.3	(3.1)	(3.7)	1.2	1.5	1.7	1.0	(0.1)	(0.6)	(0.6)	(0.4)
U.S.	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5
% Ch	3.3	2.6	0.5	(1.5)	(1.2)	1.6	1.2	(0.6)	(2.8)	(3.6)	(2.8)	(0.0)
Other Durables												
Oregon	20.3	20.9	21.4	21.5	21.7	21.9	22.0	22.2	22.4	22.6	22.7	22.8
% Ch	5.4	3.3	2.3	0.3	0.9	0.9	0.8	0.6	1.0	0.8	0.6	0.5
U.S.	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4
% Ch	2.2	2.2	1.1	2.5	1.9	1.2	1.3	1.7	1.3	1.2	0.8	0.4
Nondurable Manufacturing												
Oregon	53.4	55.6	56.9	57.2	57.8	58.4	59.0	59.4	59.9	60.5	61.0	61.6
% Ch	3.1	4.3	2.2	0.5	1.0	1.1	1.0	0.8	0.8	0.9	0.9	1.0
U.S.	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.6
% Ch	0.9	1.1	0.9	(0.2)	0.0	1.0	0.5	0.0	(0.1)	0.0	(0.1)	(0.2)
Food Manufacturing												
Oregon	27.0	28.1	29.3	29.5	29.7	29.9	30.1	30.3	30.5	30.6	30.9	31.2
% Ch	4.2	4.1	4.2	0.7	0.8	0.7	0.6	0.6	0.6	0.6	0.8	0.9
U.S.	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8
% Ch	0.7	1.4	1.9	1.5	1.6	2.1	1.6	1.4	1.4	1.6	1.4	1.1
Other Nondurable												
Oregon	26.4	27.6	27.6	27.7	28.1	28.5	28.9	29.1	29.5	29.8	30.1	30.4
% Ch	2.0	4.4	0.2	0.3	1.3	1.5	1.3	1.0	1.1	1.1	1.0	1.1
U.S.	3.0	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9
% Ch	0.9	1.0	0.4	(0.8)	(0.9)	0.2	(0.3)	(0.7)	(1.0)	(1.0)	(1.0)	(1.0)
Trade, Transportation, and Utilities												
Oregon	325.7	335.3	341.5	347.2	352.4	356.3	359.3	360.9	362.0	362.8	363.2	364.9
% Ch	2.4	2.9	1.9	1.7	1.5	1.1	0.8	0.5	0.3	0.2	0.1	0.4
U.S.	26.4	26.9	27.3	27.5	27.5	27.5	27.5	27.5	27.6	27.7	27.7	27.9
% Ch	2.0	2.0	1.6	0.5	(0.0)	0.2	(0.1)	0.0	0.2	0.3	0.3	0.4

Dec 2016 - Employment By Industry
(Oregon - Thousands, U.S. - Millions)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Retail Trade												
Oregon	196.3	202.4	205.5	208.6	212.3	214.6	216.5	217.5	218.1	218.6	218.8	220.1
% Ch	2.5	3.1	1.5	1.5	1.8	1.1	0.9	0.4	0.3	0.2	0.1	0.6
U.S.	15.4	15.6	15.9	16.0	15.9	15.9	15.8	15.7	15.7	15.8	15.8	15.8
% Ch	1.9	1.9	2.0	0.2	(0.4)	0.0	(0.5)	(0.4)	(0.1)	0.1	0.2	0.3
Wholesale Trade												
Oregon	72.6	73.9	75.6	76.8	77.3	77.8	78.5	79.0	79.3	79.6	79.9	80.1
% Ch	1.5	1.9	2.2	1.6	0.7	0.7	0.8	0.7	0.5	0.4	0.3	0.3
U.S.	5.8	5.9	5.9	5.9	6.0	6.0	6.1	6.1	6.2	6.2	6.3	6.3
% Ch	1.4	1.1	0.8	0.3	0.4	0.8	0.8	1.0	0.9	0.8	0.7	0.4
Transportation and Warehousing, and Utilities												
Oregon	56.9	59.0	60.4	61.8	62.8	63.8	64.3	64.5	64.6	64.6	64.6	64.6
% Ch	3.6	3.7	2.4	2.3	1.6	1.6	0.8	0.3	0.1	0.1	(0.0)	0.1
U.S.	5.2	5.4	5.5	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7
% Ch	3.2	3.7	1.4	1.8	0.8	0.4	0.3	0.3	0.3	0.2	0.1	0.6
Information												
Oregon	32.2	33.0	33.6	34.4	35.2	35.6	35.7	35.7	35.8	36.0	36.2	36.5
% Ch	(0.2)	2.4	1.9	2.4	2.2	1.4	0.0	0.0	0.3	0.5	0.6	0.8
U.S.	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9
% Ch	0.8	0.9	1.1	0.4	(0.5)	(0.2)	(0.0)	0.8	1.0	1.3	1.1	0.5
Financial Activities												
Oregon	92.4	94.4	94.8	96.4	98.4	99.4	99.2	99.2	99.2	99.5	99.7	100.0
% Ch	0.9	2.2	0.4	1.7	2.0	1.0	(0.2)	(0.0)	0.1	0.3	0.3	0.3
U.S.	8.0	8.1	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.4	8.4	8.4
% Ch	1.1	1.9	2.0	0.7	(0.5)	(0.2)	(0.4)	0.3	0.4	0.5	0.4	0.1
Professional and Business Services												
Oregon	219.8	228.7	238.7	251.7	263.8	272.3	276.7	280.2	283.8	287.5	292.1	297.2
% Ch	4.9	4.1	4.4	5.5	4.8	3.2	1.6	1.2	1.3	1.3	1.6	1.7
U.S.	19.1	19.7	20.2	21.0	21.6	22.1	22.5	23.0	23.7	24.4	25.1	25.6
% Ch	2.9	3.1	2.8	3.7	3.1	2.4	1.8	2.0	3.1	3.2	2.7	2.2
Education and Health Services												
Oregon	248.5	258.0	266.0	274.2	281.5	285.7	289.3	292.8	296.2	299.9	304.5	309.2
% Ch	2.4	3.8	3.1	3.1	2.6	1.5	1.3	1.2	1.1	1.3	1.5	1.6
U.S.	21.4	22.1	22.7	23.1	23.3	23.6	23.8	24.1	24.4	24.7	25.0	25.2
% Ch	1.7	2.9	2.8	1.7	1.0	1.1	1.1	1.2	1.1	1.2	1.3	1.1
Educational Services												
Oregon	34.7	35.4	35.8	36.4	36.8	37.2	37.5	37.6	37.7	37.8	37.9	38.2
% Ch	1.9	1.8	1.2	1.7	1.1	0.9	0.8	0.4	0.3	0.2	0.4	0.6
U.S.	3.4	3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.1
% Ch	1.8	1.4	1.7	(1.1)	(1.6)	(1.1)	(1.2)	(1.1)	(1.2)	(1.6)	(1.9)	(2.1)
Health Care and Social Assistance												
Oregon	213.7	222.7	230.2	237.8	244.7	248.5	251.8	255.2	258.4	262.1	266.5	271.1
% Ch	2.5	4.2	3.4	3.3	2.9	1.6	1.3	1.4	1.3	1.4	1.7	1.7
U.S.	18.0	18.6	19.2	19.6	19.9	20.2	20.4	20.8	21.1	21.4	21.8	22.1
% Ch	1.6	3.1	3.0	2.2	1.5	1.4	1.4	1.6	1.5	1.6	1.7	1.5
Leisure and Hospitality												
Oregon	182.9	191.7	199.7	206.3	211.8	214.6	214.7	213.8	213.0	212.5	213.2	214.5
% Ch	3.6	4.8	4.2	3.3	2.6	1.3	0.0	(0.4)	(0.3)	(0.3)	0.4	0.6
U.S.	14.7	15.1	15.5	15.8	15.9	16.0	16.1	16.3	16.5	16.6	16.7	16.7
% Ch	3.1	2.9	2.7	1.5	0.7	0.7	1.0	1.2	0.8	0.6	0.5	0.1
Other Services												
Oregon	59.2	60.8	63.5	64.1	64.8	65.6	66.0	66.4	66.9	67.2	67.6	68.1
% Ch	2.0	2.7	4.4	0.9	1.2	1.1	0.7	0.5	0.8	0.4	0.6	0.7
U.S.	5.6	5.6	5.7	5.7	5.6	5.6	5.5	5.5	5.5	5.5	5.5	5.5
% Ch	1.5	1.0	1.2	(0.4)	(1.2)	(0.8)	(0.3)	0.0	(0.1)	(0.3)	(0.4)	(0.4)
Government												
Oregon	293.9	300.5	307.4	314.2	318.8	322.9	328.4	330.4	333.9	337.0	340.3	344.1
% Ch	1.8	2.2	2.3	2.2	1.4	1.3	1.7	0.6	1.1	0.9	1.0	1.1
U.S.	21.9	22.0	22.1	22.1	22.3	22.4	22.7	22.6	22.7	22.8	23.0	23.1
% Ch	0.1	0.6	0.6	(0.0)	0.5	0.7	1.3	(0.4)	0.4	0.5	0.5	0.6
Federal Government												
Oregon	27.4	27.8	28.0	28.1	28.1	27.9	29.4	27.7	27.6	27.6	27.6	27.5
% Ch	(0.3)	1.2	0.9	0.5	(0.2)	(0.6)	5.4	(5.8)	(0.2)	(0.1)	(0.1)	(0.1)
U.S.	2.7	2.8	2.8	2.8	2.8	2.7	2.8	2.7	2.7	2.6	2.6	2.6
% Ch	(1.3)	0.7	1.1	0.3	(1.3)	(1.5)	4.6	(6.0)	(0.6)	(0.3)	(0.3)	(0.3)
State Government, Oregon												
State Total	84.2	87.2	89.0	90.7	92.0	93.1	94.0	94.9	95.7	96.4	97.2	98.2
% Ch	3.9	3.6	2.0	1.9	1.5	1.2	1.0	0.9	0.8	0.8	0.8	1.0
State Education	32.5	33.1	33.7	33.9	34.1	34.4	34.6	34.8	34.9	35.0	35.0	35.1
% Ch	1.6	1.8	1.7	0.5	0.8	0.7	0.7	0.5	0.2	0.2	0.2	0.2
Local Government, Oregon												
Local Total	182.3	185.5	190.4	195.4	198.7	201.9	204.9	207.8	210.6	213.0	215.5	218.4
% Ch	1.1	1.8	2.6	2.6	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.4
Local Education	94.5	96.2	99.0	101.3	102.7	104.0	105.1	106.2	107.2	108.1	108.8	109.4
% Ch	1.0	1.8	2.9	2.3	1.4	1.2	1.1	1.0	0.9	0.8	0.6	0.6

Dec 2016 - Other Economic Indicators

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP (Bil of 2009 $),												
Chain Weight (in billions of $)	15,982.3	16,397.2	16,628.7	16,989.0	17,366.2	17,748.2	18,116.7	18,509.8	18,941.1	19,367.2	19,780.7	20,178.4
% Ch	2.4	2.6	1.4	2.2	2.2	2.2	2.1	2.2	2.3	2.2	2.1	2.0
Price and Wage Indicators												
GDP Implicit Price Deflator,												
Chain Weight U.S., 2009=100	108.8	110.0	111.6	114.1	116.6	119.1	121.5	124.0	126.5	129.1	131.8	134.5
% Ch	1.8	1.1	1.4	2.3	2.2	2.1	2.1	2.0	2.0	2.1	2.1	2.1
Personal Consumption Deflator,												
Chain Weight U.S., 2009=100	109.2	109.5	110.7	112.7	114.8	117.3	119.7	122.2	124.7	127.4	130.0	132.8
% Ch	1.5	0.3	1.1	1.8	1.9	2.2	2.1	2.1	2.1	2.1	2.1	2.1
CPI, Urban Consumers,												
1982-84=100												
Portland-Salem, OR-WA	241.2	244.2	248.3	254.0	260.3	266.8	273.2	279.7	286.4	293.2	300.4	307.6
% Ch	2.4	1.2	1.7	2.3	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.4
U.S.	236.7	237.0	240.0	245.9	251.9	258.5	264.9	271.3	277.9	285.0	292.0	299.1
% Ch	1.6	0.1	1.3	2.5	2.4	2.6	2.5	2.4	2.4	2.5	2.4	2.5
Oregon Average Wage												
Rate (Thous $)	48.9	50.7	52.6	54.7	56.9	59.3	61.9	64.4	67.0	69.6	72.2	74.9
% Ch	3.2	3.8	3.6	4.1	4.0	4.2	4.3	4.1	4.1	3.9	3.8	3.7
U.S. Average Wage												
Wage Rate (Thous $)	53.8	55.4	56.5	58.6	61.1	63.4	65.9	68.5	71.2	74.0	76.8	79.8
% Ch	3.1	2.9	2.0	3.8	4.1	3.9	3.8	4.0	4.0	3.9	3.8	3.8
Housing Indicators												
FHFA Oregon Housing Price Index												
1991 Q1=100	306.2	333.8	374.1	413.1	442.4	464.0	484.7	503.2	521.3	540.5	558.4	574.7
% Ch	7.9	9.0	12.1	10.4	7.1	4.9	4.5	3.8	3.6	3.7	3.3	2.9
FHFA National Housing Price Index												
1991 Q1=100	209.5	221.3	233.1	243.8	251.9	258.0	264.5	270.9	277.9	286.8	296.3	306.4
% Ch	5.4	5.6	5.4	4.6	3.3	2.4	2.5	2.4	2.6	3.2	3.3	3.4
Housing Starts												
Oregon (Thous)	15.6	16.0	19.1	21.4	22.9	23.1	23.8	24.2	24.2	24.0	23.5	23.2
% Ch	9.2	2.6	20.0	11.6	7.3	1.0	2.9	1.5	0.2	(0.8)	(2.1)	(1.4)
U.S. (Millions)	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5
% Ch	7.8	10.7	4.7	3.2	8.5	6.9	4.6	3.1	1.0	0.4	(0.3)	(0.9)
Other Indicators												
Unemployment Rate (%)												
Oregon	6.8	5.8	5.1	5.3	5.3	5.4	5.4	5.4	5.5	5.5	5.5	5.5
Point Change	(1.0)	(1.1)	(0.7)	0.3	(0.0)	0.0	0.1	0.0	0.0	(0.0)	0.0	0.0
U.S.	6.2	5.3	4.9	4.8	4.6	4.6	4.7	4.8	4.8	4.6	4.6	4.5
Point Change	(1.2)	(0.9)	(0.4)	(0.1)	(0.2)	(0.0)	0.1	0.1	(0.0)	(0.1)	(0.1)	(0.1)
Industrial Production Index												
U.S, 2002 = 100	104.9	105.2	104.2	105.4	108.5	111.1	113.6	115.7	118.0	120.0	121.7	123.2
% Ch	2.9	0.3	(1.0)	1.1	2.9	2.4	2.2	1.9	2.0	1.7	1.4	1.3
Prime Rate (Percent)	3.3	3.3	3.5	3.8	4.5	5.4	5.8	5.8	5.8	5.8	5.8	5.8
% Ch	0.0	0.3	7.6	8.9	17.0	21.0	6.4	0.0	0.0	0.0	0.0	0.0
Population (Millions)												
Oregon	3.97	4.02	4.08	4.15	4.20	4.26	4.31	4.36	4.41	4.46	4.51	4.55
% Ch	1.1	1.3	1.5	1.5	1.4	1.3	1.3	1.2	1.1	1.1	1.0	1.0
U.S.	319.5	322.0	324.5	327.1	329.8	332.4	335.0	337.6	340.2	342.8	345.3	347.8
% Ch	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
Timber Harvest (Mil Bd Ft)												
Oregon	4,125.6	3,788.1	4,180.7	4,748.3	4,776.7	4,811.4	4,812.7	4,813.7	4,832.1	4,817.2	4,809.9	3,833.5
% Ch	(1.8)	(8.2)	10.4	13.6	0.6	0.7	0.0	0.0	0.4	(0.3)	(0.2)	(20.3)

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 200

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Matt Muldoon. I am a Senior Economist for the Public Utility Commission of Oregon (Commission or OPUC). My business address is: 201 High Street SE, Suite 100, Salem, OR 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my Witness Qualification Statement, which is provided as Exhibit Staff/201.

Q. What is the purpose of your testimony?

A. I am responsible for six issues in this docket:

<u>S-10 - Cost of Capital</u>

1. Capital Structure;
2. Cost of Common Equity, also known as Return on Equity (ROE), and
3. Cost of Long-Term (LT) Debt.

<u>S-11 - Post-retirement Expense</u>

4. Pension Expense; and
5. Post-retirement Medical Expense.

And

6. S-12 - Allowance for Funds Used During Construction (AFUDC).

Q. What is your summary recommendation?

A. I recommend a 48.9 percent equity and 51.1 percent debt Capital Structure, an Avista Corporation (AVA, Avista or Company) ROE of 9.1 percent within a range of reasonable ROEs of 8.8 to 9.3 percent, and a 5.095 percent Cost of

LT Debt. This generates an overall required Rate of Return (ROR) of 7.034 percent.

Q. Did you prepare tables showing current, Avista-proposed and Staff recommended overall CoC?

A. Yes, the following three tables provide that information.

Table 1

AVA Current OPUC Authorized (UG 288 Order No. 16-109)			AVA
Component	Percent of Total	Stipulated or Implied Cost	Weighted Average
Long Term Debt	50.00%	5.515%	2.758%
Preferred Stock	0.00%	0.00%	0.000%
Common Stock	50.00%	9.40%	4.700%
	100.00%	*	7.458%

Table 2

AVA Requested – UG 325		AVA Direct Testimony		
Component	Percent of Total	Cost	Weighted Average	ROR vs. Current
Long Term Debt	50.00%	5.75%	2.875%	0.368%
Preferred Stock	0.00%		0.000%	
Common Stock	50.00%	9.90%	4.950%	
	100.00%		7.83%	

Table 3

Staff Proposed – UG 325		Opening Testimony		
Component	Percent of Total	Cost	Weighted Average	ROR vs. Current
Long Term Debt	51.1%	5.095%	2.604%	-0.424%
Preferred Stock	0.00%		0.000%	
Common Stock	48.9%	9.1%	4.430%	
	100.00%		7.034%	

Q. Have you issued data requests (DRs) in this rate case?

A. Yes. My analysis is informed by the Company's responses to 102 multipart DRs.

ISSUE 1 – CAPITAL STRUCTURE

Q. What is the basis for your recommendation for a capital structure of 48.9 percent equity and 51.1 percent LT Debt?

A. I have three reasons for supporting my recommended capital structure:

1. This is my best estimate of capital structure at end of the test year, concluding at the end of September, 2018.
2. This capital structure is within the range that optimizes the Company's financial performance balanced against the risk of leverage.
3. This capital structure excludes elements not historically considered LT Debt by the Commission. It also removes Capital Stock Expense and Accumulated Other Comprehensive Loss from equity, which are not inputs in Oregon. My recommended LT Debt portion of the capital structure excludes short-term debt with maturities less than one year and imputed debt from the Company's contracts, consistent with ORS 757.415(3).[1] My estimates also exclude Avista's entire investment in Alaska Energy and Resources Company (AERC), inclusive of Alaska Electric Light and Power Company (AEL&P) and AERC LT Debt.

[1] Staff notes that Washington Utility and Transportation Commission (WUTC) proceedings, Avista investor presentations, and the Company's quarterly 10-Q and annual 10-K reporting to the U.S. Security and Exchange Commission (SEC) concerning capital structures and debt listings do include short-term and imputed debt. When such elements are backed out, data therein matches Staff findings herein.

ISSUE 2 – COST OF COMMON EQUITY (ROE)

Q. Avista is requesting an ROE of 9.9 percent. This recommendation is based in part on the Company's ROE witness Mr. Adrien McKenzie's results of analysis estimating a 9.6 to 10.8 percent ROE range.[2] What are the primary reasons for the difference between the Company's requested 9.9 percent ROE and your recommended 9.1 percent ROE?

A. The primary reasons for the differences between the Company's request and my recommended ROE are because the Company:

- Relies heavily on models such as constant growth — single stage — Discounted Cash Flow (DCF) model of Professor Myron J. Gordon. These models have merited no weight before the Commisison in recent general rate cases.[3]
- Fails to anticipate lower than historical long-term gross domestic product (GDP) growth rates.
- Relies in part on electric and non-gas-utility stocks rather than gas peers.
- Incorporates diversified companies in lieu of closer gas peers.[4]
- Removes the low end of modeling estimates while retaining most upper estimate outliers.[5]
- Relies on high estimates of risk premiums distorting Capital Asset Pricing Model (CAPM) modeling.[6]
- Makes outboard size adjustments normally addressed within selection of peer groups to shift modeling results up by 100 basis points (bps).[7]
- Relies on Dr. Roger Morin's "Empirical CAPM" or (ECAPM). Were no unusual adjustments used in the basic CAPM model, CAPM returns a

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2 See Avista/300, McKenzie/5.

3 *In the Matter of Portland General Electric*, OPUC Docket UE 115, Order No. 01-777 at 27, 35 (August 31, 2001); *In the Matter of PacifiCorp*, OPUC Docket UE 116, Order No. 01-787 at 24 (September 7, 2001); *In the Matter of Northwest Natural Gas Company*, OPUC Docket UG 221, OPUC Order No. 12-437 at 6 (November 16, 2012).

4 See "Chesapeake Utilities Corporation (CPK) — Not a Peer Gas Utility" in Staff/202, Muldoon/5.

5 As an example, please see Avista/300, McKenzie/36 at line 3.

6 See Avista/301 Schedule/AMM-7 for an example of where the Company uses an indefensible 8.9 percent risk premium in calculating CAPM.

7 See Avista/300, McKenzie/5.

lower required ROE than Staff recommends. ECAPM (a method not commonly used by finance academics and professionals) presumes that the security market line could be pivoted at a designated point until a reasonable result is obtained. The argument is that a properly pivoted CAPM model will correct for CAPM's flaws. Essentially this is a method that augments CAPM ROE by a minimum of 50 bps.

Q. How is your testimony organized?

A. My testimony is organized as follows:

Q. Did you prepare exhibits in support of your opening testimony?

A. Yes. I prepared the following exhibits:

Staff/202 .... Staff Peer Screening
Staff/203 .... Staff Three Stage DCF Modeling
Staff/204 .... Treasury Inflation Protected Securities (TIPS) Analysis
Staff/205 GDP Analysis with U.S. Bureau of Economic Analysis (BEA) Data
Staff/206 .... Staff CAPM Modeling
Staff/207 **CONFIDENTIAL** Cost of LT Debt Table & Maturity Profile
Staff/208 .... Merger and Acquisition Trends
Staff/209 .... Value Line (VL) Gas and Water Utility Profiles
Staff/210 Security Market Trends — News that Investors Are Seeing
Staff/211 **CONFIDENTIAL** Pension and Post-Retirement Medical Expenses

Q. Does your recommended ROE meet appropriate standards?

A. Yes. The 9.1 percent ROE I recommend meets the *Hope* and *Bluefield* standards, as well as the requirements of Oregon Revised Statute (ORS) 756.040. My recommendations are consistent with establishing “fair and reasonable rates” that are both “commensurate with the return on investments in other enterprises having corresponding risks” and “sufficient to ensure confidence in the financial integrity of the utility, allowing the utility to maintain its credit and attract capital.”[8]

Q. Are these the same standards discussed in Avista’s testimony?

A. Yes. Staff and Avista apply the same legal standards. However, Avista and Staff disagree on what ROE is commensurate with that of other utilities and other investment opportunities with risk exposure similar to Avista’s. When investors’ expected rate of return is measured using a reasonable expectation of long-term growth, and when risk is measured using an appropriate peer group of utilities, the resulting ROE is within the range recommended by Staff.

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8 *See* ORS 756.040(1) (a) and (b).

WHAT IS NEW IN THIS RATE CASE

Q. What are the key foci in this fourth general rate case that Avista has filed in as many years?

A. I will discuss four considerations that persist in this rate case and provide one material observation:

First, this is the Company's fourth consecutive annual rate case.

Second, projections of long-term growth rates by a broad consensus of U.S. Government, academic, business and analytic referent sources for U.S. gross domestic product (GDP) remain low. A new U.S. President says that he will restore U.S. growth to long-run trends, but financial professionals are skeptical.

A third consideration is that merger and acquisition activity continues to reduce the pool of potential peer gas utilities available for this rate case's cost of capital modeling.

The fourth consideration is that investor flight to quality persists.

Finally, I would like to draw attention to the fact that expected returns on financial assets in discussions of the American economy in regard to Cost of Capital and in regard to Pensions and Post-retirement Medical Benefits are discussing expectations for long-run returns in the same economy.

Q. Discuss your first consideration, frequency of rate case filings.

A. As discussed in my testimony in Avista's last rate case,[9] it is exceedingly rare for a publicly traded U.S. gas utility to file rate cases so frequently in the last

[9] Docket No. UG 288, Exhibit Staff/200, Muldoon/6.

decade, and none of the gas utilities in Staff's peer group have filed this often. Such frequent filing may decrease Avista's risk of and time for cost recovery as compared to peer gas utilities. Staff's prior testimony on this point provided a full breakout of U.S. gas utility rate case filing frequency.[10]

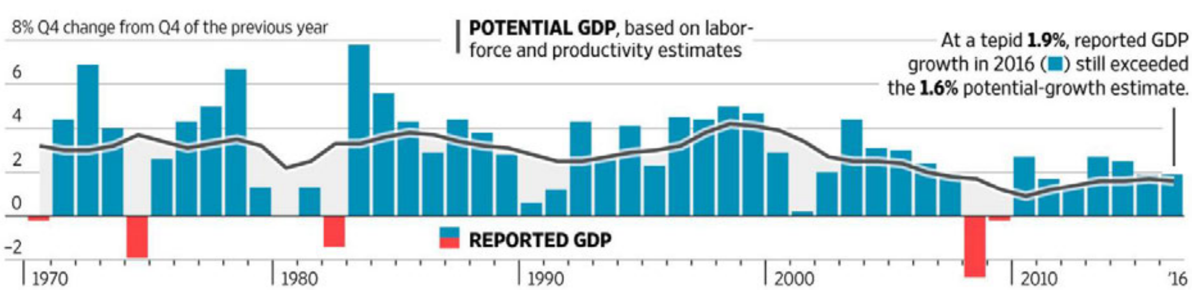
Of some interest, the WUTC proved unreceptive to yet another rate case by the Company recently.[11] However, one dissenting WUTC Commissioner suggested the case in Washington should have proceeded, but based on the testimony therein, returned a decision with a lower 9.30 percent ROE.[12]

Q. Please discuss your second consideration regarding growth rates.

A. Moody's Capital Markets Research, Inc., the Wall Street Journal (WSJ), and a variety of other business publications suggest that accelerating the U.S. economy back to historical long-run growth rates, while possible, requires certain inputs.

Figure 1[13]

U.S. Economy Returns to Lackluster Growth



[10] Docket UG 288 Exhibit Staff/211, Muldoon/1.

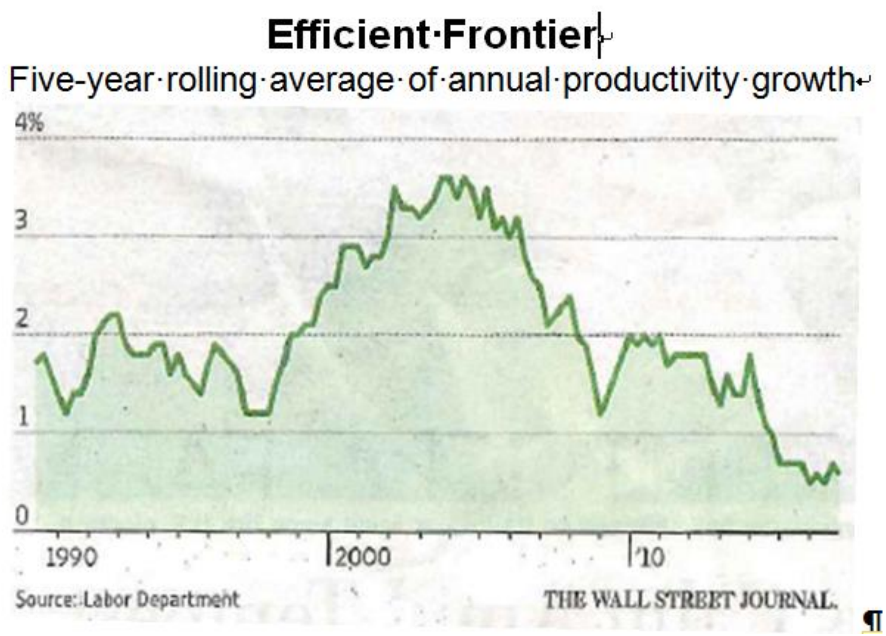
[11] See *Washington Utilities and Transportation Commission v. Avista Corporation*, WUTC Order 06, Dockets UE-160228 and UG-160229 (Consolidated) at page 58 (December 15, 2016).

[12] *Id*. at 70, Rejection and Dissenting Opinion of Commissioner Jones.

[13] Source: "Clearing a Low Bar", WSJ, Jan. 27, 2017.

The WSJ's assessment is that increasing the rate of growth by 50 percent to 100 percent per year in the U.S. requires: A) more Americans, of whom — more are working; B) investment in new U.S. plant and equipment, and C) applying cutting-edge technologies that make workers more productive. On all of these fronts, the U.S. has been struggling.[14]

Figure 2[15]



Q. Are you saying that quickening the U.S. GDP Growth rate by 50 percent or more is harder than just issuing of a set of executive commands?

A. Yes, for example, it is hard to reconcile how possible new immigration policies and declining birth rates noted in "The Economy's People Problem" cited above, translate soon to more and more productive American workers.

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[14] See Justin Lahart, "The Economy's People Problem" WSJ, February 3, 2017.

[15] Source: WSJ, January 3, 2017.

Q. Please provide some examples regarding your third topic: merger and acquisition activity over the past year.

A. Southern Co. purchased AGL Resources, Inc. Duke purchased Piedmont Natural Gas. And Canada's AltaGas is discussing a merger with WGL Holdings, Inc. AGL and Duke are no longer viable peer utilities in CoC modeling. However, Atmos Energy Corp sold off most of its non-regulated businesses to focus on natural gas core business.[16] The high free cash flow to firm of pure play natural gas distribution companies make these utilities takeover targets for electric utilities who find greater internal financing of new generation and transmission infrastructure attractive.

Q. Addressing your fourth topic, what is the relevance of global political turmoil, quantitative easing, and declining growth?

A. Rather than a momentary phase, each new global uncertainty such as British Exit from the European Union (BREXIT); upcoming French, Italian and Netherlands elections, U.S. political uncertainty and so on have investors snapping up U.S. treasuries and U.S. utility securities again.

Old concerns like declining Chinese growth with reduced imports, and Greek debt jitters of a year ago reappear to mingle with new investor and U.S. Federal Reserve worries such as BREXIT, Italian debt, French debt and so on.[17] This seeking of a safe harbor with highly certain returns is durable,

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[16] See Slene Balasta, "Center Point Energy Acquires Atmos Energy's Gas Marketing Business", SNL Financial LC, January 4, 2017.

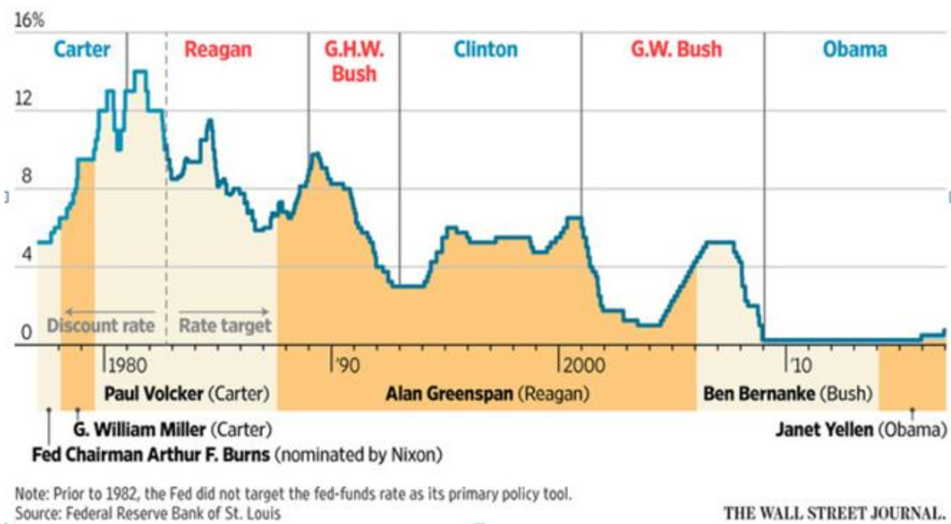
[17] See Christopher Whittall, "Greek Bond Could Set Deadline on Country's Talks with Creditors", WSJ, February 10, 2017.

suggesting that the demand for U.S. utility securities will remain high longer than in prior recoveries.[18]

Q. How have Federal Reserve Fund rates changed over time?

A. The WSJ provides the following graphical depiction of Federal Reserve funds rate changes:[19]

Figure 3 — Fed Funds Rates



Q. How do the trends set forth above help or harm U.S. regulated utilities and Avista gas distribution operations in particular?

A. Interest rates staying low longer increases demand for U.S. dividend-paying utility stocks. Demand for utility bonds remains strong, even in private placement markets. The U.S. Investor Owned Utility (IOU) combination of domestic U.S. sales and a strong dollar help provide these IOUs access to low cost capital.

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[18] See Christopher Whittall and Ernese Bartha, "Ultra-long Debt Sells Despite Politics", WSJ, February 7, 2017.

[19] See the January 27, 2017, WSJ "Federal Reserve Monitor — Market Data."

Q. How do the trends discussed above affect Avista's CoC?

A. Continued investor flight to safety, and reduction in risk and regulatory lag, may merit a lower point ROE from within a range of reasonable ROEs than the uppermost reasonable ROE as discussed in the last general rate case in UG 288 Muldoon/200.

Q. What is your notable observation?

A. The Commission is hearing two incompatible messages with one disturbing similarity.

Q. What is the first message, and in what context does it appear?

A. The Commission is hearing from the Company that a range of reasonable ROEs runs from 9.6 percent to 10.8 percent.[20] The implication is that the U.S. economy is not just going to return to its historical GDP growth rate, but investors expect growth and financial returns on their investments much higher than historical trends.

Q. What is the second message and in what context?

A. The second message the Commission is hearing is that times are terrible. Investors are lucky to eke out a pittance from Pension and Post-retirement Medical Assets going forward. Looking forward, investors must accept dramatically lower returns than historical trends.

Q. And what is the similarity in these disparate messages?

A. Customers pay coming and going. The Company's robust required ROR in terms of Cost of Capital is referring to the <u>same US economy</u> as the dismal

[20] See Avista 200, McKenzie/5 at line 34.

Expected Returns on Assets (EROA) regarding the Company's Pension and Post-Retirement Medical expenses.

Q. How do you recommend the Commission address this conundrum?

A. Staff's analysis shows multiple growth rate levels. Staff recommends a 9.1 ROE that is in the midpoint of a reasonable range of ROEs of 8.8 to 9.3 percent. The upper end of this range of reasonable ROEs is derived using a growth rate that presumes the U.S. economy will return to historical trends from recent 2.0 percent GDP growth.

This is an upwardly aggressive ROE given earlier discussed reasons to question return to historical growth rates. Moreover, Staff's assessment does not rely on lower modeling results associated with many of the Company's suggested peers, and instead finds that Staff's screened peer group best fits investor expectations. *See* Exhibit Staff/203.

Q. Are current economic conditions excellent for energy utilities?

A. Yes, as discussed in my testimony in Avista's last rate case, financial conditions are near optimal now for U.S. utilities.[21]

Q. Please summarize your testimony on these issues.

A. A) Frequent rate case filings with faster cost recovery may reduce risk;

B) U.S. LT GDP growth projections remain low;

C) Pure-play natural gas LDCs continue to be bought by electric IOUs; and

D) Investor demand for safe harbors reduces IOU CoC.

Recommendation: Simultaneous review of Investor Expectations for CoC

[21] Docket UG 288, Exhibit Staff/200, Muldoon/13.

ROR and EROA for Pensions is supportive of both the Commission's 6.6 percent EROA for Pensions and Post-retirement Medical Expense and Staff's recommended upper range for reasonable ROEs of 9.3 percent.

The **same US economy** is unlikely to grow faster than its long-run historical trend, at the same time that EROA for Pensions and Post-retirement Medical Expense should plummet far below the current 7.0 percent ROE of each of the California Public Employees' Retirement System (CALPERS) and the California State Teachers' Retirement System (CALSTRS).[22]

OVERVIEW OF ROE POSITIONS

Q. Describe the analysis underlying Staff's ROE recommendation.

A. I continue to rely primarily on two different three-stage "discounted cash flow" (DCF) models,[23] applied using a cohort group of peer utilities, to estimate the expected return on common equity required by Avista investors. I compare the results of my DCF analysis with national historical gas utilities' authorized ROE values as a check on the reasonableness of my ROE estimates. I also input parameters from some of the models used by Avista witness McKenzie into Staff's models and contrast the analytic outputs with Avista witness McKenzie's results and with results from my two DCF models using Staff's inputs.

Q. What is a DCF model?

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22 See Heather Gillers, "CALSTRS Says It Can No Longer Earn 7.5%", WSJ, Feb 2, 2017. Note that the CALSTRS solution was a drop to 7.0 percent from 7.5 percent.

23 See the Commission's discussion of multistage versus single-stage DCF models in Order No. 01-777 at page 27.

A. A DCF model estimates the cost of equity by determining the present value of the future cash flows that investors expect to receive from holding common stock. The current stock price is assumed to reflect investors' expectations for the stock, including future dividends and price appreciation.

Q. Describe the two DCF models that you used.

A. My first model is a conventional three-stage Discounted Dividend Model, which Staff denotes as a "30-year Three-stage Discounted Dividend Model with Terminal Valuation based on Growing Perpetuity" (referred to as "Model X"). My second model is the "30-year Three-stage Discounted Dividend Model with Terminal Valuation Based on P/E Ratio" (referred to as "Model Y").

Both models require, for each proxy company analyzed by Staff, a "current" market price per share of common stock, estimates of dividends per share to be received in the years 2016 through 2020, annual rates of dividend growth from 2021 through 2025, and a long-term growth rate applicable to dividends beyond 2025.

The three stages of the models are: 1) 2016-2020, where I use Value Line's (VL) forecasts of dividends per share for each company; 2) 2021-2025, where the rate of dividend growth converges from the average rate over the 2016-2020 period to the growth rate in of the third stage; and 3) 2026-2045. This is the third "long-term" stage, for which growth rates are discussed.

Model X includes a terminal value calculation, in which I assume dividends per share grow indefinitely at the rate of growth in Stage 3 ("growing perpetuity"). In contrast, Model Y terminates in a sale of stock where the price is determined by my escalated price/earnings (P/E) ratio.

Q. Why did you use five years for Stages One and Two, and about 20 years for Stage Three?

A. A 30-year horizon is relevant for investors. This reflects investor consideration of 30-year U.S. Treasury (UST) Bond and alternate investment opportunities. I use five years for Stage One as that is the timeframe for which Value Line estimates of future dividends are available.[24] I use five years for Stage Two as that seems a reasonable length of time for individual companies' dividend growth rates that are materially different from the growth rate used in Stage Three (and common to all companies) to converge to a LT dividend growth rate more representative of all gas utilities. I discuss the mechanics of this convergence below. I use 20 years for Stage Three, corresponding to forward projections from federal sources, and calculate a terminal valuation for the sale of the Company's stock in 2045.

Q. How do you address dividend timing?

A. Each model uses two sets of calculations that differ in the assumed timing of dividend receipt. One set of calculations is based on the standard assumption that the investor receives dividends at the end of each period.

The second set of calculations assumes the investor receives dividends at the beginning of each period. Each model averages the unadjusted ROE values to generate an Internal Rate of Return (IRR) produced with each set

[24] Note: ValueLine only makes projections five years into the future.

of calculations for each peer utility. This approach accounts for the time value of money, closely replicating actual quarterly receipt of dividends by investors.

Q. What accounts for differences in peer capital structures?

A. Each model employs the Hamada equation[25] to calculate an adjustment for differences in capital structure between each peer utility and the Avista-proposed and Staff-assumed capital structure for Avista.[26] When few peer utilities are available, the Hamada equation ensures Staff's analysis addresses differences in peer utility capital structures.

Q. What price do you use for each peer utility's stock?

A. I use the average of closing prices for each utility from the first trading day in October, November, and December 2016 to represent a reasonable snapshot of 2016, Q4.

Q. Did you review the impact of using prices from any other day of these months?

A. No.

Q. How do Staff's two DCF models differ?

A. Model X uses the calculation of a growing perpetuity as part of the terminal valuation in 2045. This may be the most common approach used in multistage DCF models.

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25 Dr. Robert Hamada's Equation as used in Staff/202, Muldoon/4 separates the financial risk of a levered firm, represented by its mix of common stock, preferred stock, and debt, from its fundamental business risk. Staff corrects its ROE modeling for divergent amounts of debt, also referred to as leverage, between the Company and its peers.

26 Staff describes this adjustment in recent cost of capital testimony. *See*, as an example, Staff's description in Docket No. UE 233 Exhibit Staff/800, Storm/54-57.

Model Y uses the current price-earnings (P/E) ratio[27] multiplied by the estimated “earnings per share” (EPS) in 2045, which establishes the stock’s “selling price” in 2045 for terminal valuation. I estimate the 2045 EPS analogously with methods used to estimate the 2045 dividend in both models; i.e., based on VL estimates to which multiple growth rates are sequentially applied.

Q. What is the purpose of Model Y?

A. I followed Staff’s practice in recent rate cases of including this model as a method by which to incorporate the fact that most companies have estimates of future EPS and future dividends growing at different rates. Utilizing EPS that grows on a separate trajectory than dividends is the foundation for an alternative means of terminal valuation.[28]

Q. What other checks do you perform on your estimates?

A. I also calculate Capital Asset Pricing Model (CAPM) results for Staff’s peer group and the Company’s gas peer group absent the one diversified company not followed by Value Line as a “Gas Utility”.

PEER SCREEN

Q. How did you select comparable companies (peers) to estimate Avista’s ROE?

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[27] “Current” in this context means the price obtained, as previously described, divided by VL’s estimated EPS; i.e., it is a forward P/E, not an historical P/E.

[28] Please note that the approach used in this second model is not the same as using a singular estimate of the growth rate in EPS as the growth rate in dividends.

A. I used companies that met the following criteria as peer utilities to the regulated gas utility activities of Avista Corporation:

1. Covered by VL as a Gas Utility;
2. Forecasted by VL to have Positive Dividend Growth;
3. LT Issuer Credit Rating equal or better than BBB- from S&P, or Baa3 from Moody's;
4. No Decline in Annual Dividend in Last Five Years Based on SNL;
5. Has 75 percent or greater Regulated Gas LDC Revenue;
6. Has LT Debt under 56 percent in VL Capital Structure; and
7. Has No Recent Merger and Acquisition Activity.

Q. Why do you eliminate companies that are not forecasted to have positive dividend growth?

A. My screening is consistent with Staff past practice. There is evidence that investors find common stock of dividend-cutting utilities less attractive. The stock prices for FPL Group's Florida Power and Light and for Niagara Mohawk Power Corporation declined sharply after dividend cuts.[29] These real-world findings are consistent with Staff's screening out gas utilities that have recently cut dividends.

Q. Did you carefully examine Chesapeake Utilities Corporation (CPK) as a peer for Avista's Oregon gas operations before eliminating CPK?

A. Yes, Staff validates the screening rejection of CPK in Exhibit Staff/202, Muldoon/5. CPK is a diversified company with propane, heating, ventilation, air conditioning, plumbing and other services, rather than a gas utility followed

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[29] An example of investor reaction to dividend cuts is found in The New York Times article, "Niagara Mohawk Stock Dives after Dividend Suspension", published January 25, 1996.

by VL. Less than two-thirds of CPK's revenues are from regulated gas LDC income.

Q. What cohort of companies resulted from your screens?

A. Please see Exhibit Staff/202, Muldoon/2 for detailed Staff screens and also for a table that shows the list of peer utilities obtained from Staff screens and those obtained from Avista screens in this rate case.

SENSITIVITY ANALYSIS

Q. After Avista filed this rate case did you perform sensitivities that considered Atmos Energy Corp.'s (Atmos) divestiture of non-utility assets to become a pure play gas utility more like Avista's Oregon operations?

A. Yes, I performed model runs both with and without Atmos. *See* Exhibit Staff/208.

Q. Did you also perform sensitivities that added water utilities able to pass Staff's screening methods to Staff's peer group?

A. Yes, I screened IOU water utilities to closely track average gas utility performance, so the Commission would have a track on theses utilities for future use. Note however, that this in no way diminished my ROE recommendations.

Q. How does Staff apply informed judgment to its modeling?

A. Staff examined its full range of ROE results from 7.5 percent to 9.3 percent after all adjustments. Within that range, Staff determined that 8.9 percent to 9.3 percent was a reasonable narrowing of focus, excluding some of the

Company's suggested peer companies. Further narrowing the focus to Staff's primary peers most like Avista Oregon operations was the best fit to capture investor expectations of Avista performance. Please note that this range also generates the highest modeling results, outperforming the Company's gas peer group.

Q. Does Staff's removal of the lower end of modeling results from 8.03 percent to 8.75 percent suggest Staff's results are fair, reasonable and conservative?

A. Yes, this is a representative indicator that Staff recommendations are balanced, fact-based and reasonable.

Q. Does running of these sensitivities replace or modify Staff's primary screening methods?

A. No, Staff's results address the re-focus of Atmos on core regulated natural gas utility operations and monitor water IOUs performance for future consideration beyond this rate case, but the results of my sensitivity analyses merely better inform the Commission. Sensitivity results could increase, but not decrease Staff's modeling results.

Q. Did the sensitivity of processing all of the Company peer utilities through Staff's three-stage DCF modeling provide useful information, including electric utilities and a variety of non-utility stocks?

A. No. Staff rejects the Company's use of electric utilities as gas distribution peers, and the use of diversified companies not followed by VL as gas utilities consistent with prior Commission practice. Staff's higher results using Staff's gas peers than Company proposed gas peers suggests that Staff's results are unbiased and reasonable.

GROWTH RATES

Q. What is the single most important element of discounted dividend or DCF models when used to estimate investors' required ROE?

A. The estimated rate of growth of future dividends is the most important element. I refer specifically to the singular growth rate for constant growth DCF models and the long-term growth rate for multistage DCF models such as those I use.

Q. What long-term growth rates did you use in the two DCF models?[30]

A. I used three different long-term growth rates, with different methods employed in developing each.

The first method uses a 50 percent weight applied to the average annual growth rate resulting from estimates of long-term GDP by the EIA, the OMB, and the CBO, with each receiving one-third of the 50 percent weight.[31] The remaining 50 percent is the average annual historical real GDP growth rate,

30 Methods used here related to GDP-based growth rates are similar, if not identical to methods Staff has used in past proceedings. See, as an example, Staff's discussion of these methods and, to a limited extent, their conceptual underpinnings in Docket No. UE 233, at Exhibit Staff/800, Storm/46 line through Storm/52 line 14.

31 The EIA is the Energy Information Administration within the U.S. Department of Energy (DOE), OMB is the Office of Management and Budget, and CBO is the Congressional Budget Office. EIA and OMB's estimates are of nominal GDP. I applied to CBO's estimate of real GDP an inflation rate for the relevant timeframe developed using the Treasury Inflation-Protected Securities (TIPS) method described by Staff in testimony in multiple recent general rate case proceedings.

established using regression analysis, for the period 1980 through 2016,[32] to which I apply the TIPS inflation forecast.

The second long-term growth rate for Stage 3 dividends is a control reflecting Avista's Blue Chip & OMB growth rate.

The third Stage 3 annual growth rate, which I use primarily for illustrative purposes, is the Indiana / Top-10 Blue Chip most recent optimistic upper book-end projection as of April 2016.

Please see Table 4 below for the growth rates I used in my modeling.

Table 4
GDP Growth Rates

Stage 3 – Long-Term Annual Dividend and EPS Growth Rates					
Component	Real Rate	TIPS Inflation Forecast	Nominal Rate	Weight	Weighted Rate
EIA	2.20%	2.04%	4.28%	12.50%	0.54%
OMB - 10 Year GDP Projection			4.10%	12.50%	0.51%
White House 2017 Budget			4.30%	12.50%	0.54%
CBO Projections			4.20%	12.50%	0.53%
Historical 1980 Q1 – 2016 Q3	2.80%	2.04%	4.90%	50.0%	2.45%
Composite				100%	4.56%
BEA Avg. Nominal Historical 1980 Q1 – 2016 Q1			5.46%	100.0%	5.46%
Indiana U – Kelley 2018-35 Ctr Econometric Research	2.90%	2.04%	5.00%	100.0%	5.00%
Blue Chip* – Top 10% 2019 Values	2.90%	2.04%	5.00%	100.0%	5.00%
Blue Chip – Average	2.40%	2.04%	4.49%	100.0%	4.49%
Blue Chip – Bottom 10%	1.90%	2.04%	3.98%	100.0%	3.98%

Q. Does this approach capture a reasonable set of investor expectations similar to Staff's analysis in other recent general rate cases?

32 Staff discussed this approach in recent Staff cost of equity testimony in several rate case proceedings. See, as an example, in Docket No. UE 233 Exhibit Staff/800, Storm/46, line 15 through Storm/50 line 3.

A. Yes, Staff modeling captures the expectations of investors who think variously: A) that future conditions will mirror the past, B) that federal agency expert analysis also informs the historical track record, and C) that the most optimistic 10 percent of Blue Chip referent persons surveyed have the pulse of the future. That last value represents the financial professionals who are most optimistic about the economy's long-run growth.

Q. Is it appropriate to use estimates of long-term GDP growth rates to estimate future dividends for gas utilities?

A. Yes. In each of the Company's prior rate cases, Staff has shared plots of U.S. gas demand growth since 1950 on a three-year moving average. This downward trending consumption curve allows GDP growth to be a conservative proxy for both gas sales and dividend growth rates.

Q. Can relying on a long-term GDP growth rate overstate required ROE?

A. Yes. It is possible that my modeling overstates required ROE. My highest growth rate presumes return to high historical U.S. GDP growth rates.

Q. Is it important to distinguish between long-run 20- to 30-year rates and rates over the next five years?

A. Yes. Over-extrapolating a snapshot of short term data undermines confidence in modeling results.

Q. Mr. Gorman performed CoC analysis for CUB and ICNU in the last Avista general rate case, and discussed how a utility's growth is bounded by the economy in which it operates.[33] What would be the

[33] See Docket No. UG 288, Exhibit NWIGU-CUB/100, Gorman 4-68.

implications of Avista's growth at the rates depicted in the Company's modeling?

A. As explained by Mr. Gorman, Avista would, in the Company's ROE modeling estimates, be growing at two to three times faster than the broader economy. Avista would therefore be becoming a bigger and bigger portion of the aggregate market share of U.S. utility stocks. Avista would also be outperforming the markets — which would be very exciting indeed.

Q. Has Avista shared with its investors through its filings with the SEC, in its earnings calls or in its presentations to investors any news about imminent Avista hyper-growth?

A. No. Avista's executive team has presented the Company as a dynamic and attractive investment with good prospects, rather than a market-dominating behemoth.

Q. Does Bloomberg, ValueLine, Yahoo Finance, or SNL Financial LLC division of S&P Global Market Intelligence detect extreme impending out-performance for Avista?

A. No. VL is optimistic about utility performance in general over the next five years. VL recommends Avista as a good fit for a conservative investor looking for stable returns and appealing dividends. VL sees the dividend yield of this stock as close to industry average, but states that the finances for Avista are in "good shape." VL notes higher risk of operating in Juneau, but that risk is restricted to Alaska operations.[34]

[34] See the analysis by Paul Debbas, CFA of VL dated October 28, 2016 regarding AVA.

Q. The Company makes a number of assumptions in creating synthetic growth values for its modeling. Is this necessary and advisable?

A. No. Government and academic referent projections are publicly available at no charge. Subscription projections incorporated by Staff are also available.

The Company appears to prefer to rely on alternate values predicated on highly uncertain components, transformations and methods. This is concerning.

Q. What are the results of your multistage DCF models?

A. Please see Exhibit Staff/203 for a summary followed by modeling detail.

Q. How do these estimated ROE values compare with gas utilities' ROE values for 2016 General Rate Cases?

A. These estimated ROEs are low compared with regulated U.S. utilities' authorized return on equity capital in 2016 as reported by SNL Financial, that range from a low ROE of 9.0 percent in New York for New York State Electric and Gas Corporation, and also for Rochester Gas and Electric Corp. to a high of 10.1 percent for DTE Gas Company. The average Gas Utility ROE decision in 2016 was 9.5 percent, 10 basis points lower than in 2015. That downward direction is unsurprising since there has been a downward trajectory for Average Authorized Gas ROE decisions since 1990.[35]

Q. Did your analysis include the construction of a synthetic forward curve using UST TIPS break even points?

[35] See Dennis Sperduto, "ROE Authorizations in 2016, Slightly Below Those in 2015" Regulator Research Associates (RRA) an affiliate of SNL Financial LC and S&P Global Market Intelligence, published January 19, 2017.

A. Yes. My forward curve is provided in Exhibit Staff/204, reflecting implied market-based inflationary expectations. Staff's recommendations are consistent with market activity indicating investor expectations of future inflation.

Q. Assume one ignored current downward adjustments by a broad spectrum of federal agencies and instead presumed that future U.S. GDP growth would look like the past 30 years. Would a ROE based on that assumption fall within Staff's recommended range?

A. Yes, I extracted and ran regression on data from U.S. BEA to generate the annual real historical GDP growth rate shown in Table 4 above. My recommended range of ROEs includes values that presume GDP growth over the next 30 years would look like that of the past 30 years.

Q. Do you show this analysis in your exhibits?

A. Yes. Exhibit Staff/205 shows my analysis in support of this finding.

Q. If utilities' dividends and EPS are growing at a faster rate than growth for the whole economy, then utilities would become a bigger part of the economy. Is that happening?

A. No. Utilities are not becoming a larger and larger part of the US economy.[36]

Q. How do your methods employed in this case differ from those utilized by Staff in Avista's recent general rate cases, and in the last Northwest Natural Gas Company rate case, Docket UG 221?

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[36] *See* UE 283 Staff/200, Muldoon/17-22.

A. My methods and modeling parallel those employed by Staff in recent general rate cases.

ALTERNATIVE MODELS EXAMINED

Q. What control modeling did you perform to corroborate your DCF results?

A. I performed CAPM calculations that support my DCF modeling. While I do not recommend that any alternate approach should replace the Commission's reliance on three-stage DCF modeling, such alternate models may offer a check on the reasonableness of my recommendation.

Q. Please discuss the Ibbotson approach you used.

A. The Research Foundation of CFA Institute, an impartial non-profit organization, published "Rethinking the Equity Risk Premium" in 2011. Here, Professor Roger Ibbotson of the Yale School of Management, and other earlier examiners of how best to approach and calculate equity risk premiums, share their current thinking and findings.

"In the 85 years covered by the Ibbotson data, stocks delivered a real return of 6.6% against 2.1% for bonds, supporting a 4.5% equity risk premium."[37] Adding that 4.5 percent to about a potential 4.00 percent UST risk free rate for end of 2016, would suggest that an investor looking just for a quick rough estimate should demand about an 8.5 percent ROE to be satisfied to own a stock of average risk at year end 2016.

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[37] "Rethinking the Equity Risk Premium," Research Foundation of CFA Institute p 81 (2011).

Q. Did you consider other market risk premiums in your CAPM modeling?

A: Yes, where the Ibbotson most focuses on my adult lifetime, 1980 to present, Morningstar in "Stocks, Bonds, Bills and Inflation 2015 Classic Yearbook provides a market risk premium of 6.0 percent based on 1926 through 2014. I also run my CAPM modeling using this alternative 6.0 market risk premium.

Q. Did you examine both 10- and 30- year UST yields as your market risk-free rates, and did you use the higher market forwards to pertinent bond issuance timeframes in the test year in this rate case?[38]

A: Yes, I also looked at both VL and Yahoo Finance betas, and both the Company's peers followed by VL as gas utilities and Staff's preferred peer group. For these reasons, the Commission can conclude that this modeling was reasonably examined using inputs commonly employed by investors looking for a fast rough general direction of returns.

Q. How do your CAPM results inform consideration of your more robust three-stage DCF models?

A: My CAPM modeling can be interpreted as a downward pointing vector in my range of reasonable ROEs. Two of the gas utilities examined could require returns as high as 9.1 percent in this modeling, but ROEs averaged 7.0 percent with a modeling top range or of 8.7 percent. This suggests that the

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[38] Note that the Company ignores the usual market practice of using 10-Year UST yields as a risk-free rate in CAPM modeling. Moody's Investment Services for example lists both the 10- and the 30- year UST yields under risk free rate.

9.3 percent top of range of reasonable ROEs in my two three-stage DCF modeling may overstate Avista's required rate of return. My CAPM modeling is more supportive of my 9.1 percent point ROE recommendation from my more substantial and more reliable models X and Y.

SINGLE-STAGE GORDON GROWTH DCF MODELING

Q. Did you first examine the Company's constant Gordon growth DCF model?

A. Yes. However, I note that Brealey, Myers and Allen, in the tenth edition of their textbook "Principles of Corporate Finance" caution that "the simple constant-growth DCF formula is an extremely useful rule of thumb, but no more than that."[39]

Q. Do you view this model as simply an extremely imprecise vector pointing closer to 10 percent ROE than five percent ROE?

A. Yes. As calculated by Avista, this vector would point toward the top end of my three-stage DCF results when considering a point ROE from among a reasonable range of ROEs.

Q. In Avista/300, the Company removes modeling results that it says are "irrationally" low and should be eliminated, leaving most high modeling results to dominate recommendations. Is this reasonable?

A. No.

[39] "Principles of Corporate Finance", Brealey, Myers, and Allen, p 83 (10th Edition 2010).

Q. Why are you uncomfortable relying too much on this simple Gordon growth model applied variously to gas utilities, electric utilities and non-utility companies?

A. Gordon Growth single-stage DCF modeling makes the academic assumption that information about all future returns is contained in just a few values: namely the last dividend and an appropriate very long-term average growth rate. This assumption does not prove at all reliable in the real world.

Q. Does Mr. McKenzie's single-stage Gordon Growth model become predictive of Gas Utility required ROEs as used on non-utility stocks?

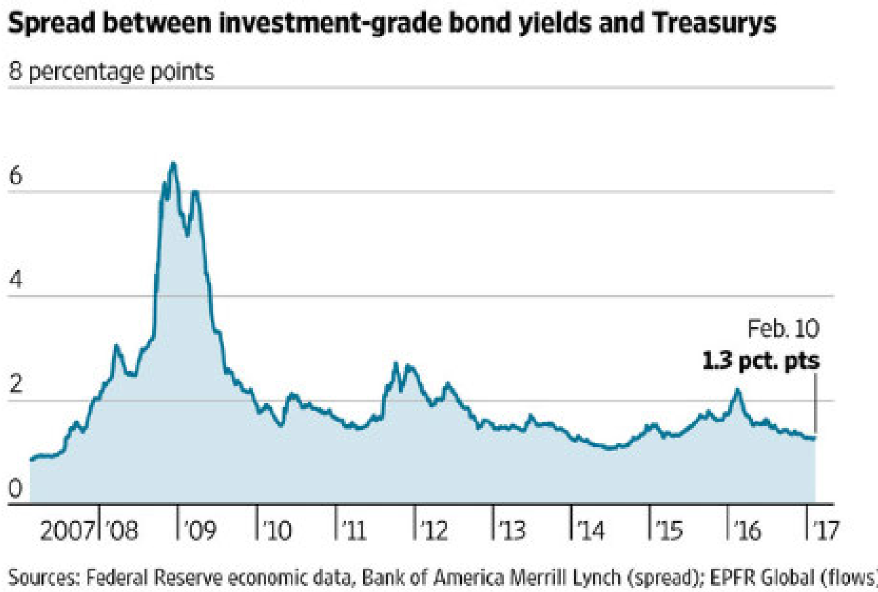
A. No, two-thirds of investors in Avista's common stock are sophisticated fund managers for whom non-utility stocks would not be acceptable substitutes.

RISK PREMIUM MODELING

Q. Did you examine Mr. McKenzie's risk premium modeling?

A. Yes, though it is exceedingly uncertain whether bond premiums in the 2008 economic downturn would predict current markedly divergence Federal Reserve policy.

Figure 4[40]



U.S. corporate-bond spreads are the narrowest in more than two years.

Q. Is there good reason to believe that Avista's examination of historical fixed-income data is not predictive of the future?

A. Yes, April 2015 Federal Reserve Policy Committee minutes released May 20, 2015, re-defined the Fed's "equilibrium rate" as the level of the FED funds rate, adjusted for inflation, consistent with the economy achieving, over a specified time horizon, maximum employment and price stability.[41]

Federal Reserve Chairwoman Janet Yellen, in testimony on Capitol Hill, February 14, 2017, said she remains reluctant to base current monetary

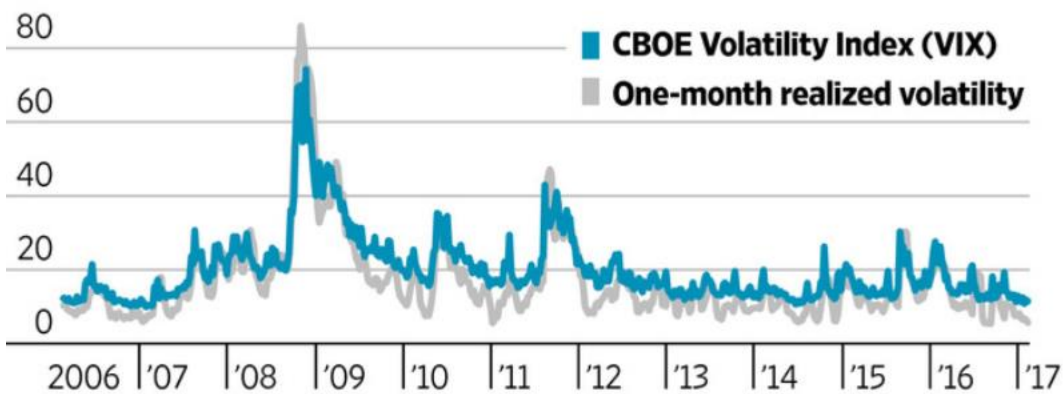
[40] See Chris Dietrich, "Bond Buying Soars, Yields Tighten", WSJ, February 13, 2017.

[41] Staff accessed the WSJ article, "A New, Lower Normal for FED Rates? FED Officials' Lively Debate" by Pedro Nicolaci da Costa on May 22, 2015, at www.WSJ.com.

policy on speculation around the possibility of tax, regulatory, infrastructure and health-care policies that are intended to boost the growth rate.[42]

As an easy mental exercise, imagine results of risk premium projections of investor required ROE with and without years 2008 and 2009 which clearly distort both spreads between U.S. investment grade corporate bond and UST yields shown above in Figure 5 and the Chicago Board Options Exchange's Volatility Index (VIX) shown below in Figure 6. Investors may be hesitant to base forward looking expectations on assumptions markedly divergent from conditions in the last five years, without strong referent expert consensus projecting another imminent great recession or depression. As 2008 and 2009 conditions are rare or "black swan" events, there may be greater reliance on federal government referent sources for forward-looking long-run projections than long-historical extrapolations that are not informed by Federal macroeconomic policy changes since 2009.

Figure 5[43]



42 See "Fed's Yellen Plays Down Speculation about Trump Boom", WSJ, February 14, 2017.

43 See James Mackintosh, "What VIX Is Really Telling Markets", WSJ, February 14, 2017.

Visually note the spikes in Figures 4 and 5 near years 2008 and 2009. It may be that investor's expectations of returns may be more informed by 2012 through 2016 trends.

REBUTTAL OF AVISTA'S CAPM AND ECAPM MODELING

Q. Did you examine Avista's CAPM and ECAPM modeling?

A. Yes. The Company includes companies not followed by VL as gas utilities. Avista also uses an interesting 7.4 percent CAPM risk free rate which pushes the midpoint of results to 9.1 percent. Then with concerning outboard adjustments tacking on up to an additional 1.6 percent, Avista arrives at a midpoint of 10.6 percent as results of their CAPM modeling.

Q. What is the formula used in CAPM modeling?

A. The formula follows in Figure 7.

Figure 6 – CAPM Formula

$$\bar{r}_a = r_f + \beta_a (\bar{r}_m - r_f)$$

Where:

r_f = Risk free rate

β_a = Beta of the security

$\bar{r}_m$ = Expected market return

$(\bar{r}_m - r_f)$ = Equity market premium

Q. What is Empirical or E CAPM?

A. Dr. Roger Morin, PhD in his book, "New Regulatory Finance" notes how CAPM seems to be off in its projections of required rates of return. Dr. Morin offers a correction which by pivoting model results, might offer a remedy to investors consistently disappointed by CAPM modeling results. I suggest that this approach is interesting, but has not caught on and merits little weight here.

AVISTA'S COMPARATIVE RISKINESS

Q. Is AVA less risky than the average non-utility publicly traded U.S. stock, and even than some other gas utilities followed by VL?

A. Yes, as a regulated gas utility, AVA returns have relatively low variability. In addition, only one other regulated gas utility has filed three consecutive general rate cases in the last decade to Avista's four. Avista may have less regulatory lag in cost recovery as a result. Moreover, the Commission finds in the most recent Avista rate case that the Commission's approval of a decoupling mechanism and the Company's higher customer base charges materially lower risk to Avista, which "should be reflected in authorized ROE".[44]

Q. Do Avista's frequent rate filings impact ratepayer perception regarding its risks and attractiveness of investment opportunity?

A. Prompt cost recovery and regulatory certainty has allowed Avista to depict the Company as a solid opportunity for investors seeking rate base growth. As discussed earlier, the Company states in its June 2015 communication to investors that the Company is well positioned for the future. Staff finds that these characteristics also afford the Company access to historically low-cost capital.

[44] OPUC Docket No. UG 288, Order No. 16-109 at 10.

Q. Have you other concerns regarding the Company's ROE modeling?

A. Yes, these concerns are well summarized by Michael Gorman in his Opening Testimony in UG 288. The same concerns persist with insufficient remedies in this case so as to merit the Company's CoC modeling little weight in this case.

STAFF THREE-STAGE DCF MODELING RESULTS

Table 5
Results of Staff's 3-Stage DCF Modeling
(See Exhibit Staff/203 for more detail)

Common Stock Flotation Costs Adjustment Shifts Range of Reasonable ROE's Upward by :					12.5	bps
Range of Modeled Results		7.5%	to	9.3%	ROE	
Best Fit Range of Reasonable ROEs		8.8%	to	9.3%	ROE	
(Best fit is Staff's Hamada adjusted screened gas utilities that have most similar characteristics to AVA regulated gas operations in Oregon)						
Midpoint of Best Fit Modeling Results			9.1%	ROE		
(Staff's informed judgement excludes some of the lower range of modeling results depicted above)						
Staff Point ROE Recommendation:			9.1%	ROE		

Q. Referring to Table 5 above, please explain why a 9.1 percent midpoint is a reasonable point ROE, in a range of reasonable ROEs of 8.8 to 9.3 percent?

A. The Commission's authorized 9.4 percent ROE in Avista's last general rate case is a sound starting point for a check of reasonableness of my recommendations. On average across the US, gas utility rate cases decisions dropped 10 basis points comparing 2016 to 2015. As it happens, Avista had a rate case in each year. This would indicate that the drop of 10 bps in the upper range of Staff's recommendations is consistent with trends and reasonable.

HAMADA EQUATION

Q. Your application of the Hamada Equation to un-lever peer utility capital structures and to re-lever at Avista's target capital structure increases required ROE. Why is this adjustment reasonable?

A. I employ the Hamada Equation as a check on the reasonableness of my modeling results. As earlier discussed, my screening criteria already identify peers that have a very close capital structure to Avista's. Use of the Hamada adjusted results helps ensure that I have captured all material risk in my analysis.

INFORMED STAFF ANALYSIS

Q. Did you take into account information from other models?

A. Yes. I performed CAPM modeling and reviewed the Company's testimony which informed my recommendations.

Q. Do you monitor and analyze current and projected market conditions?

A. Yes. My analysis includes analysis of the current economic climate and its impact on my estimates of long-term growth. I also rely heavily on feeds from SNL Financial LC (SNL), Bloomberg, Moody's, S&P, WSJ and other sources to make sure that my financial understandings are reflective of investor expectations. Please see a cross section of recent news in Exhibit Staff/210.

Q. Did you develop your recommendations while informed by authorized ROEs in other parts of the country?

A. Yes. I examined 2016 authorized ROEs across the nation in comparison with 2015 ROE decisions published by SNL Financial LC, as discussed earlier.

Q. Did you use robust and proven analytical methodologies?

A. Yes. My methods are robust, proven, and parallel Staff's work over the last decade.

Q. Describe how you performed your analysis.

A. Using the cohort of proxy companies that met my screens, I ran each of its two DCF models three times, each time using a different long-term growth rate.

Q. How did you evaluate the Company's peer cohort and other tests?

A. After performing these initial runs, I performed sensitivity analysis.

Q. Is the upper end of your range of reasonable ROEs driven by results from the Company's peer group utilizing the top growth rate?

A. No, the upper range of reasonable ROEs is from my peer group utilizing the highest growth rate adjusted for capital structure divergent from Avista's.

Q. Does your recommendation include results from the Company's peer group?

A. Yes, but the Company's peer group did not produce the highest modeling results. My range of reasonable ROEs brackets the results for the Company's peer group. If I were to rely on the Company's gas peer group, my recommended ROE would be lower than my 9.3 percent upper limit of reasonable ROEs.

ISSUE 3 – COST OF LT DEBT

Q. Have you compiled a summary table illustrating your calculation of Avista's Cost of LT Debt?

A. Yes, please see Confidential Exhibit Staff/207 supporting my recommendation for a 5.095 percent Cost of LT Debt.

Q. Is this table updated to reflect Avista's test year planned debt issuance(s) and pro forma replacement of the current portion of LT Debt maturing in the test period?

A. Yes. This table remains confidential until the company informs the public of issuance detail.

Q. Do you remove cost associated with pollution control revenue bonds supporting thermal electric generation in Montana, as is customary in Oregon gas utility rate cases?

A. Yes. Staff's methods herein are consistent with other recent Avista general rate cases.[45]

Q. Did you prepare a debt maturity profile for Avista?

A. Yes, in Exhibit Staff/207 I have provided both a current snapshot SNL Financial LC (SNL) debt maturity profile, and a separate debt maturity profile for the test period reflecting Staff's proposed Cost of LT Debt table. These profiles show that Staff's recommendations avoid maturity concentrations.

Q. Is this currently a risky environment for interest rates?

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[45] Staff's approach to Cost of LT Debt is consistent with Staff's work in recent Avista general rate cases, namely: OPUC Order No. 14-015 in Docket UG 246, Order No. 15-109 in Docket UG 284, and Order Nos.16-076 and 16-109 in Docket UG 288.

A. One hears that we are in a rising interest rate environment. Yet the following table shows that rates fall as well as rise. Notice how long maturity bonds were lower in July and September of 2016 than they were in February 2016:

Figure 7
2016-2017 Fixed Income Trends
Source — WSJ

WSJ	6-Feb-16	5-Apr-16	5-May-16	1-Jul-16	1-Sep-16	25-Oct-16	28-Nov-16	29-Dec-16	31-Jan-17
UST Yields	**Yield (%) At Close**	**Yield (%) Noon EST**	**Yield (%) At Close**	**Yield (%) Noon EST**	**Yield (%) Noon EST**	**Yield (%) Noon EST**	**Yield (%) 10 AM EST**	**Yield (%) At 1 PM**	**Yield (%) At 1 PM**
1-Year Note	0.516	0.568	0.517	0.458	0.591	0.653	0.784	0.823	0.766
2-Year Note	0.670	0.728	0.722	0.597	0.790	0.865	1.119	1.218	1.208
3-Year Note	0.830	0.846	0.859	0.698	0.898	1.000	1.381	1.475	1.467
5-Year Note	1.161	1.180	1.200	0.998	1.175	1.276	1.814	1.952	1.918
7-Year Note	1.486	1.498	1.515	1.259	1.437	1.547	2.141	2.262	2.261
10-Year Note	**1.749**	**1.729**	**1.744**	**1.443**	**1.570**	**1.757**	**2.327**	**2.464**	**2.463**
30-Year Bond	**2.577**	**2.551**	**2.600**	**2.224**	**2.234**	**2.500**	**2.989**	**3.073**	**3.069**

Q4 2015 Federal Funds Rate Target lifted by **25 bps** to 0.25 to 0.50
Q4 2016 Federal Funds Rate Target lifted by **25 bps** to 0.50 to 0.75

Q. Are the UST and Spreads you use for cost of new bond issuances in the test period based on Bloomberg market forwards and spread curves for utilities with like credit rated first mortgage bonds to Avista?

A. Yes. Exhibit Staff/207, Muldoon/4 shows averaged Bloomberg daily UST market forwards for the month of January to which I applied Bloomberg indicative spreads in my projections to match likely conditions in the test period.

Q. Has the Commission approved a way that if adopted, would provide Avista with greater flexibility regarding the amount, maturity and timing of new bond issues?

A. Yes, as memorialized in the deferral Docket UM 1756, PGE and parties stipulated in PGE's last general rate case to a benchmark LT Debt table derived from Staff's exhibits. This allowed for the capture of actual issuance detail through the end of the test year, with implied CoC differences to be deferred to and retired in the next subsequent rate case.

Q. Can this work smoothly in practice?

A. Yes, In PGE's case, a planned bond issue changed in terms of amount, maturity and timing. The stipulated deferral captured this difference allowing PGE to react to different opportunities and market conditions than expected, and ratepayers only need to support the actual Cost of LT Debt. This approach allows for rates to reflect actual costs for debts thereby providing all parties more assurance that rates are just and reasonable.

Q. Is this last idea describing any discussions or settlement activity?

A. No. This is merely an approach that has worked in other circumstances to the satisfaction of all parties.

Q. What is your recommendation absent above alternative approaches?

A. My 5.095 percent Cost of LT Debt is consistent both with the Company's response to DRs and Company policy, and with Staff best practices in recent rate cases.

ISSUES 4, 5 — POST-RETIREMENT EXPENSES

Q. What is your recommendation regarding the return side of Pension and Post-Retirement Medical Expenses?

A. Staff recommends that the Commission reaffirm its decision in Avista's 2016 general rate case that an Expected Return on Assets (EROA) of 6.6 percent is reasonable with regard to pensions and post-retirement medical expenses.[46] Applied to best available information as of the end of January 2018, this would result in a downward adjustment of ($240,000) for Pension Expense and an upward adjustment of $1,000 for Post-retirement Medical Expense.

Staff's $240,000 adjustment compares the Company's assumptions in the rate case as filed, against updated projections from the Company's third-party actuaries that have been changed by Staff to use a 6.6 percent EROA. That is the correct comparison between the rate case model as filed and best available updated information informed by the Commission's guidance.

Staff points out that were the Company to update its rate case model to incorporate the more current information used by Staff, that would increase the post-retirement expense in the rate case, but also increase Staff's adjustment by changing the referent comparator. To illustrate, an Oregonian might budget US$10 for coffee on a trip to Vancouver, B.C. and hearing coffee is expensive there, up the budget to $12 dollars for coffee, ignoring exchange rates. There, it actually costs Canadian $12, but the exchange rate

[46] Docket UG 288, OPUC Order No. 16-109 at 17-18, OPUC Order No. 16-076 at 6.

is US $0.77 to Canadian $1. Coffee cost was US$0.76 cents less than initially budgeted. This is US$2.77 less than the updated coffee budget.

Q. How does the EROA you applied compare with Dr. Malkiel's 60 40 passive fund strategy?

A. Professor Burton Malkiel is a professor of economics at Princeton University. He was formerly dean of the Yale School of Management and spent 28 years as a director of the Vanguard Group. This author of an iconic book about investing, "A Random Walk down Wall Street", now tracks a portfolio passively invested 60 percent in U.S. Stock index and 40 percent in a bond index. Over the last five years, the WSJ states that Dr. Malkiel's passive investment would have earned 8.9 percent annually.[47] This perspective has drawn $4,000,000,000,000 into Vanguard Group funds and $5,000,000,000,000 into BlackRock, Inc. funds.

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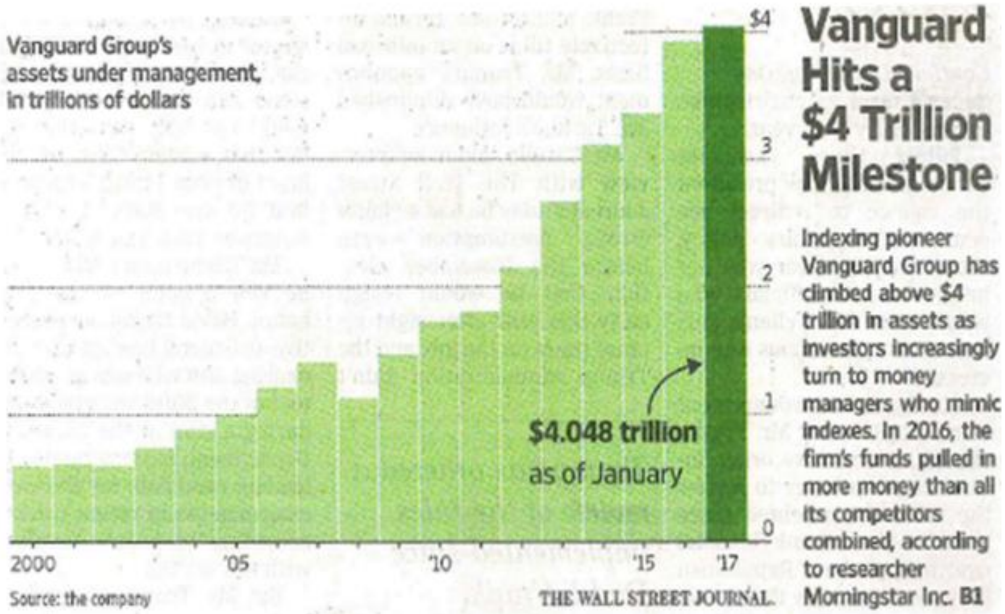
[47] See Juliet Chung and Dawn Lim, "Harvard Outsources Endowment", WSJ, January 26, 2017. Also Sarah Krouse, "Vanguard Reaches $4 Trillion for First Time", WSJ, February 10, 2017.

Figure 8 – "Riding the Wave" WSJ



Q. Haven't some prominent funds earned more over the same period?

A Yes. The endowments of Princeton University, Columbia University, and Yale University have earned annualized net returns of eight percent over the last ten years.

Q. Looking forward, did you note that large California retirement funds are using a lower EROA than eight percent?

A Yes, CALPRS and CALSTRS have dropped their long-run forward EROA to 7.0 percent. In contrast, Oregon State Treasury responsible for the Oregon Public Employees Retirement System (PERS) actively manages PERS assets and outperforms the above fund managers. PERS EROA is at 7.5 percent now, and is reviewed every two years. But it is important to return to the Commission's preferred 6.6 percent EROA in the UG 288 rate case, which may better accommodate transaction costs and fund size differences, and which may be achievable without money managers of the caliber and without the support of a finance team like that managing Yale's endowment and Oregon's PERS assets.

Q. What is the key benefit of looking at CoC and Retirement Expense together in reflecting on Staff's recommended 7.034 percent ROR?

A. Reviewing both at the same time provides grounding. The <u>economy discussed is the same</u> in both topics. VL says the Company's dividend yield is close to the average for regulated gas utilities, but "Its finances are in good shape." The economy is not in the long-run simultaneously going to exceed all historical expectations and be doomed.

Staff's top growth rate carries the assumption that the U.S. GDP growth accelerates and then sustains its former high historical long-run growth rate. In this context, both Staff's recommended 9.3 percent ceiling on ROE and the Commission's 6.6 percent EROA of the last Avista rate case are both reasonable and in ratepayers' interest, without impairing access to capital at affordable rates. Times aren't great. And times aren't terrible. There are just enough periodic market jitters to make Avista's securities very attractive to investors.

Utilities like Avista are steady dependable performers for investors. A CALPRS manager looking to achieve a target EROA can be happy with either holding Avista common stock shares – ticker (AVA) with a Commission authorized ROR over 7.0 percent. That same manager might also want to hold a passive low annual fee fund as are managed by BlackRock, Inc. and

Vanguard Group containing AVA stock. According to Yahoo Finance, a little over two-thirds of AVA is held by Institutions and Mutual Fund Owners.[48]

In addition to utilities that produce solid returns from stock price appreciation and growing dividends with relatively little variation in returns year to year, other companies have stocks that have higher returns over time but greater variability in any given year's results. For example, the returns for the Dow Jones Industrial Average gained 13.4 percent last year, while the broader Standard and Poor's S&P 500 index rose 9.5 percent.

Q. Is it stressful in a year like 2015 when returns for the S&P 500 were just 1.38 percent for the year?

A. Certainly, but annualized returns over a three year period ending December 31, 2015, were 15.13 percent. De-risking returns in 2015 by avoiding the stock market would skip returns in 2013, 2014, and 2016. Exposure to U.S. stocks helps retirement fund managers meet fiduciary obligations to retirees.

Q. Did the Company use a 6.6 percent long-run EROA closely following Order Nos. 16-076 and 16-109 in calculating related expenses?

A. No, the values for long-run EROA for Pensions and Post-Retirement medical expenses used by the Company are shown in the Company's confidential Attachment A Tabs: "A. Retirement (DB plan)" and "B. Retiree Medical" respectively provided in response to Staff DR No. 296C and provided herein as Confidential Exhibit Staff/210, Muldoon/2-3.

48 See Yahoo Finance "Holders" tab at https://finance.yahoo.com/quote/AVA/holders?p=AVA accessed by Staff on February 10, 2017.

Q. Was the Company's information regarding Pensions and Post-retirement medical expenses fully projected for the test period at the time of the Company's response to Staff DRs?

A. No, however, the Company did provide a starting point for its case in response to Staff DR No. 60. This provides a starting point for my adjustment and calibrates the impact of a higher 6.6 percent EROA.

Q. Why is there a positive adjustment for Post-retirement Medical Expense in Staff's recommendation?

A. Staff's recommendations utilize best available information at the time of this testimony. In this case, the Company's more current information showed higher costs than earlier estimates by the Company's third party analysts.

Q. Does your work parallel that done by Staff in the prior rate case?

A. Yes my review was identical to that performed by Staff witness Brian Bahr as described to the Commission in Docket UG 288, Exhibit Staff/800, Bahr/3-16.

Q. Is there a change in terminology in this case?

A. Yes, Financial Accounting Standards Board (FASB), Accounting Standards Codification (ASC), Topic 715 collapses down in everyday reference to ASC 715. This is the topic under which Financial Accounting Standard (FAS) 87 and FAS 106 now jointly reside.

Q. Has this any material impact on this case?

A. No.

Q. What would be the impact if the Company updated its information in the rate case model to the best available information as of the end of January 2017 instead of that provided in response to Staff DR No. 60?

A. Confidential Exhibit Staff/211, Muldoon/2 shows how updating the Company's placeholder information to end of January 2017 would increase the Company's revenue requirement. Such an update though would also increase Staff's adjustment as shown to ($316,000). This is because Staff already incorporates updated information for this time frame.

Q. Why is macroeconomic policy a factor regarding fixed income?

A. As earlier shown in Figure 3, factors like Federal Reserve policy can impact what retirement asset managers can earn, particularly from fixed income such as U.S. dollar denominated bonds.

However, this is already built into the Commission's 6.6 percent EROA of the last Avista general rate case. Based on that guidance, a downward adjustment of ($239,000) for Pension Expense and Post-retirement Medical Expense is reasonable.

Q. You say you are still working on this issue. What are you looking at?

A. My adjustment is only 58.41 percent of the differential (associated with using a lower EROA than 6.6 percent) that is applied to Operations. Staff continues to evaluate whether the remaining Non O&M portions allocated to three other areas are otherwise fully addressed in this rate case but does not have an adjustment at this time.

ISSUES 6 — AFUDC

Q. In your examination of the Allowance for Funds Used During Construction (AFUDC) did Staff's investigation and analysis result in an adjustment?

A. No. My focus on AFUDC was comprehensive but found no problems or departures from a structured process. I appreciate the Company's cooperation in responding to numerous multi-part DRs, which in conjunction with Staff's last audit constituted a solid review of AFUDC.

Q. Are there next steps in this or adjacent areas in this rate case?

A. Yes. In reply testimony, depending on which issues remain, I, or one of the other Staff witnesses, specifically Mitch Moore or Lance Kaufman, will opine as to whether Construction Work in Progress (CWIP) is removed from this Oregon rate case. This is just due diligence similar to calculation of Capital Structure to make sure that components which are usual and customary when the Company is before the WUTC are taken out where Oregon law differs.[49]

[49] E.g. ORS 757.355.

CONCLUSION

Staff Adjustment S-10 Cost of Capital

Q. What is Staff's recommendation regarding Capital Structure?

A. I recommend a 48.9 percent equity and 51.1 percent debt capital structure, reflecting best available information at this time.

Q. What is Staff's recommendation regarding ROE?

A. I recommend that the Commission consider a range of reasonable ROEs from 8.8 percent to 9.3 percent, and a point ROE of 9.1 percent — the midpoint in my range of reasonable ROEs.

As mentioned earlier this is 10 bps lower than the Commission's decision in Avista's last general rate case. That tracks perfectly a 10 bps drop in 2015 vs. 2016 Average US ROE decisions regarding Gas LDCs. And it reflects slightly declining VL projections of referent peer gas utility earnings per share (EPS) and (Dividend) growth rates since the last general rate case.

Though I perform additional sensitivity analysis, my recommendations are based entirely on peer gas utility modeling results that are higher than were the Company's peer utilities run through the same Commission preferred modeling.

Q. What is Staff's recommendation regarding LT Debt?

A. I recommend a Cost of LT Debt of 5.095 percent which reflects the replacement of higher cost maturing bonds with lower cost issues. My mix of maturities is consistent with Company policy and historical practice.

Q. What ROR is generated by the above recommendations?

A. Staff's recommendations generate a 7.034 percent ROR.

Staff Adjustment S-11 - Pension/Retirement Expense

Q. What position does Staff recommend the Commission take on Retirement Expense?

A. I recommend a ($239,000) adjustment for aggregated Pension and Post-retirement Medical Expense reflecting a reliance on a lower EROA than the Commission's decision of 6.6 percent EROA in the last Avista general rate case in Oregon.[50] This represents the Commission maintaining its guidance on the appropriate EROA. In the short time since the last rate case, Staff has not identified circumstances that support a change in approach.

Staff Adjustment S-12 - AFUDC

Q. Does Staff have an adjustment to AFDUC at this time?

A. No.

Q. Does that conclude your testimony?

A. Yes.

[50] See page 6 of Commission Order No. 16-076 at Part F. (Pension Expense).

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 201

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATION STATEMENT

NAME:	Matthew (Matt) J. Muldoon
EMPLOYER:	PUBLIC UTIILTY COMMISSION OF OREGON
TITLE:	Senior Economist Energy – Rates Finance and Audit Division
ADDRESS:	201 High Street SE, Suite 100 Salem, OR 97301
EDUCATION:	In 1981, I received a Bachelor of Arts Degree in Political Science from the University of Chicago. In 2007, I received a Masters of Business Administration from Portland State University with a certificate in Finance.
EXPERIENCE:	From April of 2008 to the present, I have been employed by the OPUC. My current responsibilities include financial and rate analysis with an emphasis on Cost of Capital. I have worked on Cost of Capital in the following general rate case dockets: AVA UG 186; UG 201, UG 246, UG 284, UG 288, and UG 325 current; NWN UG 221; PAC UE 246, and UE 263; PGE UE 262, UE 283, and UE 294; and CNG UG 287 and UG 305.. From 2002 to 2008 I was Executive Director of the Acceleration Transportation Rate Bureau, Inc. where I developed new rate structures for surface transportation and created metrics to insure program success within regulated processes. I was the Vice President of Operations for Willamette Traffic Bureau, Inc. from 1993 to 2002. There I managed tariff rate compilation and analysis. I also developed new information systems and did sensitivity analysis for rate modeling.
OTHER:	I have prepared, and defended formal testimony in contested hearings before the OPUC, ICC, STB, WUTC and ODOT. I have also prepared OPUC Staff testimony in BPA rate cases.

Abbreviations: AVA – Avista Corp., CNG – Cascade Natural Gas Company, IPC – Idaho Power Company, NWN – Northwest Natural Gas Company, PAC – PacifiCorp, PGE – Portland General Electric Company

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 202

Staff Peer Screening

Exhibits in Support
of Opening Testimony

March 1, 2017

Acronyms and Abbreviations Used

CIK	SEC Central Index Key
EDGAR	SEC Electronic Data Gathering, Analysis and Retrieval System
EEI	Edison Electric Institute
EIN	IRS Employer Identification Number
IRS	U.S. Internal Revenue Service
SEC	U.S. Securities and Exchange Commission
SIC	Standard Industrial Code
SNL	SNL Financial, LC – A financial Information gathering firm
U.S.	United States of America
VL	Value Line Investment Survey, The

Moody's		S&P		Fitch		DBRS		
Long-term	Short-term	Long-term	Short-term	Long-term	Short-term	Long-term	Short-term	
Aaa	P-1	AAA	A-1+	AAA	F1+	AAA	R-1H	High Grade
Aa1		AA+		AA+		AA(high)		High grade
Aa2		AA		AA		AA	R-1M	
Aa3		AA-		AA-		AA(low)		
A1		A+	A-1	A+	F1	A(high)	R-1L	Upper medium grade
A2		A		A		A		
A3	P-2	A-	A-2	A-	F2	A(low)		
Baa1		BBB+		BBB+		BBB(high)	R-2H	Lower medium grade
Baa2	P-3	BBB	A-3	BBB	F3	BBB	R-2M	
Baa3		BBB-		BBB-		BBB(low)	R-2L, R-3	
Ba1	Not prime	BB+	B	BB+	B	BB(high)	R-4	Non-investment grade speculative
Ba2		BB		BB		BB		
Ba3		BB-		BB-		BB(low)		
B1		B+		B+		B(high)		Highly speculative
B2		B		B		B		
B3		B-		B-		B(low)		
Caa1		CCC+				CCC(high)		Substantial risks
Caa2		CCC				CCC		
Caa3		CCC-				CCC(low)		
						CC(high)	R-5	
		CC	C	CCC	C	CC		

Source: http://en.wikipedia.org/wiki/Credit_rating

Avista Corporation
Peer Screen

Natural Gas
CNG UG 325

Screen: 1 VL Gas Utilities passing Staff Peer Screen
Sensitivities: 2 Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]
3 Staff Peer Gas Screen w ATO
4 Staff Peer Gas Screen w ATO and Water Utiliiies

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Gas Group												Utility (U.)			Either / Or	Either / Or	Note: Avista's Baa1 Long Te	
#	Abbreviated Utility	UG 325 Company	UG 325 Staff	VL Corporate Name Gas Utility	NYS, NSDQ Ticker	SNL Key	IRS EIN	SEC File	VL Region	VL 12/29/2016 Beta	Yahoo Fin. 12/29/2016 Beta	Yahoo Fin. 12/29/2016 Mkt Cap $ Billions	VL 12/29/2016 Mkt Cap $ Billions	Value Line Gas or Water U. w VL Beta < 1 12/30/2016	VL ID No.	SNL or VL No Div Declines 5 years	S&P Local LT 12/30/2016 Rating ≥ BBB-	Moody's Local LT 12/30/2016 Rating ≥ Baa3	Last 10-K ≥ 2/3 U.S. Regulated LDC Revenue	VL 2016 LT Debt < 56% of Capital
-	Avista Corp.	No	No	Avista Corporation	AVA	4057075	91-0462470	1-3701	West	.70	0.22	2.58	2.60	Yes	9677	Pass	BBB	Baa1	Pass	51.0%
1	AGL	No	No	AGL Resources, Inc.	GAS	4057108	58-2210952	1-14174	East	0.60	N/A	N/A	7.90	Yes	785	Pass	N/A	W Jan 2015	N/A	48.0%
2	Atmos	Yes	Sensitivity	Atmos Energy Corp.	ATO	4057157	75-1743247	1-10042	Central	0.70	0.10	7.85	7.60	Yes	802	Pass	A	A2	100%	39.0%
3	Laclede (Spire)	Yes	No	Spire, Inc. — Formerly: The Laclede Group, Inc.	SR / LG	4002506	74-2976504	1-16681	Central	0.70	0.22	2.97	3.00	Yes	5203	Pass	A	Baa2	84%	50.9%
*	Chesapeake	Yes	No	Chesapeake Utilities Corporation (DIVERSIFIED)	CPK	4057113	51-0064146	1-11590	East	N/A	-0.14	1.09	N/A	NO	N/A	Pass	None	None	FAIL 62%	N/A
4	New Jersey	Yes	No	New Jersey Resources Corp.	NJR	4057128	22-2376465	1-8359	East	0.80	0.24	3.10	2.90	Yes	6359	Pass	A	Aa2	Fail 25%	43.0%
5	NiSource	Yes	No	NiSource Inc.	NI	4057051	35-2108964	1-16189	East	NMF	0.14	7.18	7.10	Yes	6188	Fail	BBB+	Ba1	Fail 50%	63.5%
6	Northwest Natural	Yes	Yes	Northwest Natural Gas Company	NWN	4057132	93-0256722	1-15973	West	0.65	0.34	1.72	1.60	Yes	6490	Pass	A+	A3	96%	43.0%
7	Piedmont	No	No	Piedmont Natural Gas Company, Inc.	PNY	4057136	56-0556998	1-6196	East	0.70	N/A	N/A	4.90	Yes	7094	Pass	A-	A2	93%	49.5%
8	South Jersey	Yes	No	South Jersey Industries, Inc.	SJI	4057145	22-1901645	1-6364	East	0.80	0.71	2.72	2.60	Yes	8281	Pass	BBB+	A2	Fail 50%	41.5%
9	Southwest Gas	Yes	Yes	Southwest Gas Corporation	SWX	4041957	88-0085720	1-7850	West	0.75	0.38	3.64	3.50	Yes	8314	Pass	BBB+	A3	67%	49.0%
10	UGI	No	No	UGI Corporation (Propane Focus / VL)	UGI	4057537	23-2668356	1-11071	East	0.90	0.60	8.04	7.90	Yes	9166	Pass	None	A2	Fail 13%	56.5%
11	WGL	Yes	No	WGL Holdings, Inc.	WGL	4007261	52-2210912	1-16163	East	0.75	0.60	3.93	3.40	Yes	9668	Pass	A+	A3	Fail 49%	41.5%
12	American States	No	Sensitivity	American States Water Company	AWR	N/A	95-4676679	1-14431	Water	0.70	-0.01	1.67	1.40	Yes	8288	Pass	A+	W Jan 2005	73%	41.5%
13	American Water	No	Sensitivity	American Water Works Company, Inc.	AWK	N/A	51-0063696	1-34028	Water	0.65	0.17	12.94	12.80	Yes	98442	Pass	A	A3	89%	54.9%
14	Aqua America	No	No	Aqua America, Inc.	WTR	N/A	23-1702594	1-6659	Water	0.70	0.38	5.33	5.30	Yes	7056	Pass	None	None	98%	50.0%
15	CA Water	No	Sensitivity	California Water Service Group	CWT	N/A	77-0448994	1-13883	Water	0.75	0.48	1.65	1.50	Yes	1574	Pass	A+	Withdrawn	97%	46.0%
16	CT Water	No	No	Connecticut Water Service, Inc.	CTWS	N/A	06-0739839	0-8084	Water	0.60	0.02	0.62	0.55	Yes	2274	Pass	A	Withdrawn	94%	46.0%
17	Consol Water	No	No	Consolidated Water Co. Ltd.	CWCO	N/A	98-0619652	0-25248	Water	0.95	0.90	0.16	0.18	Yes	9991	Pass	None	Withdrawn	FAIL 36%	0.0%
18	Middlesex Water	No	Sensitivity	Middlesex Water Co.	MSEX	N/A	22-1114430	0-422	Water	0.70	0.54	0.69	0.55	Yes	5950	Pass	A	Withdrawn	88%	38.5%
19	SJW	No	No	SJW Corp.	SJW	N/A	77-0066628	1-8966	Water	0.70	0.05	1.15	0.85	Yes	7824	Pass	None	Withdrawn	96%	49.0%
20	York Water	No	Sensitivity	York Water Company (The)	YORW	N/A	23-1242500	1-34245	Water	0.70	0.39	0.49	0.38	Yes	16182	Pass	A-	Withdrawn	100%	43.5%
	TOTAL PEERS	2	2	When Value Line (VL) Beta ratio exceeds 99.9 or earnings are negative, VI shows "NMF" for 'no meaningful figure'.				Gas Utility	AVG:	0.74	Average Gas							W Indicates Withdrawn		
		5	7						STDV:	0.09	STDev Gas									
		w Sensitivities	w Sensitivities					H_2O Utility	AVG:	0.72	Average H_2O									

Avista Corporation
Peer Screen

Natural Gas
CNG UG 325

Screen: 1
Sensitivities: 2
3
4

ɜrm Ratings was determined by Moody's on January 30, 2014

1	2	3	4	22	23	24	25	26	27	28	
#	Abbreviated Utility	Gas Group UG 325 Company	UG 325 Staff	VL 2019-2021 LT Debt % of Capital	VL 2016 Common Equity % of Capital	VL Preferred Stock of Capital	VL Div. Growth Rate > 0%	No M&A Activity in Last 4 Years	Bloomberg M&A Under 11% of Mkt Cap	M&A Activity Activity in Last 5 Years	#
-	Avista Corp.	No	No	50.0%	49.0%	0.0%	Pass	N/A	N/A	AVA takes 10% Stake in Smart-Grid Co. "Spirae" in 2016. Bought AERC in AK. — OR Gas Ops = Regulated	-
1	AGL	No	No	47.0%	52.0%	0.0%	Pass	Fail	Fail	*Acquired Nicor Dec. 2011. **Purchase of Co. by Southern Co. in 2016.**	1
2	Atmos	Yes	Sensitivity	45.0%	61.0%	0.0%	Pass	Pass	7%	Completed Sale Atmos Marketing to CenterPoint Energy Jan. 4, 2017 **leaving Atmos Energy 100% Regulated.**	2
3	Laclede (Spire)	Yes	No	50.0%	49.1%	0.0%	Pass	Fail	Fail	**Bought Missouri Gas** $975M **2013, Alabama Gas 2014 "Spire" Apr. 28, 2016 Buying Mobile Gas,Wilmut Gas 2016**	3
*	Chesapeake	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	**This Diversified Firm is Not Followed by VL as a Gas Utility**	
4	New Jersey	Yes	No	40.5%	57.0%	0.0%	Pass	Pass	0%		4
5	NiSource	Yes	No	64.5%	36.5%	0.0%	Fail	Fail	Fail	* **Spinoff of Columbia Pipeline Gas Group – Balance Sheet in Flux / VL. 2016 Ops will vary widely / VL & SNL**	5
6	Northwest Natural	Yes	Yes	43.0%	57.0%	0.0%	Pass	Pass	0%		6
7	Piedmont	No	No	45.5%	50.5%	0.0%	Pass	Fail	Fail	* Acquired privatized service to Fort Bragg, NC per Oct. 2013. **Purchase of Co. by Duke in 2016**	7
8	South Jersey	Yes	No	45.0%	58.5%	0.0%	Pass	Pass	0%	Issued 7 million shares at $25.25 each in 2016 to fund infrastructure investment.	8
9	Southwest Gas	Yes	Yes	49.0%	51.0%	0.0%	Pass	Pass	0%	Reorganizing under holding company.	9
10	UGI	No	No	49.5%	43.5%	0.0%	Pass	Fail	Fail	* Acquired Energy Transfer Partners Jan 2012 and **Heritage Propane** Jan **2013 – Very Heavy Propane Position**	10
11	WGL	Yes	No	43.5%	57.5%	1.0%	Pass	Pass	0%	2012 paid $0.8B for Semco and Ernstar. **Canada's AltaGas wants to buy WGL as of Jan 12, 2017**	11
12	American States	No	Sensitivity	57.0%	58.5%	0.0%	Pass	Pass	0%	Sold Chapparal City Water of AZ June 2011	12
13	American Water	No	Sensitivity	55.0%	45.0%	0.1%	Pass	Pass	N/A	Acquired Mt. Ebo Sewage	13
14	Aqua America	No	No	51.5%	50.0%	0.0%	Pass	Fail	Fail	* **Acquired AquaSource July 2013 and North Maine Utilities July 2015 – 300 Purchases in last 2 decades / VL.**	14
15	CA Water	No	Sensitivity	42.0%	54.0%	0.0%	Pass	Pass	0%	Acquired Rio Grande Corp and West HI Utilities Sep 2008	15
16	CT Water	No	No	47.5%	53.9%	0.1%	Pass	Pass	N/A	Purchased Maine Water in Jan 2012, and Biddeford & Saco in Maine in Dec. 2012.	16
17	Consol Water	No	No	0.0%	99.9%	0.1%	Fail	Pass	0%	**Unclear Earnings Results** for Foreign Operations beyond those serving San Diego and Tijuana / VL	17
18	Middlesex Water	No	Sensitivity	38.5%	61.4%	0.1%	Pass	Pass	0%		18
19	SJW	No	No	50.5%	51.0%	0.0%	Pass	Fail	ACQ	Acquired Bexar Metropolitan Water Dist. – Large 1-time 2014 profits.	19
20	York Water	No	Sensitivity	47.0%	56.5%	0.0%	Pass	Pass	0%		20
	TOTAL PEERS	2	2								
		5 w Sensitivities	7 w Sensitivities								

Historical and Near Term
VL Dividends, and
VL Earnings per Share

AVA - Gas Peer Dividends

UG 325

1	#	Abbreviated Utility (2)	UG 288 Staff (3)	UG 305 Staff (4)	Ticker (5)	2011 Q1 (6)	2011 Q2 (7)	2011 Q3 (8)	2011 Q4 (9)	2011 Yr (10)	2012 Q1 (11)	2012 Q2 (12)	2012 Q3 (13)	2012 Q4 (14)	2012 Yr (15)
1	1	AGL	No	No	GAS	0.45	0.45	0.45	0.55	1.90	0.36	0.46	0.46	0.46	1.74
2	2	Atmos	Yes	Sensitivity	ATO	0.34	0.34	0.34	0.345	1.37	0.345	0.345	0.345	0.35	1.39
*	*	Chesapeake	Yes	No	CPK	0.22	0.22	0.23	0.23	0.90	0.23	0.243	0.243	0.243	0.96
3	3	Laclede (Spire)	Yes	No	SR / LG	0.405	0.405	0.405	0.405	1.62	0.415	0.415	0.415	0.415	1.66
4	4	New Jersey	Yes	No	NJR	0.18	0.18	0.18	0.18	0.72	0.19	0.19	0.19	0.40	0.97
5	5	NiSource	Yes	No	NI	0.23	0.23	0.23	0.23	0.92	0.23	0.23	0.24	0.24	0.94
6	6	Northwest Natural	Yes	Yes	NWN	0.435	0.435	0.435	0.445	1.75	0.445	0.445	0.445	0.455	1.79
7	7	Piedmont	No	No	PNY	0.28	0.29	0.29	0.29	1.15	0.29	0.30	0.30	0.60	1.49
8	8	South Jersey	Yes	No	SJI	0.00	0.183	0.183	0.3840	0.75	0.00	0.202	0.202	0.423	0.83
9	9	Southwest Gas	Yes	Yes	SWX	0.25	0.265	0.265	0.265	1.05	0.265	0.295	0.295	0.295	1.15
10	11	WGL	Yes	No	WGL	0.378	0.39	0.39	0.39	1.55	0.39	0.40	0.40	0.40	1.59
11	12	American States	No	Sensitivity	AWR					0.55	0.14	0.14	0.1775	0.1775	0.64
12	13	American Water	No	Sensitivity	AWK	0.22	0.23	0.23	0.23	0.91	0.23	0.23	0.25	0.50	1.21
13	15	CA Water	No	Sensitivity	CWT	0.154	0.154	0.154	0.15	0.62	0.1575	0.1575	0.1575	0.1575	0.63
14	18	Middlesex Water	No	Sensitivity	MSEX	0.183	0.183	0.183	0.185	0.73	0.185	0.185	0.185	0.1875	0.74
15	20	York Water	No	Sensitivity	YORW	0.131	0.131	0.131	0.131	0.52	0.134	0.134	0.134	0.134	0.54
		TOTAL	* 8	2											
		w Sensitivities	8	8											

1	#	Abbreviated Utility	2013 Q1 (16)	2013 Q2 (17)	2013 Q3 (18)	2013 Q4 (19)	2013 Yr (20)	2011-13 Average (21)	2014 Q1 (22)	2014 Q2 (23)	2014 Q3 (24)	2014 Q4 (25)	2014 Yr (26)	2012-14 Average (27)	2015 Q1 (28)	2015 Q2 (29)	2015 Q3 (30)	2015 Q4 (31)	2015 Yr (32)
1	1	AGL	0.47	0.47	0.47	0.47	1.88	1.84	0.49	0.49	0.49	0.49	1.96	1.86	0.51	0.51	0.51	0.51	2.04
2	2	Atmos	0.35	0.35	0.35	0.37	1.42	1.39	0.37	0.37	0.37	0.39	1.50	1.44	0.39	0.39	0.39	0.42	1.59
*	*	Chesapeake	0.243	0.256	0.256	0.256	1.011	0.96	0.256	0.27	0.27	0.27	1.07	1.01	0.27	0.288	0.288	0.288	1.13
3	3	Laclede (Spire)	0.425	0.425	0.425	0.425	1.70	1.66	0.44	0.44	0.44	0.44	1.76	1.71	0.46	0.46	0.46	0.46	1.84
4	4	New Jersey	0.00	0.20	0.20	0.20	0.60	0.76	0.21	0.21	0.21	0.23	0.86	0.81	0.23	0.23	0.23	0.24	0.93
5	5	NiSource	0.24	0.24	0.25	0.25	0.98	0.95	0.25	0.25	0.26	0.26	1.02	0.98	0.26	0.26	0.155	0.155	0.83
6	6	Northwest Natural	0.455	0.455	0.455	0.46	1.83	1.79	0.46	0.46	0.46	0.465	1.85	1.82	0.465	0.465	0.465	0.4675	1.86
7	7	Piedmont	0.00	0.31	0.31	0.31	0.93	1.19	0.31	0.32	0.32	0.32	1.27	1.23	0.32	0.33	0.33	0.33	1.31
8	8	South Jersey	0.00	0.222	0.222	0.458	0.90	0.83	0.00	0.237	0.237	0.488	0.96	0.90	0.00	0.251	0.251	0.515	1.02
9	9	Southwest Gas	0.295	0.33	0.33	0.33	1.29	1.16	0.33	0.365	0.365	0.365	1.43	1.29	0.365	0.405	0.405	0.405	1.58
10	11	WGL	0.40	0.42	0.42	0.42	1.66	1.60	0.42	0.44	0.44	0.44	1.74	1.66	0.44	0.463	0.463	0.463	1.83
11	12	American States	0.1775	0.1775	0.2025	0.2025	0.76	0.65	0.2025	0.2025	0.213	0.213	0.83	0.74	0.213	0.213	0.224	0.224	0.87
12	13	American Water	0.00	0.28	0.28	0.28	0.84	0.99	0.28	0.31	0.31	0.31	1.21	1.09	0.31	0.34	0.34	0.34	1.33
13	15	CA Water	0.16	0.16	0.16	0.16	0.64	0.63	0.1625	0.1625	0.1625	0.1625	0.65	0.64	0.1675	0.1675	0.1675	0.1675	0.67
14	18	Middlesex Water	0.1875	0.1875	0.1875	0.19	0.75	0.74	0.19	0.19	0.19	0.1925	0.76	0.75	0.1925	0.1925	0.1925	0.19875	0.78
15	20	York Water	0.138	0.138	0.138	0.138	0.55	0.54	0.1431	0.1431	0.1431	0.1431	0.57	0.55	0.1495	0.1495	0.1495	0.1555	0.60

* Note: Staff Excludes Chesapeake Utilities Corporation, because it is not a local natural gas distribution company covered by Value Line as such.
Dividends shown for Chesapeake are extracted from Yahoo Finance on Dec. 30, 2016.

AVA - Gas Peer EPS

Value Line Estimated EPS

1	#	Abbreviated Utility (2)	UG 288 AVA (3)	UG 288 AVA (4)	Ticker (5)	2013 Q1 (6)	2013 Q2 (7)	2013 Q3 (8)	2013 Q4 (9)	2013 Yr (10)	2014 Q1 (11)	2014 Q2 (12)	2014 Q3 (13)	2014 Q4 (14)	2014 Yr (15)
1	1	AGL	No	No	GAS	1.31	0.41	0.24	0.68	2.64	2.81	0.48	0.19	1.24	4.72
2	2	Atmos	Yes	Sensitivity	ATO	0.85	1.23	0.36	0.08	2.52	0.95	1.38	0.45	0.23	3.01
3	3	Laclede (Spire)	Yes	No	SR / LG	1.14	1.34	0.25	(0.30)	2.43	1.09	1.59	0.33	(0.35)	2.66
4	4	New Jersey	Yes	No	NJR	0.43	0.82	0.12	(0.01)	1.36	0.47	1.81	0.05	(0.23)	2.10
5	5	NiSource	Yes	No	NI	0.69	0.23	0.16	0.49	1.57	0.85	0.25	0.10	0.49	1.69
6	6	Northwest Natural	Yes	Yes	NWN	1.40	0.08	(0.31)	1.07	2.24	1.40	0.04	(0.32)	1.04	2.16
7	7	Piedmont	No	No	PNY	1.18	0.74	(0.03)	(0.11)	1.78	1.26	0.80	(0.09)	(0.13)	1.84
8	8	South Jersey	Yes	No	SJI	0.76	0.16	(0.02)	0.62	1.52	1.01	0.15	(0.05)	0.47	1.58
9	9	Southwest Gas	Yes	Yes	SWX	1.73	0.22	(0.06)	1.22	3.11	1.51	0.21	0.04	1.25	3.01
10	11	WGL	Yes	No	WGL	1.14	1.75	(0.03)	(0.55)	2.31	0.99	1.84	0.02	(0.17)	2.68
11	12	American States	No	Sensitivity	AWR	0.35	0.43	0.53	0.30	1.61	0.28	0.39	0.54	0.36	1.57
12	13	American Water	No	Sensitivity	AWK	0.32	0.57	0.84	0.33	2.06	0.39	0.62	0.86	0.52	2.39
13	15	CA Water	No	Sensitivity	CWT	0.01	0.28	0.61	0.12	1.02	(0.11)	0.36	0.70	0.24	1.19
14	18	Middlesex Water	No	Sensitivity	MSEX	0.20	0.28	0.36	0.19	1.03	0.20	0.29	0.42	0.22	1.13
15	20	York Water	No	Sensitivity	YORW	0.17	0.18	0.19	0.21	0.75	0.16	0.22	0.23	0.28	0.89
		TOTAL	8	2											
		w Sensitivities	8	8											

Value Line Estimated Near Future Earnings per Shar

1	#	Abbreviated Utility	2015 Q1 (16)	2015 Q2 (17)	2015 Q3 (18)	2015 Q4 (19)	2015 Yr (20)	2013-15 Average (21)	2016 Q1 (22)	2016 Q2 (23)	2016 Q3 (24)	2016 Q4 (25)	2016 Yr (26)	2014-16 Average (27)	2017 Q1 (28)	2017 Q2 (29)	2017 Q3 (30)	2017 Q4 (31)	2017 Yr (32)
1	1	AGL	1.62	0.35	0.09	0.89	2.95	3.44	1.51	0.40	0.19	1.10	3.20	3.62	1.80	0.40	0.20	1.20	3.60
2	2	Atmos	0.96	1.35	0.55	0.23	3.09	2.87	1.00	1.38	0.69	0.33	3.40	3.17	1.05	1.41	0.72	0.37	3.55
3	3	Laclede (Spire)	1.09	2.18	0.32	(0.43)	3.16	2.75	1.08	2.31	0.24	(0.31)	3.32	3.05	1.20	2.30	0.30	(0.30)	3.50
4	4	New Jersey	0.65	1.16	0.03	(0.06)	1.78	1.75	0.58	0.91	0.13	(0.02)	1.60	1.83	0.60	0.95	0.17	0.03	1.75
5	5	NiSource	0.61	(0.23)	0.05	0.20	0.63	1.30	0.56	0.09	0.07	0.33	1.05	1.12	0.55	0.10	0.10	0.40	1.15
6	6	Northwest Natural	1.04	0.08	(0.24)	1.08	1.96	2.12	1.33	0.07	(0.29)	1.04	2.15	2.09	1.35	0.10	(0.25)	1.15	2.35
7	7	Piedmont	1.18	0.84	(0.10)	(0.18)	1.74	1.79	1.21	0.78	(0.02)	(0.07)	1.90	1.83	1.24	0.85	(0.04)	(0.05)	2.00
8	8	South Jersey	0.86	0.03	(0.07)	0.62	1.44	1.51	0.80	0.12	0.05	0.48	1.45	1.49	0.82	0.12	0.00	0.56	1.50
9	9	Southwest Gas	1.53	0.10	(0.10)	1.38	2.91	3.01	1.58	0.19	0.05	1.38	3.20	3.04	1.68	0.22	0.10	1.50	3.50
10	11	WGL	1.16	2.02	0.22	(0.23)	3.17	2.72	1.18	1.78	0.33	(0.01)	3.28	3.04	1.21	1.81	0.36	0.02	3.40
11	12	American States	0.32	0.41	0.56	0.31	1.60	1.59	0.28	0.45	0.58	0.34	1.65	1.61	0.33	0.47	0.62	0.33	1.75
12	13	American Water	0.44	0.68	0.96	0.56	2.64	2.36	0.46	0.77	1.00	0.62	2.85	2.63	0.50	0.82	1.08	0.65	3.05
13	15	CA Water	0.03	0.21	0.52	0.18	0.94	1.05	(0.02)	0.24	0.58	0.20	1.00	1.04	0.05	0.35	0.65	0.30	1.35
14	18	Middlesex Water	0.22	0.31	0.41	0.28	1.22	1.13	0.29	0.36	0.43	0.32	1.40	1.25	0.32	0.34	0.46	0.33	1.45
15	20	York Water	0.20	0.22	0.28	0.27	0.97	0.87	0.19	0.23	0.28	0.27	0.97	0.94	0.22	0.25	0.30	0.28	1.05

* Note: Staff Excludes Chesapeake Utilities Corporation, because it is not a local natural gas distribution company covered by Value Line as such.

Historical and Near Term
VL Dividends, and
VL Earnings per Share

AVA - Gas Peer Dividends

UG 325

Value Line Estimated Near Future Dividends in Blue

	1	2	3	4	5	33	34	35	36	37	38	39	40	41	42	43	44	45	46		
	#	Abbreviated Utility	UG 288 Staff	UG 305 Staff	Ticker	2013-15 Average	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2016 Yr	2014-16 Average	2017 Yr	2018 Yr	2019 Yr	2020 Yr	2021 Yr	VL Avg. 2019 - 21 / Yr	Div Growth 2019-21 vs. 2013-15	#	
1	1	AGL	No	No	GAS	1.96	0.53	0.53	0.53	0.53	2.12	2.04	2.16	2.24	2.32	2.40	2.48	2.40	4.3%	1	1
2	2	Atmos	Yes	Sensitivity	ATO	1.50	0.42	0.42	0.42	0.45	1.71	1.60	1.80	1.91	2.03	2.15	2.27	2.15	7.0%	2	2
*	*	Chesapeake	Yes	No	CPK	1.07	0.288	0.305	0.305	0.305	1.20	1.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*	
3	3	Laclede (Spire)	Yes	No	SR / LG	1.77	0.49	0.49	0.49	0.49	1.96	1.85	2.10	2.16	2.23	2.30	2.37	2.30	5.1%	3	3
4	4	New Jersey	Yes	No	NJR	0.80	0.24	0.24	0.24	0.255	0.98	0.92	1.02	1.03	1.04	1.05	1.06	1.05	4.4%	4	4
5	5	NiSource	Yes	No	NI	0.94	0.155	0.155	0.165	0.165	0.64	0.83	0.68	0.72	0.76	0.80	0.84	0.80	-3.3%	5	5
6	6	Northwest Natural	Yes	Yes	NWN	1.84	0.4675	0.4675	0.4675	0.47	1.87	1.86	1.88	1.94	1.99	2.05	2.11	2.05	2.0%	6	6
7	7	Piedmont	No	No	PNY	1.17	0.33	0.34	0.34	0.34	1.35	1.31	1.39	1.43	1.47	1.51	1.55	1.51	3.5%	7	7
8	8	South Jersey	Yes	No	SJI	0.96	0.00	0.264	0.264	0.536	1.06	1.01	1.10	1.16	1.23	1.30	1.37	1.30	6.4%	8	8
9	9	Southwest Gas	Yes	Yes	SWX	1.43	0.405	0.45	0.45	0.45	1.76	1.59	1.90	2.05	2.22	2.40	2.58	2.40	10.9%	9	9
10	11	WGL	Yes	No	WGL	1.74	0.463	0.488	0.488	0.488	1.93	1.83	1.93	1.97	2.01	2.05	2.09	2.05	3.5%	11	10
11	12	American States	No	Sensitivity	AWR	0.82	0.224	0.224	0.224	0.232	0.90	0.87	0.96	1.05	1.14	1.25	1.36	1.25	9.1%	12	11
12	13	American Water	No	Sensitivity	AWK	1.13	0.34	0.375	0.375	0.375	1.47	1.34	1.61	1.75	1.89	2.05	2.21	2.05	11.2%	13	12
13	15	CA Water	No	Sensitivity	CWT	0.65	0.1725	0.1725	0.1725	0.1725	0.69	0.67	0.71	0.79	0.89	0.99	1.09	0.99	7.5%	15	13
14	18	Middlesex Water	No	Sensitivity	MSEX	0.76	0.19875	0.19875	0.19875	0.2025	0.80	0.78	0.84	0.86	0.89	0.91	0.93	0.91	3.2%	18	14
15	20	York Water	No	Sensitivity	YORW	0.58	0.1555	0.1555	0.1555	0.161	0.63	0.60	0.66	0.72	0.78	0.85	0.92	0.85	7.4%	20	15
		TOTAL	* 8	2														Staff Gas Screen	6.5%	Mean	
		w Sensitivities	8	8														Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	4.5%		
																		Staff Peer Gas Screen w ATO	6.6%		
																		Staff Peer Gas Screen w ATO and Water Utiliiies	7.3%		

AVA - Gas Peer EPS

'e in Blue

	1	2	3	4	5	33	34	35	36	37	38	39		
	#	Abbreviated Utility	UG 288 AVA	UG 288 AVA	Ticker	2015-17 Average	2018 Yr	2019 Yr	2020 Yr	2021 Yr	VL Avg 2019 - 21 / Yr	EPS Growth 2019-21 vs. 2013-15	#	
1	1	AGL	No	No	GAS	3.41	3.92	4.27	4.65	5.03	4.65	5.2%	1	1
2	2	Atmos	Yes	Sensitivity	ATO	3.27	3.75	3.97	4.20	4.43	4.20	6.5%	2	2
3	3	Laclede (Spire)	Yes	No	SR / LG	3.19	3.72	3.95	4.20	4.45	4.20	7.3%	3	3
4	4	New Jersey	Yes	No	NJR	1.70	1.80	1.85	1.90	1.95	1.90	1.4%	4	4
5	5	NiSource	Yes	No	NI	1.17	1.23	1.31	1.40	1.49	1.40	1.3%	5	5
6	6	Northwest Natural	Yes	Yes	NWN	2.21	2.59	2.86	3.15	3.44	3.15	6.8%	6	6
7	7	Piedmont	No	No	PNY	1.90	1.98	1.97	1.95	1.93	1.95	1.5%	7	7
8	8	South Jersey	Yes	No	SJI	1.49	1.59	1.69	1.80	1.91	1.80	2.9%	8	8
9	9	Southwest Gas	Yes	Yes	SWX	3.24	3.81	4.14	4.50	4.86	4.50	6.9%	9	9
10	11	WGL	Yes	No	WGL	3.13	3.37	3.33	3.30	3.27	3.30	3.3%	11	10
11	12	American States	No	Sensitivity	AWR	1.66	1.90	2.07	2.25	2.43	2.25	5.9%	12	11
12	13	American Water	No	Sensitivity	AWK	2.75	3.27	3.50	3.75	4.00	3.75	8.0%	13	12
13	15	CA Water	No	Sensitivity	CWT	1.13	1.43	1.51	1.60	1.69	1.60	7.3%	15	13
14	18	Middlesex Water	No	Sensitivity	MSEX	1.33	1.47	1.48	1.50	1.52	1.50	4.9%	18	14
15	20	York Water	No	Sensitivity	YORW	0.96	1.11	1.18	1.25	1.32	1.25	6.2%	20	15
		TOTAL	8	2							Staff Gas Screen	6.9%	Mean	
		w Sensitivities	8	8							Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	4.6%		
											Staff Peer Gas Screen w ATO	6.8%		
											Staff Peer Gas Screen w ATO and Water Utiliiies	6.6%		

AVA GRC
UG 325 Staff Hamada Adjustments

	1 #	2 Abbreviated Utility	3 UG 288 Staff	4 UG 305 Staff	5 Ticker	6 Yahoo Finance $ Stock Closing Price 1st Trading Day of Month Oct. 10/3/2016	7 Nov. 11/1/2016	8 Dec. 12/1/2016	9 3-Day Avg $ Stock Price	10 Div Yield at Recent Price	11 VL 2016 Return on Common Equity	12 VL 2016 Cap Structure % Long Term Debt	13 % Common Equity	14 VL Beta	15 2016 VL Tax Rate	16 Hamada Unlevered Beta	17 Relevered Beta Equity at 49.0%	18 Equity Risk Premium	19 Hamada Adjustment Equity At 49.0%	#	
1	1	AGL	No	No	GAS	N/A	N/A	N/A	N/A	N/A	9.5%	48.0	52.0	0.60	33.0%	0.37	0.63	4.20%	0.12%	1	1
2	2	Atmos	Yes	Sensitivity	ATO	73.73	72.55	74.15	73.48	2.2%	10.0%	39.0	61.0	0.70	36.4%	0.50	0.83	4.20%	0.53%	2	2
3	3	Laclede (Spire)	Yes	No	SR / LG	63.20	61.70	63.00	62.63	2.9%	8.2%	50.9	49.1	0.70	32.5%	0.41	0.70	4.20%	0.00%	3	3
4	4	New Jersey	Yes	No	NJR	32.43	32.95	33.95	33.11	2.8%	11.6%	43.0	57.0	0.80	32.0%	0.53	0.90	4.20%	0.43%	4	4
5	5	NiSource	Yes	No	NI	23.62	22.34	21.71	22.56	3.7%	9.0%	63.5	36.5	NMF	33.5%	NMF	NMF	4.20%	NMF	5	5
6	6	Northwest Natural	Yes	Yes	NWN	59.29	57.30	56.00	57.53	3.2%	8.0%	43.0	57.0	0.65	35.0%	0.44	0.73	4.20%	0.34%	6	6
7	7	Piedmont	No	No	PNY	N/A	N/A	N/A	N/A	N/A	10.0%	49.5	50.5	0.70	25.0%	0.40	0.72	4.20%	0.08%	7	7
8	8	South Jersey	Yes	No	SJI	29.27	28.76	32.70	30.24	3.4%	8.0%	41.5	58.5	0.80	25.0%	0.52	0.93	4.20%	0.55%	8	8
9	9	Southwest Gas	Yes	Yes	SWX	68.53	71.25	73.33	71.04	2.2%	9.5%	49.0	51.0	0.75	35.0%	0.46	0.77	4.20%	0.10%	9	9
10	11	WGL	Yes	No	WGL	62.27	60.87	73.15	65.43	2.8%	11.5%	41.5	58.5	0.75	39.0%	0.52	0.86	4.20%	0.44%	10	10
11	12	American States	No	Sensitivity	AWR	39.69	39.32	42.69	40.57	2.2%	12.0%	41.5	58.5	0.70	33.0%	0.47	0.81	4.20%	0.44%	12	11
12	13	American Water	No	Sensitivity	AWK	74.06	73.05	71.72	72.94	1.8%	9.5%	54.9	45.1	0.65	39.0%	0.37	0.61	4.20%	-0.17%	13	12
13	15	CA Water	No	Sensitivity	CWT	31.76	31.00	34.35	32.37	2.1%	7.5%	46.0	54.0	0.75	32.0%	0.47	0.81	4.20%	0.26%	15	13
14	18	Middlesex Water	No	Sensitivity	MSEX	34.80	35.00	41.29	37.03	2.1%	10.5%	38.5	61.5	0.70	35.0%	0.50	0.83	4.20%	0.56%	18	14
15	20	York Water	No	Sensitivity	YORW	29.04	30.45	36.00	31.83	1.9%	11.0%	43.5	56.5	0.70	28.5%	0.45	0.79	4.20%	0.37%	20	15
		TOTAL	8	2														Staff Gas Screen	0.22%	Mean	
		w Sensitivities	8	8																	

Dividend Yield = (Annual Dividends per Share) / Price per Share

When Value Line (VL) Beta ratio exceeds 99.9 or earnings are negative, Vl shows "NMF" for 'no meaningful figure'.

Staff Gas Screen	0.22%
Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK, NI]	0.34%
Staff Peer Gas Screen w ATO	0.33%
Staff Peer Gas Screen w ATO and Water Utiliiies	0.30%

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 203

Staff Three Stage DCF Modeling

Exhibits in Support
of Opening Testimony

March 1, 2017

UG 325 Staff ROE Summary

OMB White House Nominal GDP Growth Yr/Yr 4.3% Unchanged from UG 287 (Last CNG GRC)
CBO Nominal GDP Growth Yr/Yr 4.1% Down from 4.3%
TIPS Implied Inflation 2.04% Up from 1.70%
Historical Real GDP 2.80% Down from 2.81%
BEA Nominal Hist. Avg 5.46% Up from 5.34%
CBO: 4.2% Nominal GDP Down from 4.55%
EIA 2.2% Down from 2.4% Real GDP

Stage 3 – Long-Term Annual Dividend and EPS Growth Rates

Component	Real Rate	TIPS Inflation Forecast	Nominal Rate	Weight	Weighted Rate
EIA	2.20%	2.04%	4.28%	12.50%	0.54%
OMB - 10 Year GDP Projection			4.10%	12.50%	0.51%
White House 2017 Budget			4.30%	12.50%	0.54%
CBO Projections			4.20%	12.50%	0.53%
Historical 1980 Q1 – 2016 Q3	2.80%	2.04%	4.90%	50.0%	2.45%
Composite				100%	4.56%
BEA Avg. Nominal Historical 1980 Q1 – 2016 Q1			5.46%	100.0%	5.46%
Indiana U – Kelley 2018-35 Ctr Econometric Research	2.90%	2.04%	5.00%	100.0%	5.00%
Blue Chip* – Top 10% 2019 Values	2.90%	2.04%	5.00%	100.0%	5.00%
Blue Chip – Average	2.40%	2.04%	4.49%	100.0%	4.49%
Blue Chip – Bottom 10%	1.90%	2.04%	3.98%	100.0%	3.98%

Stage 3 – Other Long-Term Annual Dividend & EPS Growth Rates Considered

Component	Real Rate	TIPS Inflation Forecast	Nominal Rate	Weight	Weighted Rate
Blue Chip* – Top 10% 2021-2025 Values	2.70%	2.04%	4.80%	100.0%	4.80%
		2.04%			
Blue Chip – Average	2.30%	2.04%	4.39%	100.0%	4.39%
Blue Chip – Bottom 10%	2.00%	2.04%	4.08%	100.0%	4.08%
Blue Chip* – Top 10% 2021-2025 Values	Nominal		5.00%	100.0%	5.00%
Blue Chip – Average			4.40%	100.0%	4.40%
Blue Chip – Bottom 10%			3.90%	100.0%	3.90%

Change Drivers:

A. Historical GDP rose 6 bps after inclusion of creative works, etc. back to 1929.
B. Global expectation of inflation dropped, except in certain emerging market nations.
C. No delayed productivity surge followed the 2008 downturn.
D. US birth rates declined sharply from pre-2008, while imigration reform remains controversial.
E. Global stresses and low inflation delay Fed raising of interest rates.
F. Global investor flight to safety/quality continues.

Effect: Narrowing expectations and lower highest expected GDP growth

Model X: 3 Stage DCF - Dividend Growth with Terminal Value as Perpetuity

	X	Composite Growth	4.56%	Top-10 LT Blue Chip Growth	5.00%	Nominal Historical Growth	5.46%
1	Staff Gas Screen	7.73%		8.07%		8.44%	
2	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	7.52%		7.87%		8.24%	
3	Staff Peer Gas Screen w ATO	7.58%		7.93%		8.30%	
4	Staff Peer Gas Screen w ATO and Water Utiliiies	7.40%		7.75%		8.13%	

Hamada Adjustments to Right →

Model X: 3 Stage DCF - Dividend Growth with Terminal Value as Perpetuity (Hamada Adjusted)

X	Composite Growth	4.56%	Top-10 LT Blue Chip Growth	5.00%	Nominal Historical Growth	5.46%
Staff Gas Screen	7.95%		8.29%		8.66%	
Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	7.86%		8.21%		8.58%	
Staff Peer Gas Screen w ATO	7.91%		8.26%		8.63%	
Staff Peer Gas Screen w ATO and Water Utiliiies	7.70%		8.05%		8.43%	

Model Y: 3 Stage DCF - Dividend Growth with Terminal Value as Sales based upon EPS Growth and Terminal Stock Sale

	Y	Composite Growth	4.56%	Top-10 LT Blue Chip Growth	5.00%	Nominal Historical Growth	5.46%
1	Staff Gas Screen	8.41%		8.69%		8.99%	
2	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	7.66%		7.94%		8.23%	
3	Staff Peer Gas Screen w ATO	8.11%		8.40%		8.69%	
4	Staff Peer Gas Screen w ATO and Water Utiliiies	7.82%		8.10%		8.39%	

Hamada Adjustments to Right →

Model Y: 3 Stage DCF - Dividend & EPS Growth with Terminal Value as Stock Sale (Hamada Adjusted)

Y	Composite Growth	4.56%	Top-10 LT Blue Chip Growth	5.00%	Nominal Historical Growth	5.46%
Staff Gas Screen	8.63%		8.91%		9.21%	
Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	8.00%		8.28%		8.57%	
Staff Peer Gas Screen w ATO	8.44%		8.73%		9.02%	
Staff Peer Gas Screen w ATO and Water Utiliiies	8.12%		8.40%		8.69%	

Common Stock Flotation Costs Adjustment Shifts Range of Reasonable ROE's Upward by : 12.5 bps

Range of Modeled Results 7.5% to 9.3% ROE

Best Fit Range of Reasonable ROEs 8.8% to 9.3% ROE

(Best fit is Staff's Hamada adjusted screened gas utilities that have most similar characteristics to AVA regulated gas operations in Oregon)

Midpoint of Best Fit Modeling Results 9.1% ROE

(Staff's informed judgement excludes some of the lower range of modeling results depicted above)

Staff Point ROE Recommendation: 9.1% ROE

4.56% Annual Growth Rate - Stage 3

Dividend Growth with Terminal Value as Perpetuity

E.O.Y. Cash Flows Staff UG 325 Model X

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
						Terminal Value as			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	#	Abbreviated Utility	AVA	Staff	IRR	% of NPV_{DIV}	NPV @ IRR	Recent Price*	Initial Stage					Transition Stage				
1	1	AGL	No	No	N/A	N/A	N/A	N/A	2.12	2.16	2.24	2.32	2.40	2.48	2.59	2.71	2.83	2.95
2	2	Atmos	Yes	Sensitivity	7.2%	49.2%	0.00	(73.48)	1.71	1.80	1.91	2.03	2.15	2.27	2.44	2.61	2.79	2.98
3	3	Laclede (Spire)	Yes	No	7.7%	42.8%	0.00	(62.63)	1.96	2.10	2.16	2.23	2.30	2.37	2.49	2.62	2.76	2.90
4	4	New Jersey	Yes	No	7.1%	48.6%	0.00	(33.11)	0.98	1.02	1.03	1.04	1.05	1.06	1.11	1.16	1.21	1.26
5	5	NiSource	Yes	No	6.8%	50.9%	(0.00)	(22.56)	0.64	0.68	0.72	0.76	0.80	0.84	0.81	0.78	0.76	0.73
6	6	Northwest Natural	Yes	Yes	7.3%	46.2%	0.00	(57.53)	1.87	1.88	1.94	1.99	2.05	2.11	2.15	2.20	2.24	2.29
7	7	Piedmont	No	No	N/A	N/A	N/A	N/A	1.35	1.39	1.43	1.47	1.51	1.55	1.61	1.66	1.72	1.78
8	8	South Jersey	Yes	No	8.4%	36.1%	0.00	(30.24)	1.06	1.10	1.16	1.23	1.30	1.37	1.46	1.55	1.65	1.76
9	9	Southwest Gas	Yes	Yes	8.0%	41.2%	0.00	(71.04)	1.76	1.90	2.05	2.22	2.40	2.58	2.87	3.18	3.52	3.88
10	11	WGL	Yes	No	7.1%	49.5%	0.00	(65.43)	1.93	1.93	1.97	2.01	2.05	2.09	2.17	2.25	2.33	2.41
11	12	American States	No	Sensitivity	7.6%	45.6%	0.00	(40.57)	0.90	0.96	1.05	1.14	1.25	1.36	1.48	1.62	1.76	1.91
12	13	American Water	No	Sensitivity	7.5%	47.3%	0.00	(72.94)	1.47	1.61	1.75	1.89	2.05	2.21	2.46	2.73	3.03	3.34
13	15	CA Water	No	Sensitivity	7.5%	46.8%	0.00	(32.37)	0.69	0.71	0.79	0.89	0.99	1.09	1.18	1.27	1.36	1.46
14	18	Middlesex Water	No	Sensitivity	6.5%	57.9%	0.00	(37.03)	0.80	0.84	0.86	0.89	0.91	0.93	0.97	1.00	1.03	1.06
15	20	York Water	No	Sensitivity	7.1%	51.7%	(0.00)	(31.83)	0.63	0.66	0.72	0.78	0.85	0.92	0.99	1.06	1.14	1.22
		TOTALS	8	2	Mean													
		w Sensitivities	8	8	7.65%	43.71%	0.20%	Staff Gas Screen										
					7.45%	45.56%	0.00	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]										
					7.51%	45.53%	0.00	Staff Peer Gas Screen w ATO										
					7.33%	48.25%	0.00	Staff Peer Gas Screen w ATO and Water Utiliiies										

#	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2044				
	Final Stage																			Terminal Value	2045 Div	2045 Perpetuity	#	
1	3.09	3.23	3.37	3.53	3.69	3.86	4.03	4.22	4.41	4.61	4.82	5.04	5.27	5.51	5.76	6.02	6.30	6.59	6.89	N/A	7.20	N/A	1	1
2	3.11	3.26	3.41	3.56	3.72	3.89	4.07	4.26	4.45	4.65	4.87	5.09	5.32	5.56	5.82	6.08	6.36	6.65	6.95	292.71	7.27	285.45	2	2
3	3.03	3.17	3.31	3.46	3.62	3.79	3.96	4.14	4.33	4.53	4.73	4.95	5.17	5.41	5.66	5.91	6.18	6.47	6.76	245.61	7.07	238.54	3	3
4	1.32	1.38	1.45	1.51	1.58	1.65	1.73	1.81	1.89	1.97	2.06	2.16	2.26	2.36	2.47	2.58	2.70	2.82	2.95	127.68	3.08	124.60	4	4
5	0.76	0.80	0.83	0.87	0.91	0.95	1.00	1.04	1.09	1.14	1.19	1.24	1.30	1.36	1.42	1.49	1.56	1.63	1.70	83.45	1.78	81.67	5	5
6	2.39	2.50	2.62	2.74	2.86	2.99	3.13	3.27	3.42	3.57	3.74	3.91	4.09	4.27	4.47	4.67	4.88	5.11	5.34	219.43	5.58	213.85	6	6
7	1.87	1.95	2.04	2.13	2.23	2.33	2.44	2.55	2.66	2.79	2.91	3.05	3.19	3.33	3.48	3.64	3.81	3.98	4.16	N/A	4.35	N/A	7	7
8	1.84	1.92	2.01	2.10	2.20	2.30	2.40	2.51	2.63	2.75	2.87	3.00	3.14	3.28	3.43	3.59	3.75	3.92	4.10	121.86	4.29	117.57	8	8
9	4.06	4.24	4.43	4.64	4.85	5.07	5.30	5.54	5.79	6.06	6.33	6.62	6.93	7.24	7.57	7.92	8.28	8.66	9.05	295.95	9.46	286.49	9	9
11	2.52	2.64	2.76	2.88	3.01	3.15	3.29	3.44	3.60	3.77	3.94	4.12	4.30	4.50	4.71	4.92	5.15	5.38	5.63	251.39	5.88	245.51	11	10
12	2.00	2.09	2.19	2.29	2.39	2.50	2.61	2.73	2.86	2.99	3.12	3.27	3.42	3.57	3.73	3.90	4.08	4.27	4.46	166.01	4.67	161.34	12	11
13	3.50	3.66	3.82	4.00	4.18	4.37	4.57	4.78	4.99	5.22	5.46	5.71	5.97	6.24	6.53	6.82	7.14	7.46	7.80	300.54	8.16	292.38	13	12
15	1.53	1.60	1.67	1.75	1.83	1.91	2.00	2.09	2.19	2.28	2.39	2.50	2.61	2.73	2.86	2.99	3.12	3.26	3.41	131.74	3.57	128.18	15	13
18	1.11	1.16	1.22	1.27	1.33	1.39	1.45	1.52	1.59	1.66	1.74	1.82	1.90	1.99	2.08	2.17	2.27	2.37	2.48	142.13	2.59	139.54	18	14
20	1.28	1.34	1.40	1.46	1.53	1.60	1.67	1.75	1.83	1.91	2.00	2.09	2.18	2.28	2.39	2.50	2.61	2.73	2.85	127.57	2.98	124.58	20	15

B.O.Y. Cash Flows Staff UG 325 Model X

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
						Terminal Value as			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	#	Abbreviated Utility	Control	Staff	IRR	% of NPV_{DIV}	NPV @ IRR	Recent Price*	Initial Stage					Transition Stage				
1	1	AGL	No	No	N/A	N/A	N/A	N/A	2.16	2.24	2.32	2.40	2.48	2.59	2.71	2.83	2.95	3.09
2	2	Atmos	Yes	Sensitivity	7.4%	47.4%	0.00	(73.48)	1.80	1.91	2.03	2.15	2.27	2.44	2.61	2.79	2.98	3.11
3	3	Laclede (Spire)	Yes	No	7.8%	41.3%	0.00	(62.63)	2.10	2.16	2.23	2.30	2.37	2.49	2.62	2.76	2.90	3.03
4	4	New Jersey	Yes	No	7.3%	46.4%	0.00	(33.11)	1.02	1.03	1.04	1.05	1.06	1.11	1.16	1.21	1.26	1.32
5	5	NiSource	Yes	No	6.9%	49.7%	(0.00)	(22.56)	0.68	0.72	0.76	0.80	0.84	0.81	0.78	0.76	0.73	0.76
6	6	Northwest Natural	Yes	Yes	7.4%	45.0%	0.00	(57.53)	1.88	1.94	1.99	2.05	2.11	2.15	2.20	2.24	2.29	2.39
7	7	Piedmont	No	No	N/A	N/A	N/A	N/A	1.39	1.43	1.47	1.51	1.55	1.61	1.66	1.72	1.78	1.87
8	8	South Jersey	Yes	No	8.6%	34.3%	0.00	(30.24)	1.10	1.16	1.23	1.30	1.37	1.46	1.55	1.65	1.76	1.84
9	9	Southwest Gas	Yes	Yes	8.2%	39.0%	0.00	(71.04)	1.90	2.05	2.22	2.40	2.58	2.87	3.18	3.52	3.88	4.06
10	11	WGL	Yes	No	7.2%	48.3%	0.00	(65.43)	1.93	1.97	2.01	2.05	2.09	2.17	2.25	2.33	2.41	2.52
11	12	American States	No	Sensitivity	7.7%	43.5%	(0.00)	(40.57)	0.96	1.05	1.14	1.25	1.36	1.48	1.62	1.76	1.91	2.00
12	13	American Water	No	Sensitivity	7.6%	45.1%	0.00	(72.94)	1.61	1.75	1.89	2.05	2.21	2.46	2.73	3.03	3.34	3.50
13	15	CA Water	No	Sensitivity	7.6%	44.7%	0.00	(32.37)	0.71	0.79	0.89	0.99	1.09	1.18	1.27	1.36	1.46	1.53
14	18	Middlesex Water	No	Sensitivity	6.6%	56.7%	0.00	(37.03)	0.84	0.86	0.89	0.91	0.93	0.97	1.00	1.03	1.06	1.11
15	20	York Water	No	Sensitivity	7.2%	49.8%	0.00	(31.83)	0.66	0.72	0.78	0.85	0.92	0.99	1.06	1.14	1.22	1.28
		TOTALS	8	2	Mean													
		w Sensitivities	8	8	7.80%	41.99%	0.00%	Staff Gas Screen										
					7.58%	43.92%	(0.00)	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]										
					7.65%	43.78%	0.00	Staff Peer Gas Screen w ATO										
					7.46%	46.39%	0.00	Staff Peer Gas Screen w ATO and Water Utiliiies										

#	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2044				
	Final Stage																			Terminal Value	2045 Div	2045 Perpetuity	#	
1	3.23	3.37	3.53	3.69	3.86	4.03	4.22	4.41	4.61	4.82	5.04	5.27	5.51	5.76	6.02	6.30	6.59	6.89	7.20	N/A	7.53	N/A	1	1
2	3.26	3.41	3.56	3.72	3.89	4.07	4.26	4.45	4.65	4.87	5.09	5.32	5.56	5.82	6.08	6.36	6.65	6.95	7.27	292.34	7.60	284.74	2	2
3	3.17	3.31	3.46	3.62	3.79	3.96	4.14	4.33	4.53	4.73	4.95	5.17	5.41	5.66	5.91	6.18	6.47	6.76	7.07	246.00	7.39	238.61	3	3
4	1.38	1.45	1.51	1.58	1.65	1.73	1.81	1.89	1.97	2.06	2.16	2.26	2.36	2.47	2.58	2.70	2.82	2.95	3.08	128.20	3.22	124.98	4	4
5	0.80	0.83	0.87	0.91	0.95	1.00	1.04	1.09	1.14	1.19	1.24	1.30	1.36	1.42	1.49	1.56	1.63	1.70	1.78	83.84	1.86	81.98	5	5
6	2.50	2.62	2.74	2.86	2.99	3.13	3.27	3.42	3.57	3.74	3.91	4.09	4.27	4.47	4.67	4.88	5.11	5.34	5.58	220.59	5.84	214.75	6	6
7	1.95	2.04	2.13	2.23	2.33	2.44	2.55	2.66	2.79	2.91	3.05	3.19	3.33	3.48	3.64	3.81	3.98	4.16	4.35	N/A	4.55	N/A	7	7
8	1.92	2.01	2.10	2.20	2.30	2.40	2.51	2.63	2.75	2.87	3.00	3.14	3.28	3.43	3.59	3.75	3.92	4.10	4.29	121.81	4.48	117.33	8	8
9	4.24	4.43	4.64	4.85	5.07	5.30	5.54	5.79	6.06	6.33	6.62	6.93	7.24	7.57	7.92	8.28	8.66	9.05	9.46	294.36	9.89	284.47	9	9
11	2.64	2.76	2.88	3.01	3.15	3.29	3.44	3.60	3.77	3.94	4.12	4.30	4.50	4.71	4.92	5.15	5.38	5.63	5.88	252.58	6.15	246.43	11	10
12	2.09	2.19	2.29	2.39	2.50	2.61	2.73	2.86	2.99	3.12	3.27	3.42	3.57	3.73	3.90	4.08	4.27	4.46	4.67	165.26	4.88	160.38	12	11
13	3.66	3.82	4.00	4.18	4.37	4.57	4.78	4.99	5.22	5.46	5.71	5.97	6.24	6.53	6.82	7.14	7.46	7.80	8.16	298.99	8.53	290.46	13	12
15	1.60	1.67	1.75	1.83	1.91	2.00	2.09	2.19	2.28	2.39	2.50	2.61	2.73	2.86	2.99	3.12	3.26	3.41	3.57	131.15	3.73	127.42	15	13
18	1.16	1.22	1.27	1.33	1.39	1.45	1.52	1.59	1.66	1.74	1.82	1.90	1.99	2.08	2.17	2.27	2.37	2.48	2.59	142.50	2.71	139.79	18	14
20	1.34	1.40	1.46	1.53	1.60	1.67	1.75	1.83	1.91	2.00	2.09	2.18	2.28	2.39	2.50	2.61	2.73	2.85	2.98	127.22	3.12	124.10	20	15

Average B.O.Y. & E.O.Y. Cash Flows Model X

	1	2	3	4	5	6	7	8	9
						Terminal Value as	Average 2016 - 2020 Dividend Growth Rates		
	#	Abbreviated Utility	Control	Staff	Average IRR	% of NPV_{DIV}	EOY	BOY	Average
1	1	AGL	No	No	N/A	N/A	3.1%	3.5%	3.3%
2	2	Atmos	Yes	Sensitivity	7.3%	48.3%	5.9%	6.0%	6.0%
3	3	Laclede (Spire)	Yes	No	7.7%	42.0%	4.1%	3.1%	3.6%
4	4	New Jersey	Yes	No	7.2%	47.5%	1.9%	1.0%	1.4%
5	5	NiSource	Yes	No	6.9%	50.3%	5.7%	5.5%	5.6%
6	6	Northwest Natural	Yes	Yes	7.3%	45.6%	2.3%	2.9%	2.6%
7	7	Piedmont	No	No	N/A	N/A	2.8%	2.8%	2.8%
8	8	South Jersey	Yes	No	8.5%	35.2%	5.1%	5.6%	5.4%
9	9	Southwest Gas	Yes	Yes	8.1%	40.1%	8.1%	7.9%	8.0%
10	11	WGL	Yes	No	7.1%	48.9%	1.6%	2.0%	1.8%
11	12	American States	No	Sensitivity	7.7%	44.6%	8.4%	9.0%	8.7%
12	13	American Water	No	Sensitivity	7.6%	46.2%	8.8%	8.2%	8.5%
13	15	CA Water	No	Sensitivity	7.5%	45.8%	9.4%	11.4%	10.4%
14	18	Middlesex Water	No	Sensitivity	6.5%	57.3%	3.3%	2.7%	3.0%
15	20	York Water	No	Sensitivity	7.1%	50.7%	7.9%	8.6%	8.3%
		TOTALS	8	2	Mean				
		w Sensitivities	8	8	7.73%	42.85%	5.32%	Staff Gas Screen	
					7.52%	44.74%	4.30%	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	
					7.58%	44.66%	5.53%	Staff Peer Gas Screen w ATO	
					7.40%	47.32%	6.94%	Staff Peer Gas Screen w ATO and Water Utiliiies	

5.46%	Annual Growth Rate - Stage 3

EPS Growth to Determine a Sale Terminal V **EPS Growth**

E.O.Y. Cash Flows

Staff UG 325 Model Y

	1	2	3	4	5	6	7	8
	#	Abbreviated Utility	AVA	Staff	IRR	Terminal Value as % of NPV_{DIV}	NPV @ IRR	Recent Price*
1	1	AGL	No	No	N/A	N/A	N/A	N/A
				e				
2	2	Atmos	Yes	Sensitivity	8.0%	51.8%	0.00	(73.48)
				e				
3	3	Laclede (Spire)	Yes	No	8.6%	46.7%	0.00	(62.63)
				e				
4	4	New Jersey	Yes	No	7.4%	47.7%	0.00	(33.11)
				e				
5	5	NiSource	Yes	No	7.5%	52.8%	0.00	(22.56)
				e				
6	6	Northwest Natural	Yes	Yes	8.7%	52.6%	0.00	(57.53)
				e				
7	7	Piedmont	No	No	N/A	N/A	N/A	N/A
				e				
8	8	South Jersey	Yes	No	8.8%	36.9%	0.00	(30.24)
				e				
9	9	Southwest Gas	Yes	Yes	9.1%	46.0%	(0.00)	(71.04)
				e				
10	11	WGL	Yes	No	7.0%	46.8%	0.00	(65.43)
				e				
11	12	American States	No	Sensitivity	8.6%	49.5%	0.00	(40.57)
				e				
12	13	American Water	No	Sensitivity	8.5%	51.5%	0.00	(72.94)
				e				
13	15	CA Water	No	Sensitivity	8.9%	53.6%	0.00	(32.37)
				e				
14	18	Middlesex Water	No	Sensitivity	6.8%	57.4%	0.00	(37.03)
				e				
15	20	York Water	No	Sensitivity	7.9%	54.7%	0.00	(31.83)
				e				
		TOTALS	8	2		Mean		
		w Sensitivities	8	8	8.91%	49.30%	0.00%	Staff Gas Screen
					8.16%	47.66%	0.00%	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]
					8.62%	50.14%	0.00%	Staff Peer Gas Screen w ATO
					8.32%	52.14%	0.00%	Staff Peer Gas Screen w ATO and Water Utiliies

	9	10	11	12	13	14	15	16	17	18
#	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Initial Stage					Transition Stage				
1	2.12	2.16	2.24	2.32	2.40	2.48	2.60	2.71	2.83	2.96
	3.20	3.60	3.92	4.27	4.65	5.03	5.30	5.58	5.88	6.18
2	1.71	1.80	1.91	2.03	2.15	2.27	2.44	2.61	2.79	2.99
	3.40	3.55	3.75	3.97	4.20	4.43	4.73	5.04	5.38	5.72
3	1.96	2.10	2.16	2.23	2.30	2.37	2.49	2.63	2.76	2.90
	3.32	3.50	3.72	3.95	4.20	4.45	4.78	5.14	5.52	5.91
4	0.98	1.02	1.03	1.04	1.05	1.06	1.11	1.16	1.21	1.27
	1.60	1.75	1.80	1.85	1.90	1.95	1.98	2.01	2.04	2.07
5	0.64	0.68	0.72	0.76	0.80	0.84	0.81	0.78	0.76	0.73
	1.05	1.15	1.23	1.31	1.40	1.49	1.51	1.53	1.55	1.57
6	1.87	1.88	1.94	1.99	2.05	2.11	2.15	2.20	2.24	2.29
	2.15	2.35	2.59	2.86	3.15	3.44	3.69	3.94	4.21	4.50
7	1.35	1.39	1.43	1.47	1.51	1.55	1.61	1.67	1.72	1.79
	1.90	2.00	1.98	1.97	1.95	1.93	1.96	1.99	2.02	2.05
8	1.06	1.10	1.16	1.23	1.30	1.37	1.46	1.56	1.66	1.76
	1.45	1.50	1.59	1.69	1.80	1.91	1.96	2.02	2.09	2.15
9	1.76	1.90	2.05	2.22	2.40	2.58	2.87	3.18	3.52	3.89
	3.20	3.50	3.81	4.14	4.50	4.86	5.21	5.58	5.97	6.38
11	1.93	1.93	1.97	2.01	2.05	2.09	2.17	2.25	2.33	2.41
	3.28	3.40	3.37	3.33	3.30	3.27	3.38	3.49	3.61	3.73
12	0.90	0.96	1.05	1.14	1.25	1.36	1.48	1.62	1.76	1.92
	1.65	1.75	1.90	2.07	2.25	2.43	2.58	2.74	2.90	3.07
13	1.47	1.61	1.75	1.89	2.05	2.21	2.46	2.74	3.03	3.36
	2.85	3.05	3.27	3.50	3.75	4.00	4.33	4.68	5.05	5.45
15	0.69	0.71	0.79	0.89	0.99	1.09	1.18	1.27	1.37	1.47
	1.00	1.35	1.43	1.51	1.60	1.69	1.82	1.95	2.09	2.24
18	0.80	0.84	0.86	0.89	0.91	0.93	0.97	1.00	1.03	1.06
	1.40	1.45	1.47	1.48	1.50	1.52	1.59	1.67	1.76	1.84
20	0.63	0.66	0.72	0.78	0.85	0.92	0.99	1.06	1.14	1.23
	0.97	1.05	1.11	1.18	1.25	1.32	1.41	1.50	1.59	1.69

	19	20	21	22	23	24	25	26	27	28
#	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	Final Stage									
1	3.12	3.29	3.47	3.66	3.86	4.07	4.29	4.52	4.77	5.03
	6.52	6.87	7.25	7.64	8.06	8.50	8.97	9.46	9.97	10.52
2	3.15	3.32	3.50	3.69	3.89	4.11	4.33	4.57	4.82	5.08
	6.04	6.37	6.71	7.08	7.47	7.87	8.30	8.76	9.24	9.74
3	3.06	3.23	3.40	3.59	3.79	3.99	4.21	4.44	4.68	4.94
	6.24	6.58	6.94	7.31	7.71	8.14	8.58	9.05	9.54	10.06
4	1.34	1.41	1.48	1.57	1.65	1.74	1.84	1.94	2.04	2.15
	2.18	2.30	2.43	2.56	2.70	2.85	3.00	3.17	3.34	3.52
5	0.77	0.81	0.85	0.90	0.95	1.00	1.06	1.11	1.17	1.24
	1.66	1.75	1.84	1.94	2.05	2.16	2.28	2.40	2.53	2.67
6	2.41	2.55	2.69	2.83	2.99	3.15	3.32	3.50	3.69	3.90
	4.74	5.00	5.27	5.56	5.87	6.19	6.52	6.88	7.26	7.65
7	1.88	1.99	2.09	2.21	2.33	2.46	2.59	2.73	2.88	3.04
	2.17	2.29	2.41	2.54	2.68	2.83	2.98	3.14	3.32	3.50
8	1.86	1.96	2.07	2.18	2.30	2.42	2.56	2.69	2.84	3.00
	2.27	2.39	2.52	2.66	2.80	2.96	3.12	3.29	3.47	3.66
9	4.10	4.33	4.56	4.81	5.08	5.35	5.65	5.95	6.28	6.62
	6.72	7.09	7.48	7.89	8.32	8.77	9.25	9.75	10.29	10.85
11	2.55	2.68	2.83	2.99	3.15	3.32	3.50	3.69	3.90	4.11
	3.94	4.15	4.38	4.62	4.87	5.13	5.41	5.71	6.02	6.35
12	2.02	2.13	2.25	2.37	2.50	2.64	2.78	2.93	3.10	3.26
	3.24	3.42	3.60	3.80	4.01	4.23	4.46	4.70	4.96	5.23
13	3.54	3.73	3.94	4.15	4.38	4.62	4.87	5.13	5.41	5.71
	5.75	6.06	6.39	6.74	7.11	7.50	7.91	8.34	8.79	9.27
15	1.55	1.63	1.72	1.81	1.91	2.02	2.13	2.24	2.37	2.50
	2.36	2.49	2.63	2.77	2.92	3.08	3.25	3.43	3.62	3.81
18	1.12	1.18	1.25	1.32	1.39	1.46	1.54	1.63	1.72	1.81
	1.94	2.05	2.16	2.28	2.41	2.54	2.68	2.82	2.98	3.14
20	1.29	1.36	1.44	1.52	1.60	1.69	1.78	1.88	1.98	2.09
	1.78	1.88	1.98	2.09	2.20	2.32	2.45	2.58	2.72	2.87

	29	30	31	32	33	34	35	36	37	38	39	40	41		
#	2036	2037	2038	2039	2040	2041	2042	2043	2044	2044 Terminal Value	2045 Div	2045 Sale	2046	#	
1	5.30	5.59	5.90	6.22	6.56	6.92	7.30	7.70	8.12	N/A	8.56	N/A		1	1
	11.09	11.70	12.34	13.01	13.72	14.47	15.26	16.09	16.97		17.90		18.87		
2	5.36	5.65	5.96	6.28	6.63	6.99	7.37	7.77	8.20	386.39	8.65	377.74		2	2
	10.27	10.83	11.42	12.05	12.71	13.40	14.13	14.90	15.72		16.57		17.48		
3	5.21	5.49	5.79	6.11	6.44	6.79	7.17	7.56	7.97	349.09	8.41	340.68		3	3
	10.61	11.19	11.80	12.45	13.13	13.84	14.60	15.40	16.24		17.12		18.06		
4	2.27	2.40	2.53	2.66	2.81	2.96	3.13	3.30	3.48	134.43	3.67	130.76		4	4
	3.71	3.92	4.13	4.36	4.59	4.84	5.11	5.39	5.68		5.99		6.32		
5	1.31	1.38	1.45	1.53	1.62	1.70	1.80	1.90	2.00	105.15	2.11	103.04		5	5
	2.82	2.97	3.13	3.31	3.49	3.68	3.88	4.09	4.31		4.55		4.80		
6	4.11	4.33	4.57	4.82	5.08	5.36	5.65	5.96	6.29	374.12	6.63	367.49		6	6
	8.07	8.51	8.98	9.47	9.98	10.53	11.10	11.71	12.35		13.02		13.73		
7	3.21	3.38	3.56	3.76	3.96	4.18	4.41	4.65	4.90	N/A	5.17	N/A		7	7
	3.69	3.89	4.10	4.33	4.56	4.81	5.07	5.35	5.64		5.95		6.28		
8	3.16	3.33	3.52	3.71	3.91	4.12	4.35	4.59	4.84	141.95	5.10	136.85		8	8
	3.86	4.07	4.29	4.52	4.77	5.03	5.30	5.59	5.90		6.22		6.56		
9	6.98	7.37	7.77	8.19	8.64	9.11	9.61	10.13	10.69	443.47	11.27	432.20		9	9
	11.44	12.07	12.72	13.42	14.15	14.92	15.74	16.60	17.51		18.46		19.47		
11	4.33	4.57	4.82	5.08	5.36	5.65	5.96	6.29	6.63	234.35	6.99	227.36		11	10
	6.70	7.06	7.45	7.86	8.28	8.74	9.21	9.72	10.25		10.81		11.40		
12	3.44	3.63	3.83	4.04	4.26	4.49	4.74	4.99	5.27	236.17	5.55	230.62		12	11
	5.51	5.81	6.13	6.47	6.82	7.19	7.58	8.00	8.43		8.89		9.38		
13	6.02	6.35	6.70	7.06	7.45	7.85	8.28	8.74	9.21	435.66	9.72	425.94		13	12
	9.78	10.31	10.88	11.47	12.10	12.76	13.45	14.19	14.96		15.78		16.64		
15	2.63	2.78	2.93	3.09	3.25	3.43	3.62	3.82	4.03	225.79	4.25	221.54		15	13
	4.02	4.24	4.47	4.72	4.97	5.25	5.53	5.84	6.15		6.49		6.84		
18	1.91	2.01	2.12	2.24	2.36	2.49	2.63	2.77	2.92	152.02	3.08	148.93		18	14
	3.31	3.49	3.68	3.88	4.09	4.32	4.55	4.80	5.06		5.34		5.63		
20	2.20	2.32	2.45	2.58	2.72	2.87	3.03	3.19	3.37	172.67	3.55	169.12		20	15
	3.03	3.19	3.37	3.55	3.75	3.95	4.17	4.39	4.63		4.89		5.15		

B.O.Y. Cash Flows

Staff UG 325 Model Y EPS Growth

	1	2	3	4	5	6	7	8
	#	Abbreviated Utility	AVA	Staff	IRR	Terminal Value as % of NPV_{DIV}	NPV @ IRR	Recent Price*
1	1	AGL	No	No	N/A	N/A	N/A	N/A
				e				
2	2	Atmos	Yes	Sensitivity	8.2%	49.9%	0.00	(73.48)
				e				
3	3	Laclede (Spire)	Yes	No	8.8%	44.9%	0.00	(62.63)
				e				
4	4	New Jersey	Yes	No	7.5%	46.2%	0.00	(33.11)
				e				
5	5	NiSource	Yes	No	7.6%	51.5%	0.00	(22.56)
				e				
6	6	Northwest Natural	Yes	Yes	8.8%	51.2%	0.00	(57.53)
				e				
7	7	Piedmont	No	No	N/A	N/A	N/A	N/A
				e				
8	8	South Jersey	Yes	No	9.1%	34.9%	0.00	(30.24)
				e				
9	9	Southwest Gas	Yes	Yes	9.3%	43.7%	0.00	(71.04)
				e				
10	11	WGL	Yes	No	7.1%	45.4%	0.00	(65.43)
				e				
11	12	American States	No	Sensitivity	8.7%	47.3%	0.00	(40.57)
				e				
12	13	American Water	No	Sensitivity	8.7%	49.2%	0.00	(72.94)
				e				
13	15	CA Water	No	Sensitivity	9.1%	51.4%	0.00	(32.37)
				e				
14	18	Middlesex Water	No	Sensitivity	6.9%	55.9%	0.00	(37.03)
				e				
15	20	York Water	No	Sensitivity	8.1%	52.7%	0.00	(31.83)
				e				
		TOTALS	8	2	Mean			
		w Sensitivities	8	8	9.06%	47.45%	0.00%	Staff Gas Screen
					8.30%	45.96%	0.00%	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]
					8.76%	48.26%	0.00%	Staff Peer Gas Screen w ATO
					8.47%	50.17%	0.00%	Staff Peer Gas Screen w ATO and Water Utiliiies

Utility	9	10	11	12	13	14	15	16	17	18
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	Initial Stage					Transition Stage				
AGL	2.16	2.24	2.32	2.40	2.48	2.60	2.71	2.83	2.96	3.12
	3.20	3.60	3.92	4.27	4.65	5.03	5.30	5.58	5.88	6.18
Atmos	1.80	1.91	2.03	2.15	2.27	2.44	2.61	2.79	2.99	3.15
	3.40	3.55	3.75	3.97	4.20	4.43	4.73	5.04	5.38	5.72
Laclede (Spire)	2.10	2.16	2.23	2.30	2.37	2.49	2.63	2.76	2.90	3.06
	3.32	3.50	3.72	3.95	4.20	4.45	4.78	5.14	5.52	5.91
New Jersey	1.02	1.03	1.04	1.05	1.06	1.11	1.16	1.21	1.27	1.34
	1.60	1.75	1.80	1.85	1.90	1.95	1.98	2.01	2.04	2.07
NiSource	0.68	0.72	0.76	0.80	0.84	0.81	0.78	0.76	0.73	0.77
	1.05	1.15	1.23	1.31	1.40	1.49	1.51	1.53	1.55	1.57
Northwest Natural	1.88	1.94	1.99	2.05	2.11	2.15	2.20	2.24	2.29	2.41
	2.15	2.35	2.59	2.86	3.15	3.44	3.69	3.94	4.21	4.50
Piedmont	1.39	1.43	1.47	1.51	1.55	1.61	1.67	1.72	1.79	1.88
	1.90	2.00	1.98	1.97	1.95	1.93	1.96	1.99	2.02	2.05
South Jersey	1.10	1.16	1.23	1.30	1.37	1.46	1.56	1.66	1.76	1.86
	1.45	1.50	1.59	1.69	1.80	1.91	1.96	2.02	2.09	2.15
Southwest Gas	1.90	2.05	2.22	2.40	2.58	2.87	3.18	3.52	3.89	4.10
	3.20	3.50	3.81	4.14	4.50	4.86	5.21	5.58	5.97	6.38
WGL	1.93	1.97	2.01	2.05	2.09	2.17	2.25	2.33	2.41	2.55
	3.28	3.40	3.37	3.33	3.30	3.27	3.38	3.49	3.61	3.73
American States	0.96	1.05	1.14	1.25	1.36	1.48	1.62	1.76	1.92	2.02
	1.65	1.75	1.90	2.07	2.25	2.43	2.58	2.74	2.90	3.07
American Water	1.61	1.75	1.89	2.05	2.21	2.46	2.74	3.03	3.36	3.54
	2.85	3.05	3.27	3.50	3.75	4.00	4.33	4.68	5.05	5.45
CA Water	0.71	0.79	0.89	0.99	1.09	1.18	1.27	1.37	1.47	1.55
	1.00	1.35	1.43	1.51	1.60	1.69	1.82	1.95	2.09	2.24
Middlesex Water	0.84	0.86	0.89	0.91	0.93	0.97	1.00	1.03	1.06	1.12
	1.40	1.45	1.47	1.48	1.50	1.52	1.59	1.67	1.76	1.84
York Water	0.66	0.72	0.78	0.85	0.92	0.99	1.06	1.14	1.23	1.29
	0.97	1.05	1.11	1.18	1.25	1.32	1.41	1.50	1.59	1.69

Utility	19	20	21	22	23	24	25	26	27	28
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	Final Stage									
AGL	3.29	3.47	3.66	3.86	4.07	4.29	4.52	4.77	5.03	5.30
	6.52	6.87	7.25	7.64	8.06	8.50	8.97	9.46	9.97	10.52
Atmos	3.32	3.50	3.69	3.89	4.11	4.33	4.57	4.82	5.08	5.36
	6.04	6.37	6.71	7.08	7.47	7.87	8.30	8.76	9.24	9.74
Laclede (Spire)	3.23	3.40	3.59	3.79	3.99	4.21	4.44	4.68	4.94	5.21
	6.24	6.58	6.94	7.31	7.71	8.14	8.58	9.05	9.54	10.06
New Jersey	1.41	1.48	1.57	1.65	1.74	1.84	1.94	2.04	2.15	2.27
	2.18	2.30	2.43	2.56	2.70	2.85	3.00	3.17	3.34	3.52
NiSource	0.81	0.85	0.90	0.95	1.00	1.06	1.11	1.17	1.24	1.31
	1.66	1.75	1.84	1.94	2.05	2.16	2.28	2.40	2.53	2.67
Northwest Natural	2.55	2.69	2.83	2.99	3.15	3.32	3.50	3.69	3.90	4.11
	4.74	5.00	5.27	5.56	5.87	6.19	6.52	6.88	7.26	7.65
Piedmont	1.99	2.09	2.21	2.33	2.46	2.59	2.73	2.88	3.04	3.21
	2.17	2.29	2.41	2.54	2.68	2.83	2.98	3.14	3.32	3.50
South Jersey	1.96	2.07	2.18	2.30	2.42	2.56	2.69	2.84	3.00	3.16
	2.27	2.39	2.52	2.66	2.80	2.96	3.12	3.29	3.47	3.66
Southwest Gas	4.33	4.56	4.81	5.08	5.35	5.65	5.95	6.28	6.62	6.98
	6.72	7.09	7.48	7.89	8.32	8.77	9.25	9.75	10.29	10.85
WGL	2.68	2.83	2.99	3.15	3.32	3.50	3.69	3.90	4.11	4.33
	3.94	4.15	4.38	4.62	4.87	5.13	5.41	5.71	6.02	6.35
American States	2.13	2.25	2.37	2.50	2.64	2.78	2.93	3.10	3.26	3.44
	3.24	3.42	3.60	3.80	4.01	4.23	4.46	4.70	4.96	5.23
American Water	3.73	3.94	4.15	4.38	4.62	4.87	5.13	5.41	5.71	6.02
	5.75	6.06	6.39	6.74	7.11	7.50	7.91	8.34	8.79	9.27
CA Water	1.63	1.72	1.81	1.91	2.02	2.13	2.24	2.37	2.50	2.63
	2.36	2.49	2.63	2.77	2.92	3.08	3.25	3.43	3.62	3.81
Middlesex Water	1.18	1.25	1.32	1.39	1.46	1.54	1.63	1.72	1.81	1.91
	1.94	2.05	2.16	2.28	2.41	2.54	2.68	2.82	2.98	3.14
York Water	1.36	1.44	1.52	1.60	1.69	1.78	1.88	1.98	2.09	2.20
	1.78	1.88	1.98	2.09	2.20	2.32	2.45	2.58	2.72	2.87

Utility	29	30	31	32	33	34	35	36	37	38	39	40	41		
	2036	2037	2038	2039	2040	2041	2042	2043	2044	2044 Terminal Value	2045 Div	2045 Sale	2046	#	
AGL	5.59	5.90	6.22	6.56	6.92	7.30	7.70	8.12	8.56	N/A	9.03	N/A		1	1
	11.09	11.70	12.34	13.01	13.72	14.47	15.26	16.09	16.97		17.90		18.87		
Atmos	5.65	5.96	6.28	6.63	6.99	7.37	7.77	8.20	8.65	386.86	9.12	377.74		2	2
	10.27	10.83	11.42	12.05	12.71	13.40	14.13	14.90	15.72		16.57		17.48		
Laclede (Spire)	5.49	5.79	6.11	6.44	6.79	7.17	7.56	7.97	8.41	349.55	8.86	340.68		3	3
	10.61	11.19	11.80	12.45	13.13	13.84	14.60	15.40	16.24		17.12		18.06		
New Jersey	2.40	2.53	2.66	2.81	2.96	3.13	3.30	3.48	3.67	134.63	3.87	130.76		4	4
	3.71	3.92	4.13	4.36	4.59	4.84	5.11	5.39	5.68		5.99		6.32		
NiSource	1.38	1.45	1.53	1.62	1.70	1.80	1.90	2.00	2.11	105.26	2.22	103.04		5	5
	2.82	2.97	3.13	3.31	3.49	3.68	3.88	4.09	4.31		4.55		4.80		
Northwest Natural	4.33	4.57	4.82	5.08	5.36	5.65	5.96	6.29	6.63	374.48	6.99	367.49		6	6
	8.07	8.51	8.98	9.47	9.98	10.53	11.10	11.71	12.35		13.02		13.73		
Piedmont	3.38	3.56	3.76	3.96	4.18	4.41	4.65	4.90	5.17	N/A	5.45	N/A		7	7
	3.69	3.89	4.10	4.33	4.56	4.81	5.07	5.35	5.64		5.95		6.28		
South Jersey	3.33	3.52	3.71	3.91	4.12	4.35	4.59	4.84	5.10	142.23	5.38	136.85		8	8
	3.86	4.07	4.29	4.52	4.77	5.03	5.30	5.59	5.90		6.22		6.56		
Southwest Gas	7.37	7.77	8.19	8.64	9.11	9.61	10.13	10.69	11.27	444.08	11.88	432.20		9	9
	11.44	12.07	12.72	13.42	14.15	14.92	15.74	16.60	17.51		18.46		19.47		
WGL	4.57	4.82	5.08	5.36	5.65	5.96	6.29	6.63	6.99	234.73	7.37	227.36		11	10
	6.70	7.06	7.45	7.86	8.28	8.74	9.21	9.72	10.25		10.81		11.40		
American States	3.63	3.83	4.04	4.26	4.49	4.74	4.99	5.27	5.55	236.48	5.86	230.62		12	11
	5.51	5.81	6.13	6.47	6.82	7.19	7.58	8.00	8.43		8.89		9.38		
American Water	6.35	6.70	7.06	7.45	7.85	8.28	8.74	9.21	9.72	436.19	10.25	425.94		13	12
	9.78	10.31	10.88	11.47	12.10	12.76	13.45	14.19	14.96		15.78		16.64		
CA Water	2.78	2.93	3.09	3.25	3.43	3.62	3.82	4.03	4.25	226.02	4.48	221.54		15	13
	4.02	4.24	4.47	4.72	4.97	5.25	5.53	5.84	6.15		6.49		6.84		
Middlesex Water	2.01	2.12	2.24	2.36	2.49	2.63	2.77	2.92	3.08	152.19	3.25	148.93		18	14
	3.31	3.49	3.68	3.88	4.09	4.32	4.55	4.80	5.06		5.34		5.63		
York Water	2.32	2.45	2.58	2.72	2.87	3.03	3.19	3.37	3.55	172.86	3.74	169.12		20	15
	3.03	3.19	3.37	3.55	3.75	3.95	4.17	4.39	4.63		4.89		5.15		

Average B.O.Y. & E.O.Y. Cash Flows

Model Y EPS Growth

	1	2	3	4	5	6	7	8	9
						Terminal Value as	Average 2016 - 2020 Dividend Growth Rates		
	#	Abbreviated Utility	AVA	Staff	Average IRR	% of NPV_{DIV}	EOY	BOY	Average
1	1	AGL	No	No	N/A	N/A	3.1%	3.5%	3.3%
2	2	Atmos	Yes	Sensitivity	8.1%	50.9%	5.9%	6.0%	6.0%
3	3	Laclede (Spire)	Yes	No	8.7%	45.8%	4.1%	3.1%	3.6%
4	4	New Jersey	Yes	No	7.5%	47.0%	1.9%	1.0%	1.4%
5	5	NiSource	Yes	No	7.6%	52.1%	5.7%	5.5%	5.6%
6	6	Northwest Natural	Yes	Yes	8.8%	51.9%	2.3%	2.9%	2.6%
7	7	Piedmont	No	No	N/A	N/A	2.8%	2.8%	2.8%
8	8	South Jersey	Yes	No	8.9%	35.9%	5.1%	5.6%	5.4%
9	9	Southwest Gas	Yes	Yes	9.2%	44.8%	8.1%	7.9%	8.0%
10	11	WGL	Yes	No	7.1%	46.1%	1.6%	2.0%	1.8%
11	12	American States	No	Sensitivity	8.6%	48.4%	8.4%	9.0%	8.7%
12	13	American Water	No	Sensitivity	8.6%	50.4%	8.8%	8.2%	8.5%
13	15	CA Water	No	Sensitivity	9.0%	52.5%	9.4%	11.4%	10.4%
14	18	Middlesex Water	No	Sensitivity	6.8%	56.6%	3.3%	2.7%	3.0%
15	20	York Water	No	Sensitivity	8.0%	53.7%	7.9%	8.6%	8.3%
		TOTALS	8	2	Mean				
		w Sensitivities	8	8	8.99%	48.37%	5.32%	Staff Gas Screen	
					8.23%	46.81%	4.30%	Co.'s VL Gas Utilities w/o [UGI, AGL,PNY, & CPK]	
					8.69%	49.20%	5.53%	Staff Peer Gas Screen w ATO	
					8.39%	51.15%	7.08%	Staff Peer Gas Screen w ATO and Water Utiliiies	

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 204

Staff Synthetic Forward Curve TIPS Analysis

Exhibits in Support
of Opening Testimony

March 1, 2017

2028 through 2047 TIPs-Implied Average Annual Inflation Rate: 2.04%

Yr. End		Individually Implied Price Levels					Implied Forward Curve/Price Level					Implied	
Mo.-Yr.	Years	5-Yr	7-Yr	10-Yr	20-Yr	30-Yr	5-Yr	7-Yr	10-Yr	20-Yr	30-Yr	Price Level	Check
Dec-17	0	100.00	100.00	100.00	100.00	100.00	100.00					100.00	
Dec-18	1	101.67	101.80	101.80	101.83	101.96	101.67					101.67	
Dec-19	2	103.37	103.64	103.64	103.69	103.96	103.37					103.37	
Dec-20	3	105.09	105.51	105.51	105.58	106.00	105.09					105.09	
Dec-21	4	106.85	107.41	107.41	107.51	108.07	106.85					106.85	
Dec-22	5	108.63	109.35	109.35	109.47	110.19	108.63					108.63	
Dec-23	6		111.32	111.32	111.47	112.35		110.96				110.96	
Dec-24	7		113.33	113.33	113.51	114.55		113.33				113.33	
Dec-25	8			115.37	115.58	116.80			115.37			115.37	
Dec-26	9			117.45	117.69	119.09			117.45			117.45	
Dec-27	10			119.57	119.84	121.42			119.57			119.57	
Dec-28	11				122.03	123.80				121.78		121.78	122.01
Dec-29	12				124.26	126.23				124.03		124.03	124.49
Dec-30	13				126.53	128.70				126.33		126.33	127.03
Dec-31	14				128.84	131.23				128.67		128.67	129.62
Dec-32	15				131.20	133.80				131.05		131.05	132.26
Dec-33	16				133.59	136.42				133.47		133.47	134.96
Dec-34	17				136.03	139.09				135.94		135.94	137.71
Dec-35	18				138.52	141.82				138.45		138.45	140.52
Dec-36	19				141.05	144.60				141.02		141.02	143.38
Dec-37	20				143.63	147.43				143.63		143.63	146.30
Dec-38	21					150.32					146.82	146.82	149.29
Dec-39	22					153.27					150.09	150.09	152.33
Dec-40	23					156.27					153.44	153.44	155.43
Dec-41	24					159.34					156.85	156.85	158.60
Dec-42	25					162.46					160.35	160.35	161.84
Dec-43	26					165.64					163.92	163.92	165.14
Dec-44	27					168.89					167.57	167.57	168.50
Dec-45	28					172.20					171.30	171.30	171.94
Dec-46	29					175.58					175.12	175.12	175.44
Dec-47	30					179.02					179.02	179.02	179.02

Average Quarterly Values for FRB H15 Data

See FRB H.15 Tab for Data Feed Sources.

Staff TIPS Analysis **Quarterly Aggregation**

Average Monthly Inflation Indexed Rates by Quarter					
Qtr	TIPS-05m	TIPS-07m	TIPS-10m	TIPS-20m	TIPS-30m
2003-Q1	1.33	1.81	2.07		
2003-Q2	1.15	1.61	1.94		
2003-Q3	1.36	1.84	2.21		
2003-Q4	1.24	1.65	2.01		
2004-Q1	0.82	1.26	1.71		
2004-Q2	1.26	1.69	2.05		
2004-Q3	1.17	1.55	1.89	2.28	
2004-Q4	0.93	1.30	1.69	2.08	
2005-Q1	1.17	1.41	1.71	1.93	
2005-Q2	1.30	1.44	1.68	1.83	
2005-Q3	1.59	1.70	1.82	1.98	
2005-Q4	1.92	1.98	2.04	2.13	
2006-Q1	2.00	2.05	2.09	2.08	
2006-Q2	2.34	2.39	2.46	2.48	
2006-Q3	2.37	2.37	2.37	2.38	
2006-Q4	2.40	2.36	2.32	2.29	
2007-Q1	2.28	2.33	2.33	2.36	
2007-Q2	2.35	2.40	2.44	2.49	
2007-Q3	2.38	2.44	2.45	2.46	
2007-Q4	1.54	1.81	1.92	2.11	
2008-Q1	0.58	1.02	1.32	1.81	
2008-Q2	0.79	1.17	1.48	2.03	
2008-Q3	1.18	1.47	1.70	2.16	
2008-Q4	2.73	2.92	2.60	2.73	
2009-Q1	1.37	1.54	1.79	2.34	
2009-Q2	1.12	1.37	1.72	2.31	
2009-Q3	1.17	1.41	1.74	2.22	
2009-Q4	0.58	0.94	1.37	1.98	
2010-Q1	0.47	0.94	1.43	2.00	2.16
2010-Q2	0.46	0.91	1.36	1.77	1.88
2010-Q3	0.20	0.57	1.06	1.68	1.76
2010-Q4	-0.11	0.28	0.75	1.48	1.65
2011-Q1	0.07	0.67	1.09	1.71	2.00
2011-Q2	-0.29	0.33	0.80	1.49	1.78
2011-Q3	-0.65	-0.22	0.28	0.95	1.25
2011-Q4	-0.75	-0.39	0.05	0.61	0.85
2012-Q1	-1.02	-0.60	-0.17	0.51	0.78
2012-Q2	**-1.08**	**-0.75**	**-0.35**	**0.35**	**0.66**
2012-Q3	-1.27	-1.01	-0.63	0.02	0.43
2012-Q4	**-1.42**	**-1.15**	**-0.76**	**-0.02**	**0.36**
2013-Q1	-1.40	-0.98	-0.59	0.19	0.56
2013-Q2	**-1.04**	**-0.62**	**-0.25**	**0.47**	**0.80**
2013-Q3	-0.32	0.17	0.56	1.16	1.43
2013-Q4	**-0.29**	**0.25**	**0.57**	**1.19**	**1.50**
2014-Q1	-0.16	0.37	0.58	1.11	1.39
2014-Q2	**-0.25**	**0.27**	**0.43**	**0.88**	**1.14**
2014-Q3	-0.13	0.24	0.32	0.72	0.98
2014-Q4	**0.19**	**0.39**	**0.45**	**0.75**	**0.95**
2015-Q1	0.11	0.23	0.27	0.52	0.71
2015-Q2	**-0.10**	**0.22**	**0.30**	**0.67**	**0.91**
2015-Q3	0.26	0.48	0.57	0.92	1.14
2015-Q4	**0.36**	**0.51**	**0.66**	**1.02**	**1.24**
2016-Q1	0.15	0.32	0.49	0.88	1.11
2016-Q2	**-0.24**	**-0.05**	**0.19**	**0.62**	**0.85**
2016-Q3	-0.22	-0.09	0.08	0.44	0.62
2016-Q4	**-0.06**	**0.12**	**0.33**	**0.69**	**0.86**

Average Monthly Nominal UST Rates by Quarter					
Qtr	UST-05m	UST-07m	UST-10m	UST-20m	UST-30m
2003-Q1	2.91	3.46	3.92	4.90	
2003-Q2	2.57	3.13	3.62	4.59	
2003-Q3	3.14	3.72	4.23	5.17	
2003-Q4	3.25	3.78	4.29	5.16	
2004-Q1	2.99	3.52	4.02	4.89	
2004-Q2	3.72	4.18	4.60	5.36	
2004-Q3	3.51	3.92	4.30	5.07	
2004-Q4	3.49	3.85	4.17	4.87	
2005-Q1	3.88	4.09	4.30	4.76	
2005-Q2	3.87	3.99	4.16	4.55	
2005-Q3	4.04	4.11	4.21	4.51	
2005-Q4	4.39	4.42	4.49	4.77	
2006-Q1	4.55	4.55	4.57	4.76	4.64
2006-Q2	4.99	5.02	5.07	5.29	5.14
2006-Q3	4.84	4.85	4.90	5.09	4.99
2006-Q4	4.60	4.60	4.63	4.83	4.74
2007-Q1	4.65	4.65	4.68	4.90	4.80
2007-Q2	4.76	4.79	4.85	5.07	4.99
2007-Q3	4.50	4.60	4.73	5.01	4.94
2007-Q4	3.79	3.98	4.26	4.65	4.61
2008-Q1	2.75	3.15	3.66	4.40	4.41
2008-Q2	3.16	3.46	3.89	4.59	4.58
2008-Q3	3.11	3.44	3.86	4.49	4.45
2008-Q4	2.18	2.63	3.25	3.97	3.68
2009-Q1	1.76	2.23	2.74	3.69	3.45
2009-Q2	2.23	2.88	3.31	4.19	4.17
2009-Q3	2.47	3.12	3.52	4.28	4.32
2009-Q4	2.30	2.98	3.46	4.27	4.33
2010-Q1	2.42	3.16	3.72	4.49	4.62
2010-Q2	2.25	2.93	3.49	4.20	4.37
2010-Q3	1.55	2.19	2.79	3.60	3.85
2010-Q4	1.49	2.18	2.86	3.84	4.16
2011-Q1	2.12	2.83	3.46	4.32	4.56
2011-Q2	1.86	2.55	3.21	4.07	4.34
2011-Q3	1.15	1.78	2.43	3.34	3.70
2011-Q4	0.95	1.50	2.05	2.75	3.04
2012-Q1	0.90	1.44	2.04	2.80	3.14
2012-Q2	**0.79**	**1.24**	**1.82**	**2.55**	**2.94**
2012-Q3	0.67	1.08	1.64	2.37	2.75
2012-Q4	**0.69**	**1.12**	**1.71**	**2.46**	**2.86**
2013-Q1	0.83	1.32	1.95	2.75	3.14
2013-Q2	**0.92**	**1.39**	**2.00**	**2.78**	**3.15**
2013-Q3	1.51	2.12	2.71	3.44	3.72
2013-Q4	**1.44**	**2.12**	**2.75**	**3.50**	**3.79**
2014-Q1	1.60	2.22	2.76	3.42	3.68
2014-Q2	**1.66**	**2.19**	**2.62**	**3.18**	**2.86**
2014-Q3	1.70	2.16	2.50	3.01	3.26
2014-Q4	**1.60**	**2.00**	**2.28**	**2.69**	**2.97**
2015-Q1	1.45	1.77	1.97	2.32	2.55
2015-Q2	**1.52**	**1.91**	**2.17**	**2.62**	**2.89**
2015-Q3	1.55	1.94	2.22	2.65	2.96
2015-Q4	**1.59**	**1.94**	**2.19**	**2.60**	**2.96**
2016-Q1	1.37	1.69	1.92	2.32	2.72
2016-Q2	**1.24**	**1.54**	**1.75**	**2.15**	**2.57**
2016-Q3	1.13	1.40	1.56	1.91	2.28
2016-Q4	**1.61**	**1.93**	**2.13**	**2.52**	**2.82**

Implied Market-based Inflationary Expectations					
Qtr	5-Yr	7-Yr	10-Yr	20-Yr	30-Yr
2003-Q1	1.58	1.65	1.85		
2003-Q2	1.42	1.52	1.68		
2003-Q3	1.78	1.87	2.03		
2003-Q4	2.01	2.13	2.28		
2004-Q1	2.17	2.26	2.31		
2004-Q2	2.47	2.50	2.55		
2004-Q3	2.34	2.37	2.41	2.79	
2004-Q4	2.56	2.55	2.48	2.79	
2005-Q1	2.72	2.68	2.58	2.83	
2005-Q2	2.57	2.55	2.48	2.72	
2005-Q3	2.44	2.41	2.39	2.52	
2005-Q4	2.47	2.44	2.45	2.64	
2006-Q1	2.55	2.50	2.48	2.69	
2006-Q2	2.65	2.62	2.61	2.80	
2006-Q3	2.47	2.48	2.52	2.71	
2006-Q4	2.20	2.24	2.31	2.54	
2007-Q1	2.36	2.32	2.35	2.54	
2007-Q2	2.41	2.39	2.41	2.58	
2007-Q3	2.13	2.16	2.28	2.55	
2007-Q4	2.24	2.17	2.34	2.54	
2008-Q1	2.17	2.13	2.34	2.59	
2008-Q2	2.37	2.29	2.40	2.56	
2008-Q3	1.93	1.96	2.16	2.33	
2008-Q4	-0.55	-0.29	0.65	1.24	
2009-Q1	0.39	0.69	0.95	1.35	
2009-Q2	1.11	1.51	1.60	1.88	
2009-Q3	1.30	1.72	1.77	2.06	
2009-Q4	1.72	2.04	2.09	2.29	
2010-Q1	1.96	2.22	2.28	2.49	2.47
2010-Q2	1.80	2.03	2.13	2.43	2.49
2010-Q3	1.35	1.63	1.73	1.92	2.09
2010-Q4	1.59	1.90	2.12	2.36	2.51
2011-Q1	2.05	2.16	2.37	2.61	2.56
2011-Q2	2.15	2.22	2.41	2.57	2.56
2011-Q3	1.81	2.00	2.15	2.39	2.45
2011-Q4	1.71	1.89	1.99	2.14	2.19
2012-Q1	1.92	2.04	2.20	2.29	2.36
2012-Q2	**1.86**	**1.99**	**2.17**	**2.21**	**2.28**
2012-Q3	1.94	2.09	2.28	2.35	2.31
2012-Q4	**2.11**	**2.27**	**2.47**	**2.48**	**2.50**
2013-Q1	2.23	2.31	2.54	2.55	2.58
2013-Q2	**1.95**	**2.01**	**2.25**	**2.32**	**2.34**
2013-Q3	1.82	1.95	2.15	2.29	2.29
2013-Q4	**1.73**	**1.86**	**2.17**	**2.31**	**2.29**
2014-Q1	1.77	1.85	2.18	2.30	2.29
2014-Q2	**1.90**	**1.92**	**2.20**	**2.30**	**1.72**
2014-Q3	1.83	1.92	2.18	2.28	2.29
2014-Q4	**1.41**	**1.61**	**1.83**	**1.95**	**2.02**
2015-Q1	1.35	1.54	1.70	1.79	1.85
2015-Q2	**1.63**	**1.69**	**1.86**	**1.95**	**1.97**
2015-Q3	1.29	1.47	1.65	1.73	1.82
2015-Q4	**1.23**	**1.43**	**1.53**	**1.58**	**1.72**
2016-Q1	1.23	1.37	1.43	1.45	1.61
2016-Q2	**1.48**	**1.58**	**1.56**	**1.53**	**1.72**
2016-Q3	1.35	1.49	1.48	1.47	1.66
2016-Q4	**1.67**	**1.80**	**1.80**	**1.83**	**1.96**

FRB **H.15** Market Yield on U.S. Treasury (UST) Securities at Constant Maturity, Quoted on an Investment Basis in Percent per Year

Staff Accessed , Jan. 6, 2017 at: http://federalreserve.gov/releases/h15/data.htm

https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15

Monthly

TIPS-05m	5	Year	Inflation Indexed	H.15 ID	RIFLGFCY05_XII_N.M
TIPS-07m	7				RIFLGFCY07_XII_N.M
TIPS-10m	10				RIFLGFCY10_XII_N.M
TIPS-20m	20				RIFLGFCY20_XII_N.M
TIPS-30m	30				RIFLGFCY30_XII_N.M

Month	TIPS-05m	TIPS-07m	TIPS-10m	TIPS-20m	TIPS-30m
2003-01	1.65	2.10	2.29		
2003-02	1.24	1.74	1.99		
2003-03	1.09	1.60	1.94		
2003-04	1.36	1.85	2.18		
2003-05	1.18	1.61	1.91		
2003-06	0.91	1.37	1.72		
2003-07	1.30	1.76	2.11		
2003-08	1.48	1.97	2.32		
2003-09	1.29	1.80	2.19		
2003-10	1.21	1.68	2.08		
2003-11	1.27	1.64	1.96		
2003-12	1.23	1.64	1.98		
2004-01	1.09	1.48	1.89		
2004-02	0.86	1.31	1.76		
2004-03	0.52	0.98	1.47		
2004-04	1.02	1.49	1.90		
2004-05	1.34	1.77	2.09		
2004-06	1.41	1.80	2.15	TIPS-20	
2004-07	1.29	1.68	2.02	2.44	
2004-08	1.12	1.51	1.86	2.23	
2004-09	1.10	1.46	1.80	2.16	
2004-10	0.97	1.35	1.73	2.13	
2004-11	0.90	1.27	1.68	2.09	
2004-12	0.92	1.28	1.67	2.02	
2005-01	1.13	1.40	1.72	1.98	
2005-02	1.08	1.33	1.63	1.85	
2005-03	1.29	1.49	1.79	1.95	
2005-04	1.23	1.42	1.71	1.87	
2005-05	1.28	1.41	1.65	1.82	
2005-06	1.39	1.49	1.67	1.80	
2005-07	1.67	1.75	1.88	2.00	
2005-08	1.71	1.79	1.89	2.02	
2005-09	1.40	1.56	1.70	1.93	
2005-10	1.70	1.82	1.94	2.09	
2005-11	1.97	2.03	2.06	2.16	
2005-12	2.09	2.10	2.12	2.14	
2006-01	1.93	1.98	2.01	2.05	
2006-02	1.98	2.02	2.05	2.01	
2006-03	2.09	2.15	2.20	2.17	
2006-04	2.26	2.34	2.41	2.43	
2006-05	2.30	2.36	2.45	2.48	
2006-06	2.45	2.48	2.53	2.54	
2006-07	2.46	2.48	2.51	2.52	
2006-08	2.27	2.29	2.29	2.31	
2006-09	2.38	2.35	2.32	2.31	
2006-10	2.51	2.45	2.41	2.38	
2006-11	2.41	2.35	2.29	2.23	
2006-12	2.28	2.28	2.25	2.26	
2007-01	2.47	2.47	2.44	2.42	
2007-02	2.34	2.38	2.36	2.38	
2007-03	2.04	2.14	2.18	2.27	
2007-04	2.12	2.20	2.26	2.35	
2007-05	2.29	2.32	2.37	2.45	
2007-06	2.65	2.67	2.69	2.67	
2007-07	2.60	2.63	2.64	2.62	
2007-08	2.39	2.45	2.44	2.47	
2007-09	2.14	2.24	2.26	2.30	
2007-10	2.01	2.15	2.20	2.26	
2007-11	1.35	1.65	1.77	1.99	
2007-12	1.27	1.62	1.79	2.08	
2008-01	0.86	1.24	1.47	1.81	
2008-02	0.65	1.09	1.41	1.87	
2008-03	0.23	0.73	1.09	1.76	
2008-04	0.62	1.00	1.36	1.91	
2008-05	0.79	1.16	1.46	2.00	
2008-06	0.97	1.35	1.63	2.19	
2008-07	0.84	1.24	1.57	2.09	
2008-08	1.15	1.47	1.68	2.15	
2008-09	1.55	1.71	1.85	2.25	
2008-10	2.75	2.96	2.75	2.87	
2008-11	3.69	3.84	2.89	3.00	
2008-12	1.76	1.96	2.17	2.32	
2009-01	1.59	1.72	1.91	2.46	
2009-02	1.29	1.48	1.75	2.31	
2009-03	1.23	1.43	1.71	2.26	
2009-04	1.11	1.29	1.57	2.22	
2009-05	1.07	1.34	1.72	2.36	
2009-06	1.18	1.48	1.86	2.36	
2009-07	1.18	1.44	1.82	2.31	
2009-08	1.29	1.49	1.77	2.22	
2009-09	1.03	1.29	1.64	2.13	
2009-10	0.83	1.12	1.48	2.04	
2009-11	0.48	0.84	1.28	1.90	
2009-12	0.43	0.86	1.36	1.99	
2010-01	0.42	0.85	1.37	2.00	TIPS-30
2010-02	0.42	0.90	1.42	2.03	2.16
2010-03	0.56	1.08	1.51	1.98	2.15
2010-04	0.62	1.10	1.50	1.90	2.05
2010-05	0.41	0.86	1.31	1.72	1.83
2010-06	0.34	0.76	1.26	1.69	1.77
2010-07	0.34	0.73	1.24	1.80	1.87
2010-08	0.13	0.51	1.02	1.65	1.76
2010-09	0.13	0.46	0.91	1.58	1.66
2010-10	-0.32	0.02	0.53	1.32	1.44
2010-11	-0.21	0.17	0.67	1.44	1.61
2010-12	0.21	0.65	1.04	1.67	1.89
2011-01	0.06	0.62	1.06	1.70	1.97
2011-02	0.25	0.84	1.24	1.85	2.13
2011-03	-0.09	0.54	0.96	1.58	1.89
2011-04	-0.14	0.49	0.86	1.48	1.79
2011-05	-0.34	0.29	0.78	1.47	1.77
2011-06	-0.38	0.21	0.76	1.53	1.78
2011-07	-0.49	0.09	0.62	1.36	1.62
2011-08	-0.75	-0.36	0.14	0.81	1.10
2011-09	-0.72	-0.39	0.08	0.69	1.02
2011-10	-0.63	-0.28	0.19	0.72	0.99
2011-11	-0.85	-0.46	0.00	0.55	0.78
2011-12	-0.78	-0.44	-0.03	0.56	0.78
2012-01	-0.92	-0.55	-0.11	0.51	0.74
2012-02	-1.11	-0.69	-0.25	0.45	0.72
2012-03	-1.03	-0.57	-0.14	0.56	0.87
2012-04	**-1.06**	**-0.65**	**-0.21**	**0.50**	**0.79**
2012-05	**-1.12**	**-0.79**	**-0.34**	**0.44**	**0.68**
2012-06	**-1.05**	**-0.82**	**-0.50**	**0.10**	**0.50**
2012-07	-1.15	-0.92	-0.60	-0.01	0.39
2012-08	-1.19	-0.94	-0.59	0.06	0.47
2012-09	-1.47	-1.17	-0.71	0.02	0.44
2012-10	**-1.47**	**-1.18**	**-0.75**	**-0.01**	**0.41**
2012-11	**-1.38**	**-1.13**	**-0.77**	**-0.06**	**0.35**
2012-12	**-1.40**	**-1.13**	**-0.76**	**0.00**	**0.33**
2013-01	-1.39	-1.04	-0.61	0.20	0.48
2013-02	-1.39	-0.94	-0.57	0.19	0.57
2013-03	-1.43	-0.97	-0.59	0.19	0.62
2013-04	**-1.38**	**-0.97**	**-0.65**	**0.07**	**0.48**
2013-05	**-1.14**	**-0.69**	**-0.36**	**0.35**	**0.72**
2013-06	**-0.59**	**-0.21**	**0.25**	**0.98**	**1.21**
2013-07	-0.45	0.02	0.46	1.09	1.34
2013-08	-0.33	0.15	0.55	1.16	1.44
2013-09	-0.17	0.34	0.66	1.22	1.50
2013-10	**-0.41**	**0.11**	**0.43**	**1.05**	**1.37**
2013-11	**-0.38**	**0.18**	**0.55**	**1.20**	**1.51**
2013-12	**-0.09**	**0.47**	**0.74**	**1.32**	**1.61**
2014-01	-0.09	0.45	0.63	1.17	1.44
2014-02	-0.26	0.30	0.55	1.12	1.40
2014-03	-0.14	0.37	0.56	1.05	1.33
2014-04	**-0.11**	**0.38**	**0.54**	**0.98**	**1.23**
2014-05	**-0.34**	**0.21**	**0.37**	**0.82**	**1.08**
2014-06	**-0.29**	**0.23**	**0.37**	**0.84**	**1.11**
2014-07	-0.27	0.18	0.28	0.72	0.98
2014-08	-0.21	0.15	0.22	0.64	0.90
2014-09	0.10	0.38	0.46	0.81	1.05
2014-10	**0.06**	**0.32**	**0.38**	**0.74**	**0.96**
2014-11	**0.14**	**0.37**	**0.45**	**0.77**	**0.99**
2014-12	**0.37**	**0.47**	**0.51**	**0.73**	**0.89**
2015-01	0.17	0.24	0.27	0.50	0.66
2015-02	0.11	0.22	0.26	0.52	0.73
2015-03	0.04	0.23	0.28	0.55	0.73
2015-04	**-0.26**	**-0.01**	**0.08**	**0.42**	**0.65**
2015-05	**-0.10**	**0.27**	**0.33**	**0.70**	**0.96**
2015-06	**0.05**	**0.39**	**0.50**	**0.89**	**1.13**
2015-07	0.14	0.42	0.50	0.87	1.11
2015-08	0.31	0.49	0.56	0.87	1.08
2015-09	0.33	0.52	0.65	1.01	1.24
2015-10	**0.21**	**0.39**	**0.57**	**0.98**	**1.22**
2015-11	**0.40**	**0.55**	**0.69**	**1.03**	**1.25**
2015-12	**0.46**	**0.59**	**0.73**	**1.06**	**1.26**
2016-01	**0.33**	**0.49**	**0.67**	**1.05**	**1.26**
2016-02	**0.14**	**0.30**	**0.47**	**0.85**	**1.09**
2016-03	**-0.03**	**0.16**	**0.34**	**0.73**	**0.99**
2016-04	**-0.22**	**-0.03**	**0.19**	**0.60**	**0.86**
2016-05	**-0.22**	**-0.04**	**0.21**	**0.64**	**0.86**
2016-06	**-0.27**	**-0.07**	**0.17**	**0.63**	**0.82**
2016-07	-0.32	-0.16	0.04	0.42	0.61
2016-08	-0.17	-0.06	0.09	0.43	0.62
2016-09	-0.17	-0.05	0.12	0.47	0.64
2016-10	**-0.26**	**-0.10**	**0.10**	**0.49**	**0.69**
2016-11	**-0.07**	**0.11**	**0.32**	**0.69**	**0.86**
2016-12	**0.15**	**0.36**	**0.56**	**0.89**	**1.04**

Monthly

UST-05m	5	Year	H.15 ID	RIFLGFCY05_N.M
UST-07m	7			RIFLGFCY07_N.M
UST-10m	10			RIFLGFCY10_N.M
UST-20m	20			RIFLGFCY20_N.M
UST-30m	30			RIFLGFCY30_N.M

Month	UST-05m	UST-07m	UST-10m	UST-20m	UST-30m
2003-01	3.05	3.60	4.05	5.02	
2003-02	2.90	3.45	3.90	4.87	
2003-03	2.78	3.34	3.81	4.82	
2003-04	2.93	3.47	3.96	4.91	
2003-05	2.52	3.07	3.57	4.52	
2003-06	2.27	2.84	3.33	4.34	
2003-07	2.87	3.45	3.98	4.92	
2003-08	3.37	3.96	4.45	5.39	
2003-09	3.18	3.74	4.27	5.21	
2003-10	3.19	3.75	4.29	5.21	
2003-11	3.29	3.81	4.30	5.17	
2003-12	3.27	3.79	4.27	5.11	
2004-01	3.12	3.65	4.15	5.01	
2004-02	3.07	3.59	4.08	4.94	
2004-03	2.79	3.31	3.83	4.72	
2004-04	3.39	3.89	4.35	5.16	
2004-05	3.85	4.31	4.72	5.46	
2004-06	3.93	4.35	4.73	5.45	
2004-07	3.69	4.11	4.50	5.24	
2004-08	3.47	3.90	4.28	5.07	
2004-09	3.36	3.75	4.13	4.89	
2004-10	3.35	3.75	4.10	4.85	
2004-11	3.53	3.88	4.19	4.89	
2004-12	3.60	3.93	4.23	4.88	
2005-01	3.71	3.97	4.22	4.77	
2005-02	3.77	3.97	4.17	4.61	
2005-03	4.17	4.33	4.50	4.89	
2005-04	4.00	4.16	4.34	4.75	
2005-05	3.85	3.94	4.14	4.56	
2005-06	3.77	3.86	4.00	4.35	
2005-07	3.98	4.06	4.18	4.48	
2005-08	4.12	4.18	4.26	4.53	
2005-09	4.01	4.08	4.20	4.51	
2005-10	4.33	4.38	4.46	4.74	
2005-11	4.45	4.48	4.54	4.83	
2005-12	4.39	4.41	4.47	4.73	
2006-01	4.35	4.37	4.42	4.65	UST-30
2006-02	4.57	4.56	4.57	4.73	4.54
2006-03	4.72	4.71	4.72	4.91	4.73
2006-04	4.90	4.94	4.99	5.22	5.06
2006-05	5.00	5.03	5.11	5.35	5.20
2006-06	5.07	5.08	5.11	5.29	5.15
2006-07	5.04	5.05	5.09	5.25	5.13
2006-08	4.82	4.83	4.88	5.08	5.00
2006-09	4.67	4.68	4.72	4.93	4.85
2006-10	4.69	4.69	4.73	4.94	4.85
2006-11	4.58	4.58	4.60	4.78	4.69
2006-12	4.53	4.54	4.56	4.78	4.68
2007-01	4.75	4.75	4.76	4.95	4.85
2007-02	4.71	4.71	4.72	4.93	4.82
2007-03	4.48	4.50	4.56	4.81	4.72
2007-04	4.59	4.62	4.69	4.95	4.87
2007-05	4.67	4.69	4.75	4.98	4.90
2007-06	5.03	5.05	5.10	5.29	5.20
2007-07	4.88	4.93	5.00	5.19	5.11
2007-08	4.43	4.53	4.67	5.00	4.93
2007-09	4.20	4.33	4.52	4.84	4.79
2007-10	4.20	4.33	4.53	4.83	4.77
2007-11	3.67	3.87	4.15	4.56	4.52
2007-12	3.49	3.74	4.10	4.57	4.53
2008-01	2.98	3.31	3.74	4.35	4.33
2008-02	2.78	3.21	3.74	4.49	4.52
2008-03	2.48	2.93	3.51	4.36	4.39
2008-04	2.84	3.19	3.68	4.44	4.44
2008-05	3.15	3.46	3.88	4.60	4.60
2008-06	3.49	3.73	4.10	4.74	4.69
2008-07	3.30	3.60	4.01	4.62	4.57
2008-08	3.14	3.46	3.89	4.53	4.50
2008-09	2.88	3.25	3.69	4.32	4.27
2008-10	2.73	3.19	3.81	4.45	4.17
2008-11	2.29	2.82	3.53	4.27	4.00
2008-12	1.52	1.89	2.42	3.18	2.87
2009-01	1.60	1.98	2.52	3.46	3.13
2009-02	1.87	2.30	2.87	3.83	3.59
2009-03	1.82	2.42	2.82	3.78	3.64
2009-04	1.86	2.47	2.93	3.84	3.76
2009-05	2.13	2.81	3.29	4.22	4.23
2009-06	2.71	3.37	3.72	4.51	4.52
2009-07	2.46	3.14	3.56	4.38	4.41
2009-08	2.57	3.21	3.59	4.33	4.37
2009-09	2.37	3.02	3.40	4.14	4.19
2009-10	2.33	2.96	3.39	4.16	4.19
2009-11	2.23	2.92	3.40	4.24	4.31
2009-12	2.34	3.07	3.59	4.40	4.49
2010-01	2.48	3.21	3.73	4.50	4.60
2010-02	2.36	3.12	3.69	4.48	4.62
2010-03	2.43	3.16	3.73	4.49	4.64
2010-04	2.58	3.28	3.85	4.53	4.69
2010-05	2.18	2.86	3.42	4.11	4.29
2010-06	2.00	2.66	3.20	3.95	4.13
2010-07	1.76	2.43	3.01	3.80	3.99
2010-08	1.47	2.10	2.70	3.52	3.80
2010-09	1.41	2.05	2.65	3.47	3.77
2010-10	1.18	1.85	2.54	3.52	3.87
2010-11	1.35	2.02	2.76	3.82	4.19
2010-12	1.93	2.66	3.29	4.17	4.42
2011-01	1.99	2.72	3.39	4.28	4.52
2011-02	2.26	2.96	3.58	4.42	4.65
2011-03	2.11	2.80	3.41	4.27	4.51
2011-04	2.17	2.84	3.46	4.28	4.50
2011-05	1.84	2.51	3.17	4.01	4.29
2011-06	1.58	2.29	3.00	3.91	4.23
2011-07	1.54	2.28	3.00	3.95	4.27
2011-08	1.02	1.63	2.30	3.24	3.65
2011-09	0.90	1.42	1.98	2.83	3.18
2011-10	1.06	1.62	2.15	2.87	3.13
2011-11	0.91	1.45	2.01	2.72	3.02
2011-12	0.89	1.43	1.98	2.67	2.98
2012-01	0.84	1.38	1.97	2.70	3.03
2012-02	0.83	1.37	1.97	2.75	3.11
2012-03	1.02	1.56	2.17	2.94	3.28
2012-04	**0.89**	**1.43**	**2.05**	**2.82**	**3.18**
2012-05	**0.76**	**1.21**	**1.80**	**2.53**	**2.93**
2012-06	**0.71**	**1.08**	**1.62**	**2.31**	**2.70**
2012-07	0.62	0.98	1.53	2.22	2.59
2012-08	0.71	1.14	1.68	2.40	2.77
2012-09	0.67	1.12	1.72	2.49	2.88
2012-10	**0.71**	**1.15**	**1.75**	**2.51**	**2.90**
2012-11	**0.67**	**1.08**	**1.65**	**2.39**	**2.80**
2012-12	**0.70**	**1.13**	**1.72**	**2.47**	**2.88**
2013-01	0.81	1.30	1.91	2.68	3.08
2013-02	0.85	1.35	1.98	2.78	3.17
2013-03	0.82	1.32	1.96	2.78	3.16
2013-04	**0.71**	**1.15**	**1.76**	**2.55**	**2.93**
2013-05	**0.84**	**1.31**	**1.93**	**2.73**	**3.11**
2013-06	**1.20**	**1.71**	**2.30**	**3.07**	**3.40**
2013-07	1.40	1.99	2.58	3.31	3.61
2013-08	1.52	2.15	2.74	3.49	3.76
2013-09	1.60	2.22	2.81	3.53	3.79
2013-10	**1.37**	**1.99**	**2.62**	**3.38**	**3.68**
2013-11	**1.37**	**2.07**	**2.72**	**3.50**	**3.80**
2013-12	**1.58**	**2.29**	**2.90**	**3.63**	**3.89**
2014-01	1.65	2.29	2.86	3.52	3.77
2014-02	1.52	2.15	2.71	3.38	3.66
2014-03	1.64	2.23	2.72	3.35	3.62
2014-04	**1.70**	**2.27**	**2.71**	**3.27**	**3.52**
2014-05	**1.59**	**2.12**	**2.56**	**3.12**	**3.39**
2014-06	**1.68**	**2.19**	**2.60**	**3.15**	**3.42**
2014-07	1.70	2.17	2.54	3.07	3.33
2014-08	1.63	2.08	2.42	2.94	3.20
2014-09	1.77	2.22	2.53	3.01	3.26
2014-10	**1.55**	**1.98**	**2.30**	**2.77**	**3.04**
2014-11	**1.62**	**2.03**	**2.33**	**2.76**	**3.04**
2014-12	**1.64**	**1.98**	**2.21**	**2.55**	**2.83**
2015-01	1.37	1.67	1.88	2.20	2.46
2015-02	1.47	1.79	1.98	2.34	2.57
2015-03	1.52	1.84	2.04	2.41	2.63
2015-04	**1.35**	**1.69**	**1.94**	**2.33**	**2.59**
2015-05	**1.54**	**1.93**	**2.20**	**2.69**	**2.96**
2015-06	**1.68**	**2.10**	**2.36**	**2.85**	**3.11**
2015-07	1.63	2.04	2.32	2.77	3.07
2015-08	1.54	1.91	2.17	2.55	2.86
2015-09	1.49	1.88	2.17	2.62	2.95
2015-10	**1.39**	**1.76**	**2.07**	**2.50**	**2.89**
2015-11	**1.67**	**2.02**	**2.26**	**2.69**	**3.03**
2015-12	**1.70**	**2.04**	**2.24**	**2.61**	**2.97**
2016-01	**1.52**	**1.85**	**2.09**	**2.49**	**2.86**
2016-02	**1.22**	**1.53**	**1.78**	**2.20**	**2.62**
2016-03	**1.38**	**1.68**	**1.89**	**2.28**	**2.68**
2016-04	**1.26**	**1.57**	**1.81**	**2.21**	**2.62**
2016-05	**1.30**	**1.60**	**1.81**	**2.22**	**2.63**
2016-06	**1.17**	**1.44**	**1.64**	**2.02**	**2.45**
2016-07	1.07	1.33	1.50	1.82	2.23
2016-08	1.13	1.40	1.56	1.89	2.26
2016-09	1.18	1.46	1.63	2.02	2.35
2016-10	**1.27**	**1.56**	**1.76**	**2.17**	**2.50**
2016-11	**1.60**	**1.93**	**2.14**	**2.54**	**2.86**
2016-12	**1.96**	**2.29**	**2.49**	**2.84**	**3.11**

AVA UG 305 (beside 2016-01 to 2016-03)

AVA UG 325 (beside 2016-10 to 2016-12)

Staff Accessed , Jan. 6, 2017 at: http://federalreserve.gov/releases/h15/data.htm

https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15

Annual

TIPS-05a	5	Year	Inflation Indexed	H.15 ID	RIFLGFCY05_XII_N.A
TIPS-07a	7				RIFLGFCY07_XII_N.A
TIPS-10a	10				RIFLGFCY10_XII_N.A
TIPS-20a	20				RIFLGFCY20_XII_N.A
TIPS-30a	30				RIFLGFCY30_XII_N.A

Year	TIPS-05a	TIPS-07a	TIPS-10a	TIPS-20a	TIPS-30a
2003	1.27	1.73	2.06		
2004	1.04	1.45	1.83	2.14	
2005	1.50	1.63	1.81	1.97	
2006	2.28	2.29	2.31	2.31	
2007	2.15	2.25	2.29	2.36	
2008	1.30	1.63	1.77	2.18	
2009	1.06	1.32	1.66	2.21	
2010	0.26	0.68	1.15	1.73	1.82
2011	-0.41	0.09	0.55	1.19	1.47
2012	-1.19	-0.87	-0.48	0.22	0.56
2013	0.76	-0.29	0.07	0.75	1.07
2014	-0.09	0.32	0.44	0.86	1.11
2015	0.15	0.36	0.45	0.78	1.00
2016	**-0.01**	**0.07**	**0.27**	**0.65**	**0.86**

Annual

UST-05a	5	Year	H.15 ID	RIFLGFCY05_N.A
UST-07a	7			RIFLGFCY07_N.A
UST-10a	10			RIFLGFCY10_N.A
UST-20a	20			RIFLGFCY20_N.A
UST-30a	30			RIFLGFCY30_N.A

Year	UST-05a	UST-07a	UST-10a	UST-20a	UST-30a
2003	2.97	3.52	4.01	4.96	
2004	3.43	3.87	4.27	5.04	
2005	4.05	4.15	4.29	4.64	
2006	4.75	4.76	4.80	5.00	4.91
2007	4.43	4.51	4.63	4.91	4.84
2008	2.80	3.17	3.66	4.36	4.28
2009	2.20	2.82	3.26	4.11	4.08
2010	1.93	2.62	3.22	4.03	4.25
2011	1.52	2.16	2.78	3.62	3.91
2012	0.76	1.22	1.80	2.54	2.92
2013	1.17	1.74	2.35	3.12	3.45
2014	1.64	2.14	2.54	3.07	3.34
2015	1.53	1.89	2.14	2.55	2.84
2016	**1.33**	**1.63**	**1.84**	**2.22**	**2.59**

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 205

Staff Historical GDP Analysis with BEA Data

Exhibits in Support
of Opening Testimony

March 1, 2017

Bureau of Economic Analysis (BEA)

Current-Dollar and "Real" Gross Domestic Product (GDP)

Staff Accessed January 6, 2017

Annual

http://www.bea.gov/national/index.htm

Yr	GDP in billions of current dollars	GDP in billions of chained 2009 dollars
1929	104.6	1,056.6
1930	92.2	966.7
1931	77.4	904.8
1932	59.5	788.2
1933	57.2	778.3
1934	66.8	862.2
1935	74.3	939.0
1936	84.9	1,060.5
1937	93.0	1,114.6
1938	87.4	1,077.7
1939	93.5	1,163.6
1940	102.9	1,266.1
1941	129.4	1,490.3
1942	166.0	1,771.8
1943	203.1	2,073.7
1944	224.6	2,239.4
1945	228.2	2,217.8
1946	227.8	1,960.9
1947	249.9	1,939.4
1948	274.8	2,020.0
1949	272.8	2,008.9
1950	300.2	2,184.0
1951	347.3	2,360.0
1952	367.7	2,456.1
1953	389.7	2,571.4
1954	391.1	2,556.9
1955	426.2	2,739.0
1956	450.1	2,797.4
1957	474.9	2,856.3
1958	482.0	2,835.3
1959	522.5	3,031.0
1960	543.3	3,108.7
1961	563.3	3,188.1
1962	605.1	3,383.1
1963	638.6	3,530.4
1964	685.8	3,734.0
1965	743.7	3,976.7
1966	815.0	4,238.9
1967	861.7	4,355.2
1968	942.5	4,569.0
1969	1,019.9	4,712.5
1970	1,075.9	4,722.0
1971	1,167.8	4,877.6
1972	1,282.4	5,134.3
1973	1,428.5	5,424.1
1974	1,548.8	5,396.0
1975	1,688.9	5,385.4
1976	1,877.6	5,675.4
1977	2,086.0	5,937.0
1978	2,356.6	6,267.2
1979	2,632.1	6,466.2
1980	2,862.5	6,450.4
1981	3,211.0	6,617.7
1982	3,345.0	6,491.3
1983	3,638.1	6,792.0
1984	4,040.7	7,285.0
1985	4,346.7	7,593.8
1986	4,590.2	7,860.5
1987	4,870.2	8,132.6
1988	5,252.6	8,474.5
1989	5,657.7	8,786.4
1990	5,979.6	8,955.0
1991	6,174.0	8,948.4
1992	6,539.3	9,266.6
1993	6,878.7	9,521.0
1994	7,308.8	9,905.4
1995	7,664.1	10,174.8
1996	8,100.2	10,561.0
1997	8,608.5	11,034.9
1998	9,089.2	11,525.9
1999	9,660.6	12,065.9
2000	10,284.8	12,559.7
2001	10,621.8	12,682.2
2002	10,977.5	12,908.8
2003	11,510.7	13,271.1
2004	12,274.9	13,773.5
2005	13,093.7	14,234.2
2006	13,855.9	14,613.8
2007	14,477.6	14,873.7
2008	14,718.6	14,830.4
2009	14,418.7	14,418.7
2010	14,964.4	14,783.8
2011	15,517.9	15,020.6
2012	16,155.3	15,354.6
2013	16,691.5	15,612.2
2014	17,393.1	15,982.3
2015	18,036.6	16,397.2

Quarterly

(Seasonally adjusted annual rates)

Quarter	GDP in billions of current dollars	GDP in billions of chained 2009 dollars	Qtr#
1947q1	243.1	1,934.5	1
1947q2	246.3	1,932.3	2
1947q3	250.1	1,930.3	3
1947q4	260.3	1,960.7	4
1948q1	266.2	1,989.5	5
1948q2	272.9	2,021.9	6
1948q3	279.5	2,033.2	7
1948q4	280.7	2,035.3	8
1949q1	275.4	2,007.5	9
1949q2	271.7	2,000.8	10
1949q3	273.3	2,022.8	11
1949q4	271.0	2,004.7	12
1950q1	281.2	2,084.6	13
1950q2	290.7	2,147.6	14
1950q3	308.5	2,230.4	15
1950q4	320.3	2,273.4	16
1951q1	336.4	2,304.5	17
1951q2	344.5	2,344.5	18
1951q3	351.8	2,392.8	19
1951q4	356.6	2,398.1	20
1952q1	360.2	2,423.5	21
1952q2	361.4	2,428.5	22
1952q3	368.1	2,446.1	23
1952q4	381.2	2,526.4	24
1953q1	388.5	2,573.4	25
1953q2	392.3	2,593.5	26
1953q3	391.7	2,578.9	27
1953q4	386.5	2,539.8	28
1954q1	385.9	2,528.0	29
1954q2	386.7	2,530.7	30
1954q3	391.6	2,559.4	31
1954q4	400.3	2,609.3	32
1955q1	413.8	2,683.8	33
1955q2	422.2	2,727.5	34
1955q3	430.9	2,764.1	35
1955q4	437.8	2,780.8	36
1956q1	440.5	2,770.0	37
1956q2	446.8	2,792.9	38
1956q3	452.0	2,790.6	39
1956q4	461.3	2,836.2	40
1957q1	470.6	2,854.5	41
1957q2	472.8	2,848.2	42
1957q3	480.3	2,875.9	43
1957q4	475.7	2,846.4	44
1958q1	468.4	2,772.7	45
1958q2	472.8	2,790.9	46
1958q3	486.7	2,855.5	47
1958q4	500.4	2,922.3	48
1959q1	511.1	2,976.6	49
1959q2	524.2	3,049.0	50
1959q3	525.2	3,043.1	51
1959q4	529.3	3,055.1	52
1960q1	543.3	3,123.2	53
1960q2	542.7	3,111.3	54
1960q3	546.0	3,119.1	55
1960q4	541.1	3,081.3	56
1961q1	545.9	3,102.3	57
1961q2	557.4	3,159.9	58
1961q3	568.2	3,212.6	59
1961q4	581.6	3,277.7	60
1962q1	595.2	3,336.8	61
1962q2	602.6	3,372.7	62
1962q3	609.6	3,404.8	63
1962q4	613.1	3,418.0	64
1963q1	622.7	3,456.1	65
1963q2	631.8	3,501.1	66
1963q3	645.0	3,569.5	67
1963q4	654.8	3,595.0	68
1964q1	671.1	3,672.7	69
1964q2	680.8	3,716.4	70
1964q3	692.8	3,766.9	71
1964q4	698.4	3,780.2	72
1965q1	719.2	3,873.5	73
1965q2	732.4	3,926.4	74
1965q3	750.2	4,006.2	75
1965q4	773.1	4,100.6	76
1966q1	797.3	4,201.9	77
1966q2	807.2	4,219.1	78
1966q3	820.8	4,249.2	79
1966q4	834.9	4,285.6	80
1967q1	846.0	4,324.9	81
1967q2	851.1	4,328.7	82
1967q3	866.6	4,366.1	83
1967q4	883.2	4,401.2	84
1968q1	911.1	4,490.6	85
1968q2	936.3	4,566.4	86
1968q3	952.3	4,599.3	87
1968q4	970.1	4,619.8	88
1969q1	995.4	4,691.6	89
1969q2	1,011.4	4,706.7	90
1969q3	1,032.0	4,736.1	91
1969q4	1,040.7	4,715.5	92
1970q1	1,053.5	4,707.1	93
1970q2	1,070.1	4,715.4	94
1970q3	1,088.5	4,757.2	95
1970q4	1,091.5	4,708.3	96
1971q1	1,137.8	4,834.3	97
1971q2	1,159.4	4,861.9	98
1971q3	1,180.3	4,900.0	99
1971q4	1,193.6	4,914.3	100
1972q1	1,233.8	5,002.4	101
1972q2	1,270.1	5,118.3	102
1972q3	1,293.8	5,165.4	103
1972q4	1,332.0	5,251.2	104
1973q1	1,380.7	5,380.5	105
1973q2	1,417.6	5,441.5	106
1973q3	1,436.8	5,411.9	107
1973q4	1,479.1	5,462.4	108
1974q1	1,494.7	5,417.0	109
1974q2	1,534.2	5,431.3	110
1974q3	1,563.4	5,378.7	111
1974q4	1,603.0	5,357.2	112
1975q1	1,619.6	5,292.4	113
1975q2	1,656.4	5,333.2	114
1975q3	1,713.8	5,421.4	115
1975q4	1,765.9	5,494.4	116
1976q1	1,824.5	5,618.5	117
1976q2	1,856.9	5,661.0	118
1976q3	1,890.5	5,689.8	119
1976q4	1,938.4	5,732.5	120
1977q1	1,992.5	5,799.2	121
1977q2	2,060.2	5,913.0	122
1977q3	2,122.4	6,017.6	123
1977q4	2,168.7	6,018.2	124
1978q1	2,208.7	6,039.2	125
1978q2	2,336.6	6,274.0	126
1978q3	2,398.9	6,335.3	127
1978q4	2,482.2	6,420.3	128
1979q1	2,531.6	6,433.0	129
1979q2	2,595.9	6,440.8	130
1979q3	2,670.4	6,487.1	131
1979q4	2,730.7	6,503.9	132
1980q1	2,796.5	6,524.9	133
1980q2	2,799.9	6,392.6	134
1980q3	2,860.0	6,382.9	135
1980q4	2,993.5	6,501.2	136
1981q1	3,131.8	6,635.7	137
1981q2	3,167.3	6,587.3	138
1981q3	3,261.2	6,662.9	139
1981q4	3,283.5	6,585.1	140
1982q1	3,273.8	6,475.0	141
1982q2	3,331.3	6,510.2	142
1982q3	3,367.1	6,486.8	143
1982q4	3,407.8	6,493.1	144
1983q1	3,480.3	6,578.2	145
1983q2	3,583.8	6,728.3	146
1983q3	3,692.3	6,860.0	147
1983q4	3,796.1	7,001.5	148

1980 through 2016 Q3		
Average	5.46%	Nominal
Average	2.63%	Real
1	8.783381	1980
2	8.762896	
3	8.761378	
4	8.779742	
5	8.800219	1981
6	8.792899	
7	8.804310	
8	8.792565	
9	8.775704	1982
10	8.781125	
11	8.777525	
12	8.778495	
13	8.791516	1983
14	8.814078	
15	8.833463	
16	8.853880	
17	8.873552	1984
18	8.890961	
19	8.900753	
20	8.908695	
21	8.918583	1985
22	8.927699	
23	8.943140	
24	8.950611	
25	8.959838	1986
26	8.964414	
27	8.974441	
28	8.979606	
29	8.986572	1987
30	8.997729	
31	9.006754	
32	9.023131	
33	9.028735	1988
34	9.041863	
35	9.047621	
36	9.060784	
37	9.070814	1989
38	9.078647	
39	9.086080	
40	9.088195	
41	9.099085	1990
42	9.102944	
43	9.103189	
44	9.094638	
45	9.089934	1991
46	9.097664	
47	9.102454	
48	9.106800	
49	9.118554	1992
50	9.129510	
51	9.139188	
52	9.149156	
53	9.151026	1993
54	9.156950	
55	9.161812	
56	9.175076	
57	9.184838	1994
58	9.198409	
59	9.204292	
60	9.215577	
61	9.218993	1995
62	9.222476	
63	9.231005	
64	9.238072	
65	9.244616	1996
66	9.261927	
67	9.271134	
68	9.281647	
69	9.289235	1997
70	9.304213	
71	9.316860	
72	9.324588	
73	9.334432	1998
74	9.344084	
75	9.357087	
76	9.373369	
77	9.381323	1999
78	9.389532	
79	9.402043	
80	9.419247	
81	9.422148	2000
82	9.440857	
83	9.442063	
84	9.447726	
85	9.444883	2001
86	9.450168	
87	9.447000	
88	9.449775	
89	9.458941	2002
90	9.464440	
91	9.469299	
92	9.469932	
93	9.475102	2003
94	9.484337	
95	9.500946	
96	9.512569	
97	9.518303	2004
98	9.525604	
99	9.534653	
100	9.543263	
101	9.553866	2005
102	9.559073	
103	9.567441	
104	9.573135	
105	9.585078	2006
106	9.588064	
107	9.588955	
108	9.596752	
109	9.597370	2007
110	9.604994	
111	9.611697	
112	9.615259	
113	9.608412	2008
114	9.613362	
115	9.608553	
116	9.587200	
117	9.573246	2009
118	9.571895	
119	9.575157	
120	9.584789	
121	9.589106	2010
122	9.598720	
123	9.605452	
124	9.611731	
125	9.607861	2011
126	9.615112	
127	9.617211	
128	9.628412	
129	9.635020	2012
130	9.639678	
131	9.640875	
132	9.641103	
133	9.648073	2013
134	9.649988	
135	9.657670	
136	9.667379	
137	9.664405	2014
138	9.674125	
139	9.686233	
140	9.691945	
141	9.697017	2015
142	9.703462	
143	9.708379	
144	9.710552	
145	9.712630	2016
146	9.716139	
147	9.724779	

OLS Regression

Annualized Real LN GPD Q

2.80%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.987369563
R Square	0.974898655
Adjusted R Square	0.974725542
Standard Error	0.047411547
Observations	147

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	12.65898051	12.65898051	5631.582812	6.3677E-118
Residual	145	0.325938947	0.002247855		
Total	146	12.98491946			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	8.790216674	0.00786095	1118.213012	3.02E-287	8.774679824	8.805753524	8.774679824	8.805753524
X Variable 1	0.006915507	9.21529E-05	75.04387258	6.3677E-118	0.006733371	0.007097644	0.006733371	0.007097644

GDP is an array of expenditure and income data collected by BEA directly and through other government agencies.

Note July 31, 2013, 14th Comprehensive Significant Revision:
BEA revised its tables back to 1929 in to order to count:
1 Artistic Works
2 Research and Development
as Capital Investments that Depreciate Over Time rather than one time expenditures

From an Economy based on
(Industry and Manufacturing)
to one based on
(Knowledge and Information)

This comprehensive revision did not cause a large percentage jump.
The relative difference of actual amounts over time changed little.

1984q1	3,912.8	7,140.6	149
1984q2	4,015.0	7,266.0	150
1984q3	4,087.4	7,337.5	151
1984q4	4,147.6	7,396.0	152
1985q1	4,237.0	7,469.5	153
1985q2	4,302.3	7,537.9	154
1985q3	4,394.6	7,655.2	155
1985q4	4,453.1	7,712.6	156
1986q1	4,516.3	7,784.1	157
1986q2	4,555.2	7,819.8	158
1986q3	4,619.6	7,898.6	159
1986q4	4,669.4	7,939.5	160
1987q1	4,736.2	7,995.0	161
1987q2	4,821.5	8,084.7	162
1987q3	4,900.5	8,158.0	163
1987q4	5,022.7	8,292.7	164
1988q1	5,090.6	8,339.3	165
1988q2	5,207.7	8,449.5	166
1988q3	5,299.5	8,498.3	167
1988q4	5,412.7	8,610.9	168
1989q1	5,527.4	8,697.7	169
1989q2	5,628.4	8,766.1	170
1989q3	5,711.6	8,831.5	171
1989q4	5,763.4	8,850.2	172
1990q1	5,890.8	8,947.1	173
1990q2	5,974.7	8,981.7	174
1990q3	6,029.5	8,983.9	175
1990q4	6,023.3	8,907.4	176
1991q1	6,054.9	8,865.6	177
1991q2	6,143.6	8,934.4	178
1991q3	6,218.4	8,977.3	179
1991q4	6,279.3	9,016.4	180
1992q1	6,380.8	9,123.0	181
1992q2	6,492.3	9,223.5	182
1992q3	6,586.5	9,313.2	183
1992q4	6,697.6	9,406.5	184
1993q1	6,748.2	9,424.1	185
1993q2	6,829.6	9,480.1	186
1993q3	6,904.2	9,526.3	187
1993q4	7,032.8	9,653.5	188
1994q1	7,136.3	9,748.2	189
1994q2	7,269.8	9,881.4	190
1994q3	7,352.3	9,939.7	191
1994q4	7,476.7	##########	192
1995q1	7,545.3	##########	193
1995q2	7,604.9	##########	194
1995q3	7,706.5	##########	195
1995q4	7,799.5	##########	196
1996q1	7,893.1	##########	197
1996q2	8,061.5	##########	198
1996q3	8,159.0	##########	199
1996q4	8,287.1	##########	200
1997q1	8,402.1	##########	201
1997q2	8,551.9	##########	202
1997q3	8,691.8	##########	203
1997q4	8,788.3	##########	204
1998q1	8,889.7	##########	205
1998q2	8,994.7	##########	206
1998q3	9,146.5	##########	207
1998q4	9,325.7	##########	208
1999q1	9,447.1	##########	209
1999q2	9,557.0	##########	210
1999q3	9,712.3	##########	211
1999q4	9,926.1	##########	212
2000q1	10,031.0	##########	213
2000q2	10,278.3	##########	214
2000q3	10,357.4	##########	215
2000q4	10,472.3	##########	216
2001q1	10,508.1	##########	217
2001q2	10,638.4	##########	218
2001q3	10,639.5	##########	219
2001q4	10,701.3	##########	220
2002q1	10,834.4	##########	221
2002q2	10,934.8	##########	222
2002q3	11,037.1	##########	223
2002q4	11,103.8	##########	224
2003q1	11,230.1	##########	225
2003q2	11,370.7	##########	226
2003q3	11,625.1	##########	227
2003q4	11,816.8	##########	228
2004q1	11,988.4	##########	229
2004q2	12,181.4	##########	230
2004q3	12,367.7	##########	231
2004q4	12,562.2	##########	232
2005q1	12,813.7	##########	233
2005q2	12,974.1	##########	234
2005q3	13,205.4	##########	235
2005q4	13,381.6	##########	236
2006q1	13,648.9	##########	237
2006q2	13,799.8	##########	238
2006q3	13,908.5	##########	239
2006q4	14,066.4	##########	240
2007q1	14,233.2	##########	241
2007q2	14,422.3	##########	242
2007q3	14,569.7	##########	243
2007q4	14,685.3	##########	244
2008q1	14,668.4	##########	245
2008q2	14,813.0	##########	246
2008q3	14,843.0	##########	247
2008q4	14,549.9	##########	248
2009q1	14,383.9	##########	249
2009q2	14,340.4	##########	250
2009q3	14,384.1	##########	251
2009q4	14,566.5	##########	252
2010q1	14,681.1	##########	253
2010q2	14,888.6	##########	254
2010q3	15,057.7	##########	255
2010q4	15,230.2	##########	256
2011q1	15,238.4	##########	257
2011q2	15,460.9	##########	258
2011q3	15,587.1	##########	259
2011q4	15,785.3	##########	260
2012q1	15,973.9	##########	261
2012q2	16,121.9	##########	262
2012q3	16,227.9	##########	263
2012q4	16,297.3	##########	264
2013q1	16,475.4	##########	265
2013q2	16,541.4	##########	266
2013q3	16,749.3	##########	267
2013q4	16,999.9	##########	268
2014q1	17,025.2	##########	269
2014q2	17,285.6	##########	270
2014q3	17,569.4	##########	271
2014q4	17,692.2	##########	272
2015q1	17,783.6	##########	273
2015q2	17,998.3	##########	274
2015q3	18,141.9	##########	275
2015q4	18,222.8	##########	276
2016q1	18,281.6	##########	276
2016q2	18,450.1	##########	276
2016q3	18,675.3	##########	276

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 206

Staff CAPM Results
(Capital Asset Pricing Model)

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff CAPM
Capital Asset Pricing Model

Staff's Representative CAPM Modeling Results

3.68%	Risk Free Rate as Average of Bloomberg January 2017 daily market forwards for June 1, 2018 effective 10 Yr UST Yields
4.30%	Risk Free Rate as Average of Bloomberg January 2017 daily market forwards for June 1, 2018 effective 30 Yr UST Yields
4.50%	Ibbotson Market Risk Premium (Since 1980 — My Adult Lifetime)
6.00%	Morningstar in Stocks, Bonds, Bills and Inflation 2015 Classic Yearbook (Very Long Run since 1926)

$R_{AVA} = R_f + Beta*MRP$

Note See Staff Cost of Capital Wxhibits for Bloomberg UST Market forwards

							Ibbotson's Modern Adult Lifetime Perspective				Morningstar Very Long Historical Perspective			
							w 10 Yr Forward UST		w 30 Yr Forward UST		w 10 Yr Forward UST		w 30 Yr Forward UST	
#	Abbreviated Utility	Ticker	VL 12/29/2016 Beta	Yahoo Fin. 12/29/2016 Beta	UG 325 Company	UG 325 Staff	CAPM w VL Beta	CAPM w Yahoo Beta	CAPM w VL Beta	CAPM w Yahoo Beta	CAPM w VL Beta	CAPM w Yahoo Beta	CAPM w VL Beta	CAPM w Yahoo Beta
1	Atmos	ATO	0.70	0.10	Yes	Sensitivity	6.83%	4.13%	7.45%	4.75%	7.88%	4.28%	8.50%	4.90%
2	Laclede (Spire)	SR / LG	0.70	0.22	Yes	No	6.83%	4.67%	7.45%	5.29%	7.88%	5.00%	8.50%	5.62%
3	New Jersey	NJR	0.80	0.24	Yes	No	7.28%	4.76%	7.90%	5.38%	8.48%	5.12%	9.10%	5.74%
4	NiSource	NI	NMF	0.14	Yes	No	NMF	4.31%	NMF	4.93%	NMF	4.52%	NMF	5.14%
5	Northwest Natural	NWN	0.65	0.34	Yes	Yes	6.61%	5.21%	7.23%	5.83%	7.58%	5.72%	8.20%	6.34%
6	South Jersey	SJI	0.80	0.71	Yes	No	7.28%	6.88%	7.90%	7.50%	8.48%	7.94%	9.10%	8.56%
7	Southwest Gas	SWX	0.75	0.38	Yes	Yes	7.06%	5.39%	7.68%	6.01%	8.18%	5.96%	8.80%	6.58%
8	WGL	WGL	0.75	0.60	Yes	No	7.06%	6.38%	7.68%	7.00%	8.18%	7.28%	8.80%	7.90%
						Avista:	6.99%	5.22%	7.61%	5.84%	8.10%	5.73%	8.72%	6.35%
						Staff w/o ATO:	6.83%	5.30%	7.45%	5.92%	7.88%	5.84%	8.50%	6.46%
						Staff w ATO:	6.83%	4.91%	7.45%	5.53%	7.88%	5.32%	8.50%	5.94%
						Range	From:	4.91%	To:	7.61%	From:	5.32%	To:	8.72%
							Overall	Midpoint	6.26%		Overall	Midpoint	7.02%	

NMF: VL Provides no Beta for NiSource at time of analysis

Note: Chesapeake is excluded - NOT a VL defined Gas Utility

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 207

REDACTED
Cost of Long-Term Debt

Exhibits in Support of Opening Testimony

March 1, 2017

Abbreviations Used by Staff:

10-K	Annual Report AVA files with the SEC (2012 unless specified otherwise)
10-Q	Quarterly Report AVA files with the SEC (2012 Q1 unless specified otherwise)
AVA	Avista Corporation (NYSE: AVA)
BB	Bloomberg
Cpn	Coupon Rate (Percent)
Curr	Currency
CUSIP	Committee on Uniform Securities Identification Procedures Security Identification
Ecova	Ecova, Inc. (Former Indirect Subsidiary of AVA)
EIN	IRS Employer Identification Number
FMB	First Mortgage Bonds
Freq	Frequency
IRS	U.S. Internal Revenue Service
Key	SNL Funding Key (Identification Number)
LT	Long-Term
MTN	Medium Term Notes
N/A	Not Available
N/R	Not Rated
NYSE	New York Stock Exchange (Ticker Symbol)
PCRB	Pollution Control Revenue Bonds
SEC	U.S. Securities and Exchange Commission (File Number)
SE	Spokane Energy (AVA owns all capital of this Special Purpose Limited Liability Company)
SNL	SNL Financial, LC
U.S.	United States of America
USD	US Dollar (Denominated)
WD	Withdrawn (Credit Rating)

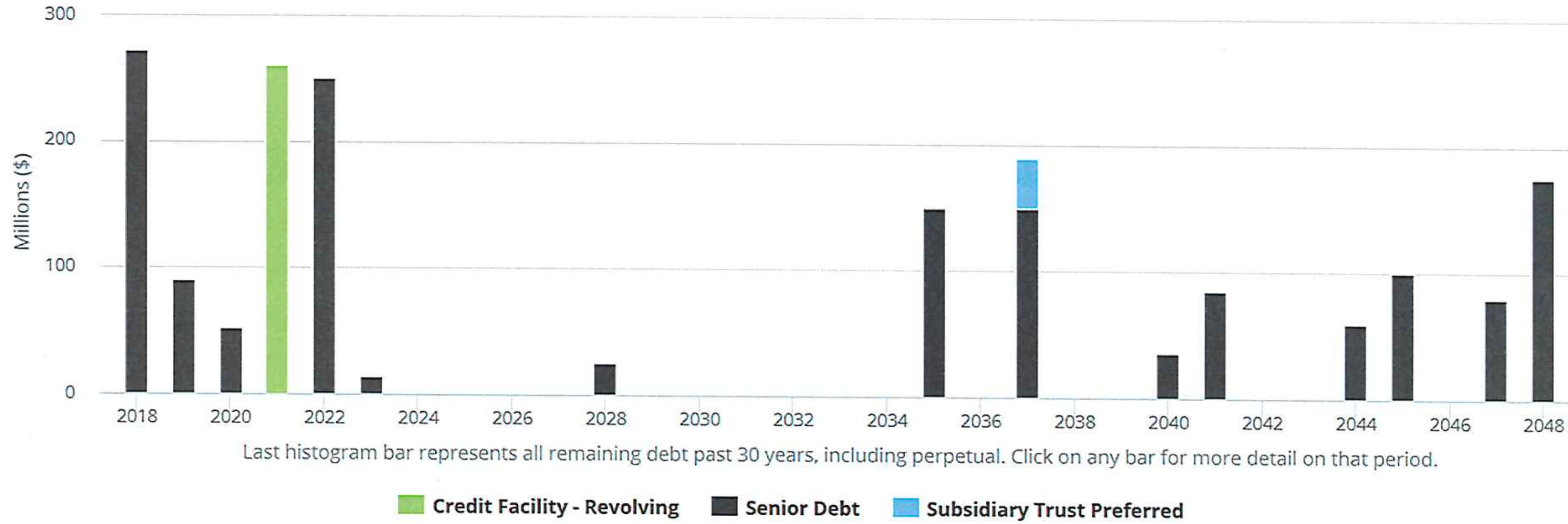
This page is confidential and is subject to

Protective Order No. 16-460.

SNL Financial
Debt Maturity Profile

Debt Maturity Profile (Data displayed in USD)

(Includes outstanding notes, bonds, and trust preferreds with original maturity greater than 1 year)



Source SNL Financial LC, Accessed by Staff at: https://www.snl.com/web/client?auth=inherit#company/debtMaturityProfile?ID=4057075 on January 27, 2017

Pages 4 – 5 are confidential and is subject to

Protective Order No. 16-460.

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 208

Examples of Mergers and Acquisitions In Gas Utilities Followed by VL

Exhibits in Support of Opening Testimony

March 1, 2017

Southern/AGL Merger Settlement Reached in New Jersey; Closing Expected in Q2'16

by Phoebe Magdirila — SNL Financial LC — May 5, 2016

Southern Co. and **AGL** Resources Inc. have reached an **agreement with all parties in the** companies' New Jersey **merger** proceeding, putting **the deal on track to close in the second half of 2016**.

The merger is expected to close **following New Jersey Board** of **Public Utilities** and **Illinois Commerce Commission approval** of the **settlements reached in those** respective **jurisdictions**, according to a May 5 news release.

The companies sought approval from the New Jersey and Illinois regulators in October 2015.

In a separate release the same day, **Southern said it expects to raise about $900 million from an underwritten public offering of 18,300,000 shares of its common stock** and use a portion of the net proceeds **to fund the AGL acquisition**. The offering is expected to close May 11, subject to customary closing conditions.

Citigroup and **J.P. Morgan** are acting as **joint book**-**running managers** for the offering.

—

Duke Energy Closes $6.7B Acquisition of Piedmont Natural Gas

By Darren Sweeney — SNL Financial LC — Oct. 3, 2016

Duke Energy Corp. has **completed** its **$6.7 billion acquisition** of **Piedmont** Natural Gas Co. Inc.

The Oct. 3 announcement comes days after the **North Carolina Utilities Commission** issued an order **Sept**. **29 approving** the **merger**. (Docket Nos. E-2, SUB 1095; E-7, SUB 1000; G-9 SUB 682)

Approval by North Carolina regulators was the **final regulatory hurdle** for the deal.

The combination previously received approvals from the Tennessee Regulatory Authority and Piedmont shareholders, as well as the Federal Trade Commission.

Piedmont will **retain** its **name** and will **operate** as a **business unit** of **Duke** Energy. Piedmont serves about 1 million natural gas customers in North Carolina, South Carolina and Tennessee and, like Duke, is headquartered in Charlotte, N.C.

—

Canada's AltaGas in Talks to Combine with D.C. Utility WGL

by Matt Jarzemsky and Dama Cimilluca — WSJ — Jan. 12, 2017

Canada's **AltaGas** Ltd. is **in talks to combine with WGL** Holdings Inc. in a **transaction** that **could value** the **parent of Washington, D.C.'s natural-gas utility at $5** billion to **$6 billion**, as increasing use of natural gas spurs merger activity.

A **deal could be announced this month**, people familiar with the matter said—assuming the talks don't fall apart and another bidder doesn't re-emerge. WGL has been considering a sale for months.

In a statement after The Wall Street Journal reported on the talks Thursday, AltaGas said "While we are in discussions regarding a potential transaction with a third party, no agreement has been reached and there is **no assurance** that these discussions will continue or that any **transaction will be agreed upon**." A WGL spokesman declined to comment.

WGL operates Washington Gas, a utility founded through a congressional charter in 1848, according to its website. The company installed gas lights in the House and Senate chambers and the White House, and later expanded into Virginia and Maryland. Washington Gas now has more than **1 million customers in** the **D.C. area**. WGL also provides retail energy-marketing services and operates natural-gas distribution facilities.

Calgary-based AltaGas operates utilities that serve more than 560,000 customers, according to its website. The company has been diversifying in recent years beyond its roots in natural-gas processing facilities and electric-power plants. **In 2012**, it **paid** about **$800 million for** the **parent of two natural-gas distributors**, **Michigan's Semco** and **Alaska's Enstar**.

Growth in natural-gas use by homes and businesses has fueled **takeover interest among large utility operators and power companies**, particularly those struggling with stagnant electricity sales.

Last year, Dominion Resources Inc. **bought Questar** Corp. for about **$4.4 billion**, **Duke** Energy Corp. **bought Piedmont** Natural Gas Co. **for $4.8 billion** and **Southern** Co. **bought AGL** Resources Inc.

A price in the $5 billion to $6 billion range could mark a **significant premium** for **WGL**. The company had a **market value Thursday** afternoon of about **$3.9 billion**, a figure that had already received a lift from the prospect of a sale. Bloomberg reported in November that WGL was considering a sale after fielding **interest from Iberdrola** SA. Discussions with the Spanish company **fell apart**, a person familiar with the matter said this week. WGL shares jumped nearly 6 percent Thursday on news of the potential deal to close at $80.26.

A **purchase of WGL** would be a **big bite for AltaGas**, which is **valued at** about 5.6 billion Canadian dollars (**US$4.3 billion**). **AltaGas** also has a hefty **debt load** of

C$3.8 billion, but its Toronto-traded shares were up 20 percent in the past year, which could increase its ammunition for a deal.

Regulatory or political pushback is seen as a **potential obstacle** to any proposed tie-up between WGL and AltaGas, one of the people familiar with the matter said. Exelon Corp. spent nearly two years seeking approval from D.C. regulators for its nearly $7 billion purchase of Pepco Holdings Inc., a deal that closed in March. AltaGas also may seek the blessing of the **Committee on Foreign Investment** in the U.S., which **screens takeovers by foreign acquirers** for security concerns, according to this person.

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CenterPoint Energy Acquires Atmos Energy's Gas Marketing Business

by Selene Balasta — SNL Financial LC — Jan. 4, 2016

CenterPoint Energy Inc. unit CenterPoint Energy Services Inc. **closed** its **purchase** of **Atmos Energy Marketing** LLC **from Atmos Energy Holdings** Inc., according to a Jan. 3 news release.

Under an **all-cash transaction of $40 million plus working capital**, **Atmos Energy** Corp. **has fully exited its nonregulated gas marketing business** and **has become a fully regulated pure-play gas company**. The transaction includes the transfer of about 800 delivered gas customers and Atmos Energy Marketing's related asset optimization business.

"This transaction is a strategic fit for both CES and AEM, and the acquisition will enable CES to more effectively access new markets and customer segments, grow our customer base and gross margins, and maintain our low value-at-risk, cost-effective organizational structure. AEM's complementary operational and geographic footprints will provide CES with increased scale, geographic reach, and expanded capabilities that will enable it to grow, while maintaining a focus on excellent customer service," CenterPoint vice president Joe Vortherms said in the release.

With the completion of the deal, CenterPoint Energy Services now operates in 32 states and will deliver in excess of 1 trillion cubic feet of natural gas to approximately 100,000 customers annually.

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 209

Value Line (VL)
Gas and Water Utility Profiles

Exhibits in Support
of Opening Testimony

March 1, 2017

NATURAL GAS UTILITY

Stocks in *Value Line's* Natural Gas Utility Industry have performed well, in general, during 2016. (At the time of this writing, a number of them were trading close to their historical highs.) We attribute that relative strength partly to turbulent financial markets, reflecting concern over such factors as the welfare of China's economy (the third largest in the world) and the United Kingdom's decision to exit the European Union. Indeed, during periods of uncertainty, which seem to be more common these days, the equities in this group appear more enticing than those of other industries mainly because they offer well-covered, appealing amounts of dividend income. Of course, no sector (even the most defensive) is completely immune to financial market fluctuations.

Natural Gas Prices

Despite recent strength, natural gas quotations are nowhere near the heights reached late last decade, and the situation might not improve very much for some time. Even though that scenario does not augur well for companies that produce this commodity, regulated utility units generally benefit. That's partially because lower gas pricing tends to lead to diminished prices for customers, which may well bring down bad-debt expense. Furthermore, there is an increased possibility that homeowners will switch from alternative fuel sources, such as oil or propane, to natural gas. (At the present time, it's estimated that more than half of all households within the United States use natural gas.) It is important to mention, however, that companies in our universe also possess nonregulated businesses (including pipelines and energy marketing & trading), which tend to underperform when gas prices are at subdued levels.

How's The Weather?

Weather is a factor that affects the demand for natural gas, particularly from small commercial businesses and consumers. Not surprisingly, profits for utilities are susceptible to seasonal temperature patterns, with consumption normally at its peak during the winter heating months. Unseasonably warm or cold weather can cause significant volatility in quarterly operating results. But some companies strive to counteract this exposure through temperature-adjusted rate mechanisms, which are available in a number of states.

Long-Term Prospects

Overall, we are optimistic about the industry's operating performance over the next three to five years. Natural gas should continue to be abundant in the United States, brought about by new technologies, so a shortage does not appear probable anytime soon. Furthermore, there are limited alternatives for the services the companies in this group offer. Too, it's a challenge for new entrants in the market, given such factors as the size of existing competitors and the considerable initial capital outlays that are required. Finally, the country's population (now numbering more than 320 million) ought to remain on a steady, upward course, which augurs well for future demand for utility services.

INDUSTRY TIMELINESS: 62 (of 97)

Nonetheless, there are some risks to consider. For a start, companies are subject to state and local regulatory authorities. That being the case, there are no guarantees that petitions for rate increases will be accepted or that certain favorable provisions (including temperature-adjusted rate mechanisms) will continue indefinitely. To further complicate matters, a slowdown in the economy may prompt customers to conserve gas and push up bad-debt expense. Lastly, operational difficulties created by leaks and other accidents could result in substantial financial losses (if not adequately covered by insurance).

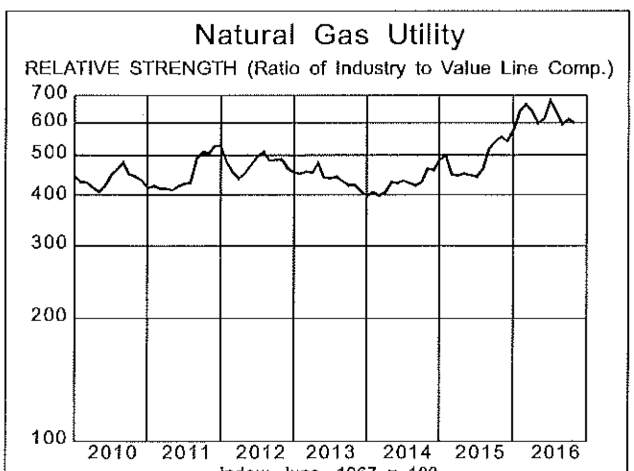
Appealing Dividends

The primary feature of utility equities is their dividend income, which is well covered by corporate profits. (It's important to mention that the Financial Strength ratings for the 10 companies in our universe are no lower than B+.) At the time of this report, the average yield for the group was about 2.8%, significantly above the *Value Line* median of 2.1%. Standouts include *South Jersey Industries, Northwest Natural Gas, Spire Inc.*, and *NiSource Inc.* When the financial markets experience heightened volatility, which seems to be more often the case these days, solid dividend yields tend to provide a measure of much-needed stability.

Conclusion

Stocks within the Natural Gas Utility Industry ought to draw the interest of income-focused accounts with a conservative bent, given that a number of these issues are ranked favorably for Safety and possess high marks for Price Stability. It is important to keep in mind that companies owning more-established nonregulated operations might offer a higher potential for returns, but profits could be more volatile than for firms with a greater emphasis on the more stable utility segment. As always, our readers are advised to carefully examine the following reports before committing funds.

Frederick L. Harris, III

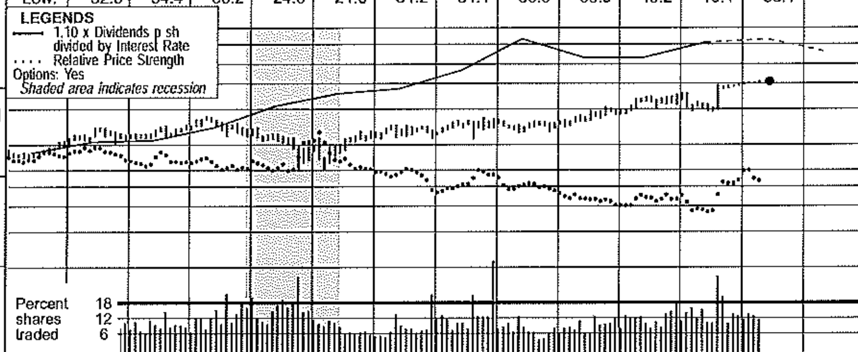


AGL RESOURCES NYSE-GAS

RECENT PRICE	P/E RATIO		RELATIVE P/E RATIO	DIV'D YLD	
65.60	20.5	(Trailing: 23.1 / Median: 14.0)	1.13	3.2%	VALUE LINE

TIMELINESS – Suspended 9/4/15
SAFETY 1 Raised 9/9/11
TECHNICAL – Suspended 9/4/15
BETA .60 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	39.3	40.1	44.7	39.1	37.5	40.1	43.7	42.9	49.3	56.7	64.0	66.5
Low:	32.0	34.4	35.2	24.0	24.0	34.2	34.1	36.6	38.9	45.2	46.4	63.1



Target Price Range
2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(+15%)	6%
Low	65	(Nil)	3%

Insider Decisions

	J	A	S	O	N	D	J	F	M
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	2	5	0	1	1	7	0
to Sell	1	3	1	0	0	1	0	0	1

Institutional Decisions

	2Q2015	3Q2015	4Q2015
to Buy	193	224	215
to Sell	197	209	217
Hld's(000)	75486	76517	77994

% TOT. RETURN 4/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	36.0	-3.4
3 yr.	68.7	29.5
5 yr.	95.4	47.7

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
11.25	19.04	15.32	15.25	23.89	34.98	33.73	32.64	36.41	29.88	30.42	19.97	33.28	38.83	45.01	32.74	35.25	37.80	Revenues per sh A	44.00
2.86	3.31	3.39	3.47	3.29	4.20	4.50	4.65	4.68	4.90	5.05	3.06	5.82	6.15	7.87	6.23	6.70	7.40	"Cash Flow" per sh	8.80
1.29	1.50	1.82	2.08	2.28	2.48	2.72	2.72	2.71	2.88	3.00	2.12	2.31	2.64	4.71	2.94	3.20	3.60	Earnings per sh A B	4.65
1.08	1.08	1.08	1.11	1.15	1.30	1.48	1.64	1.68	1.72	1.76	1.90	1.74	1.88	1.96	2.04	2.12	2.16	Div'ds Decl'd per sh CF■	2.40
2.92	2.83	3.30	2.46	3.44	3.44	3.26	3.39	4.84	6.14	6.54	3.65	6.64	6.30	6.43	8.53	7.40	7.30	Cap'l Spending per sh	7.20
11.50	12.19	12.52	14.66	18.06	19.29	20.71	21.74	21.48	22.95	23.24	28.33	28.96	30.54	31.63	32.64	33.35	35.05	Book Value per sh D	40.15
54.00	55.10	56.70	64.50	76.70	77.70	77.70	76.40	76.90	77.54	78.00	117.10	117.86	118.89	119.65	120.38	122.00	123.00	Common Shs Outst'g E	125.00
13.6	14.6	12.5	12.5	13.1	14.3	13.5	14.7	12.3	11.2	12.5	18.8	17.2	16.7	10.9	18.5	Bold figures are		Avg Ann'l P/E Ratio	15.0
.88	.75	.68	.71	.69	.76	.73	.78	.74	.75	.80	1.18	1.09	.94	.57	.95	Value Line		Relative P/E Ratio	.95
6.2%	4.9%	4.7%	4.3%	3.9%	3.7%	4.0%	4.1%	5.0%	5.4%	4.7%	4.8%	4.4%	4.3%	3.8%	3.8%	estimates		Avg Ann'l Div'd Yield	3.4%

CAPITAL STRUCTURE as of 3/31/16
Total Debt $4300 mill. Due in 5 Yrs $2764 mill.
LT Debt $3273 mill. LT Interest $181 mill.
(Total interest coverage: 4.1x)

Leases, Uncapitalized Annual rentals $33 mill.
Pension Assets-12/15 $847 mill. **Oblig.** $1067 mill.

Pfd Stock None

Common Stock 120,680,030 shs. **as of 4/29/16**
MARKET CAP: $7.9 billion (Large Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
2621.0	2494.0	2800.0	2317.0	2373.0	2338.0	3922.0	4617.0	5385.0	3941.0	4300	4650	Revenues ($mill) A	5500
212.0	211.0	207.6	222.0	234.0	172.0	271.0	313.0	562.0	353.0	390	445	Net Profit ($mill)	580
37.8%	37.6%	40.5%	35.2%	35.9%	40.2%	36.4%	36.6%	37.6%	36.3%	33.0%	38.0%	Income Tax Rate	38.0%
8.1%	8.5%	7.4%	9.6%	9.9%	7.4%	6.9%	6.8%	10.4%	9.0%	9.1%	9.5%	Net Profit Margin	10.5%
50.2%	50.2%	50.3%	52.6%	48.0%	51.8%	49.4%	51.2%	48.8%	45.5%	48.0%	48.0%	Long-Term Debt Ratio	47.0%
49.8%	49.8%	49.7%	47.4%	52.0%	48.2%	50.6%	48.8%	51.2%	54.5%	52.0%	52.0%	Common Equity Ratio	53.0%
3231.0	3335.0	3327.0	3754.0	3486.0	6879.0	6740.0	7444.0	7386.0	7204.0	7835	8270	Total Capital ($mill)	9605
3436.0	3566.0	3816.0	4146.0	4405.0	7900.0	8347.0	8781.0	9090.0	9791.0	10475	11105	Net Plant ($mill)	13225
8.0%	7.7%	7.4%	6.9%	7.6%	3.1%	5.4%	5.4%	8.8%	6.1%	6.5%	7.0%	Return on Total Cap'l	7.5%
13.2%	12.7%	12.6%	12.5%	12.9%	5.2%	7.9%	8.6%	14.9%	9.0%	9.5%	10.5%	Return on Shr. Equity	11.5%
13.2%	12.7%	12.6%	12.5%	12.9%	5.2%	7.9%	8.6%	14.9%	9.0%	9.5%	10.5%	Return on Com Equity	11.5%
6.3%	5.3%	5.1%	5.3%	5.6%	.7%	2.0%	2.5%	8.7%	2.8%	3.0%	4.0%	Retained to Com Eq	5.5%
52%	58%	60%	57%	57%	86%	75%	71%	41%	69%	66%	60%	All Div'ds to Net Prof	52%

CURRENT POSITION ($MILL.)	2014	2015	3/31/16
Cash Assets	39	27	20
Other	2851	2088	1517
Current Assets	2890	2115	1537
Accts Payable	312	673	613
Debt Due	2152	1555	1027
Other	755	772	849
Current Liab.	3219	3000	2489
Fix. Chg. Cov.	611%	465%	415%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.5%	4.0%	2.0%
"Cash Flow"	6.5%	6.5%	4.5%
Earnings	4.0%	3.5%	5.0%
Dividends	5.0%	2.5%	3.5%
Book Value	6.0%	7.0%	4.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1709	904	675	1329	4617
2014	2462	889	589	1445	5385
2015	1721	674	584	962	3941
2016	1334	850	700	1416	4300
2017	1700	900	700	1350	4650

Cal-endar	EARNINGS PER SHARE AB Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.31	.41	.24	.68	2.64
2014	2.81	.48	.19	1.24	4.71
2015	1.62	.35	.09	.89	2.94
2016	1.51	.40	.19	1.10	3.20
2017	1.80	.40	.20	1.20	3.60

Cal-endar	QUARTERLY DIVIDENDS PAID CF■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.36	.46	.46	.46	1.74
2013	.47	.47	.47	.47	1.88
2014	.49	.49	.49	.49	1.96
2015	.51	.51	.51	.51	2.04
2016	.53	.53			

BUSINESS: AGL Resources Inc. is a public utility holding company. Distribution subsidiaries include Atlanta Gas Light, Chattanooga Gas, Elizabethtown Gas, Virginia Natural Gas, Florida City Gas and Elkton Gas. Acquired Nicor in 2011. The utilities have more than 4.5 million customers in Georgia, Virginia, Tennessee, New Jersey, Florida, and Illinois. Engaged in nonregulated natural gas marketing and other allied services. Deregulated subsidiaries: Georgia Natural Gas markets natural gas at retail. BlackRock Inc. owns 8.0% of common stock; officers/directors, less than 1.0% (3/15 Proxy). President & CEO: John W. Somerhalder II. Inc.: GA. Addr.: Ten Peachtree Place N.E., Atlanta, GA 30309. Telephone: 404-584-4000. Internet: www.aglresources.com.

The takeover of AGL Resources by Southern Company appears to be on track. Indeed, the company has reached agreements with both the New Jersey Board of Public Utilities and the Georgia Public Service Commission, which would ease their concerns with the merger continuing. In addition, the company has approval from Maryland authorities. The deal has already received shareholder and antitrust approval. This move would create the nation's second-largest public utility company. Management thinks it will likely close in the second half of 2016, and we think this may be toward the earlier half of that range. Still, risks still exist here until the deal is completed.

First-quarter results underwhelmed. Temperatures were warmer than usual during the period, while lower gross contributions hurt the bottom line, and additional costs related to the company's pending merger (see below) were incurred. These caused earnings to fall to $1.51 a share. However, the bad news was partially offset by lower maintenance expenses, as warmer temperatures allowed for lower overtime expense.

The company appears poised for better results in the coming years. AGL Resources is investing in pipelines to its coverage areas, which should both lower costs of natural gas and lead to higher allowable returns on equity. Too, the company appears likely to benefit from more normal temperatures in the years ahead. All told, we think it will be able to earn $4.65 a share by the end of the decade.

We believe that there is little reason to own shares of AGL Resources at the recent quotation. Indeed, these shares are trading just under the proposed all-cash acquisition price of $66, so little appreciation potential exists here. However, should anything cause the deal to falter, these shares could tumble, though we think this possibility is remote. In the meantime, the yield here does not stand out for a utility. Longer-term investors should look elsewhere in the industry, while those who still hold the stock should consider selling their shares given the small discount to the deal price. The stock's Timeliness rank is suspended pending the takover agreement.

John E. Seibert III *June 3, 2016*

(A) Fiscal year ends December 31st. Ended September 30th prior to 2002.
(B) Diluted earnings per share. May not add up due to rounding. Excl. nonrecurring gains (losses): '00, $0.13; '01, $0.13; '03, ($0.07); '08, $0.13; '14, ($0.67). Next earnings report due late July. (C) Dividends historically paid early March, June, Sept., and Dec. ■ Div'd reinvest. plan available. (D) Includes intangibles. In 2015: $1,922 million, $15.97/share.(E) In millions. (F) Excluding special dividends from the Nicor merger.

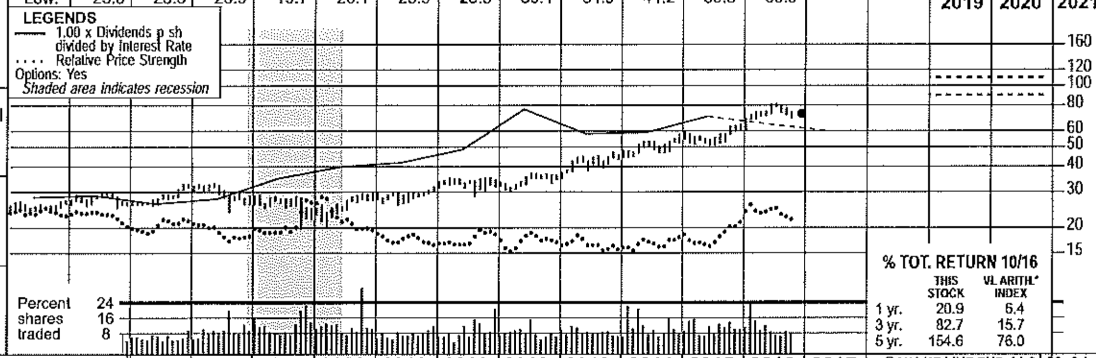
Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	55
Earnings Predictability	55

ATMOS ENERGY CORP. NYSE-ATO

RECENT PRICE 72.84 | P/E RATIO 20.8 (Trailing: 21.4, Median: 15.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 2.5% | VALUE LINE

TIMELINESS 3 Lowered 9/16/16
SAFETY 1 Raised 6/6/14
TECHNICAL 3 Lowered 9/30/16
BETA .70 (1.00 = Market)

High:	30.0	33.1	33.5	29.3	30.3	32.0	35.6	37.3	47.4	58.2	64.8	82.0
Low:	25.0	25.5	23.9	19.7	20.1	25.9	28.5	30.4	34.9	44.2	50.8	60.0



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	110	(+50%)	13%
Low	90	(+25%)	8%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	2	0	0	2	6	0	2	0	0
to Sell	0	0	0	0	1	0	0	2	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	159	212	188
to Sell	133	142	148
Hld's(000)	70628	71888	73716

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	20.9	6.4
3 yr.	82.7	15.7
5 yr.	154.6	76.0

Atmos Energy's history dates back to 1906 in the Texas Panhandle. Over the years, through various mergers, it became part of Pioneer Corporation, and, in 1981, Pioneer named its gas distribution division Energas. In 1983, Pioneer organized Energas as a separate subsidiary and distributed the outstanding shares of Energas to Pioneer shareholders. Energas changed its name to Atmos in 1988. Atmos acquired Trans Louisiana Gas in 1986, Western Kentucky Gas Utility in 1987, Greeley Gas in 1993, United Cities Gas in 1997, and others.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
75.27	66.03	79.52	53.69	53.12	48.15	38.10	42.88	49.22	40.82	32.20	33.65	Revenues per sh A	45.85
4.26	4.14	4.19	4.29	4.64	4.72	4.76	5.14	5.42	5.81	6.20	6.50	"Cash Flow" per sh	7.25
2.00	1.94	2.00	1.97	2.16	2.26	2.10	2.50	2.96	3.09	3.38	3.55	Earnings per sh A B	4.20
1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.48	1.56	1.68	1.80	Div'ds Decl'd per sh C ■	2.15
5.20	4.39	5.20	5.51	6.02	6.90	8.12	9.32	8.32	9.61	10.45	11.00	Cap'l Spending per sh	10.60
20.16	22.01	22.60	23.52	24.16	24.98	26.14	28.47	30.74	31.48	33.30	31.25	Book Value per sh	36.65
81.74	89.33	90.81	92.55	90.16	90.30	90.24	90.64	100.39	101.48	104.00	107.00	Common Shs Outst'g D	120.00
13.5	15.9	13.6	12.5	13.2	14.4	15.9	15.9	16.1	17.5	20.8		Avg Ann'l P/E Ratio	24.0
.73	.84	.82	.83	.84	.90	1.01	.89	.85	.89	1.11		Relative P/E Ratio	1.50
4.7%	4.2%	4.8%	5.3%	4.7%	4.2%	4.1%	3.5%	3.1%	2.9%	2.4%		Avg Ann'l Div'd Yield	2.1%
6152.4	5898.4	7221.3	4969.1	4789.7	4347.6	3438.5	3886.3	4940.9	4142.1	3349.9	3600	Revenues ($mill) A	5500
162.3	170.5	180.3	179.7	201.2	199.3	192.2	230.7	289.8	315.1	350.1	380	Net Profit ($mill)	500
37.6%	35.8%	38.4%	34.4%	38.5%	36.4%	33.8%	38.2%	39.2%	38.3%	36.4%	37.0%	Income Tax Rate	40.0%
2.6%	2.9%	2.5%	3.6%	4.2%	4.6%	5.6%	5.9%	5.9%	7.6%	10.5%	10.6%	Net Profit Margin	9.1%
57.0%	52.0%	50.8%	49.9%	45.4%	49.4%	45.3%	48.8%	44.3%	43.5%	39.0%	42.0%	Long-Term Debt Ratio	45.0%
43.0%	48.0%	49.2%	50.1%	54.6%	50.6%	54.7%	51.2%	55.7%	56.5%	61.0%	58.0%	Common Equity Ratio	55.0%
3828.5	4092.1	4172.3	4346.2	3987.9	4461.5	4315.5	5036.1	5542.2	5650.2	5655	5765	Total Capital ($mill)	8000
3629.2	3836.8	4136.9	4439.1	4793.1	5147.9	5475.6	6030.7	6725.9	7430.6	8280	9060	Net Plant ($mill)	11500
6.1%	5.9%	5.9%	5.9%	6.9%	6.1%	6.1%	5.9%	6.4%	6.6%	7.5%	8.0%	Return on Total Cap'l	7.5%
9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	10.0%	11.5%	Return on Shr. Equity	11.5%
9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	10.0%	11.5%	Return on Com Equity	11.5%
3.6%	3.0%	3.1%	2.7%	3.5%	3.3%	2.8%	4.0%	4.7%	4.9%	5.0%	5.5%	Retained to Com Eq	5.5%
63%	65%	65%	68%	62%	62%	65%	56%	50%	51%	50%	51%	All Div'ds to Net Prof	52%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $3126.1 mill. Due in 5 Yrs $1157.9 mill.
LT Debt $2205.6 mill. LT Interest $135.0 mill.
(LT interest earned: 5.4x; total interest coverage: 5.4x)
Leases, Uncapitalized Annual rentals $16.5 mill.
Pfd Stock None
Pension Assets-9/15 $450.9 mill. Oblig. $508.6 mill.
Common Stock 103,847,858 shs. as of 7/29/16
MARKET CAP: $7.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	42.3	28.7	66.2
Other	733.5	602.3	582.7
Current Assets	775.8	631.0	648.9
Accts Payable	311.6	238.9	198.9
Debt Due	196.7	457.9	920.5
Other	402.4	458.0	410.4
Current Liab.	910.7	1154.8	1529.8
Fix. Chg. Cov.	637%	743%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-2.0%	-6.5%	.5%
"Cash Flow"	5.0%	4.5%	5.0%
Earnings	5.5%	7.0%	6.5%
Dividends	2.0%	2.5%	6.5%
Book Value	5.0%	5.0%	3.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1034.2	1309.0	857.9	685.2	3886.3
2014	1255.1	1964.3	942.7	778.8	4940.9
2015	1258.8	1540.1	686.4	656.8	4142.1
2016	906.2	1132.3	632.9	678.5	3349.9
2017	930	1250	720	700	3600

Fiscal Year Ends	EARNINGS PER SHARE A B E Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.85	1.23	.36	.08	2.50
2014	.95	1.38	.45	.23	2.96
2015	.96	1.35	.55	.23	3.09
2016	1.00	1.38	.69	.33	3.38
2017	1.05	1.41	.72	.37	3.55

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.345	.345	.345	.35	1.39
2013	.35	.35	.35	.37	1.42
2014	.37	.37	.37	.39	1.50
2015	.39	.39	.39	.42	1.59
2016	.42	.42	.42	.45	

BUSINESS: Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to roughly three million customers through six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Gas sales breakdown for fiscal 2015: 66%, residential; 29%, commercial; 3%, industrial; and 2% other. The company has around 4,760 employees. Officers and directors own approximately 1.5% of common stock (12/15 Proxy). President and Chief Executive Officer: Kim R. Cocklin. Incorporated: Texas. Address: Three Lincoln Centre, Suite 1800, 5430 LBJ Freeway, Dallas, Texas 75240. Telephone: 972-934-9227. Internet: www.atmosenergy.com.

Atmos Energy may well post respectable results in fiscal 2017 (started October 1st). The natural gas distribution division, accounting for the largest portion of revenues, stands to benefit from a rise in throughput, assuming that both the weather and economic environment are generally favorable (leading to a boost in consumption levels). Also, we look for reasonably decent performances from the other segments, including the regulated pipeline unit. At this juncture, full-year profits might advance around 5%, to $3.55 a share, versus the fiscal 2016 tally of $3.38. Concerning fiscal 2018, we believe the bottom line can grow at a similar percentage rate, to $3.75 a share, if operating margins expand.

There are plans to sell Atmos Energy Marketing (AEM) to a subsidiary of CenterPoint Energy. The transaction involves the transfer of 800 delivered gas customers and AEM's related asset optimization business at an all-cash price of $40 million plus working capital at the closing date (anticipated during the first calendar quarter of 2017). Proceeds are to be utilized for infrastructure investment in the core regulated units. Note that we estimate the pending divestiture's impact on earnings per share would be minimal.

The fiscal 2017 capital expenditures budget is expected to lie between $1.1 billion and $1.25 billion. That would be some 8% higher than the previous year's figure, assuming the midpoint of that range is used. Similar to fiscal 2016, a meaningful portion of the resources will be deployed to enhance the safety and reliability of Atmos' natural gas distribution and transmission systems.

The quarterly common stock dividend was raised a few cents, to $0.45 a share. Moreover, our 2019-2021 projections indicate that additional, steady increases in the distribution will take place. The payout ratio over that period ought to be roughly 50%, which should not place a substantial financial burden on the energy company.

These top-quality shares hold decent, risk-adjusted long-term total return potential. That reflects the healthy dividend and worthwhile capital gains possibilities here.

Frederick L. Harris, III December 2, 2016

(A) Fiscal year ends Sept. 30th. (B) Diluted shrs. Excl. nonrec. items: '06, d18¢; '07, d2¢; '09, 12¢; '10, 5¢; '11, (1¢). Excludes discontinued operations: '11, 10¢; '12, 27¢; '13, 14¢. Next egs. rpt. due early Feb.
(C) Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan. Direct stock purchase plan avail.
(D) In millions.
(E) Qtrs may not add due to change in shrs outstanding.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	90

Formerly: Laclede Group

SPIRE INC. NYSE-SR

RECENT PRICE 65.60 | P/E RATIO 18.8 (Trailing: 19.8, Median: 15.0) | RELATIVE P/E RATIO 0.98 | DIV'D YLD 3.2% | VALUE LINE

High:	34.3	37.5	36.0	55.8	48.3	37.8	42.8	44.0	48.5	55.2	61.0	71.2	
Low:	26.9	29.1	28.8	31.9	29.3	30.8	32.9	36.5	37.4	44.0	49.1	57.1	

Target Price Range 2019 | 2020 | 2021

TIMELINESS 3 Lowered 8/12/16

SAFETY 2 Raised 6/20/03

TECHNICAL 3 Lowered 10/7/16

BETA .70 (1.00 = Market)

2019-21 PROJECTIONS

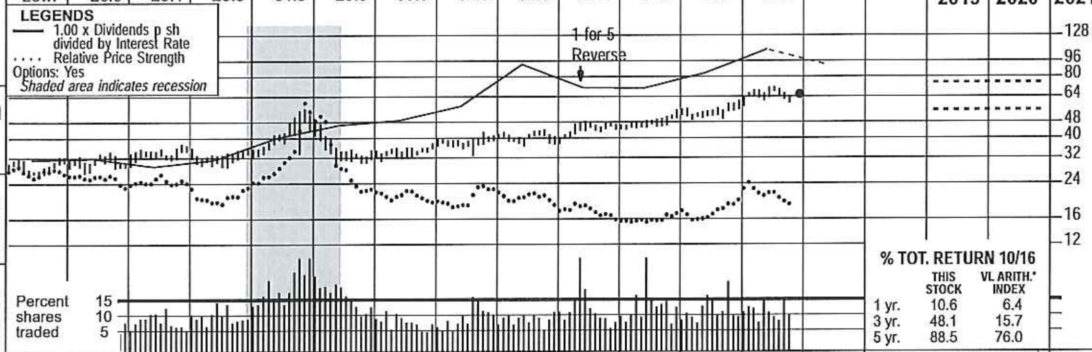
	Price	Gain	Ann'l Total Return
High	75	(+15%)	6%
Low	55	(-15%)	-1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	114	109	142
to Sell	86	104	83
Hld's(000)	34753	35632	36826



% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.6	6.4
3 yr.	48.1	15.7
5 yr.	88.5	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
29.99	53.08	39.84	54.95	59.59	75.43	93.51	93.40	100.44	85.49	77.83	71.48	49.90	31.10	37.68	45.59	33.68	40.45	Revenues per sh A	53.00
2.68	3.00	2.56	3.15	2.79	2.98	3.81	3.87	4.22	4.56	4.11	4.62	4.58	3.12	3.87	6.15	6.16	6.55	"Cash Flow" per sh	7.40
1.37	1.61	1.18	1.82	1.82	1.90	2.37	2.31	2.64	2.92	2.43	2.86	2.79	2.02	2.35	3.16	3.24	3.50	Earnings per sh A B	4.20
1.34	1.34	1.34	1.34	1.35	1.37	1.40	1.45	1.49	1.53	1.57	1.61	1.66	1.70	1.76	1.84	1.96	2.10	Div'ds Decl'd per sh C ■	2.30
2.77	2.51	2.80	2.67	2.45	2.84	2.97	2.72	2.57	2.36	2.56	3.02	4.83	4.00	3.96	6.68	6.42	6.90	Cap'l Spending per sh	7.10
14.99	15.26	15.07	15.65	16.96	17.31	18.85	19.79	22.12	23.32	24.02	25.56	26.67	32.00	34.93	36.30	38.73	40.65	Book Value per sh D	45.55
18.88	18.88	18.96	19.11	20.98	21.17	21.36	21.65	21.99	22.17	22.29	22.43	22.55	32.70	43.18	43.36	45.65	47.00	Common Shs Outst'g E	50.00
14.9	14.5	20.0	13.6	15.7	16.2	13.6	14.2	14.3	13.4	13.7	13.0	14.5	21.3	19.8	16.5	19.6		Avg Ann'l P/E Ratio	15.5
.97	.74	1.09	.78	.83	.86	.73	.75	.86	.89	.87	.82	.92	1.20	1.04	.83	1.05		Relative P/E Ratio	.95
6.6%	5.7%	5.7%	5.4%	4.7%	4.4%	4.3%	4.4%	3.9%	3.9%	4.7%	4.3%	4.1%	4.0%	3.8%	3.5%	3.1%		Avg Ann'l Div'd Yield	3.5%

CAPITAL STRUCTURE as of 9/30/16
Total Debt $2482.4 mill. Due in 5 Yrs $400.0 mill.
LT Debt $1833.7 mill. LT Interest $70.0 mill.
(Total interest coverage: 3.7x)

Leases, Uncapitalized Annual rentals $11.0 mill.
Pension Assets-9/16 $540.5 mill. Oblig. $724.5 mill.

Pfd Stock None
Common Stock 45,656,218 shs. as of 11/11/16

MARKET CAP: $3.0 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1997.6	2021.6	2209.0	1895.2	1735.0	1603.3	1125.5	1017.0	1627.2	1976.4	1537.3	1900	Revenues ($mill) A	2650
50.5	49.8	57.6	64.3	54.0	63.8	62.6	52.8	84.6	136.9	144.2	165	Net Profit ($mill)	210
32.5%	33.4%	31.3%	33.6%	33.4%	31.4%	29.6%	25.0%	27.6%	31.2%	32.5%	28.0%	Income Tax Rate	30.0%
2.5%	2.5%	2.6%	3.4%	3.1%	4.0%	5.6%	5.2%	5.2%	6.9%	9.4%	8.7%	Net Profit Margin	7.9%
49.5%	45.3%	44.4%	42.9%	40.5%	38.9%	36.1%	46.6%	55.1%	53.0%	50.9%	50.0%	Long-Term Debt Ratio	50.0%
50.4%	54.6%	55.5%	57.1%	59.5%	61.1%	63.9%	53.4%	44.9%	47.0%	49.1%	50.0%	Common Equity Ratio	50.0%
798.9	784.5	876.1	906.3	899.9	937.7	941.0	1959.0	3359.4	3345.1	3601.9	3835	Total Capital ($mill)	4505
763.8	793.8	823.2	855.9	884.1	928.7	1019.3	1776.6	2759.7	2941.2	3300.9	3465	Net Plant ($mill)	4010
8.4%	8.5%	8.1%	8.7%	7.4%	8.1%	7.9%	3.3%	3.1%	5.1%	4.9%	5.0%	Return on Total Cap'l	5.5%
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	8.5%	Return on Shr. Equity	9.0%
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	8.5%	Return on Com Equity	9.0%
5.1%	4.3%	5.2%	5.9%	3.6%	4.9%	4.3%	1.0%	1.5%	3.7%	3.3%	3.5%	Retained to Com Eq	4.0%
59%	63%	56%	53%	64%	56%	59%	81%	73%	58%	59%	60%	All Div'ds to Net Prof	55%

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	16.1	13.8	5.2
Other	588.8	516.3	564.4
Current Assets	604.9	530.1	569.6
Accts Payable	176.7	146.5	210.9
Debt Due	287.1	418.0	648.7
Other	319.0	289.3	301.7
Current Liab.	782.8	853.8	1161.3
Fix. Chg. Cov.	360%	365%	366%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16 to '19-'21
Revenues	-6.5%	-13.0%	6.5%
"Cash Flow"	5.5%	4.0%	9.5%
Earnings	3.5%	1.5%	9.0%
Dividends	3.0%	3.5%	3.5%
Book Value	7.5%	8.5%	4.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.)A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	307.0	397.6	165.3	147.1	1017.0
2014	468.6	694.5	241.8	222.3	1627.2
2015	619.6	877.4	275.2	204.2	1976.4
2016	399.4	609.3	249.3	279.3	1537.3
2017	475	775	250	400	1900

Fiscal Year Ends	EARNINGS PER SHARE A B F Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1.14	1.34	.25	d.30	2.02
2014	1.09	1.59	.33	d.35	2.35
2015	1.09	2.18	.32	d.43	3.16
2016	1.08	2.31	.24	d.31	3.24
2017	1.20	2.30	.30	d.30	3.50

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.425	.425	.425	.425	1.70
2014	.44	.44	.44	.44	1.76
2015	.46	.46	.46	.46	1.84
2016	.49	.49	.49	.49	
2017	.525				

BUSINESS: Spire Inc., formerly known as the Laclede Group, Inc., is a holding company for natural gas utilities, which distributes natural gas across Missouri, including the cities of St. Louis and Kansas City. Has roughly 1.6 million customers. Acquired Missouri Gas 9/13, Alabama Gas Co 9/14. Utility therms sold and transported in fiscal 2016: 2.6 bill. Revenue mix for regulated operations: residential, 67%; commercial and industrial, 23%; transportation, 2%; other, 8%. Has around 3,078 employees. Officers and directors own 3.2% of common shares (1/16 proxy). Chairman: Edward Glotzbach; CEO: Suzanne Sitherwood. Inc.: Missouri. Address: 700 Market Street, St. Louis, Missouri 63101. Telephone: 314-342-0500. Internet: www.thelacledegroup.com.

Spire Inc. reported mixed fiscal fourth-quarter results (ended September 30th). Revenues were kept in check by lower commodity prices, and 20% warmer-than-usual weather during the period. But the total was supported by better gas marketing revenues and additional contributions from the MobileGas and Willmut Gas acquisitions. Overall, the company had better operational performance across the board, including strong results in its gas marketing division, which allowed for losses of $0.31 a share.

Near-term results will be driven by regulatory outcomes. Spire has filed for infrastructure replacement surcharges on its Laclede and Missouri Gas subsidiaries, which would boost results if approved. Too, changes in the utility regulatory environment in Missouri may change ratemaking mechanisms. The company will file its next general rates cases in April, which could allow for better profitability. Those outcomes are uncertain, but we think the company will earn $3.50 a share in fiscal 2017.

The integrations of Willmut Gas and MobileGas are occurring. Completion of the purchases boosted utility incomes in Alabama and Mississippi. This deal could be earnings accretive sooner than fiscal 2018 thanks to the early accord completion, and cost synergies are expected to emerge shortly.

The build out of the STL pipeline remains on track. An environmental assessment and route refinements are being nailed down in anticipation of the January filing with FERC. This project should cost between $190 million and $210 million, and be put into service during fiscal 2019. As pipelines generally have higher allowable returns, we expect this would provide an ample boost to long-term results.

The company has raised the dividend 7% to $0.525 quarterly. This represents a decent bump in the payout, and should appeal to investors. This marks the 14th year in a row of dividend increases.

Shares of Spire Inc. do not stand out for Timeliness. Though they offer a decent yield and steady dividend growth, the shares offer little total return potential. Most investors would be best served waiting for a price dip.

John E. Seibert III *December 2, 2016*

(A) Fiscal year ends Sept. 30th. (B) Based on diluted shares outstanding. Excludes nonrecurring loss: '06, 7¢. Excludes gain from discontinued operations: '08, 94¢. Next earnings report due late January. (C) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available. (D) Incl. deferred charges. In '14: $383.8 mill., $8.85/sh. (E) In millions. (F) Qtly. egs. may not sum due to rounding or change in shares outstanding in 2013, 2014, 2016.

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	40
Earnings Predictability	80

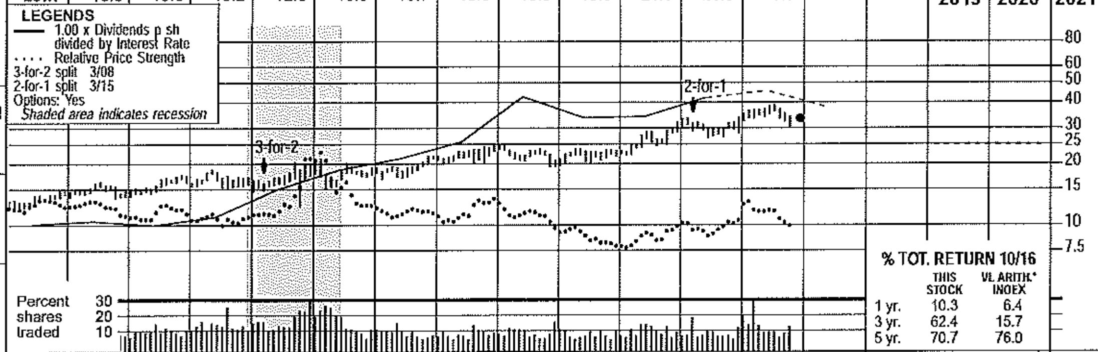
NEW JERSEY RES. NYSE-NJR

RECENT PRICE 33.50 | P/E RATIO 19.7 (Trailing: 20.9 Median: 16.0) | RELATIVE P/E RATIO 1.03 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS 3 Lowered 10/28/16
SAFETY 1 Raised 9/15/06
TECHNICAL 3 Lowered 10/28/16
BETA .80 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	16.4	17.7	18.8	20.6	21.2	22.0	25.2	25.1	23.8	32.1	34.1	38.9
Low:	13.6	13.8	15.2	12.3	15.0	16.7	19.8	19.3	19.5	21.9	26.8	30.5

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(-10%)	Nil
Low	25	(-25%)	-4%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	6	0	0	0	0	0	0	0	0
to Sell	0	0	4	0	1	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	117	114	103
to Sell	94	114	107
Hld's(000)	49713	51216	52551

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.3	6.4
3 yr.	62.4	15.7
5 yr.	70.7	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.71	25.61	22.06	31.14	30.44	38.10	39.81	36.31	45.37	31.17	32.05	36.30	27.08	38.38	44.40	32.09	21.90	27.35	Revenues per sh A	29.85
1.00	1.06	1.07	1.19	1.25	1.31	1.37	1.22	1.81	1.58	1.63	1.70	1.86	1.93	2.73	2.52	2.45	2.50	"Cash Flow" per sh	2.85
.60	.65	.70	.79	.85	.88	.93	.78	1.35	1.20	1.23	1.29	1.36	1.37	2.08	1.78	1.61	1.75	Earnings per sh B	2.10
.38	.39	.40	.41	.43	.45	.48	.51	.56	.62	.68	.72	.77	.81	.86	.93	.98	1.02	Div'ds Decl'd per sh C ■	1.05
.62	.55	.51	.57	.72	.64	.64	.73	.86	.90	1.05	1.13	1.26	1.33	1.52	3.76	1.70	1.75	Cap'l Spending per sh	1.80
4.14	4.40	4.35	5.13	5.62	5.30	7.50	7.75	8.64	8.29	8.81	9.36	9.80	10.65	11.48	12.99	13.80	14.55	Book Value per sh D	17.40
79.17	79.99	83.00	81.70	83.22	82.64	82.88	83.22	84.12	83.17	82.35	82.89	83.05	83.32	84.20	85.19	85.88	86.00	Common Shs Outst'g E	86.00
14.7	14.2	14.7	14.0	15.3	16.8	16.1	21.6	12.3	14.9	15.0	16.8	16.8	16.0	11.7	16.6	21.3		Avg Ann'l P/E Ratio	14.0
.96	.73	.80	.80	.81	.89	.87	1.15	.74	.99	.95	1.05	1.07	.90	.62	.84	1.17		Relative P/E Ratio	.90
4.4%	4.2%	3.9%	3.7%	3.3%	3.1%	3.2%	3.0%	3.3%	3.5%	3.7%	3.3%	3.4%	3.7%	3.5%	3.1%	2.9%		Avg Ann'l Div'd Yield	3.6%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1223.8 mill. Due in 5 Yrs $321.9 mill.
LT Debt $967.8 mill. LT Interest $25.4 mill.
Incl. $53.2 mill. capitalized leases.
(LT interest earned: 7.5x; total interest coverage: 7.5x)
Pension Assets-9/15 $256.4 mill. Oblig. $394.4 mill.
Pfd Stock None

Common Stock 86,150,280 shs. as of 8/1/16
MARKET CAP: $2.9 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
3299.6	3021.8	3816.2	2592.5	2639.3	3009.2	2248.9	3198.1	3738.1	2734.0	1880.9	2350	Revenues ($mill) A	2565
78.5	65.3	113.9	101.0	101.8	106.5	112.4	113.7	176.9	153.7	138.1	150	Net Profit ($mill)	180
38.9%	38.8%	37.6%	27.1%	41.4%	30.2%	7.1%	25.4%	30.2%	26.3%	32.0%	32.0%	Income Tax Rate	32.0%
2.4%	2.2%	3.0%	3.9%	3.9%	3.5%	5.0%	3.6%	4.7%	5.6%	7.3%	6.4%	Net Profit Margin	7.0%
34.8%	37.3%	38.5%	39.8%	37.2%	35.5%	39.2%	36.6%	38.2%	43.2%	43.0%	43.0%	Long-Term Debt Ratio	40.5%
65.2%	62.7%	61.5%	60.2%	62.8%	64.5%	60.8%	63.4%	61.8%	56.8%	57.0%	57.0%	Common Equity Ratio	59.5%
954.0	1028.0	1182.1	1144.8	1154.4	1203.1	1339.0	1400.3	1564.4	1950.6	2085	2200	Total Capital ($mill)	2495
934.9	970.9	1017.3	1064.4	1135.7	1295.9	1484.9	1643.1	1884.1	2128.3	2170	2215	Net Plant ($mill)	2350
9.6%	7.7%	10.7%	9.7%	9.7%	9.7%	9.2%	9.0%	12.1%	8.6%	7.5%	8.0%	Return on Total Cap'l	8.0%
12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	12.0%	Return on Shr. Equity	12.0%
12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	12.0%	Return on Com Equity	12.0%
6.3%	3.6%	9.5%	7.2%	6.7%	6.2%	6.2%	5.2%	11.0%	6.8%	4.6%	5.0%	Retained to Com Eq	6.0%
50%	64%	40%	50%	52%	55%	55%	59%	40%	50%	61%	58%	All Div'ds to Net Prof	50%

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.2	4.9	94.8
Other	680.5	539.6	509.9
Current Assets	682.7	544.5	604.7
Accts Payable	330.3	273.2	216.0
Debt Due	335.5	77.5	256.0
Other	125.3	85.4	129.5
Current Liab.	791.1	436.1	601.5
Fix. Chg. Cov.	1007%	750%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.0%	-4.0%
"Cash Flow"	6.5%	7.5%	3.0%
Earnings	7.5%	6.5%	3.0%
Dividends	7.0%	7.0%	3.5%
Book Value	8.0%	6.5%	7.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	736.0	960.9	767.5	733.7	3198.1
2014	878.4	1579.6	688.3	591.9	3738.1
2015	824.1	1013.1	458.5	438.3	2734.0
2016	444.3	574.2	393.2	469.2	1880.9
2017	560	690	510	590	2350

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.43	.82	.12	d.01	1.37
2014	.47	1.79	.05	d.23	2.08
2015	.65	1.16	.03	d.06	1.78
2016	.58	.91	.13	d.02	1.61
2017	.60	.95	.17	.03	1.75

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.19	.19	.19	.40	.97
2013	--	.20	.20	.20	.60
2014	.21	.21	.21	.23	.86
2015	.23	.23	.23	.24	.93
2016	.24	.24	.24	.255	

BUSINESS: New Jersey Resources Corp. is a holding company providing retail/wholesale energy svcs. to customers in New Jersey, and in states from the Gulf Coast to New England, and Canada. New Jersey Natural Gas had about 512,300 customers at 9/30/15 in Monmouth and Ocean counties, and other N.J. counties. Fiscal 2015 volume: 341 bill. cu. ft. (14% interruptible, 21% residential and commercial and electric utility, 65% incentive programs). N.J. Natural Energy subsidiary provides unregulated retail/wholesale natural gas and related energy svcs. 2015 dep. rate: 2.5%. Has 991 empls. Off./dir. own about 1.4% of common (12/15 Proxy). Chrmn., CEO & Pres.: Laurence M. Downes. Inc.: NJ Addr.: 1415 Wyckoff Road, Wall, NJ 07719. Tel.: 732-938-1480. Web: www.njresources.com.

New Jersey Resources faced a difficult operating environment in fiscal 2016 (ended September 30th). Indeed, the company posted a downturn in both revenues and earnings this past year. What's more, since our September review, the stock has registered a modest 5% pullback, likely as a reflection of the slowdown in the retail/wholesale energy business. Revenues declined more than 30% on a year-over-year basis, to $1.88 billion. This largely stemmed from the warmer-than-normal weather patterns that existed across NJR's service territory. This trend was further exacerbated by the falloff of natural gas and commodity prices when compared to 2015's levels. Despite these challenges, the New Jersey Natural Gas (NJNG), regulated utility business added 8,170 new customer accounts in 2016. A bit more than 55% of those came from new construction. Still, on the profitability front, the sharp downturn in volumes weighed on both fixed- and variable-cost absorption. In fact, operating expenses ticked 20 basis points higher, when viewed as a percentage of the top line. Combined, these factors equated to an earnings reduction of almost 10%, to $1.61 per share. This was in line with our expectation.

That said, we have adjusted our outlook for this year. The company appears poised to log a rebound in revenues of about 25%, to $2.35 billion, due primarily to new NJNG customer accounts. Management estimates roughly 24,000-27,000 accounts will be added between fiscal 2017 and 2019. Elsewhere, the regulated utility division received approval of a rate reduction as well as a bill credit, that will have a net impact on the typical residential heating customer lowering a bill about 2% annually. This helps to put rates more in line with the current natural gas pricing environment. Finally, we have trimmed a nickel off our 2017 share-net estimate, to $1.75, placing it near the top end of management's recently issued guidance range of $1.65-$1.75. This would represent an annual increase of almost 9%.

We think most investors' funds could be better utilized elsewhere. Neutrally ranked NJR is lacking upside potential based on our projections. And the dividend yield is a bit light for a utility.

Bryan J. Fong — *December 2, 2016*

(A) Fiscal year ends Sept. 30th.
(B) Diluted earnings. Qtly egs may not sum to total due to change in shares outstanding. Next earnings report due late Jan.
(C) Dividends historically paid in early Jan., April, July, and October. 1Q '13 div'd paid in 4Q '12. ■ Dividend reinvestment plan available.
(D) Includes regulatory assets in 2015: $410.2 million, $4.82/share.
(E) In millions, adjusted for splits.

Company's Financial Strength	A+
Stock's Price Stability	85
Price Growth Persistence	55
Earnings Predictability	55

NISOURCE INC. NYSE-NI

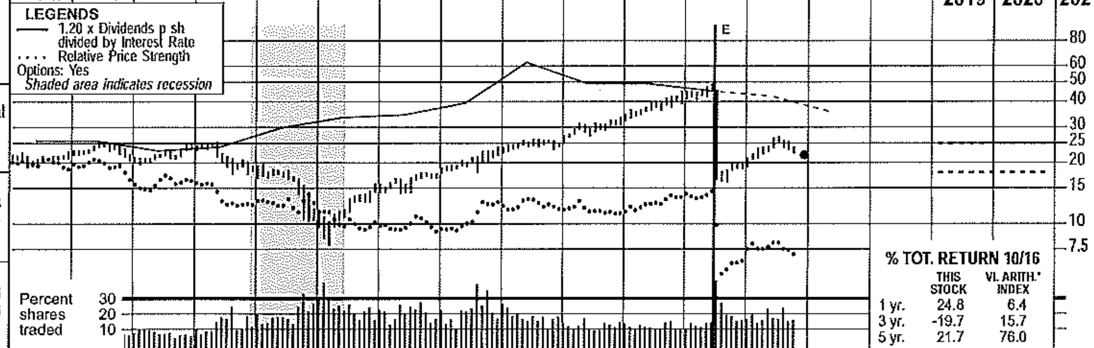
RECENT PRICE 21.89 | P/E RATIO 20.8 (Trailing: 23.8 Median: 19.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS – F Suspended 6/5/15
SAFETY 3 New 9/4/15
TECHNICAL – F Suspended 6/5/15
BETA NMF (1.00 = Market)

High:	25.5	24.8	25.4	19.8	15.8	18.0	24.0	26.2	33.5	44.9	49.2	26.9
Low:	20.4	19.5	17.5	10.4	7.8	14.1	17.7	22.3	24.8	32.1	16.0	19.0

Target Price Range 2019 | 2020 | 2021

LEGENDS
—— 1.20 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	25	(+15%)	6%
Low	18	(-20%)	-1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	8	1	0	9	0	0	0	0
to Sell	0	0	2	0	0	0	0	0	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	192	219	226
to Sell	171	165	181
Hld's(000)	263849	264916	265637

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	24.8	6.4
3 yr.	-19.7	15.7
5 yr.	21.7	76.0

NiSource acquired Columbia Energy on November 1, 2000, paying approximately $6 billion in cash and stock. Columbia shareholders who chose cash received $70 a share, plus a security with a face value of $2.60. Those who chose stock received $74 a share in NiSource common stock. Shareholders' selections were prorated to reflect a 30% stock portion of the transaction. In 2003, NiSource sold Columbia's exploration and production business.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
27.37	28.96	32.36	24.02	22.99	21.33	16.31	18.04	20.47	14.58	*13.95*	*16.15*	Revenues per sh	*18.20*
3.18	3.20	3.32	2.96	3.19	2.98	3.13	3.41	3.60	2.27	*2.60*	*2.95*	"Cash Flow" per sh	*3.25*
1.14	1.14	1.34	.84	1.06	1.05	1.37	1.57	1.67	.63	*1.05*	*1.15*	Earnings per sh A	*1.40*
.92	.92	.92	.92	.92	.92	.94	.98	1.02	.83	*.64*	*.68*	Div'd Decl'd per sh B ■	*.80*
2.33	2.88	3.54	2.81	2.88	3.99	4.83	5.99	6.42	4.26	*4.35*	*4.60*	Cap'l Spending per sh	*5.45*
18.32	18.52	17.24	17.54	17.63	17.71	17.90	18.77	19.54	12.04	*11.70*	*12.40*	Book Value per sh C	*12.90*
273.65	274.18	274.26	276.79	279.30	282.18	310.28	313.68	316.04	319.11	*323.00*	*325.00*	Common Shs Outst'g D	*330.00*
19.2	18.8	12.1	14.3	15.3	19.4	17.9	18.9	22.7	37.3	*Bold figures are*		Avg Ann'l P/E Ratio	*16.0*
1.04	1.00	.73	.95	.97	1.22	1.14	1.06	1.19	1.89	*Value Line*		Relative P/E Ratio	*1.00*
4.2%	4.3%	5.7%	7.6%	5.7%	4.5%	3.8%	3.3%	2.7%	3.5%	*estimates*		Avg Ann'l Div'd Yield	*3.6%*
7490.0	7939.8	8874.2	6649.4	6422.0	6019.1	5061.2	5657.3	6470.6	4651.8	*4500*	*5250*	Revenues ($mill)	*6000*
314.6	312.0	369.8	231.2	294.6	303.8	410.6	490.9	530.7	198.6	*340*	*360*	Net Profit ($mill)	*460*
35.2%	35.6%	33.4%	41.8%	32.4%	35.0%	34.4%	34.8%	36.9%	41.6%	*33.5%*	*35.5%*	Income Tax Rate	*37.5%*
4.2%	6.6%	--	--	--	--	--	--	2.9%	2.9%	*2.0%*	*2.0%*	AFUDC % to Net Profit	*2.0%*
50.7%	52.4%	55.7%	55.1%	54.7%	55.6%	55.1%	56.3%	56.9%	60.7%	*63.5%*	*63.5%*	Long-Term Debt Ratio	*64.5%*
49.3%	47.6%	44.3%	44.9%	45.3%	44.4%	44.9%	43.7%	43.1%	39.3%	*36.5%*	*36.5%*	Common Equity Ratio	*35.5%*
10160	10671	10673	10819	10859	11264	12373	13480	14331	9792.0	*10225*	*10775*	Total Capital ($mill)	*12060*
9694.5	10032	10276	10592	11097	11800	12916	14365	16017	12112	*12595*	*13100*	Net Plant ($mill)	*14595*
4.8%	4.6%	5.2%	4.0%	4.5%	4.4%	5.0%	5.2%	5.3%	4.0%	*5.0%*	*5.5%*	Return on Total Cap'l	*5.5%*
6.3%	6.1%	7.8%	4.8%	6.0%	6.1%	7.4%	8.3%	8.6%	5.2%	*9.0%*	*9.5%*	Return on Shr. Equity	*11.0%*
6.3%	6.1%	7.8%	4.8%	6.0%	6.1%	7.4%	8.3%	8.6%	5.2%	*9.0%*	*9.5%*	Return on Com Equity	*11.0%*
1.2%	1.2%	2.5%	NMF	.8%	.9%	2.5%	3.1%	3.4%	NMF	*3.5%*	*4.0%*	Retained to Com Eq	*4.5%*
80%	81%	68%	110%	87%	85%	67%	62%	61%	NMF	*60%*	*58%*	All Div'ds to Net Prof	*57%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $7737.8 mill. Due in 5 Yrs $2598.8 mill.
LT Debt $6096.2 mill. LT Interest $450 mill.
(Interest cov. earned: 2.4x) (67% of Cap'l)

Leases, Uncapitalized Annual rentals $18.4 mill.
Pension Assets-12/15 $1.75 bill. Oblig. $2.21 bill.

Pfd Stock None

Common Stock 322,737,775 shs. as of 10/25/16

MARKET CAP: $7.1 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	25.4	15.5	29.9
Other	2441.1	1561.7	1348.6
Current Assets	2466.5	1577.2	1378.5
Accts Payable	670.6	433.4	352.2
Debt Due	1843.5	1001.1	1641.6
Other	1440.8	1223.0	917.8
Current Liab.	3954.9	2657.5	2911.6
Fix. Chg. Cov.	274%	210%	240%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-3.5%	-7.5%	*.5%*
"Cash Flow"	-1.0%	-.5%	*1.0%*
Earnings	-1.0%	3.5%	*1.5%*
Dividends	-.5%	.5%	*-2.5%*
Book Value	-.5%	-1.0%	*-4.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1782.2	1201.5	1076.8	1596.8	5657.3
2014	2320.5	1335.1	1123.9	1691.1	6470.6
2015	1852.2	884.6	817.2	1097.8	4651.8
2016	1436.6	897.6	861.3	*1304.5*	*4500*
2017	*1750*	*950*	*950*	*1600*	*5250*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.69	.23	.16	.49	1.57
2014	.85	.25	.10	.49	1.67
2015	.61	d.23	.05	.20	.63
2016	.56	.09	.07	*.33*	*1.05*
2017	*.55*	*.10*	*.10*	*.40*	*1.15*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.23	.23	.24	.24	.94
2013	.24	.24	.25	.25	.98
2014	.25	.25	.26	.26	1.02
2015	.26	.26	.155	.155	.83
2016	.155	.155	.165	.165	

BUSINESS: NiSource Inc. is a holding company for Northern Indiana Public Service Company (NIPSCO), which supplies electricity and gas to the northern third of Indiana. Customers: 461,000 electric in Indiana, 3.4 million gas in Indiana, Ohio, Pennsylvania, Kentucky, Virginia, Maryland, Massachusetts through its Columbia subsidiaries. Revenue breakdown, 2015: electrical, 34%; gas, 66%; other, less than 1%. Generating sources, 2015: coal, 77.3%; purchased & other, 22.7%. 2015 reported depreciation rates: 3.0% electric, 1.8% gas. Has 7,596 employees. Chairman: Ian M. Rolland. President & Chief Executive Officer: Robert C. Skaggs, Jr. Incorporated: Indiana. Address: 801 East 86th Ave., Merrillville, Indiana 46410. Telephone: 877-647-5990. Internet: www.nisource.com.

NiSource reported solid third-quarter results. Revenues increased to $861.3 million, boosted by higher base rates and better electric operations. Though elevated maintenance expense and depreciation were incurred, the company achieved improved operating income, which allowed earnings to rise to $0.07 a share. The company should benefit from cooler weather and better rates in the fourth quarter, with spending of around $1.5 billion on infrastructure, which should drive revenues higher. Altogether, we expect NiSource will earn $0.33 a share in the fourth quarter.

Rate cases should allow for better results in the years ahead. New base rates in Massachusetts and Maryland were enacted, and the approvals received in Pennsylvania will drive revenues higher by around $35 million. Too, NiSource will receive an additional $3.7 million in Maryland. Regulatory relief should allow for much-better infrastructure replacement-related revenues in the coming years. Moreover, decisions are pending in Virginia, Kentucky and elsewhere over the next six months, which would allow for an additional $110 million in infrastructure replacement revenues. These factors should boost earnings in 2017, which we now think will be $1.15 a share. The company has NIPSCO Gas approval for $800 million in projects over several years, too, which should provide for better revenues over the long haul. NiSource also launched pilot programs in Pennsylvania and Indiana to increase natural gas conversions. All told, earnings per share may reach $1.40 by decade's end.

Financial leverage has continued to increase. Debt has risen to around 67% of total capital recently, which has driven interest expense higher. Still, the company may be able to refinance some older, higher-cost debt at lower rates over the coming years.

Shares of NiSource are not attractive at the recent quotation. They are trading within our long-term Target Price Range, and the yield does not stand out. The increasing debt load likely raises financial risk, as well. Long-term investors would be best served waiting for a further dip in price.

John E. Seibert III *December 2, 2016*

(A) Dil. EPS. Excl. nonrec. gains (losses): '05, (4¢); gains (losses) on disc. ops.: '05, 10¢; '06, (11¢); '07, 3¢; '08, ($1.14); '15, (30¢). Next egs. report due late January. Qtl'y egs. may not sum to total due to rounding.
(B) Div'ds historically paid in mid-Feb., May, Aug., Nov. ■ Div'd reinv. avail.
(C) Incl. intang in '15: $1944.4 million, $6.08/sh.
(D) In mill.
(E) Spun off Columbia Pipeline Group (7/15)
(F) Suspended due to spinoff of CPGX

Company's Financial Strength	B+
Stock's Price Stability	NMF
Price Growth Persistence	NMF
Earnings Predictability	NMF

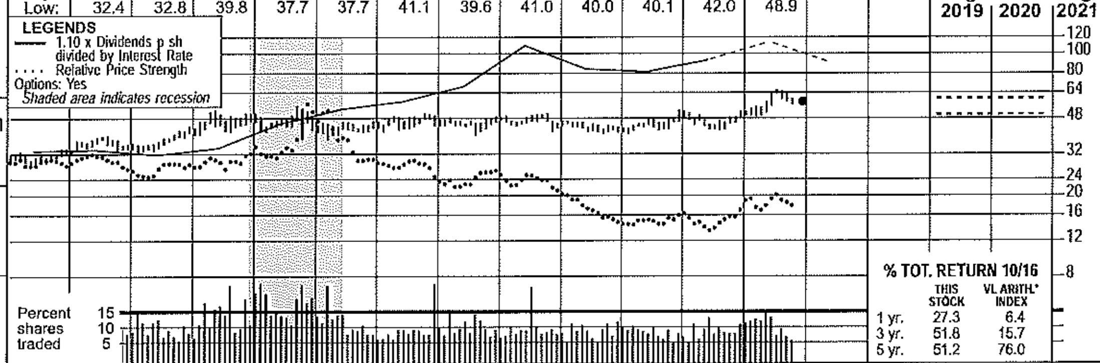
N.W. NAT'L GAS NYSE-NWN

RECENT PRICE	57.95	P/E RATIO	26.3 (Trailing: 26.5 Median: 18.0)	RELATIVE P/E RATIO	1.38	DIV'D YLD	3.2%	VALUE LINE

TIMELINESS 3 Lowered 8/12/16
SAFETY 1 Raised 3/18/05
TECHNICAL 2 Raised 12/2/16
BETA .65 (1.00 = Market)

High:	39.6	43.7	52.8	55.2	46.5	50.9	49.0	50.8	46.6	52.6	52.3	66.2
Low:	32.4	32.8	39.8	37.7	37.7	41.1	39.6	41.0	40.0	40.1	42.0	48.9

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+5%)	4%
Low	50	(-15%)	Nil

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	4	12	3	0	4	6	1	0	0
to Sell	0	0	4	0	2	7	1	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	81	98	118
to Sell	65	65	80
Hld's(000)	16813	15946	16937

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	27.3	6.4
3 yr.	51.8	15.7
5 yr.	51.2	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
21.09	25.78	25.07	23.57	25.69	33.01	37.20	39.13	39.16	38.17	30.56	31.72	27.14	28.02	27.64	26.39	23.45	25.15	Revenues per sh	28.90
3.68	3.86	3.65	3.85	3.92	4.34	4.76	5.41	5.31	5.20	5.18	5.00	4.94	5.04	5.05	4.91	4.50	4.85	"Cash Flow" per sh	6.05
1.79	1.88	1.62	1.76	1.86	2.11	2.35	2.76	2.57	2.83	2.73	2.39	2.22	2.24	2.16	1.96	2.15	2.35	Earnings per sh A	3.15
1.24	1.25	1.26	1.27	1.30	1.32	1.39	1.44	1.52	1.60	1.68	1.75	1.79	1.83	1.85	1.86	1.87	1.88	Div'ds Decl'd per sh B■	2.05
3.46	3.23	3.11	4.90	5.52	3.48	3.56	4.48	3.92	5.09	9.35	3.76	4.91	5.13	4.40	4.37	4.50	6.20	Cap'l Spending per sh	6.35
17.93	18.56	18.88	19.52	20.64	21.28	22.01	22.52	23.71	24.88	26.08	26.70	27.23	27.77	28.12	28.47	27.40	28.40	Book Value per sh D	30.55
25.23	25.23	25.59	25.94	27.55	27.58	27.24	26.41	26.50	26.53	26.58	26.76	26.92	27.08	27.28	27.43	29.00	29.00	Common Shs Outst'g C	28.00
12.4	12.9	17.2	15.8	16.7	17.0	15.9	16.7	18.1	15.2	17.0	19.0	21.1	19.4	20.7	23.7	Bold figures are		Avg Ann'l P/E Ratio	17.0
.81	.66	.94	.90	.88	.91	.86	.89	1.09	1.01	1.08	1.19	1.34	1.09	1.09	1.19	Value Line		Relative P/E Ratio	1.05
5.6%	5.1%	4.5%	4.6%	4.2%	3.7%	3.7%	3.1%	3.3%	3.7%	3.6%	3.9%	3.8%	4.2%	4.1%	4.0%	estimates		Avg Ann'l Div'd Yield	3.7%

CAPITAL STRUCTURE as of 9/30/16
Total Debt $790.1 mill. Due in 5 Yrs $360.0 mill.
LT Debt $530.2 mill. LT Interest $45.0 mill.

(Total interest coverage: 3.5x)

Pension Assets-12/15 $249.4 mill. Oblig. $445.6 mill.

Pfd Stock None

Common Stock 27,557,756 shares as of 10/21/16

MARKET CAP $1.6 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1013.2	1033.2	1037.9	1012.7	812.1	848.8	730.6	758.5	754.0	723.8	680	730	Revenues ($mill)	865
65.2	74.5	68.5	75.1	72.7	63.9	59.9	60.5	58.7	53.7	62.0	68.0	Net Profit ($mill)	86.0
36.3%	37.2%	36.9%	38.3%	40.5%	40.4%	42.4%	40.8%	41.5%	40.0%	35.0%	35.0%	Income Tax Rate	35.0%
6.4%	7.2%	6.6%	7.4%	8.9%	7.5%	8.2%	8.0%	7.8%	7.4%	9.2%	9.3%	Net Profit Margin	10.9%
46.3%	46.3%	44.9%	47.7%	46.1%	47.3%	48.5%	47.6%	44.8%	42.5%	43.0%	43.0%	Long-Term Debt Ratio	43.0%
53.7%	53.7%	55.1%	52.3%	53.9%	52.7%	51.5%	52.4%	55.2%	57.5%	57.0%	57.0%	Common Equity Ratio	57.0%
1116.5	1106.8	1140.4	1261.8	1284.8	1356.2	1424.7	1433.6	1389.0	1357.7	1390	1445	Total Capital ($mill)	1605
1425.1	1495.9	1549.1	1670.1	1854.2	1893.9	1973.6	2062.9	2121.6	2182.7	2270	2360	Net Plant ($mill)	2655
7.1%	8.5%	7.7%	7.3%	7.0%	6.2%	5.7%	5.8%	5.8%	5.5%	5.5%	6.0%	Return on Total Cap'l	7.5%
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	8.0%	8.0%	Return on Shr. Equity	10.5%
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	8.0%	8.0%	Return on Com Equity	10.5%
4.5%	6.0%	4.5%	5.0%	4.0%	2.4%	1.6%	1.5%	1.1%	.6%	1.0%	1.5%	Retained to Com Eq	3.5%
59%	52%	59%	56%	61%	73%	80%	81%	85%	92%	87%	80%	All Div'ds to Net Prof	65%

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	9.5	4.2	6.2
Other	353.1	327.9	204.4
Current Assets	362.6	332.1	210.6
Accts Payable	91.4	73.2	55.9
Debt Due	274.7	295.0	259.9
Other	103.3	109.5	86.9
Current Liab.	469.4	477.7	402.7
Fix. Chg. Cov.	321%	300%	350%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	--	-5.5%	1.0%
"Cash Flow"	2.0%	-1.0%	3.0%
Earnings	1.0%	-5.0%	7.0%
Dividends	3.5%	3.0%	2.0%
Book Value	3.0%	2.5%	1.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	277.9	131.7	88.2	260.7	758.5
2014	293.4	133.1	87.2	240.3	754.0
2015	261.7	138.3	93.1	230.7	723.8
2016	255.5	99.2	87.7	237.6	680
2017	255	130	95.0	250	730

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.40	.08	d.31	1.07	2.24
2014	1.40	.04	d.32	1.04	2.16
2015	1.04	.08	d.24	1.08	1.96
2016	1.33	.07	d.29	1.04	2.15
2017	1.35	.10	d.25	1.15	2.35

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.445	.445	.445	.455	1.79
2013	.455	.455	.455	.460	1.83
2014	.460	.460	.460	.465	1.85
2015	.465	.465	.465	.4675	1.86
2016	.4675	.4675	.4675	.470	

BUSINESS: Northwest Natural Gas Co. distributes natural gas to 90 communities, 704,000 customers, in Oregon (89% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 2.5 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 35%; commercial, 22%; industrial, gas transportation, and other, 43%. Employs 1,092. BlackRock Inc. owns 10.0% of shares; officers and directors, 2.1% (4/16 proxy). CEO: Gregg S. Kantor. Inc.: Oregon. Address: 220 NW 2nd Ave., Portland, OR 97209. Telephone: 503-226-4211. Internet: www.nwnatural.com.

Northwest Natural Gas reported lackluster third-quarter results. Revenues fell 6% year over year, hurt by lower commodity prices. Still, the company had better gross profits, aided by stronger gas storage results. Operating expenses increased during the quarter, while bottom-line results were hurt by a $1.2 million environmental remediation charge. This caused losses to expand to $0.29 a share. Still, cooler weather is expected in the fourth quarter, which should help drive revenues higher. We have lowered our 2016 full-year estimate by a nickel to $2.15 a share.

Near-term results should benefit from improvements in the Portland market. Unemployment there has continued to drop, and construction in the area continues to be strong, as building permits were up 20% year over year. Too, the company should continue to benefit from decent conversion efforts, which ought to drive usage growth. These efforts will likely allow for better earnings in 2017.

Meanwhile, the Mist expansion plant has received its notice to proceed from Portland General Electric. This project will provide up to 120 million cubic feet of gas per day through a 13-mile pipeline, and will cost around $128 million. The company has already started to raise the funds required through equity sales, as it will sell up to 1.01 million shares, largely paying for the early buildout of the system. The facility is on track to be in service by the winter of 2018-2019, and will allow for a sizable bump in earnings.

The company raised its quarterly dividend to $0.47 a share (up 1%). This marks the 61st annual increase for the dividend aristocrat. The yield remains average for a utility, and will likely grow at modest rates until the Mist facility comes on line. Too, higher market interest rates are expected, which should decrease the appeal of the slow-growing dividend.

Shares of Northwest Natural Gas do not hold much appeal at the recent quotation. They are trading within our long-term Target Price Range, and the yield does not stand out among utilities. Long-term accounts would be best served waiting for a dip in price.

John E. Seibert III *December 2, 2016*

(A) Diluted earnings per share. Excludes nonrecurring items: '00, $0.11; '06, ($0.06); '08, ($0.03); '09, 6¢; May not sum due to rounding. Next earnings report due in early February.

(B) Dividends historically paid in mid-February, May, August, and November.
■ Dividend reinvestment plan available.
(C) In millions.

(D) Includes intangibles. In 2015: $370.7 million, $13.52/share.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	25
Earnings Predictability	85

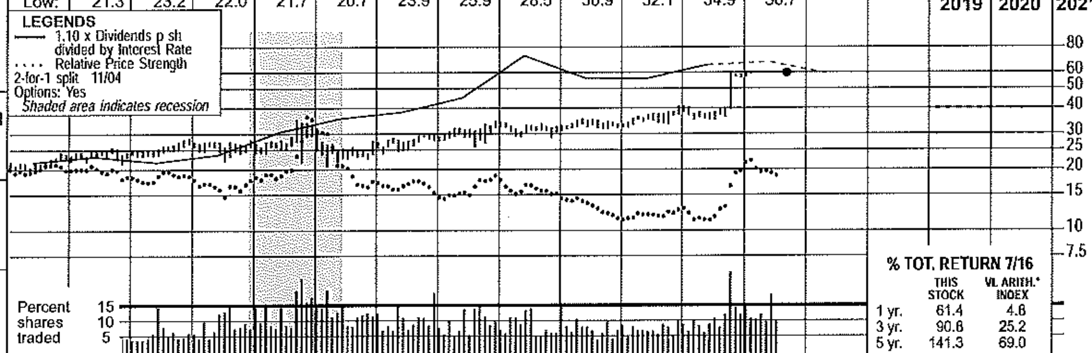
PIEDMONT NAT'L. GAS NYSE-PNY

RECENT PRICE 59.92 | P/E RATIO 30.0 (Trailing: 35.0, Median: 19.0) | RELATIVE P/E RATIO 1.57 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS – Suspended 11/6/15
SAFETY 2 New 7/27/90
TECHNICAL – Suspended 11/6/15
BETA .70 (1.00 = Market)

High:	25.8	28.4	28.0	35.3	32.0	30.1	34.7	34.6	35.5	41.0	59.1	60.3	
Low:	21.3	23.2	22.0	21.7	20.7	23.9	25.9	28.5	30.9	32.1	34.9	56.7	

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(-35%)	-6%
Low	30	(-50%)	-12%

Insider Decisions

	O	N	D	J	F	M	A	M	J
to Buy	0	0	0	0	0	0	0	0	0
Options	12	12	29	12	12	12	12	12	12
to Sell	1	1	1	1	1	3	2	0	1

Institutional Decisions

	3Q2015	4Q2015	1Q2016
to Buy	112	132	118
to Sell	91	129	114
Hld's(000)	46102	46867	50644

% TOT. RETURN 7/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	61.4	4.6
3 yr.	90.6	25.2
5 yr.	141.3	69.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
13.01	17.06	12.57	18.14	19.95	22.96	25.80	23.37	28.52	22.36	21.48	19.83	15.54	17.07	18.87	17.38	14.70	17.05	Revenues per sh A	18.00
1.77	1.81	1.81	2.04	2.31	2.43	2.51	2.64	2.77	3.01	2.91	2.99	3.09	3.29	3.37	3.36	3.50	3.65	"Cash Flow" per sh	3.70
1.01	1.01	.95	1.11	1.27	1.32	1.28	1.40	1.49	1.67	1.55	1.57	1.66	1.78	1.84	1.73	1.90	2.00	Earnings per sh AB	1.95
.72	.76	.80	.82	.85	.91	.95	.99	1.03	1.07	1.11	1.15	1.19	1.23	1.27	1.31	1.35	1.39	Div'ds Decl'd per sh C■	1.51
1.65	1.29	1.21	1.16	1.85	2.50	2.74	1.85	2.47	1.76	2.75	3.37	7.33	8.01	5.91	5.62	5.85	5.80	Cap'l Spending per sh	5.60
8.26	8.63	8.91	9.36	11.15	11.53	11.83	11.99	12.11	12.67	13.35	13.79	14.21	15.87	16.80	18.07	19.25	20.15	Book Value per sh D	22.65
63.83	64.93	66.18	67.31	76.67	76.70	74.61	73.23	73.26	73.27	72.28	72.32	72.25	74.88	77.88	78.94	81.00	82.00	Common Shs Outst'g E	85.00
14.3	16.7	18.4	16.7	16.6	17.9	19.2	18.7	18.2	15.4	17.1	18.9	19.2	18.5	18.9	22.1	Bold figures are		Avg Ann'l P/E Ratio	18.0
.93	.86	1.01	.95	.88	.95	1.04	.99	1.10	1.03	1.09	1.19	1.22	1.04	.99	1.12	Value Line		Relative P/E Ratio	1.13
5.0%	4.5%	4.6%	4.4%	4.1%	3.8%	3.9%	3.8%	3.8%	4.1%	4.2%	3.9%	3.7%	3.7%	3.7%	3.4%	estimates		Avg Ann'l Div'd Yield	4.3%

CAPITAL STRUCTURE as of 4/30/16
Total Debt $1954.1 mill. Due in 5 Yrs $410.0 mill.
LT Debt $1524.1 mill. LT Interest $61.6 mill.
(LT interest earned: 4.1x; total interest coverage: 3.4x)

Pension Assets-10/15 $356.9 mill. **Oblig.** $354.6 mill.

Pfd Stock None

Common Stock 81,199,179 shs. as of 5/31/16

MARKET CAP: $4.9 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1924.6	1711.3	2089.1	1638.1	1552.3	1433.9	1122.8	1278.2	1470.0	1371.7	1190	1400	Revenues ($mill) A	1530
97.2	104.4	110.0	122.8	111.8	113.6	119.8	134.4	143.8	136.4	155	165	Net Profit ($mill)	165
34.2%	33.0%	36.3%	28.5%	23.4%	24.6%	29.7%	32.6%	34.5%	.5%	25.0%	25.0%	Income Tax Rate	25.0%
5.0%	6.1%	5.3%	7.5%	7.2%	7.9%	10.7%	10.5%	9.8%	9.9%	13.0%	10.8%	Net Profit Margin	10.8%
48.3%	48.4%	47.2%	44.1%	41.0%	40.4%	48.7%	49.7%	52.1%	51.7%	49.5%	48.0%	Long-Term Debt Ratio	45.5%
51.7%	51.6%	52.8%	55.9%	59.0%	59.6%	51.3%	50.3%	47.9%	48.3%	50.5%	52.0%	Common Equity Ratio	54.5%
1707.9	1703.3	1681.5	1660.5	1636.9	1671.9	2002.0	2363.5	2733.0	2950.0	3085	3180	Total Capital ($mill)	3525
2075.3	2141.5	2240.8	2304.4	2437.7	2627.3	3105.1	3634.5	3989.4	4348.0	4400	4500	Net Plant ($mill)	4750
7.2%	7.8%	8.2%	9.1%	8.4%	8.2%	7.0%	6.8%	6.4%	5.8%	6.5%	6.5%	Return on Total Cap'l	6.0%
11.0%	11.9%	12.4%	13.2%	11.6%	11.4%	11.7%	11.3%	11.0%	9.6%	10.0%	10.0%	Return on Shr. Equity	8.5%
11.0%	11.9%	12.4%	13.2%	11.6%	11.4%	11.7%	11.3%	11.0%	9.6%	10.0%	10.0%	Return on Com Equity	8.5%
2.8%	3.5%	3.9%	4.8%	3.3%	3.1%	3.3%	3.6%	3.4%	2.3%	3.0%	3.0%	Retained to Com Eq	2.0%
74%	70%	69%	64%	72%	73%	72%	69%	69%	76%	71%	70%	All Div'ds to Net Prof	78%

CURRENT POSITION ($MILL.)	2014	2015	4/30/16
Cash Assets	9.6	13.7	12.3
Other	338.4	242.2	266.7
Current Assets	348.0	255.9	279.0
Accts Payable	139.7	152.0	117.1
Debt Due	355.0	380.0	430.0
Other	127.3	103.6	105.8
Current Liab.	622.0	635.6	652.9
Fix. Chg. Cov.	325%	325%	325%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-1.5%	-6.0%	Nil
"Cash Flow"	4.0%	3.0%	1.5%
Earnings	4.0%	2.5%	1.5%
Dividends	4.0%	3.5%	3.0%
Book Value	4.5%	6.0%	5.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Jan.31	Apr.30	Jul.31	Oct.31	Full Fiscal Year
2013	515.9	399.4	162.9	200.0	1278.2
2014	657.7	462.2	164.2	185.8	1469.9
2015	607.3	424.9	158.3	181.2	1371.7
2016	461.3	350.2	180	198.5	1190
2017	515	405	230	250	1400

Fiscal Year Ends	EARNINGS PER SHARE AB Jan.31	Apr.30	Jul.31	Oct.31	Full Fiscal Year
2013	1.18	.74	d.03	d.11	1.78
2014	1.26	.80	d.09	d.13	1.84
2015	1.18	.84	d.10	d.18	1.73
2016	1.21	.78	d.02	d.07	1.90
2017	1.24	.85	d.04	d.05	2.00

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.29	.30	.30	.60	1.49
2013	--	.31	.31	.31	.93
2014	.31	.32	.32	.32	1.27
2015	.32	.33	.33	.33	1.31
2016	.33	.34	.34		

BUSINESS: Piedmont Natural Gas Company is primarily a regulated natural gas distributor, serving over 992,551 customers in North Carolina, South Carolina, and Tennessee. 2015 revenue mix: residential (48%), commercial (27%), industriel (15%), other (10%). Principal suppliers: Transco and Tennessee Pipeline. Gas costs: 47.0% of revenues. '15 deprec. rate: 2.5%. Estimated plant age: 10 years. Non-regulated operations: sale of gas-powered heating equipment; natural gas brokering; propane sales. Has 1,879 employees. Off./dir. own about 1.4% of common stock, BlackRock; 8.2% (2/16 proxy). Chmn., CEO & Pres.: Thomas E. Skains. Inc.: NC. Addr.: 4720 Piedmont Row Drive, Charlotte, NC 28210. Telephone: 704-364-3120. Internet: www.piedmonting.com.

Piedmont Natural Gas continues to face a difficult operating environment this year. Revenues fell almost 18% for the April quarter, to $350 million, the last period for which financial information was available. However, this can largely be attributed to the sharp drop in commodity prices when compared to 2015's figures, as a result, we view it more as a technicality. Piedmont's strength is evidenced by its rising number of customer accounts. That metric rose about 2% during the quarter. Consequently, overall system throughput ticked more than 3% higher, to 274,751 dekatherms. On the profitability front, the weaker revenues did result in an 8.2% rise in operating costs when viewed as a percentage of the top line. A downturn in income from the company's equity investments also weighed on results for the April period. After accounting for the steadily rising share count, PNY's second-quarter earnings fell 7.1% on a year-over-year basis, to $0.78 a share. This was markedly below our earlier call.

As a result, we have reduced our fiscal 2016 (ends October 31st) bottom line estimate by a nickel, to $1.90 a share. This would still represent a healthy almost 10% improvement when viewed against 2015's somewhat easy comparison. This year continues to be impacted by the soft natural gas prices. Meanwhile, the company's return in its investment in the Constitution Pipeline is being hurt by the New York State Department of Environmental Conservation's denial of a necessary water quality certificate. The company is appealing that decision, although how long this could delay progress on this venture is unclear.

Piedmont's acquisition is moving along nicely. The company entered into an agreement to be acquired by Duke Energy (DUK) back in October for $60.00 per share, and the assumption of about $1.8 billion in PNY's debt, effectively valuing the company at about $6.7 billion. The proposed transaction already has approval from shareholders and the Tennessee Regulatory Authority. Assuming the North Carolina Utilities Commission gives the deal a green light, we look for it to close before the end of 2016. The stock's quotation remains near the takeout price.

Bryan J. Fong *September 2, 2016*

(A) Fiscal year ends October 31st.
(B) Diluted earnings. Excl. extraordinary item: '00, 8¢. Excl. nonrecurring gains (losses): '10, 41¢. Next earnings report due mid-Oct. Quarters may not add to total due to change in shares outstanding.
(C) Dividends historically paid early-January, April, July, October. 2013 Q1 dividend paid in Q4 of 2012. ■ Div'd reinvest. plan available; 5% discount. (D) Includes deferred charges. In 2015: $861.6 million, $10.92/share.
(E) In millions, adjusted for stock split.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	50
Earnings Predictability	95

SOUTH JERSEY INDS. NYSE-SJI

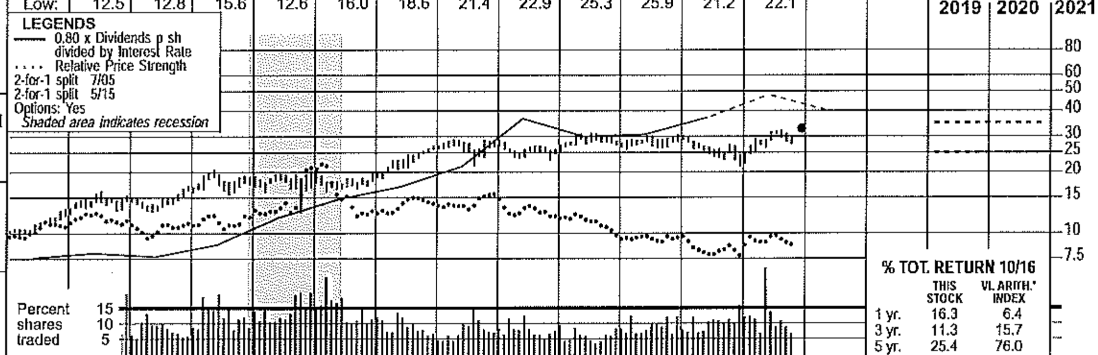
RECENT PRICE **32.95** | P/E RATIO **22.4** (Trailing: 20.7 Median: 17.0) | RELATIVE P/E RATIO **1.17** | DIV'D YLD **3.3%** | VALUE LINE

TIMELINESS **2** Lowered 10/28/16
SAFETY **2** Lowered 1/4/91
TECHNICAL **3** Lowered 11/18/16
BETA .80 (1.00 = Market)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	16.2	17.1	20.6	20.3	20.4	27.1	29.0	29.0	31.1	30.6	30.4
Low:	12.5	12.8	15.6	12.6	16.0	18.6	21.4	22.9	25.3	25.9	21.2

High: 16.2 17.1 20.6 20.3 20.4 27.1 29.0 29.0 31.1 30.6 30.4 32.9
Low: 12.5 12.8 15.6 12.6 16.0 18.6 21.4 22.9 25.3 25.9 21.2 22.1

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+5%)	5%
Low	25	(-25%)	-2%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	9	0	9	0	0	1	0	0	0
to Sell	0	0	1	1	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	105	109	129
to Sell	72	77	61
Hld's(000)	43333	46585	56193

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	16.3	6.4
3 yr.	11.3	15.7
5 yr.	25.4	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
11.22	17.65	10.35	13.17	14.75	15.89	15.88	16.15	16.18	14.19	15.48	13.71	11.16	11.18	12.98	13.52	*12.40*	*12.80*	Revenues per sh	*15.10*
.97	.95	1.06	1.12	1.22	1.25	1.75	1.60	1.74	1.86	2.10	2.23	2.34	2.48	2.67	2.42	*2.45*	*2.55*	"Cash Flow" per sh	*2.95*
.54	.57	.61	.68	.79	.86	1.23	1.05	1.14	1.19	1.35	1.45	1.52	1.52	1.57	1.44	*1.45*	*1.50*	Earnings per sh A	*1.80*
.37	.37	.38	.39	.41	.43	.46	.51	.56	.61	.68	.75	.83	.90	.96	1.02	*1.06*	*1.10*	Div'ds Decl'd per sh B ■	*1.30*
1.11	1.41	1.74	1.18	1.34	1.60	1.26	.94	1.04	1.83	2.79	3.20	4.01	4.84	5.01	4.87	*3.25*	*3.90*	Cap'l Spending per sh	*5.10*
3.62	3.91	4.84	5.63	6.20	6.75	7.55	8.12	8.67	9.12	9.54	10.33	11.63	12.64	13.65	14.62	*16.90*	*18.30*	Book Value per sh C	*21.50*
46.00	47.44	48.83	52.92	55.52	57.96	58.65	59.22	59.46	59.59	59.75	60.43	63.31	65.43	68.33	70.97	*80.00*	*82.00*	Common Shs Outst'g D	*86.00*
13.0	13.6	13.5	13.3	14.1	16.6	11.9	17.2	15.9	15.0	16.8	18.4	16.9	18.9	18.0	17.9	*Bold figures are*		Avg Ann'l P/E Ratio	*16.0*
.85	.70	.74	.76	.74	.88	.64	.91	.96	1.00	1.07	1.15	1.08	1.06	.95	.90	*Value Line*		Relative P/E Ratio	*1.00*
5.2%	4.7%	4.6%	4.3%	3.7%	3.0%	3.2%	2.8%	3.1%	3.4%	3.0%	2.8%	3.2%	3.1%	3.4%	3.9%	*estimates*		Avg Ann'l Div'd Yield	*4.5%*
						931.4	956.4	962.0	845.4	925.1	828.6	706.3	731.4	887.0	959.6	*990*	*1050*	Revenues ($mill)	*1300*
						72.0	61.8	67.7	71.3	81.0	87.0	93.3	97.1	104.0	99.0	*110*	*120*	Net Profit ($mill)	*150*
						41.3%	41.9%	47.7%	23.0%	15.2%	22.4%	10.8%	--	10.8%	5.9%	*25.0%*	*25.0%*	Income Tax Rate	*25.0%*
						7.7%	6.5%	7.0%	8.4%	8.8%	10.5%	13.2%	13.3%	11.7%	10.3%	*11.1%*	*11.4%*	Net Profit Margin	*11.5%*
						44.7%	42.7%	39.2%	36.5%	37.4%	40.5%	45.0%	45.1%	48.0%	49.2%	*41.5%*	*42.5%*	Long-Term Debt Ratio	*45.0%*
						55.3%	57.3%	60.8%	63.5%	62.6%	59.5%	55.0%	54.9%	52.0%	50.8%	*58.5%*	*57.5%*	Common Equity Ratio	*55.0%*
						801.1	839.0	848.0	856.4	910.1	1048.3	1337.6	1507.4	1791.9	2043.9	*2300*	*2600*	Total Capital ($mill)	*3350*
						920.0	948.9	982.6	1073.1	1193.3	1352.4	1578.0	1859.1	2134.1	2448.1	*2580*	*2700*	Net Plant ($mill)	*3000*
						10.1%	8.6%	8.9%	9.0%	9.5%	8.9%	7.4%	6.8%	6.4%	5.4%	*5.5%*	*5.0%*	Return on Total Cap'l	*5.0%*
						16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Shr. Equity	*8.0%*
						16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Com Equity	*8.0%*
						10.2%	6.7%	6.7%	6.4%	7.1%	6.7%	5.8%	4.8%	4.3%	2.8%	*2.0%*	*2.0%*	Retained to Com Eq	*2.0%*
						37%	48%	49%	51%	50%	52%	55%	59%	61%	71%	*77%*	*75%*	All Div'ds to Net Prof	*75%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1270.8 mill. **Due in 5 Yrs** $1140 mill.
LT Debt $808.7 mill. **LT Interest** $25.0 mill.
(Total interest coverage: 6.1x)

Leases, Uncapitalized Annual rentals $.8 mill.
Pension Assets-12/15 $184.8 mill. **Oblig.** $254.2 mill.

Pfd Stock None

Common Stock 79,477,822 shs. as of 11/1/16

MARKET CAP: $2.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	4.2	3.9	6.9
Other	562.5	427.4	350.9
Current Assets	566.7	431.3	357.8
Accts Payable	273.0	186.4	141.1
Debt Due	395.6	461.2	462.1
Other	181.6	184.9	209.2
Current Liab.	850.2	832.5	812.4
Fix. Chg. Cov.	432%	496%	572%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-1.5%	-4.0%	3.0%
"Cash Flow"	7.5%	6.0%	2.5%
Earnings	7.0%	4.0%	3.0%
Dividends	9.0%	9.5%	6.5%
Book Value	8.0%	8.5%	8.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	255.6	122.6	128.8	224.4	731.4
2014	350.2	133.3	122.4	281.1	887.0
2015	383.0	177.7	141.1	257.8	959.6
2016	333.0	154.4	219.1	*283.5*	*990*
2017	*350*	*175*	*200*	*325*	*1050*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.76	.16	d.02	.62	1.52
2014	1.01	.15	d.05	.47	1.57
2015	.86	.03	d.07	.62	1.44
2016	.80	.12	.05	*.48*	*1.45*
2017	*.82*	*.12*	*Nil*	*.56*	*1.50*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	--	.202	.202	.423	.83
2013	--	.222	.222	.458	.90
2014	--	.237	.237	.488	.96
2015	--	.251	.251	.515	1.02
2016	--	.264	.264	.536	

BUSINESS: South Jersey Industries, Inc. is a holding company. Its subsidiary, South Jersey Gas Co., distributes natural gas to 373,100 customers in New Jersey's southern counties. Gas revenue mix '15: residential, 45%; commercial, 22%; cogeneration and electric generation, 12%; industrial, 21%. Non-utility operations include: South Jersey Energy, South Jersey Resources Group, South Jersey Exploration, Marina Energy, South Jersey Energy Service Plus, and SJI Midstream. Has about 720 employees. Off./dir. own less than 1% of common shares; BlackRock, Inc., 10.5%; The Vanguard Group, Inc., 7.7% (3/16 proxy). Pres. & CEO: Michael J. Renna. Inc.: NJ. Address: 1 South Jersey Plaza, Folsom, NJ 08037. Tel.: 609-561-9000. Internet: www.sjindustries.com.

Shares of South Jersey Industries are trading near an all-time high price. The company posted impressive results for the September interim. This was largely due to performance at SJ Energy Services. This line benefited from strong production from its solar fleet and improved SREC (Solar Renewable Energy Credit) prices. A recovery related to the writedown of an energy facility and investment tax credits associated with solar project development also boosted results here. Both SJ Energy Group and utility South Jersey Gas reported lower operating losses for the period. The third quarter is traditionally weak for the utility.

South Jersey Gas has received regulatory approval to continue its Accelerated Infrastructure Replacement Program and to adjust rates to reflect prior investments. This allows the utility to invest up to $302.5 million over the next five years to continue the accelerated replacement of aging bare steel and cast iron mains with plastic pipe, which is more durable. It will recover these investments though annual rate adjustments, the first of which will occur next October. South Jersey Gas is also to recover $74.5 million in safety and reliability investments not previously reflected in rates through a base rate adjustment. In addition, the utility will issue customers a $10 million credit, mainly due to lower-than-expected wholesale gas costs.

We expect healthy operating improvement to late decade. The utility should further benefit from infrastructure investment and customer additions. Natural gas remains the fuel of choice within its service territory, and this business should continue to gain from customer conversions. Meanwhile, growth in the number of fuel management contracts augurs well for volumes and margins at SJ Energy Group. Elsewhere, SJ Energy Services should benefit from the healthy performance of its energy production assets.

This timely stock offers a good dividend yield. Moreover, South Jersey earns favorable marks for Safety, Financial Strength, Price Stability, and Earnings Predictability. But capital gains potential is underwhelming at this juncture, following a run-up in the share price.

Michael Napoli, CFA *December 2, 2016*

(A) Based on GAAP egs. through 2006, economic egs. thereafter. GAAP EPS: '07, $1.05; '08, $1.29; '09, $0.97; '10, $1.11; '11, $1.49; '12, $1.49; '13, $1.28; '14, $1.46; '15, $1.52. Excl. nonrecur. gain (loss): '01, $0.07; '08, $0.16; '09, ($0.22); '10, ($0.24); '11, $0.04; '12, ($0.03); '13, ($0.24); '14, ($0.11); '15, $0.08. Egs. may not sum due to rounding. Next egs. report due late February. (B) Div'ds paid early April, July, Oct., and late Dec. ■ Div. reinvest. plan avail. (C) Incl. reg. assets. In 2015: $521.0 mill., $7.34 per shr. (D) In mill., adj. for split.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	40
Earnings Predictability	80

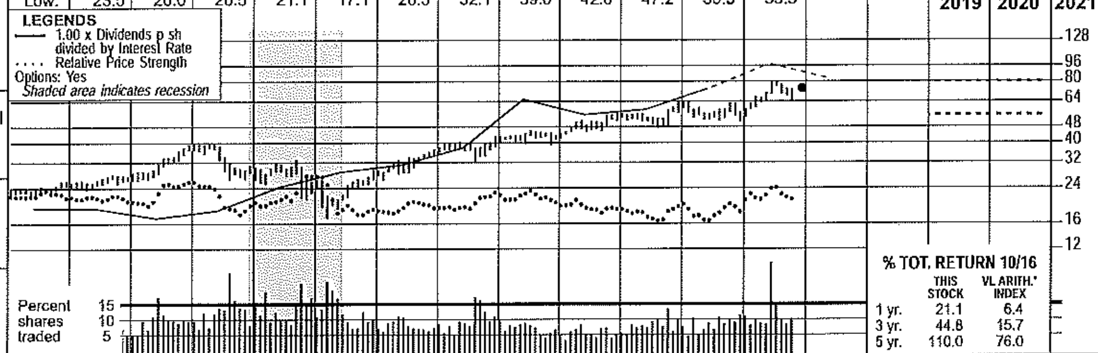
SOUTHWEST GAS NYSE-SWX

RECENT PRICE 74.45 | P/E RATIO 22.4 (Trailing: 23.3; Median: 16.0) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 2.5% | VALUE LINE

TIMELINESS 3 Lowered 9/30/16
SAFETY 3 Lowered 1/4/91
TECHNICAL 4 Lowered 11/18/16
BETA .75 (1.00 = Market)

High:	28.1	39.4	39.9	33.3	29.5	37.3	43.2	46.1	56.0	64.2	63.7	79.6		
Low:	23.5	26.0	26.5	21.1	17.1	26.3	32.1	39.0	42.0	47.2	50.5	53.5		

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+5%)	5%
Low	55	(-25%)	-3%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	8	20	10	0	1	1	0	1	1
to Sell	0	0	9	0	3	5	0	1	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	99	108	111
to Sell	87	85	102
Hld's(000)	37256	37942	37855

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	21.1	6.4
3 yr.	44.8	15.7
5 yr.	110.0	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
32.61	42.98	39.68	35.96	40.14	43.59	48.47	50.28	48.53	42.00	40.18	41.07	41.77	42.08	45.61	52.00	**52.60**	**53.55**	Revenues per sh	**61.55**
4.57	4.79	5.07	5.11	5.57	5.20	5.97	6.21	5.76	6.16	6.46	6.81	7.73	8.24	8.47	8.62	**9.25**	**10.10**	"Cash Flow" per sh	**12.30**
1.21	1.15	1.16	1.13	1.66	1.25	1.98	1.95	1.39	1.94	2.27	2.43	2.86	3.11	3.01	2.92	**3.20**	**3.50**	Earnings per sh A	**4.50**
.82	.82	.82	.82	.82	.82	.82	.86	.90	.95	1.00	1.06	1.18	1.32	1.46	1.62	**1.76**	**1.90**	Div'ds Decl'd per sh B■†	**2.40**
7.04	8.17	8.50	7.03	8.23	7.49	8.27	7.96	6.79	4.81	4.73	8.29	8.57	7.86	8.53	10.30	**11.25**	**11.75**	Cap'l Spending per sh	**13.10**
16.82	17.27	17.91	18.42	19.18	19.10	21.58	22.98	23.49	24.44	25.62	26.66	28.35	30.47	31.95	33.61	**34.90**	**36.20**	Book Value per sh	**40.40**
31.71	32.49	33.29	34.23	36.79	39.33	41.77	42.81	44.19	45.09	45.56	45.96	46.15	46.36	46.52	47.38	**48.00**	**49.00**	Common Shs Outst'g C	**52.00**
16.0	19.0	19.9	19.2	14.3	20.6	15.9	17.3	20.3	12.2	14.0	15.7	15.0	15.8	17.9	19.4	*Bold figures are*		Avg Ann'l P/E Ratio	**15.0**
1.04	.97	1.09	1.09	.76	1.10	.86	.92	1.22	.81	.89	.98	.95	.89	.94	.98	*Value Line*		Relative P/E Ratio	**.95**
4.2%	3.8%	3.6%	3.8%	3.5%	3.2%	2.6%	2.6%	3.2%	4.0%	3.2%	2.8%	2.8%	2.7%	2.7%	2.9%	*estimates*		Avg Ann'l Div'd Yield	**3.6%**
						2024.7	2152.1	2144.7	1893.8	1830.4	1887.2	1927.8	1950.8	2121.7	2463.6	**2525**	**2625**	Revenues ($mill)	**3200**
						80.5	83.2	61.0	87.5	103.9	112.3	133.3	145.3	141.1	138.3	**155**	**175**	Net Profit ($mill)	**240**
						37.3%	36.5%	40.1%	34.0%	34.7%	36.2%	36.2%	35.0%	35.7%	36.4%	**35.0%**	**35.0%**	Income Tax Rate	**35.0%**
						4.0%	3.9%	2.8%	4.6%	5.7%	6.0%	6.9%	7.4%	6.7%	5.6%	**6.1%**	**6.7%**	Net Profit Margin	**7.5%**
						60.6%	58.1%	55.3%	53.5%	49.1%	43.2%	49.2%	49.4%	52.4%	49.3%	**49.0%**	**49.0%**	Long-Term Debt Ratio	**49.0%**
						39.4%	41.9%	44.7%	46.5%	50.9%	56.8%	50.8%	50.6%	47.6%	50.7%	**51.0%**	**51.0%**	Common Equity Ratio	**51.0%**
						2287.8	2349.7	2323.3	2371.4	2291.7	2155.9	2576.9	2793.7	3123.9	3143.5	**3275**	**3475**	Total Capital ($mill)	**4100**
						2668.1	2845.3	2983.3	3034.5	3072.4	3218.9	3343.8	3486.1	3658.4	3891.1	**4080**	**4275**	Net Plant ($mill)	**4850**
						5.5%	5.5%	4.5%	5.4%	6.1%	6.4%	6.4%	6.3%	5.7%	5.5%	**6.0%**	**6.0%**	Return on Total Cap'l	**7.0%**
						8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	**9.5%**	**10.0%**	Return on Shr. Equity	**11.5%**
						8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	**9.5%**	**10.0%**	Return on Com Equity	**11.5%**
						5.2%	4.8%	2.1%	4.1%	5.1%	5.3%	6.1%	6.1%	5.0%	4.0%	**4.0%**	**4.5%**	Retained to Com Eq	**5.5%**
						42%	44%	63%	48%	43%	43%	40%	41%	47%	54%	**55%**	**53%**	All Div'ds to Net Prof	**52%**

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1642.4 mill. Due in 5 Yrs $525.0 mill.
LT Debt $1592.9 mill. LT Interest $72.0 mill.
(Total interest coverage: 4.3x) (49% of Cap'l)
Leases, Uncapitalized Annual rentals $7.0 mill.
Pension Assets-12/15 $780.5 mill. Oblig. $1117.4 mill.

Pfd Stock None

Common Stock 47,482,068 shs. as of 10/28/16

MARKET CAP: $3.5 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	39.6	36.0	85.2
Other	567.2	522.2	459.1
Current Assets	606.8	558.2	544.3
Accts Payable	168.0	164.9	138.8
Debt Due	24.2	37.5	49.5
Other	277.9	332.6	424.7
Current Liab.	470.1	535.0	613.0
Fix. Chg. Cov.	395%	401%	411%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.5%	5.0%
"Cash Flow"	5.0%	6.5%	6.5%
Earnings	8.5%	10.0%	7.0%
Dividends	6.0%	9.0%	8.5%
Book Value	5.5%	5.5%	4.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	613.5	411.6	387.3	538.4	1950.8
2014	608.4	453.2	432.5	627.7	2121.7
2015	734.2	538.6	505.4	685.4	2463.6
2016	731.2	547.7	540.0	***706.1***	***2525***
2017	***765***	***575***	***560***	***725***	***2625***

Cal-endar	EARNINGS PER SHARE A D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.73	.22	d.06	1.22	3.11
2014	1.51	.21	.04	1.25	3.01
2015	1.53	.10	d.10	1.38	2.92
2016	1.58	.19	.05	***1.38***	***3.20***
2017	***1.68***	***.22***	***.10***	***1.50***	***3.50***

Cal-endar	QUARTERLY DIVIDENDS PAID B■† Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.265	.295	.295	.295	1.15
2013	.295	.330	.330	.330	1.29
2014	.330	.365	.365	.365	1.43
2015	.365	.405	.405	.405	1.58
2016	.405	.450	.450	.450	

BUSINESS: Southwest Gas Corporation is a regulated gas distributor serving approximately 2.0 million customers in sections of Arizona, Nevada, and California. Comprised of two business segments: natural gas operations and construction services. 2015 margin mix: residential and small commercial, 85%; large commercial and industrial, 4%; transportation, 11%. Total throughput: 2.1 billion therms. Has 5,876 employees. Officers & directors own 1.3% of common stock; BlackRock Inc., 9.6%; The Vanguard Group, Inc., 7.4%; GAMCO Investors, Inc., 6.4% (3/16 Proxy). Chairman: Michael J. Melarkey. Pres. & CEO: John Hester. Inc.: CA. Address: 5241 Spring Mountain Road, Las Vegas, Nevada 89193. Tel.: 702-876-7237. Internet: www.swgas.com.

Shares of Southwest Gas have come off a high-water mark in recent months. The company reported favorable comparisons for the September quarter. The construction services segment, Centuri, benefited from additional pipe replacement work with existing customers, incremental work from awarded bid contracts, and growth in the customer base. Earnings of $14.9 million here more than offset a net loss of $12.4 million at the natural gas operation due to seasonal factors. Nevertheless, the utility reported a lower deficit, thanks to positive returns on company-owned life insurance policies. Performance here was also supported by rate relief and customer additions. Looking forward, we expect that earnings per share will match the prior-year figure for the December quarter. For the full year, we look for healthy bottom-line improvement for Southwest Gas, on modest top-line gains.

Prospects appear favorable for the long term. The company's natural gas business ought to further benefit from customer growth, infrastructure tracker mechanisms, and expansion projects. Elsewhere, Centuri should continue to report solid performance. This business operates in 20 major markets in the United States and two major markets in Canada. Fundamentals appear solid here, considering the need to replace aging infrastructure. Centuri has a strong base of large utility clients to sustain and grow its operation. Many of these are multiyear pipe replacement programs.

The stock does not stand out at this time. The equity is ranked to perform in line with the broader market for the coming six to 12 months. Moreover, appreciation potential is subpar, as the shares are trading well within our Target Price Range. Though we anticipate healthy growth for the company in the coming years, the issue is currently trading at a premium valuation. The dividend yield is nothing special for a utility, either. However, it's worth mentioning that Southwest Gas earns favorable marks for Price Stability, Growth Persistence, and Earnings Predictability. A pullback in the share price may present conservative investors with a better entry point.

Michael Napoli, CFA *December 2, 2016*

(A) Diluted earnings. Excl. nonrec. gains (losses): '02, (10¢); '05, (11¢); '06, 7¢. Next egs. report due late February. (B) Dividends historically paid early March, June, September, and December. ■† Div'd reinvestment and stock purchase plan avail. (C) In millions. (D) Totals may not sum due to rounding.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	90
Earnings Predictability	85

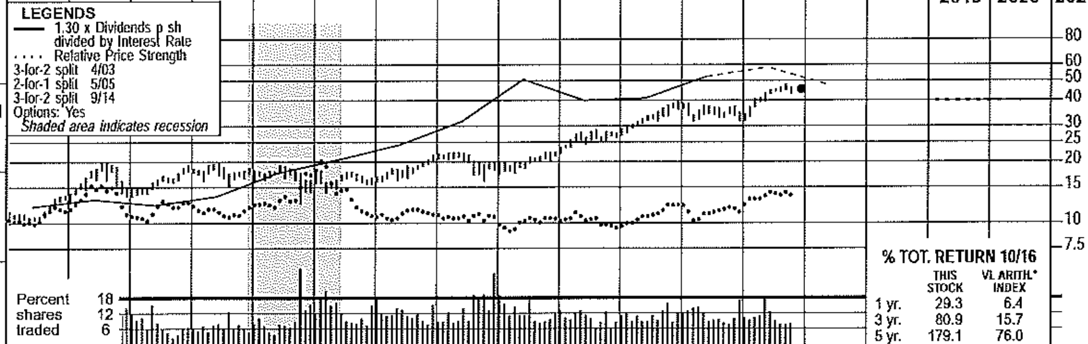
UGI CORP. NYSE-UGI

RECENT PRICE 45.67 | P/E RATIO 20.9 (Trailing: 22.2, Median: 15.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 2.1% | VALUE LINE

TIMELINESS 4 Lowered 11/18/16
SAFETY 2 Raised 9/17/04
TECHNICAL 3 Lowered 11/18/16
BETA .90 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	20.0	19.3	19.8	19.2	18.3	21.7	22.4	22.4	28.8	39.7	38.6	48.1
Low:	12.8	13.5	15.2	12.5	14.1	15.9	16.0	17.3	21.9	26.8	31.5	31.6

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(-10%)	-1%
Low	30	(-35%)	-7%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	7	4	1	0	3	2	0	1	2
to Sell	0	2	2	0	3	2	0	1	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	170	170	229
to Sell	141	158	148
Hld's(000)	133006	134051	135283

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	29.3	6.4
3 yr.	80.9	15.7
5 yr.	179.1	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.50	20.09	17.76	23.62	24.63	31.10	33.01	34.24	41.27	35.25	34.01	36.31	38.56	42.10	47.92	38.65	32.84	38.25	Revenues per sh A	43.05
1.16	1.32	1.36	1.59	1.63	2.09	2.05	2.26	2.48	2.82	2.87	2.75	3.05	3.75	4.05	4.20	4.35	4.80	"Cash Flow" per sh	5.30
.35	.47	.60	.76	.81	1.15	1.10	1.18	1.33	1.57	1.59	1.37	1.17	1.59	1.92	2.01	2.05	2.35	Earnings per sh AB	2.80
.34	.35	.36	.38	.40	.43	.46	.48	.50	.52	.60	.68	.71	.74	.79	.89	.94	.95	Div'ds Decl'd per sh C ■	1.04
.58	.64	.76	.79	.87	1.01	1.21	1.39	1.44	1.85	2.11	2.15	2.01	2.84	2.64	2.83	3.00	3.25	Cap'l Spending per sh	3.25
2.04	2.08	2.55	4.45	5.43	6.35	6.95	8.26	8.80	9.78	11.10	11.79	13.21	14.59	15.39	15.55	17.05	17.65	Book Value per sh D	22.70
121.47	122.83	124.66	128.10	153.63	157.20	158.18	159.97	161.09	162.78	164.38	167.75	169.06	170.88	172.73	173.12	173.15	170.00	Common Shs Outst'g E	170.00
13.6	12.1	11.4	12.6	13.4	13.8	14.0	15.1	13.3	10.3	10.9	15.0	16.4	15.4	15.8	17.7	19.3		Avg Ann'l P/E Ratio	12.0
.88	.62	.62	.72	.71	.73	.76	.80	.80	.69	.69	.94	1.04	.87	.83	.90	1.06		Relative P/E Ratio	.75
7.0%	6.2%	5.3%	3.9%	3.7%	2.7%	3.0%	2.7%	2.9%	3.2%	3.5%	3.3%	3.7%	3.0%	2.6%	2.5%	2.4%		Avg Ann'l Div'd Yield	3.1%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $4300.9 mill. **Due in 5 Yrs** $2124 mill.
LT Debt $3774.7 mill. **LT Interest** $242 mill.
(Total interest coverage: 4.2x)

Leases, Uncapitalized Annual rentals $73.4 mill.
Pension Assets-9/15 $472 mill. **Oblig.** $466 mill.

Pfd Stock None

Common Stock 173,246,168 shares as of 7/31/16

MARKET CAP: $7.9 bill. (Large Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
5221.0	5476.9	6648.2	5737.8	5591.4	6091.3	6519.2	7194.7	8277.3	6691.1	5685.7	6505	Revenues ($mill) A	7315
176.2	191.8	215.5	258.5	261.0	232.9	199.4	278.1	337.2	353.8	360.0	410	Net Profit ($mill)	485
30.5%	23.8%	30.6%	29.4%	32.0%	29.8%	34.8%	27.6%	30.6%	30.0%	30.0%	30.0%	Income Tax Rate	30.0%
3.4%	3.5%	3.2%	4.5%	4.7%	3.8%	3.1%	3.9%	4.1%	5.3%	6.3%	6.3%	Net Profit Margin	6.0%
64.1%	60.7%	58.4%	56.2%	44.0%	51.6%	60.0%	58.7%	56.4%	56.1%	56.5%	55.5%	Long-Term Debt Ratio	49.5%
35.9%	39.3%	41.6%	43.8%	56.0%	48.4%	40.0%	41.3%	43.6%	43.9%	43.5%	44.5%	Common Equity Ratio	50.5%
3064.6	3360.7	3405.0	3630.0	3256.7	4088.0	5580.7	6034.7	6092.7	6133.8	6665	6775	Total Capital ($mill)	7660
2214.7	2397.4	2449.5	2903.6	3053.2	3204.5	4233.1	4480.2	4543.7	4994.1	5490	6035	Net Plant ($mill)	8000
7.5%	7.4%	7.9%	8.9%	10.1%	7.4%	5.6%	6.6%	7.5%	7.7%	5.5%	6.0%	Return on Total Cap'l	6.4%
16.0%	14.5%	15.2%	16.2%	14.3%	11.8%	8.9%	11.2%	12.7%	13.1%	12.5%	13.5%	Return on Shr. Equity	12.5%
16.0%	14.5%	15.2%	16.2%	14.3%	11.8%	8.9%	11.2%	12.7%	13.1%	12.5%	13.5%	Return on Com Equity	12.5%
9.4%	8.7%	9.5%	10.9%	8.9%	6.0%	3.6%	6.1%	7.6%	7.4%	7.0%	8.5%	Retained to Com Eq	8.0%
41%	40%	38%	33%	38%	49%	60%	45%	40%	43%	45%	39%	All Div'ds to Net Prof	36%

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	419.5	369.7	909.2
Other	1243.5	1090.1	972.9
Current Assets	1663.0	1459.8	1882.1
Accts Payable	459.8	392.9	337.0
Debt Due	288.0	447.9	526.2
Other	683.1	838.1	726.1
Current Liab.	1430.9	1678.9	1589.3
Fix. Chg. Cov.	338%	338%	340%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	3.0%	1.0%
"Cash Flow"	8.5%	8.0%	4.5%
Earnings	7.5%	4.0%	4.5%
Dividends	7.0%	8.5%	4.0%
Book Value	11.0%	9.0%	7.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	2018	2542	1374	1259	7194.7
2014	2316	3163	1486	1311	8277.3
2015	2005	2456	1148	1082	6691.1
2016	1607	1972	1131	976	5685.7
2017	1810	2175	1335	1185	6505

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.60	.99	.09	d.09	1.59
2014	.70	1.23	.10	d.11	1.92
2015	.66	1.23	.03	.01	2.01
2016	.64	1.24	.23	d.05	2.05
2017	.68	1.28	.27	.02	2.25

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.175	.175	.18	.18	.71
2013	.18	.18	.19	.19	.74
2014	.19	.19	.20	.22	.80
2015	.22	.22	.23	.23	.90
2016	.23	.238	.238	.238	

BUSINESS: UGI Corp. operates six business segments: AmeriGas Propane (accounted for 21.7% of net income in 2015), UGI International (18.8%), Gas Utility (41.2%), Midstream & Marketing (38.8%), and Corp. & Other -21%. UGI Utilities distributes natural gas and electricity to over 617,000 customers mainly in Pennsylvania; 27%-owned AmeriGas Partners is the largest U.S. propane marketer, serving about 1.3 million users in 50 states. Acquired remaining 80% interest in Antargaz (3/04); Energy Transfer Partners (1/12). Wellington Management Co. holds 9.6% of stock; officers/dir., about 3% (12/15 proxy). Has 8,500 empls. CEO: John L. Walsh. Inc.: PA. Address: 460 N. Gulph Rd., King of Prussia, PA 19406. Telephone: 610-337-1000. Internet: www.ugicorp.com.

Since our September review, shares of UGI Corp. are trading relatively unchanged. This comes after the company registered mixed financial results for the fourth quarter and the fiscal year, ended September 30th.

Both the top line and volumes were impacted by warmer-than-normal weather patterns. With the exception of UGI International, all of the company's operating segments experienced a downturn in revenue contributions. The former has been getting a boost from the previously completed Finagaz acquisition. Meanwhile, the AmeriGas Propane division, which represents the lion's share of overall operations, saw its revenues drop almost 20% this past year. Weather patterns drove down consumer demand, and the year-to-year downturn in commodity prices, when compared to 2015's figures, further exacerbated this problem. On balance, retail gallons sold fell by double digits across the company's domestic operations. And overall system throughput on the UGI Utilities arm fell off, as well. Despite the lower volumes, a tight hold on cost controls and a reduced share count equated to a modest 2% rise in earnings, to $2.05 a share, slightly below our call.

That said, the company appears poised to show improvement in fiscal 2017. UGI's revenues ought to rebound nicely this year, as market rates for propane and other fossil fuels have been on the mend since March of this year. Meanwhile, we look for recent acquisitions to be further integrated with existing operations. Finally, we have raised our earnings outlook for this year by a dime to $2.35. This would represent an annual increase of almost 15%, and falls more in line with management's recently issued guidance range of $2.30-$2.45.

Since our last review, these shares have fallen two notches in Timeliness. They are now ranked to lag the broader market averages in the coming year. What's more, UGI stock has been trading above our Target Price Range for some time now. As a result, it offers unattractive appreciation potential for the pull to 2019-2021. The yield is modest, too. We think most investors would be better served elsewhere.

Bryan J. Fong *December 2, 2016*

(A) Fiscal year ends Sept. 30. Quarterly sales and earnings may not sum to total due to rounding and/or change in share count. (B) Diluted earnings. Excludes nonrecur. items: '99, 13¢; '01, d1¢; '03, 22¢; '04, d6¢; '05, 3¢; '06, 5¢; '07, 12¢. Next egs. report due late Jan. (C) Dividends historically paid in early Jan., April, July, and Oct. ■ Div. reinvest. plan available. (D) Incl. intang. At 9/15: $3,564 mill., $20.61/sh. (E) In mill., adjusted for stock splits.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	70

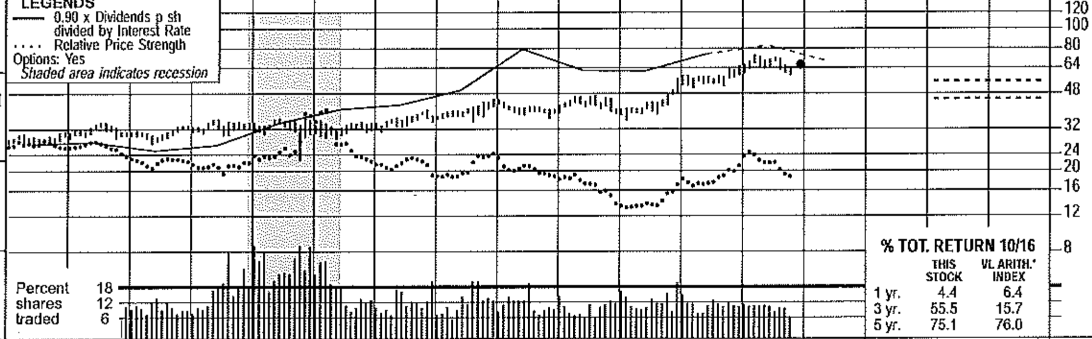
WGL HOLDINGS NYSE-WGL

RECENT PRICE 66.57 | P/E RATIO 19.8 (Trailing: 20.3; Median: 15.0) | RELATIVE P/E RATIO 1.04 | DIV'D YLD 2.9% | VALUE LINE

TIMELINESS 3 Lowered 11/25/16
SAFETY 1 Raised 4/2/93
TECHNICAL 3 Lowered 10/28/16
BETA .75 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	34.8	33.6	35.9	37.1	35.5	40.0	45.0	45.0	47.0	56.8	65.6	74.1
Low:	28.8	27.0	29.8	22.4	28.6	31.0	34.7	36.0	38.0	35.4	50.9	58.7

LEGENDS
—— 0.90 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(-15%)	-1%
Low	45	(-30%)	-5%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	9	0	0	0	0	0	0	0	0
to Sell	0	1	2	0	1	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	123	126	123
to Sell	106	121	106
Hld's(000)	33248	34219	34930

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	4.4	6.4
3 yr.	55.5	15.7
5 yr.	75.1	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
22.19	29.80	32.63	42.45	42.93	44.94	53.96	53.51	52.65	53.98	53.60	53.75	47.07	47.70	53.73	53.43	*46.55*	*51.90*	Revenues per sh A	*53.65*
3.20	3.24	2.63	4.00	3.87	3.97	3.84	3.89	4.34	4.44	4.11	4.01	4.53	4.29	4.80	5.60	*5.50*	*5.70*	"Cash Flow" per sh	*6.00*
1.79	1.88	1.14	2.30	1.98	2.13	1.94	2.09	2.44	2.53	2.27	2.25	2.68	2.31	2.68	3.16	3.27	*3.40*	Earnings per sh B	*3.30*
1.24	1.26	1.27	1.28	1.30	1.32	1.35	1.37	1.41	1.47	1.50	1.55	1.59	1.66	1.72	1.83	1.93	*1.99*	Div'ds Decl'd per sh C ■	*2.05*
2.67	2.68	3.34	2.65	2.33	2.32	3.27	3.33	2.70	2.77	2.57	3.94	4.87	6.04	7.63	9.33	*16.35*	*17.30*	Cap'l Spending per sh	*19.10*
15.31	16.24	15.78	16.25	16.95	17.80	18.86	19.83	20.99	21.89	22.82	23.49	24.64	24.65	24.08	24.97	*27.00*	*29.00*	Book Value per sh D	*34.60*
46.47	48.54	48.56	48.63	48.67	48.65	48.89	49.45	49.92	50.14	50.54	51.20	51.52	51.70	51.76	49.78	*51.00*	*52.00*	Common Shs Outst'g E	*55.00*
14.6	14.7	23.1	11.1	14.2	14.7	15.5	15.6	13.7	12.6	15.1	17.0	15.3	18.2	15.2	17.0	20.0		Avg Ann'l P/E Ratio	*15.0*
.95	.75	1.26	.63	.75	.78	.84	.83	.82	.84	.96	1.07	.97	1.02	.80	.86	1.10		Relative P/E Ratio	*.95*
4.8%	4.6%	4.8%	5.0%	4.6%	4.2%	4.5%	4.2%	4.2%	4.6%	4.4%	4.1%	3.9%	3.9%	4.2%	3.4%	2.9		Avg Ann'l Div'd Yield	*4.1%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1552.6 mill. Due in 5 Yrs $329.3 mill.
LT Debt $1194.3 mill. LT Interest $50.5 mill.
(LT interest earned: 6.2x; total interest coverage: 5.7x) (45% of Total Capital)
Pension Assets-9/15 $1,218.7 mill. Oblig. $1,218.7 mill.
Preferred Stock $28.2 mill. Pfd. Div'd $1.3 mill.

Common Stock 51,059,773 shs. as of 7/31/16

MARKET CAP: $3.4 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
2637.9	2646.0	2628.2	2706.9	2708.9	2751.5	2425.3	2466.1	2780.9	2659.8	2349.6	*2700*	Revenues ($mill) A	*2950*
96.0	102.9	122.9	128.7	115.0	115.5	138.4	119.7	139.0	158.2	*155*	*175*	Net Profit ($mill)	*185*
39.0%	39.1%	37.1%	39.1%	38.7%	42.4%	40.1%	30.2%	29.0%	39.9%	*39.0%*	*39.0%*	Income Tax Rate	*39.0%*
3.6%	3.9%	4.7%	4.8%	4.2%	4.2%	5.7%	4.9%	5.0%	5.9%	*6.6%*	*6.5%*	Net Profit Margin	*6.2%*
37.8%	37.9%	35.9%	33.3%	33.4%	32.3%	31.2%	28.7%	34.8%	42.6%	*41.5%*	*41.5%*	Long-Term Debt Ratio	*43.5%*
60.4%	60.3%	62.4%	65.0%	65.0%	66.2%	67.3%	69.8%	63.8%	56.1%	*57.5%*	*57.0%*	Common Equity Ratio	*55.5%*
1526.1	1625.4	1679.5	1687.7	1774.4	1818.1	1886.9	1826.8	1954.0	2215.6	*2405*	*2635*	Total Capital ($mill)	*3430*
2067.9	2150.4	2208.3	2269.1	2346.2	2489.9	2667.4	2907.5	3314.4	3672.7	*4070*	*4510*	Net Plant ($mill)	*6135*
7.6%	7.6%	8.5%	8.8%	7.6%	7.5%	8.3%	7.5%	8.1%	8.3%	*8.0%*	*7.5%*	Return on Total Cap'l	*7.0%*
10.1%	10.2%	11.4%	11.4%	9.7%	9.4%	10.7%	9.2%	10.9%	12.4%	*11.5%*	*11.0%*	Return on Shr. Equity	*9.5%*
10.3%	10.4%	11.6%	11.6%	9.9%	9.5%	10.8%	9.3%	11.0%	12.6%	*11.5%*	*11.0%*	Return on Com Equity	*9.5%*
3.2%	3.5%	5.0%	5.0%	3.3%	3.4%	4.8%	2.6%	4.3%	5.4%	*4.0%*	*4.5%*	Retained to Com Eq	*3.5%*
69%	66%	57%	57%	67%	64%	56%	72%	62%	58%	*63%*	*61%*	All Div'ds to Net Prof	*62%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	8.8	6.7	16.5
Other	826.7	774.7	804.1
Current Assets	835.5	781.4	820.6
Accts Payable	313.2	325.1	333.2
Debt Due	473.5	357.0	358.3
Other	233.6	300.8	303.4
Current Liab.	1020.3	982.9	994.9
Fix. Chg. Cov.	535%	535%	535%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	-.5%	*0.5%*
"Cash Flow"	2.0%	2.5%	*3.5%*
Earnings	2.5%	2.5%	*3.5%*
Dividends	3.0%	3.5%	*2.5%*
Book Value	4.0%	2.5%	*6.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	686.7	891.4	478.1	409.9	2466.1
2014	680.5	1174.0	467.5	458.9	2780.9
2015	749.2	1001.7	441.2	467.7	2659.8
2016	613.4	835.7	440.6	459.9	2349.6
2017	*695*	*915*	*520*	*570*	*2700*

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1.14	1.75	d.03	d.55	2.31
2014	.99	1.84	.02	d.17	2.68
2015	1.16	2.02	.22	d.23	3.16
2016	1.18	1.78	.33	d.01	3.27
2017	*1.21*	*1.81*	*.36*	*.02*	*3.40*

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.39	.40	.40	.40	1.59
2013	.40	.42	.42	.42	1.66
2014	.42	.44	.44	.44	1.74
2015	.44	.463	.463	.463	1.83
2016	.463	.488	.488	.488	

BUSINESS: WGL Holdings, Inc. is the parent of Washington Gas Light, a natural gas distributor in Washington, D.C. and adjacent areas of VA and MD to resident'l and comm'l users (1,129,865 meters). Hampshire Gas, a federally regulated sub., operates an underground gas-storage facility in WV. Non-regulated subs.: Wash. Gas Energy Svcs. sells and delivers natural gas and provides energy-related products in the D.C. metro area; Wash. Gas Energy Sys. designs/installs comm'l heating, ventilating, and air cond. systems. BlackRock, Inc. owns 8.7% of common stock; Off./dir. less than 1% (1/16 proxy). Chrmn. & CEO: Terry D. McCallister. Inc.: D.C. and VA. Addr.: 101 Const. Ave., N.W., Washington, D.C. 20080. Tel.: 202-624-6410. Internet: www.wglholdings.com.

Shares of WGL Holdings are trading modestly higher in price since our September review. Indeed, the stock registered a gain of approximately 3%-5% over that time frame. In comparison, the S&P 500 Index was basically unchanged for this same period, logging an advance of roughly 0.5%.

Meanwhile, the company's fourth-quarter and fiscal-year (ended September 30th) financial results lined up with our expectations. On the downside, annual revenues fell 11.7%, to $2.349 billion. This reflected a downturn in utility and nonutility volumes of 19.9% and 3.8%, respectively. However, we view this apparent weakness in the regulated utility business as more of technicality, owing to the year-over-year decline in natural gas prices. On the profitability front, overall expenses declined 300 basis points, as a percentage of the top line. All told, these factors sent the bottom line 3.5% higher, to $3.27 a share. This was modestly above our earlier call of $3.10 for the year.

We have increased our outlook for fiscal 2017 accordingly. In fact, we added a dime to our earnings estimate, to $3.40 a share. This falls broadly in line with management's recently issued guidance range of $3.30-$3.50. WGL Holdings ought to benefit from continued additions of active customer meters. Over the course of fiscal 2016, the company increased its number of meters by 12,500. We look for similar growth to continue in 2017 and beyond. At the same time, management has been quite successful at identifying attractive capital growth projects needed to boost its geographic footprint in the D.C. region, and overall system throughput. On the downside, the Constitution Pipeline continues to be delayed as WGL works through some red tape with the NY State Department of Environmental Conservation.

At the recent quotation, we think most investors' funds could be better utilized elsewhere. The stock is ranked to just mirror the broader market averages in the coming year. And at this price point, it is trading above our Target Price Range, thus suggesting that it lacks appreciation potential for the pull to 2019-2021.

Bryan J. Fong *December 2, 2016*

(A) Fiscal years end Sept. 30th.
(B) Based on diluted shares. Excludes nonrecurring losses: '01, (13¢); '02, (34¢); '07, (4¢); '08, (14¢) discontinued operations: '06, (15¢). Qtly egs. may not sum to total, due to change in shares outstanding. Next earnings report due late Jan.
(C) Dividends historically paid early February, May, August, and November. ■ Dividend reinvestment plan available.
(D) Includes deferred charges and intangibles. '15: $705.8 million, $14.18/sh.
(E) In millions.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	55
Earnings Predictability	75

October 14, 2016

WATER UTILITY INDUSTRY

INDUSTRY TIMELINESS: 44 (of 97)

The market sentiment for the Water Utility Industry has changed dramatically since we last reported on the group in July. Indeed, the value of almost all equities in this sector have declined by double digits on average, while the broader market averages have advanced modestly.

The underlying fundamentals of this sector remain basically unchanged. Following decades of underinvestment in new water infrastructure, utilities have substantially increased capital budgets to replace aging pipelines. As internally generated funds are not sufficient to fund all of the construction costs, debt and equity offerings are often required. Still, the financial condition of the industry remains very stable.

Most authorities realize that the capital being spent to modernize systems in their states are necessary and have generally had a constructive working relationship with water utilities they regulate.

Traditionally, a haven for conservative, income-oriented investors, we continue to urge subscribers to use more caution when getting involved in this sector because the low Beta coefficients can sometimes be misleading. Due to the industry's small market capitalization, a shift in institutional investor sentiment, can move the prices of stocks widely in a short period of time.

A Major Retreat

When we went to press last July, institutional investors, spurred by low rates on U.S. Treasury securities, had plowed large amounts of funds into this relatively minor segment of the U.S. equity market. Consisting of only nine stocks, the industry has a combined market capitalization of less than $25 billion. Long known to many retail investors for their modest, but well-defined earnings, many accounts have also been attracted to these shares because of their higher-than-average yields, solid dividend growth prospects, low volatility, and defensive nature. During the first half of 2016, however, demand for certain income-generating stocks reached peak levels. Indeed, the price of the equities in this industry were pushed to such all time highs, that their yields (the primary reason to buy the stocks) fell below the median of the *Value Line* universe. Over the past quarter, the stocks in this industry have declined 12.0% on average, while the S&P 500 Index has increased by about 3%.

Capital Expenditures And Balance Sheets

Currently, the average utility is in the process of replacing aging pipelines systems, upgrading and expanding wastewater facilities, and spending funds to be in compliance in EPA regulations. As an example, *American Water Works*, the largest and one of the best run utilities in the country broke out the age of its pipeline system at a recent presentation. (Keep in mind that the following numbers come from a company that has been spending heavily to upgrade its assets.) The age of its pipes are as follows: 21%, 30 years old or less; 51%, 31-69 years; 24%, 70 to 90 years; and 4%, at least 100 years. Over 25% of this elite utility's pipe are 70 years or older. So, clearly America's water infrastructure is aging and huge sums of capital will have to be invested for a long period of time. Fortunately, the industry and regulators are in agreement that not enough maintenance capital had been spent during the previous decades, as customers water bills, in many parts of the country were kept artificially low. An emphasis has been placed on modernizing most water districts at a gradual, but determined pace.

All of the regulated utilities in this group have relatively sound balance sheets. Capital outlays have increased for most companies, but they haven't had to take on excessive amounts of debt or issue too much new equity. We expect this trend to continue with companies probably being marginally more leveraged later in the decade.

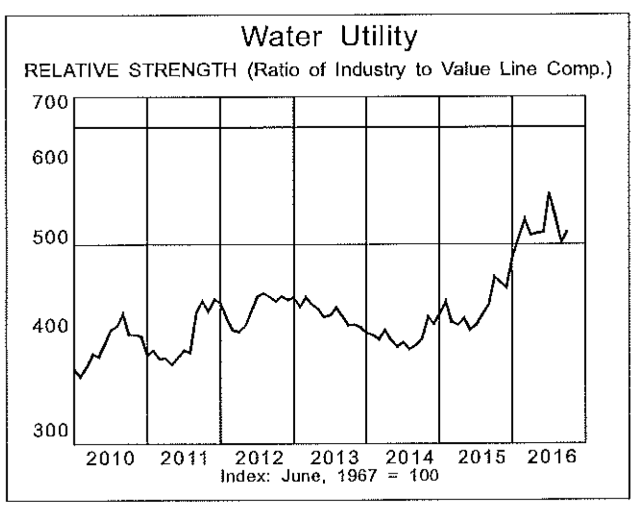
Regulation Continues To Be Reasonable

Utilities are governed by authorities in the state in which they operate. In addition to setting the rates for what water users pay, these regulatory bodies also have the power to set the return a company can earn. Even a very well run utility can have a difficult time being successful in a harsh regulatory climate. Fortunately, in this industry, both the utilities and regulator seem to be working toward a common goal. As we often point out, the regulatory impact on a utility's bottom line should never be underestimated.

Conclusion

The industry ranking here has plunged from among the highest of all those followed by *Value Line* to somewhere around the middle of the pack. Actually, we do not have a negative outlook on the operational side of the business. Our problem is simply that the valuations are too rich. And, while the recent sell off has improved the prospects of these stocks over the pull to 2019-2021, there is still not one that has above-average capital appreciation to that time. *Aqua American* comes close, and still may interest some conservative investors, willing to sacrifice some capital appreciation in return for safety. Also, of the nine equities, only *California Water* is expected to outperform the broader market averages in the year ahead.

James A. Flood



AMER. STATES WATER NYSE-AWR

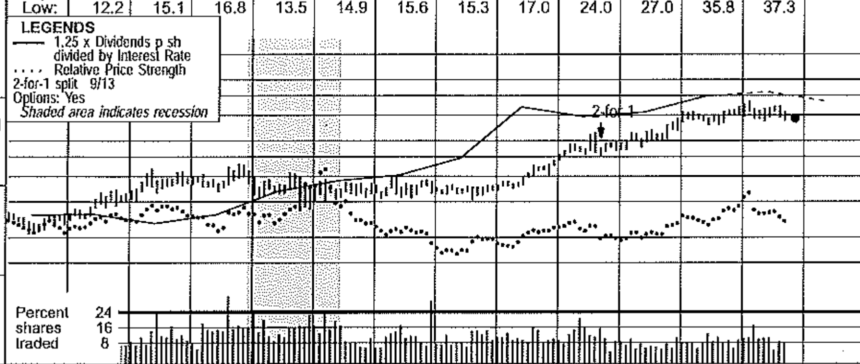
RECENT PRICE 38.62 | P/E RATIO 22.7 (Trailing: 24.1 / Median: 20.0) | RELATIVE P/E RATIO 1.23 | DIV'D YLD 2.4% | VALUE LINE

TIMELINESS	3 Raised 8/19/16
SAFETY	2 Raised 7/20/12
TECHNICAL	2 Raised 10/14/16

BETA .70 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	17.3	21.9	23.1	21.0	19.4	19.8	18.2	24.1	33.1	38.7	44.1	47.2
Low:	12.2	15.1	16.8	13.5	14.9	15.6	15.3	17.0	24.0	27.0	35.8	37.3

LEGENDS
—— 1.25 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 9/13
Options: Yes
Shaded area indicates recession



Target Price Range
2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+30%)	9%
Low	40	(+5%)	4%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	2	11	1	10	1	8	4	1	1
to Sell	1	2	1	2	2	2	3	2	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	88	100	95
to Sell	88	96	90
Hld's(000)	23016	22935	23585

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-1.2	17.7
3 yr.	56.2	23.7
5 yr.	169.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
6.08	6.53	6.89	6.99	6.81	7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	*12.35*	*12.90*	Revenues per sh	*15.50*
1.10	1.26	1.27	1.04	1.11	1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	*2.75*	*2.90*	"Cash Flow" per sh	*3.80*
.64	.67	.67	.39	.53	.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.60	*1.65*	*1.75*	Earnings per sh A	*2.25*
.43	.43	.44	.44	.44	.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	*.91*	*.96*	Div'd Decl'd per sh B■	*1.25*
1.51	1.59	1.34	1.88	2.51	2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	*2.45*	*2.45*	Cap'l Spending per sh	*2.75*
6.37	6.61	7.02	6.98	7.51	7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	*13.70*	*14.50*	Book Value per sh	*16.45*
30.24	30.24	30.36	30.42	33.50	33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	*36.50*	*36.50*	Common Shs Outst'g C	*37.00*
15.9	16.7	18.3	31.9	23.2	21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	*Bold figures are*		Avg Ann'l P/E Ratio	*21.0*
1.03	.86	1.00	1.82	1.23	1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.25	*Value Line*		Relative P/E Ratio	*1.30*
4.2%	3.9%	3.6%	3.5%	3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%	*estimates*		Avg Ann'l Div'd Yield	*2.6%*
						268.6	301.4	318.7	361.0	398.9	419.3	466.9	472.1	465.8	458.6	*450*	*470*	Revenues ($mill)	*575*
						23.1	28.0	26.8	29.5	41.4	42.0	54.1	62.7	61.1	60.5	*60.0*	*64.0*	Net Profit ($mill)	*83.0*
						40.5%	42.6%	37.8%	38.9%	43.2%	41.7%	39.9%	36.3%	38.4%	38.4%	*33.0%*	*36.0%*	Income Tax Rate	*36.0%*
						12.2%	8.5%	6.9%	3.2%	5.8%	2.0%	2.5%	--	2.5%	.5%	*1.0%*	*1.5%*	AFUDC % to Net Profit	*1.0%*
						48.6%	46.9%	46.2%	45.9%	44.3%	45.4%	42.2%	39.8%	39.1%	41.1%	*41.5%*	*42.5%*	Long-Term Debt Ratio	*57.0%*
						51.4%	53.1%	53.8%	54.1%	55.7%	54.6%	57.8%	60.2%	60.9%	58.9%	*58.5%*	*57.5%*	Common Equity Ratio	*43.0%*
						551.6	569.4	577.0	665.0	677.4	749.1	787.0	818.4	832.6	791.5	*855*	*920*	Total Capital ($mill)	*1065*
						750.6	776.4	825.3	866.4	855.0	896.5	917.8	981.5	1003.5	1060.8	*1110*	*1150*	Net Plant ($mill)	*1370*
						6.0%	6.7%	6.4%	5.9%	7.6%	7.1%	8.3%	8.9%	8.6%	9.0%	*8.5%*	*8.5%*	Return on Total Cap'l	*9.5%*
						8.1%	9.3%	8.6%	8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	*12.0%*	*12.0%*	Return on Shr. Equity	*13.5%*
						8.1%	9.3%	8.6%	8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	*12.0%*	*12.0%*	Return on Com Equity	*13.5%*
						2.7%	3.9%	3.1%	3.2%	5.8%	5.3%	6.6%	6.8%	5.7%	6.0%	*5.5%*	*5.5%*	Retained to Com Eq	*6.0%*
						67%	58%	64%	61%	47%	49%	45%	47%	53%	54%	*55%*	*55%*	All Div'ds to Net Prof	*56%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $384.7 mill. Due in 5 Yrs $41.6 mill.
LT Debt $320.9 mill. LT Interest $21.1 mill.
(40% of Cap'l)

Leases, Uncapitalized: Annual rentals $2.5 mill.
Pension Assets-12/15 $142.2 mill.
Oblig. $168.9 mill.
Pfd Stock None.

Common Stock 36,558,468 shs.
as of 8/1/16

MARKET CAP: $1.4 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	76.0	4.4	4.5
Accts Receivable	18.8	18.9	20.4
Other	114.7	109.4	107.9
Current Assets	209.5	132.7	132.8
Accts Payable	41.9	50.6	54.0
Debt Due	.3	28.3	63.8
Other	57.1	44.6	42.4
Current Liab.	99.3	123.5	160.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	6.0%	4.5%	*4.0%*
"Cash Flow"	9.0%	8.0%	*6.0%*
Earnings	12.0%	12.0%	*6.0%*
Dividends	6.5%	10.0%	*7.0%*
Book Value	5.5%	6.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	110.6	120.7	130.9	109.9	472.1
2014	102.0	115.6	138.3	109.9	465.8
2015	100.9	114.6	133.0	110.1	458.6
2016	93.5	112.0	*134.5*	*115*	*450*
2017	*98.0*	*117*	*143*	*117*	*475*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.35	.43	.53	.30	1.61
2014	.28	.39	.54	.36	1.57
2015	.32	.41	.56	.31	1.60
2016	.28	.45	*.58*	*.34*	*1.65*
2017	*.33*	*.47*	*.62*	*.33*	*1.75*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.14	.14	.1775	.1775	.64
2013	.1775	.1775	.2025	.2025	.76
2014	.2025	.2025	.213	.213	.83
2015	.213	.213	.224	.224	.87
2016	.224	.224	.224		

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden States Water Company, it supplies water to 260,151 customers in 75 cities and 10 counties. Service areas include the greater metropolitan areas of Los Angeles and Orange Counties. The company also provides electric utility services to 23,846 customers in the city of Big Bear Lake and in areas of San Bernardino County. Sold Chaparral City Water of Arizona (6/11). Has 707 employees. Blackrock Inc., owns 9.9% of out. shares; Vanguard, 9.4%; off. & dir. 1.4%. (4/16 Proxy). Chairman: Lloyd Ross. President & Chief Executive Officer: Robert J. Sprowls. Inc: CA. Address: 630 East Foothill Boulevard, San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water did not raise the dividend at the last board meeting. Over the past four years, the company has increased the payout annually, but chose not to do so in August. We do not think that investors should be too concerned as management is probably awaiting a decision on a pending rate case and it also kept the dividend the same for five straight quarters in 2011-2012.

The long-awaited outcome of an important rate case should be revealed in the coming months. We have been anticipating this for quite some time now. Through its Golden State Water Company (GSWC), the company filed a petition for rate relief for the years 2016 to 2018. The original filing was made in 2014, but the drought in California led to complications as consumers were ordered to reduce water usage. In any case, California regulators have acted constructively with water utilities in the recent past.

Earnings will probably be flat this year. By the time any rate hike is implemented, it will be too late to have a major impact on 2016's bottom line. (We are assuming that the utility doesn't take the gain all at once or restate 2016 financials.) So, for now, we are sticking with our share-net estimate of $1.65.

Next year should be better. No matter how American States chooses to recognize the 2016 rate relief, higher tariffs for two years should be in effect for 2017. As a result, share earnings could rise 6% to $1.75.

The nonregulated sector of the business should continue to grow. The ASUS subsidiary was established to use the company's expertise in the private segment of the economy where it can earn higher returns on equity. The focus here has been the privatization of the water systems at U.S. Army facilities. Thus far, ASUS has won 10 contracts, and many more bases are in the process of placing contracts out in a formal bidding process. American States seems to be holding its own as it recently won a 50-year contract with the Elgin Air Force Base.

These shares do not stand out for either short- or long-term potential performance. The Timeliness rank is 3 (Average), and return prospects to 2019-2021 are subpar.

James A. Flood *October 14, 2016*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢) '11, 10¢. Next earnings report due early November.

(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.

(C) In millions, adjusted for split.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	75
Earnings Predictability	85

AMERICAN WATER NYSE-AWK

RECENT PRICE 71.91 | P/E RATIO 24.9 (Trailing: 26.1 Median: NMF) | RELATIVE P/E RATIO 1.35 | DIV'D YLD 2.2% | VALUE LINE

TIMELINESS 4 Lowered 9/30/16
SAFETY 3 New 7/25/08
TECHNICAL 3 Lowered 9/30/16
BETA .65 (1.00 = Market)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	23.7	23.0	25.8	32.8	39.4	45.1	56.2	61.2	85.2
Low:	16.5	16.2	19.4	25.2	31.3	37.0	41.1	48.4	58.9

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

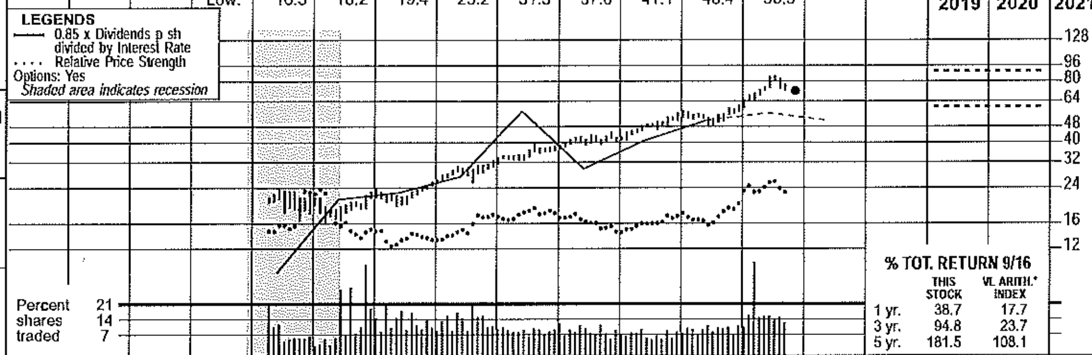
	Price	Gain	Ann'l Total Return
High	90	(+25%)	8%
Low	60	(-15%)	-1%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	10	6	0	10	0	0	2
to Sell	0	0	0	6	0	3	0	0	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	241	313	280
to Sell	227	232	254
Hld's(000)	147408	158854	150627



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	38.7	17.7
3 yr.	94.8	23.7
5 yr.	181.5	108.1

2000	2001	2002	2003	2004	2005	2006	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
--	--	--	--	--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	*18.75*	*19.30*	Revenues per sh	*22.20*
--	--	--	--	--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	*5.45*	*5.75*	"Cash Flow" per sh	*6.55*
--	--	--	--	--	--	d.97	d2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	*2.85*	*3.05*	Earnings per sh A	*3.75*
--	--	--	--	--	--	--	--	.40	.82	.86	.90	1.21	.84	1.21	1.33	*1.47*	*1.61*	Div'd Decl'd per sh B■	*2.05*
--	--	--	--	--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	*7.25*	*7.10*	Cap'l Spending per sh	*6.00*
--	--	--	--	--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	*29.05*	*30.95*	Book Value per sh D	*34.60*
--	--	--	--	--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	*178.50*	*180.00*	Common Shs Outst'g C	*187.50*
--	--	--	--	--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	*Bold figures are*		Avg Ann'l P/E Ratio	*20.0*
--	--	--	--	--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.04	*Value Line*		Relative P/E Ratio	*1.25*
--	--	--	--	--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	*estimates*		Avg Ann'l Div'd Yield	*2.7%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $6854.0 mil. Due in 5 Yrs $1272.0 mil.
LT Debt $5850.0 mil. LT Interest $297.0 mil.
(53% of Cap'l)

Leases, Uncapitalized: Annual rentals $14.0 mill.
Pension Assets 12/15 $1376.0 mill
Oblig. $1584.0 mill.
Pfd Stock $11.0 mill. Pfd Div'd $.2 mill

Common Stock 177,902,408 shs.
as of 7/28/16

MARKET CAP: $12.8 billion (Large Cap)

2006	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
2093.1	2214.2	2336.9	2440.7	2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	*3345*	*3475*	Revenues ($mill)	*4160*
d155.8	d342.3	187.2	209.9	267.8	304.9	374.3	369.3	429.8	476.0	*505*	*550*	Net Profit ($mill)	*700*
--	--	37.4%	37.9%	40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	*39.0%*	*38.5%*	Income Tax Rate	*37.0%*
--	--	--	--	--	--	6.2%	5.1%	5.1%	1.4%	*2.5%*	*3.0%*	AFUDC % to Net Profit	*3.0%*
56.1%	50.9%	53.1%	56.9%	56.8%	55.7%	53.9%	52.4%	52.4%	53.7%	*55.0%*	*55.0%*	Long-Term Debt Ratio	*55.0%*
43.9%	49.1%	46.9%	43.1%	43.2%	44.2%	46.1%	47.6%	47.4%	46.2%	*45.0%*	*45.0%*	Common Equity Ratio	*45.0%*
8692.8	9245.7	8750.2	9289.0	9561.3	9580.3	9635.5	9940.7	10364	10911	*11610*	*12300*	Total Capital ($mill)	*14540*
8720.6	9318.0	9991.8	10524	11059	11021	11739	12391	12900	13933	*14600*	*15400*	Net Plant ($mill)	*17200*
NMF	NMF	3.7%	3.8%	4.4%	4.8%	5.4%	5.1%	5.5%	5.7%	*5.5%*	*6.0%*	Return on Total Cap'l	*6.0%*
NMF	NMF	4.6%	5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	*9.5%*	*10.0%*	Return on Shr. Equity	*10.5%*
NMF	NMF	4.6%	5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	*9.5%*	*10.0%*	Return on Com Equity	*10.5%*
NMF	NMF	3.0%	1.8%	2.8%	3.5%	3.6%	4.7%	4.3%	4.7%	*4.5%*	*5.0%*	Retained to Com Eq	*5.0%*
--	--	34%	65%	56%	52%	57%	40%	50%	50%	*52%*	*53%*	All Div'ds to Net Prof	*55%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	23.1	45.0	75.0
Accts Receivable	267.1	255.0	240.0
Other	638.3	357.0	376.0
Current Assets	661.4	657.0	691.0
Accts Payable	285.8	126.0	148.0
Debt Due	511.1	682.0	1004.0
Other	444.1	725.0	588.0
Current Liab.	1241.0	1533.0	1740.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	--	3.0%	4.5%
"Cash Flow"	--	9.0%	5.5%
Earnings	--	13.0%	8.0%
Dividends	--	10.0%	10.5%
Book Value	--	2.5%	4.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	636.1	724.3	829.2	712.3	2901.9
2014	679.0	754.8	846.1	731.4	3011.3
2015	698.0	782.0	896.0	783.0	3159.0
2016	743.0	827.0	*945*	*830*	*3345*
2017	*760*	*870*	*990*	*855*	*3475*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.32	.57	.84	.33	2.06
2014	.39	.62	.86	.52	2.39
2015	.44	.68	.96	.56	2.64
2016	.46	.77	*1.00*	*.62*	*2.85*
2017	*.50*	*.82*	*1.08*	*.65*	*3.05*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.23	.23	.25	.50	1.21
2013	--	.28	.28	.28	.84
2014	.28	.31	.31	.31	1.21
2015	.31	.34	.34	.34	1.33
2016	.34	.375	.375		

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in over 47 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military basas with the maintenance and upkeep as well. Regulated operations made up 86.8% of 2015 revenues. New Jarsey is its largest market accounting for 25.7% of regulated revenues. Has 6,700 employees. BlackRock, Inc., owns 10.2% of outstanding shares; Vanguard, 7.2%; officers & directors, less than 1.0%. (4/16 Proxy). President & CEO: Susan Story. Chairman: George Mackenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com.

Acquisitions and cost controls remain key earnings drivers for American Water Works. The domestic water industry in the U.S. is dominated by small municipally-run authorities. Many of these water districts do not have the financial wherewithal to replace aging pipeline infrastructures and to make costly adjustments to be in compliance with EPA regulations. This is a major advantage for American Water, by far the largest of investor-owned water utilities in the U.S., as it buys small (and lately mid sized) water authorities on a continual basis, which gradually increases the company customer base. Also, because there are such redundancies in the water industry, the purchased utility can be absorbed and run substantially more efficiently.

American Water Works should post another solid bottom-line gain in 2016. Management uses an internal "operational and maintenance expense-to-operating revenues" ratio as a measure of how it's performing on the cost front. The ratio has declined from 44.2% in 2010 to 35.9% at year-end 2015. At June 30th, the percentage improved 70 basis points to 35.2%. All told, we now think the company's share net can rise 8%, to $2.85 this year.

We expect 2017 to be strong, too. Through its many subsidiaries, the company is currently seeking $100 million in higher rates in five different states. With all of this in effect for the full year, some subject to refund, we think American Water's share earnings can climb another 7%, to $3.05.

The capital budget is large, but manageable. Over the five-year period from 2016 to 2020, the company projects that $5.5 billion will be required for upgrading its infrastructure along with another $600 million more needed for acquisitions. Internal funds will be able to finance a majority of these expenditures, but the rest will probably mostly come from the debt markets, as the company is not prone to issue new equity. (Since 2009, shares outstanding have increased by less than 2%.)

These shares are ranked to not keep pace with the broader market averages in the year ahead. Moreover, the stock's prospects to 2019-2021 are subpar.

James A. Flood *October 14, 2016*

(A) Diluted earnings. Excludes nonrecurring losses: '08, $4.62; '09, $2.63; '11, $0.07. Discontinued operations: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due early November. Quarterly earnings may not sum due to rounding. (B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available. Two payments made in 4th quarter of 2012. (C) In millions. (D) Includes intangibles. In 6/16: $1.31 billion, $7.38/share. (E) Pro forma numbers for '06 & '07.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	90
Earnings Predictability	95

AQUA AMERICA NYSE-WTR

RECENT PRICE 29.73 | P/E RATIO 21.7 (Trailing: 25.4 Median: 22.0) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 2.6% | VALUE LINE

TIMELINESS 3 Lowered 8/26/16
SAFETY 2 Raised 4/20/12
TECHNICAL 3 Lowered 10/7/16
BETA .70 (1.00 = Market)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	23.4	23.8	21.3	17.6	17.2	18.4	19.0	21.5	28.1	28.2	31.1	35.8
Low:	14.0	16.1	15.1	9.8	12.3	13.2	15.4	16.8	20.6	22.4	24.4	28.3

Target Price Range
2019 | 2020 | 2021

2019-21 PROJECTIONS

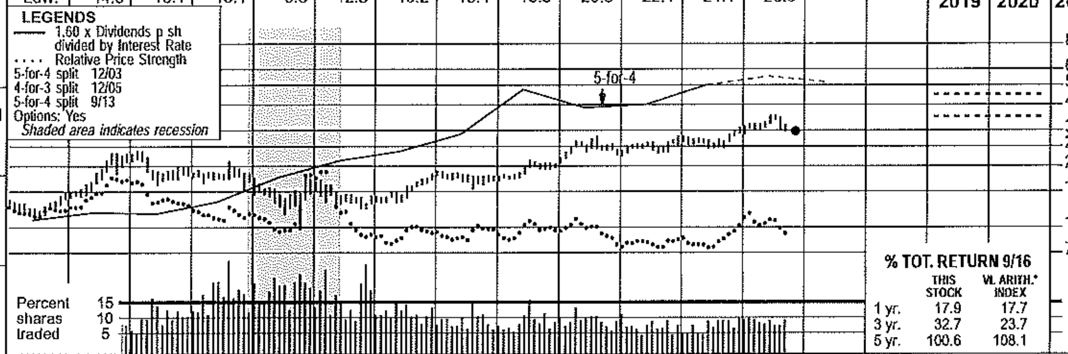
	Price	Gain	Ann'l Total Return
High	45	(+50%)	13%
Low	35	(+20%)	7%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	1	0	8	13	1	0	7	0
to Sell	1	0	0	4	0	3	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	182	190	179
to Sell	149	147	152
Hld's(000)	83005	85054	85171



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	17.9	17.7
3 yr.	32.7	23.7
5 yr.	100.6	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
1.97	2.16	2.28	2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	*4.70*	*4.95*	Revenues per sh	*5.85*
.61	.69	.76	.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	*2.10*	*2.25*	"Cash Flow" per sh	*2.65*
.37	.41	.43	.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	*1.35*	*1.45*	Earnings per sh A	*1.75*
.23	.24	.26	.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	*.74*	*.80*	Div'd Decl'd per sh B ■	*1.05*
.93	.87	.96	1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	*2.00*	*2.00*	Cap'l Spending per sh	*2.10*
3.08	3.32	3.49	4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	*10.45*	*11.10*	Book Value per sh	*13.75*
139.78	142.47	141.49	154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	*177.50*	*178.00*	Common Shs Outst'g C	*180.00*
18.2	23.6	23.6	24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	*Bold figures are*		Avg Ann'l P/E Ratio	*22.5*
1.18	1.21	1.29	1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.19	*Value Line*		Relative P/E Ratio	*1.40*
3.3%	2.5%	2.5%	2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	*estimates*		Avg Ann'l Div'd Yield	*2.7%*
						533.5	602.5	627.0	670.5	726.1	712.0	757.8	768.6	779.9	814.2	*830*	*875*	Revenues ($mill)	*1050*
						92.0	95.0	97.9	104.4	124.0	144.8	153.1	205.0	213.9	201.8	*240*	*260*	Net Profit ($mill)	*315*
						39.6%	38.9%	39.7%	39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	*7.0%*	*7.0%*	Income Tax Rate	*20.0%*
						--	--	--	--	--	--	--	1.1%	2.4%	3.1%	*2.0%*	*2.5%*	AFUDC % to Net Profit	*3.0%*
						51.6%	55.4%	54.1%	55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	*50.0%*	*51.0%*	Long-Term Debt Ratio	*51.5%*
						48.4%	44.6%	45.9%	44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	*50.0%*	*49.0%*	Common Equity Ratio	*48.5%*
						1904.4	2191.4	2306.6	2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	*3700*	*4040*	Total Capital ($mill)	*5100*
						2506.0	2792.8	2997.4	3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	*4700*	*5075*	Net Plant ($mill)	*5700*
						6.4%	5.9%	5.7%	5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	*7.5%*	*7.5%*	Return on Total Cap'l	*7.5%*
						10.0%	9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	*13.0%*	*13.0%*	Return on Shr. Equity	*12.5%*
						10.0%	9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	*13.0%*	*13.0%*	Return on Com Equity	*12.5%*
						3.7%	3.2%	2.8%	2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	*6.0%*	*6.0%*	Retained to Com Eq	*5.0%*
						63%	67%	70%	72%	65%	60%	61%	50%	52%	60%	*55%*	*55%*	All Div'ds to Net Prof	*60%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1840.4 mill. Due in 5 Yrs $441.5 mill.
LT Debt $1775.9 mill. LT Interest $78.6 mill.
(50% of Cap'l)

Pension Assets-12/15 $238.6 mill.
Oblig. $306.5 mill.

Pfd Stock None
Common Stock 177,329,959 shares
as of 7/20/16

MARKET CAP: $5.3 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assats	4.1	3.2	4.9
Receivables	97.0	99.1	99.7
Inventory (AvgCst)	12.8	12.4	11.7
Other	38.6	13.7	16.1
Current Assets	152.5	128.4	132.4
Accts Payable	60.0	56.5	40.7
Dabt Dua	70.0	52.3	64.5
Other	95.3	84.4	74.0
Current Liab.	225.3	193.2	179.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	2.5%	*4.5%*
"Cash Flow"	8.0%	8.0%	*6.0%*
Earnings	8.5%	13.0%	*7.0%*
Dividends	8.0%	7.5%	*9.0%*
Book Value	7.0%	7.0%	*7.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	180.0	195.7	204.3	188.6	768.6
2014	182.7	195.3	210.5	191.4	779.9
2015	190.3	205.8	221.0	197.1	814.2
2016	192.6	208.4	*227*	*202*	*830*
2017	*205*	*220*	*240*	*210*	*875*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.26	.30	.36	.24	1.16
2014	.24	.31	.38	.27	1.20
2015	.27	.32	.38	.17	1.14
2016	.29	.33	*.42*	*.31*	*1.35*
2017	*.31*	*.37*	*.45*	*.32*	*1.45*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.132	.132	.132	.14	.54
2013	.14	.14	.152	.152	.58
2014	.152	.152	.165	.165	.63
2015	.165	.165	.178	.178	.69
2016	.178	.178	.1913		

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Has 1,617 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues '2015: residential, 69%; commercial, 18%; industrial & other, 13%. Officers and directors own less than 1% of the common stock; Vangurad Group, 7.7%; Blackrock, Inc, 7.3%; State Street Capital, 5.5% (3/16 Proxy). President & Chief Executive Officer: Christopher Franklin. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.

Aqua America should maintain its solid dividend growth rate, in our opinion. Last quarter, the company raised the interim payout to $0.1913 a share, a healthy 7.5% increase. This hike was in line with Aqua's historical dividend policy over the past 10-year period. We project the annual advance will be in the 7.5%-9.0% range through 2019-2021.

Earnings are on track for a solid comeback in 2016. We expect the positive earnings momentum from the first two quarters to pick up steam in the second half of the year. The utility, through its various subsidiaries, has received permission to charge higher fees in five separate states this year. With all of these increases in effect for the second half and an easy final-quarter comparison, Aqua's share net will likely climb 18%, compared to 2015's depressed level.

Additional rate relief should make 2017 a good year, too. Large rate cases are currently pending in New Jersey and Ohio. While we don't believe state regulators will grant the utility its full revenue requests, Aqua's constructive relationship with state authorities ought to help. All told, for the full year, we think the increased tariffs from these two states, together with the increases from 2016, should enable the company's share net to rise 7%-8%, to $1.35.

Shares of Aqua have performed poorly of late. The price of WTR (like others in the water utility group) spiked in the first half of the year due in part to strong demand for higher-yielding stocks with solid dividend growth prospects resulting from, in part, low interest rates on U.S Treasuries. As a result of institutional investors recently reducing their positions in this sector significantly, the prices of water stocks have tumbled. Indeed, WTR has declined about 20% in value since our July report. By comparison, the S&P 500 Index has risen roughly 3%.

This equity is ranked to mirror the market in the coming year. Over the next 3- to 5-year period, conservative, income-oriented investors may want to take a look here, however. Capital appreciation is a tad below the *Value Line* median, but the stock has a 2 (Above Average) rank for Safety and a solid balance sheet.

James A. Flood *October 14, 2016*

(A) Diluted egs. Excl. nonrec. gains: '00, 2¢; '01, 2¢; '02, 4¢; '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due early November.
(B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount).
(C) In millions, adjusted for stock splits.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	70
Earnings Predictability	90

CALIFORNIA WATER NYSE-CWT

RECENT PRICE 30.96 | P/E RATIO 28.9 (Trailing: 33.7 Median: 20.0) | RELATIVE P/E RATIO 1.56 | DIV'D YLD 2.2% | VALUE LINE

TIMELINESS 1 Raised 8/19/16
SAFETY 3 Lowered 7/27/07
TECHNICAL 2 Lowered 9/30/16
BETA .75 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	45	(+45%)	12%
Low	30	(-5%)	2%

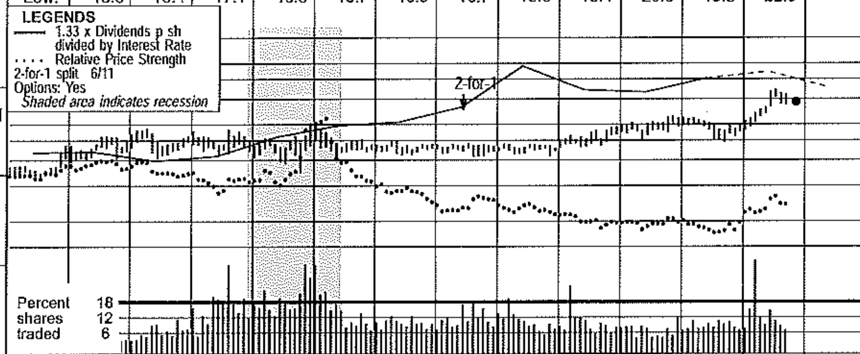
Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	1	1	1	4	1	1	1	1	1
Options	0	0	0	25	0	0	0	0	0
to Sell	0	0	0	2	0	2	1	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	69	100	87
to Sell	75	72	78
Hld's(000)	30579	34783	35876

High:	21.1	22.9	22.7	23.3	24.1	19.8	19.4	19.3	23.4	26.4	26.0	35.6		
Low:	15.6	16.4	17.1	13.8	16.7	16.9	16.7	16.8	18.4	20.3	19.5	22.5		



Target Price Range 2019 | 2020 | 2021

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	48.9	17.7
3 yr.	71.6	23.7
5 yr.	110.5	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
8.08	8.13	8.67	8.18	8.59	8.72	8.10	8.88	9.90	10.82	11.05	12.00	13.34	12.23	12.50	12.29	*12.60*	*13.00*	Revenues per sh	*14.70*
1.26	1.10	1.32	1.26	1.42	1.52	1.36	1.56	1.66	1.93	1.93	2.07	2.32	2.21	2.47	2.22	*2.30*	*2.65*	"Cash Flow" per sh	*3.25*
.66	.47	.63	.61	.73	.74	.67	.75	.95	.98	.91	.86	1.02	1.02	1.19	.94	*1.00*	*1.35*	Earnings per sh A	*1.60*
.55	.56	.56	.56	.57	.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	*.69*	*.71*	Div'd Decl'd per sh B ■	*.99*
1.23	2.04	2.91	2.19	1.87	2.01	2.14	1.84	2.41	2.66	2.97	2.83	3.04	2.58	2.76	3.69	*3.65*	*3.55*	Cap'l Spending per sh	*3.30*
6.45	6.48	6.56	7.22	7.83	7.90	9.07	9.25	9.72	10.13	10.45	10.76	11.28	12.54	13.11	13.41	*13.55*	*14.25*	Book Value per sh C	*16.00*
30.29	30.36	30.36	33.86	36.73	36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	47.74	47.81	47.88	*48.00*	*48.00*	Common Shs Outst'g D	*50.00*
19.6	27.1	19.8	22.1	20.1	24.9	29.2	26.1	19.8	19.7	20.3	21.3	17.9	20.1	19.7	24.8	*Bold figures are*		Avg Ann'l P/E Ratio	*23.0*
1.27	1.39	1.08	1.26	1.06	1.33	1.58	1.39	1.19	1.31	1.29	1.34	1.14	1.13	1.04	1.26	*Value Line*		Relative P/E Ratio	*1.45*
4.3%	4.4%	4.5%	4.2%	3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	*estimates*		Avg Ann'l Div'd Yield	*2.6%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $637.0 mill. Due in 5 Yrs $175.3 mill.
LT Debt $555.8 mill. LT Interest $27.2 mill.
(47% of Cap'l)

Pension Assets-12/15 $328.6 mill.
Oblig. $501.9 mill.

Pfd Stock None

Common Stock 47,971,000 shs.

MARKET CAP: $1.5 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
334.7	367.1	410.3	449.4	460.4	501.8	560.0	584.1	597.5	588.3	*605*	*625*	Revenues ($mill) E	*735*
25.6	31.2	39.8	40.6	37.7	36.1	42.6	47.3	56.7	45.0	*48.0*	*65.0*	Net Profit ($mill)	*80.0*
37.4%	39.9%	37.7%	40.3%	39.5%	40.5%	37.5%	30.3%	33.0%	35.3%	*32.0%*	*32.0%*	Income Tax Rate	*35.0%*
10.6%	8.3%	8.6%	7.6%	4.2%	7.6%	8.0%	4.3%	2.7%	4.2%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
43.5%	42.9%	41.6%	47.1%	52.4%	51.7%	47.8%	41.6%	40.1%	44.4%	*46.0%*	*45.0%*	Long-Term Debt Ratio	*42.0%*
55.9%	56.6%	58.4%	52.9%	47.6%	48.3%	52.2%	58.4%	59.9%	55.6%	*54.0%*	*55.0%*	Common Equity Ratio	*58.0%*
670.1	674.9	690.4	794.9	914.7	931.5	908.2	1024.9	1045.9	1154.5	*1200*	*1250*	Total Capital ($mill)	*1375*
941.5	1010.2	1112.4	1198.1	1294.3	1381.1	1457.1	1515.8	1590.4	1701.8	*1775*	*1815*	Net Plant ($mill)	*1900*
5.2%	5.9%	7.1%	6.5%	5.5%	5.5%	6.3%	6.0%	6.3%	5.1%	*5.0%*	*6.5%*	Return on Total Cap'l	*7.0%*
6.8%	8.1%	9.9%	9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	*7.5%*	*9.5%*	Return on Shr. Equity	*10.0%*
6.8%	8.1%	9.9%	9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	*7.5%*	*9.5%*	Return on Com Equity	*10.0%*
1.0%	1.8%	3.8%	3.8%	3.0%	2.3%	3.4%	3.4%	4.1%	2.0%	*2.5%*	*4.5%*	Retained to Com Eq	*4.0%*
86%	77%	61%	60%	66%	71%	62%	56%	55%	71%	*69%*	*52%*	All Div'ds to Net Prof	*62%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	19.6	8.8	30.8
Other	134.5	118.8	128.2
Current Assets	154.1	127.6	159.0
Accts Payable	59.4	66.4	77.6
Debt Due	85.7	40.2	81.2
Other	72.6	41.9	43.2
Current Liab.	217.7	148.5	202.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.0%	5.0%	3.0%
"Cash Flow"	6.0%	5.5%	6.0%
Earnings	5.0%	4.0%	7.5%
Dividends	1.5%	2.0%	7.0%
Book Value	5.5%	5.0%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.)E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	111.4	154.6	184.4	133.7	584.1
2014	110.5	158.4	191.2	137.4	597.5
2015	122.0	144.4	183.5	138.4	588.3
2016	121.7	152.4	*190*	*140.9*	*605*
2017	*130*	*155*	*195*	*145*	*625*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.01	.28	.61	.12	1.02
2014	d.11	.36	.70	.24	1.19
2015	.03	.21	.52	.18	.94
2016	d.02	.24	*.58*	*.20*	*1.00*
2017	*.05*	*.35*	*.65*	*.30*	*1.35*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.1575	.1575	.1575	.1575	.63
2013	.16	.16	.16	.16	.64
2014	.1625	.1625	.1625	.1625	.65
2015	.1675	.1675	.1675	.1675	.67
2016	.1725	.1725	.1725		

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 477,900 customers in 85 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '15: residential, 70%; business, 20%; industrial, 5%; public authorities, 4%; other 1%. '15 reported depreciation rate: 4.0%. Has 1,155 employees. President, Chairman, and CEO: Peter C. Nelson. Inc.: DE. Address: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group shares have dipped about 10% in price since our July review. Similar to a handful of other equities in the utility industry, CWT stock recently etched an all-time high in 2016, and investors unsurprisingly took this opportune time to take some profits off the table. However, California posted better-than-anticipated financial results in the second quarter, leading us to believe the selloff may be short-lived.

Revenues and earnings improved nicely compared to prior-year figures. California Water generated $152 million in sales during the second quarter (a 6% annual increase), largely due to higher accrued unbilled revenues. Moreover, we are lifting our full-year revenue call by $5 million, to $605 million, supported by continued collections on drought expenses (conditions that have yet to improve), as well as potentially positive rate activity on the horizon for 2017. On the earnings front, second-quarter net income was $0.02 better than we expected, at $0.24 a share, marking a healthy double-digit improvement over the year-earlier tally. Thinner operating and maintenance expenses, namely pension costs, gave the bottom line a boost. Though, at this time, our 2016 share net estimate remains unchanged, at $1.00.

Capital investment will likely be the main theme in California's long-term story. Over the 3- to 5-year stretch, it is probable that CWT will spend more than $3.00 per share annually to revitalize aging infrastructure, water tanks, and water supply. The company has already spent more in the first half of 2016 than it has in past years, and we think this trend ought to continue further out. In addition, acquisitions are likely to be an supplemental growth avenue. The balance sheet is in good shape, with a decent amount of cash on hand and less than 50% of its total capital comprised of debt.

These favorably ranked shares are best suited for near-term accounts. Meanwhile, those looking to add a security to the buy-and-hold portion of their portfolio should exercise patience, as the stock is already trading inside of our 3- to 5-year Target Price Range.

Nicholas P. Patrikis *October 14, 2016*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (4¢); '01, 2¢; '02, 4¢; '11, 4¢. Next earnings report due late November.
(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. intangible assets. In '15 : $7.5 mill., $0.16/sh.
(D) In millions, adjusted for splits.
(E) Excludes non-reg. rev.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	35
Earnings Predictability	75

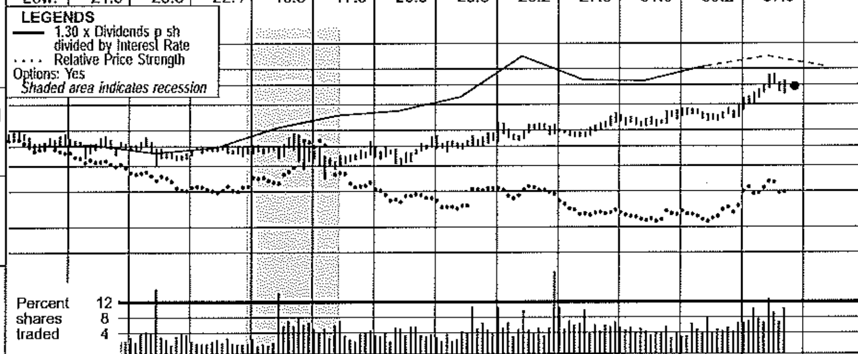
CONNECTICUT WATER NDQ-CTWS

RECENT PRICE 49.21 | P/E RATIO 22.2 (Trailing: 22.8, Median: 20.0) | RELATIVE P/E RATIO 1.20 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS 3 Lowered 9/2/16
SAFETY 3 New 1/18/13
TECHNICAL 3 Lowered 10/7/16
BETA .60 (1.60 = Market)

High:	28.2	27.7	25.6	29.0	26.4	27.9	29.1	32.8	36.4	37.5	39.9	56.6
Low:	21.9	20.3	22.4	19.3	17.3	20.0	23.3	26.2	27.8	31.0	33.2	37.5

Target Price Range
2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+10%)	5%
Low	40	(-20%)	-2%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	2	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	51	45	49
to Sell	44	48	52
Hld's(000)	4535	4728	5138

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	39.7	17.7
3 yr.	68.4	23.7
5 yr.	131.0	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
5.70	5.93	5.77	5.91	6.04	5.81	5.68	7.05	7.24	6.93	7.65	7.93	9.47	8.29	8.45	8.58	*8.70*	*9.20*	Revenues per sh	*13.35*
1.73	1.78	1.78	1.89	1.91	1.62	1.52	1.90	1.95	1.93	2.04	2.11	2.64	2.63	2.97	3.18	*3.35*	*3.45*	"Cash Flow" per sh	*3.75*
1.09	1.13	1.12	1.15	1.16	.88	.81	1.05	1.11	1.19	1.13	1.13	1.53	1.66	1.92	2.04	*2.20*	*2.25*	Earnings per sh A	*2.50*
.79	.80	.81	.83	.84	.85	.86	.87	.88	.90	.92	.94	.96	.98	1.01	1.05	*1.12*	*1.20*	Div'd Decl'd per sh B■	*1.35*
1.43	1.86	1.98	1.49	1.58	1.96	1.96	2.24	2.44	3.28	3.06	2.61	2.79	3.02	4.11	4.29	*5.80*	*4.35*	Cap'l Spending per sh	*3.35*
8.92	9.25	10.06	10.46	10.94	11.52	11.60	11.95	12.23	12.67	13.05	13.50	20.95	17.92	18.83	20.02	*20.70*	*21.75*	Book Value per sh D	*22.90*
7.28	7.65	7.94	7.97	8.04	8.17	8.27	8.38	8.46	8.57	8.68	8.76	8.85	11.04	11.12	11.19	*11.35*	*11.50*	Common Shs Outst'g C	*12.00*
18.2	21.5	24.3	23.5	22.9	28.6	29.0	23.0	22.2	18.4	20.7	23.0	19.4	18.4	17.5	17.6	*Bold figures are*		Avg Ann'l P/E Ratio	*19.0*
1.18	1.10	1.33	1.34	1.21	1.52	1.57	1.22	1.34	1.23	1.32	1.44	1.23	1.03	.92	.89	*Value Line*		Relative P/E Ratio	*1.20*
4.0%	3.3%	3.0%	3.0%	3.1%	3.4%	3.6%	3.6%	3.6%	4.1%	3.9%	3.6%	3.2%	3.2%	3.0%	2.9%	*estimates*		Avg Ann'l Div'd Yield	*2.8%*
						46.9	59.0	61.3	59.4	66.4	69.4	83.8	91.5	94.0	96.0	*99.0*	*106*	Revenues ($mill)	*160*
						6.7	8.8	9.4	10.2	9.8	9.9	13.6	18.3	21.3	22.7	*25.0*	*26.0*	Net Profit ($mill)	*30.0*
						23.5%	32.4%	27.2%	19.5%	35.2%	41.3%	32.0%	28.0%	14.4%	4.2%	*7.5%*	*19.0%*	Income Tax Rate	*28.0%*
						--	--	1.7%	--	--	--	1.7%	2.0%	2.4%	2.2%	*2.5%*	*2.5%*	AFUDC % to Net Profit	*2.0%*
						44.4%	47.8%	46.9%	50.6%	49.5%	53.2%	49.0%	46.9%	45.7%	44.2%	*46.0%*	*47.0%*	Long-Term Debt Ratio	*47.5%*
						55.1%	51.8%	52.7%	49.1%	50.2%	46.5%	50.8%	52.9%	54.1%	55.8%	*54.0%*	*53.0%*	Common Equity Ratio	*52.5%*
						174.1	193.2	196.5	221.3	225.6	254.2	364.6	373.6	386.8	401.7	*435*	*470*	Total Capital ($mill)	*525*
						268.1	284.3	302.3	325.2	344.2	362.4	447.9	471.9	506.9	546.3	*565*	*590*	Net Plant ($mill)	*675*
						4.9%	5.5%	5.9%	5.5%	5.4%	4.9%	4.8%	5.9%	6.4%	6.6%	*6.5%*	*6.5%*	Return on Total Cap'l	*6.5%*
						6.9%	8.7%	9.0%	9.3%	8.6%	8.3%	7.3%	9.2%	10.1%	10.1%	*10.5%*	*10.5%*	Return on Shr. Equity	*11.0%*
						7.0%	8.7%	9.1%	9.4%	8.7%	8.3%	7.3%	9.2%	10.2%	10.1%	*10.5%*	*10.5%*	Return on Com Equity	*11.0%*
						NMF	1.6%	1.9%	2.3%	1.6%	1.4%	2.8%	3.8%	4.8%	4.9%	*5.0%*	*5.0%*	Retained to Com Eq	*5.0%*
						105%	82%	79%	76%	81%	83%	62%	59%	53%	52%	*51%*	*53%*	All Div'ds to Net Prof	*54%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $203.8 mill. Due in 5 Yrs $19.3 mill.
LT Debt $200.9 mill. LT Interest $8.0 mill.
(47% of Cap'l)

Leases, Uncapitalized: Annual rentals $.3 mill.
Pension Assets-12/15 $56.6 mill.
Oblig. $75.8 mill.

Pfd Stock $0.8 mill. **Pfd Divd** NMF

Common Stock 11,231,037 shs.

MARKET CAP: $550 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.5	.7	1.1
Accounts Receivable	12.0	11.0	11.6
Other	21.7	15.3	18.2
Current Assets	36.2	27.0	30.9
Accts Payable	10.0	11.9	11.6
Debt Due	4.4	2.8	2.9
Other	9.2	22.2	15.8
Current Liab.	23.6	36.9	30.3

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.0%	4.5%	*8.0%*
"Cash Flow"	4.0%	7.5%	*4.0%*
Earnings	4.0%	9.0%	*5.0%*
Dividends	2.0%	2.0%	*5.0%*
Book Value	6.5%	9.5%	*3.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	19.7	22.6	27.6	21.6	91.5
2014	20.3	25.4	27.6	20.7	94.0
2015	20.0	26.6	28.4	21.0	96.0
2016	21.6	26.1	*29.0*	*22.3*	*99.0*
2017	*23.0*	*28.0*	*32.0*	*23.0*	*106*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.24	.39	.86	.17	1.66
2014	.27	.67	.76	.22	1.92
2015	.28	.77	.79	.20	2.04
2016	.28	.89	*.83*	*.20*	*2.20*
2017	*.30*	*.79*	*.88*	*.28*	*2.25*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.238	.238	.2425	.2425	.962
2013	.2425	.2425	.2475	.2475	.98
2014	.2475	.2475	.2575	.2575	1.01
2015	.2575	.2575	.2675	.2675	1.05
2016	.2675	.2825	.2825		

BUSINESS: Connecticut Water Service, Inc. is a non-operating holding company, whose income is derived from earnings of its wholly-owned subsidiary companies (regulated water utilities). In 2015, 92% of net income was derived from these activities. Provides water services to 400,000 people in 77 municipalities throughout Connecticut and Maine. Acquired The Maine Water Company, January, 2012; Biddeford and Saco Water, December, 2012. Incorporated: Connecticut. Has 266 employees. Chairman/President/Chief Executive Officer: Eric W. Thornburg. Officers and directors own 2.6% of the common stock; BlackRock, Inc. 7.0%; (4/16 proxy). Address: 93 West Main Street, Clinton, CT 06413. Telephone: (860) 669-8636. Internet: www.ctwater.com.

Connecticut Water Service delivered mixed results in the second quarter. The New England water utility owner registered better-than-expected share-net of $0.89, well above our $0.72 call. The outperformance can largely be attributed to slimmer operating and maintenance expenses (nearly 20% lower than the prior year), coupled with reduced pension costs. On the other hand, revenues contracted slightly, on an annual basis, to about $26 million. The manner in which Connecticut Water is required to recognize revenues, mainly unbilled, resulted in a softer top-line figure for the June period. This was partly offset by beneficial surcharges in Maine and Connecticut.

As a consequence, we are simultaneously lowering and raising our 2016 top- and bottom-line outlooks, respectively. Unfavorable accounting methods may persist in the near term, spurring us to trim $2 million from this year's revenue estimate, to $99 million. Conversely, we are tacking a dime onto our full-year earnings estimate, to $2.20 a share, stemming largely from CTWS' drastically higher profits in the most recent quarter.

Robust capital spending and tuck-in acquisitions are likely to remain in the spotlight over the foreseeable future. The company is patiently awaiting town approval for its purchase of Heritage Village Water Company, a $20 million stock-for-stock transaction that would add approximately 40,000 people to its total service count. The deal is slated to close within the year. What's more, we think CTWS will be actively sourcing new opportunities to expand its footprint over the pull to late decade. On top of that, due to the industry's capital-intensive nature, investment in its aging infrastructure should be par for the course. In fact, we think the company could spend upward of $150 million over that time frame.

The stock price has cooled a bit since our July review. These neutrally ranked shares have declined roughly 10% in value over the past three months, scaling back from all-time highs set earlier this year. At recent levels, our model projects limited upside out to 2019-2021. Thus, we advise investors to wait for a more attractive entry point before committing funds.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Next earnings report due late November.
(B) Dividends historically paid in mid-March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) Includes intangibles. In 2015: $30.4 million/$2.72 a share.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	50
Earnings Predictability	85

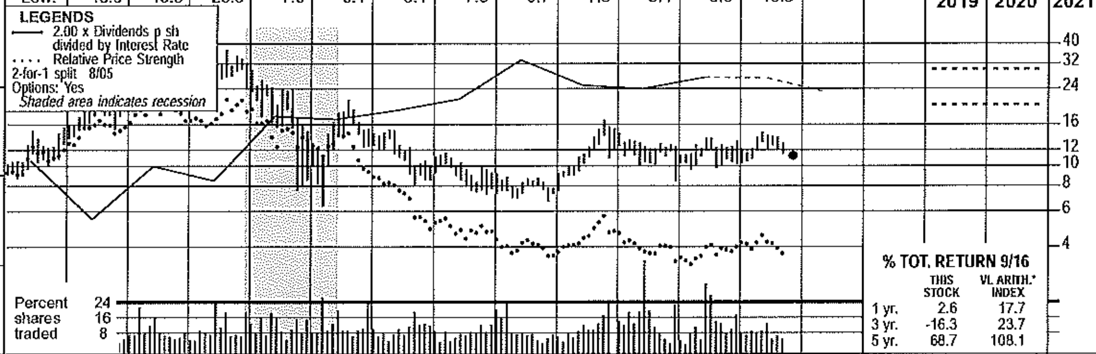
CONSOL. WATER CO. NDQ-CWCO

RECENT PRICE 11.25 | P/E RATIO 17.9 (Trailing: 21.6 Median: 25.0) | RELATIVE P/E RATIO 0.97 | DIV'D YLD 2.7% | VALUE LINE

TIMELINESS 3 Lowered 8/19/16
SAFETY 3 New 1/17/14
TECHNICAL 2 Raised 10/14/16
BETA .95 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	22.5	31.8	37.5	29.8	21.3	15.1	11.7	9.2	16.9	14.5	13.8	14.7
Low:	13.6	19.8	23.3	7.6	6.4	8.1	7.3	6.7	7.5	8.4	9.6	10.3

LEGENDS
—— 2.00 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 8/05
Options: Yes
Shaded area indicates recession



Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(+165%)	30%
Low	20	(+80%)	18%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	7	0	1	0	0	2	10	0	0
to Sell	0	0	0	0	0	2	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	34	37	43
to Sell	27	30	29
Hld's(000)	6793	6967	6934

Percent shares traded 24 16 8

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	2.6	17.7
3 yr.	-16.3	23.7
5 yr.	68.7	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
1.24	1.41	1.52	1.68	2.02	1.12	2.71	3.41	4.52	3.99	3.49	3.79	4.49	4.35	4.46	3.86	**4.45**	**4.80**	Revenues per sh	**9.40**
.46	.52	.50	.63	.77	.37	.87	1.20	.95	1.18	.86	.83	1.17	.96	.80	.88	**1.00**	**1.10**	"Cash Flow" per sh	**1.60**
.34	.35	.32	.42	.49	.23	.59	.79	.50	.74	.43	.42	.64	.58	.42	.51	**.60**	**.67**	Earnings per sh A	**1.20**
.17	.20	.21	.21	.23	.12	.24	.20	.33	.28	.30	.30	.30	.30	.30	.30	**.30**	**.30**	Div'd Decl'd per sh B■	**.40**
.30	.24	.39	.19	.24	.77	1.83	.54	.46	.18	.09	.96	.31	.29	.32	.21	**.65**	**1.35**	Cap'l Spending per sh	**.40**
2.30	2.45	2.64	3.89	4.20	2.54	7.49	8.21	8.36	8.53	8.69	8.83	9.20	9.44	9.58	9.81	**10.10**	**10.65**	Book Value per sh D	**11.85**
7.73	7.84	7.99	11.37	11.51	23.46	14.13	14.40	14.53	14.54	14.55	14.57	14.59	14.69	14.72	14.78	**14.90**	**15.00**	Common Shs Outst'g C	**16.00**
10.4	13.9	21.6	19.3	23.1	NMF	43.0	35.4	37.8	19.0	26.9	22.4	12.4	20.0	28.3	22.7	*Bold figures are*		Avg Ann'l P/E Ratio	**21.0**
.68	.71	1.18	1.10	1.22	NMF	2.32	1.88	2.27	1.27	1.71	1.41	.79	1.12	1.49	1.15	*Value Line*		Relative P/E Ratio	**1.30**
4.9%	4.2%	3.1%	2.6%	2.0%	.7%	.9%	.7%	1.7%	2.0%	2.6%	3.2%	3.8%	2.6%	2.5%	2.6%	*estimates*		Avg Ann'l Div'd Yield	**1.6%**
						38.2	49.2	65.7	58.0	50.7	55.2	65.5	63.8	65.6	57.1	**61.0**	**65.0**	Revenues ($mill)	**150**
						7.5	11.4	7.2	10.8	6.3	6.1	9.3	8.6	6.3	7.5	**9.0**	**10.0**	Net Profit ($mill)	**19.0**
						--	--	--	--	--	--	--	--	--	--	**NMF**	**NMF**	Income Tax Rate	**NMF**
						--	--	--	--	--	4.0%	--	--	--	--	**NMF**	**NMF**	AFUDC % to Net Profit	**NMF**
						18.2%	15.9%	14.8%	13.8%	11.8%	5.1%	3.7%	--	3.7%	--	**Nil**	**Nil**	Long-Term Debt Ratio	**Nil**
						81.8%	84.1%	85.2%	86.2%	88.2%	94.9%	96.3%	99.8%	99.8%	100.0%	**100%**	**100%**	Common Equity Ratio	**100%**
						129.3	140.7	142.7	143.9	143.3	135.6	139.4	138.9	141.2	145.0	**150**	**155**	Total Capital ($mill)	**190**
						63.6	65.0	65.1	61.2	56.2	64.3	61.6	58.6	56.4	53.7	**57.0**	**75.0**	Net Plant ($mill)	**240**
						6.5%	8.8%	5.7%	8.1%	4.9%	5.0%	7.0%	6.2%	4.4%	5.2%	**6.0%**	**6.5%**	Return on Total Cap'l	**10.0%**
						7.1%	9.6%	5.9%	8.7%	5.0%	4.7%	6.9%	6.2%	4.4%	5.2%	**6.0%**	**6.5%**	Return on Shr. Equity	**10.0%**
						7.1%	9.6%	5.9%	8.7%	5.0%	4.7%	6.9%	6.2%	4.4%	5.1%	**6.0%**	**6.5%**	Return on Com Equity	**10.0%**
						4.2%	6.5%	2.8%	4.6%	1.5%	1.0%	3.6%	3.0%	1.2%	2.1%	**3.0%**	**3.5%**	Retained to Com Eq	**6.5%**
						41%	33%	52%	46%	69%	79%	48%	51%	73%	60%	**50%**	**45%**	All Div'ds to Net Prof	**33%**

CAPITAL STRUCTURE as of 6/30/16
Total Debt $0.5 mill. **Due in 5 Yrs** $0.5 mill.
LT Debt None **LT Interest** None

Leases, Uncapitalized: Annual rentals $.7 mill.

No Defined Benefit Pension Plan

Pfd Stock NMF (38,804 shares out.) **Div'd** NMF

Common Stock 14,815,530 shs. as of 8/5/16

MARKET CAP: $175 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	40.7	50.4	37.1
Accts Receivable	11.8	9.5	13.7
Other	6.9	5.5	5.8
Current Assets	59.4	65.4	56.6
Accts Payable	6.0	4.8	4.1
Debt Due	9.0	7.0	.5
Other	1.2	1.4	1.1
Current Liab.	16.2	13.2	5.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	10.0%	1.0%	*14.5%*
"Cash Flow"	4.0%	-2.5%	*10.5%*
Earnings	3.0%	-2.0%	*15.5%*
Dividends	5.0%	--	*5.0%*
Book Value	10.5%	2.5%	*3.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	16.6	16.6	15.4	15.2	63.8
2014	16.3	16.9	17.0	15.4	65.6
2015	14.7	14.4	14.6	13.4	57.1
2016	14.0	15.4	***15.6***	***16.0***	***61.0***
2017	***15.0***	***16.0***	***17.0***	***17.0***	***65.0***

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.26	.19	.06	.07	.58
2014	.04	.19	.13	.06	.42
2015	.13	.15	.12	.11	.51
2016	.14	.15	***.16***	***.15***	***.60***
2017	***.17***	***.17***	***.17***	***.16***	***.67***

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.075	.075	.075	.075	.30
2013	.075	.075	.075	.075	.30
2014	.075	.075	.075	.075	.30
2015	.075	.075	.075	.075	.30
2016	.075	.075	.075		

BUSINESS: Consolidated Water Co. Ltd. develops and operates seawater desalination plants and water distribution systems in areas where naturally occurring supplies of potable water are scarce or nonexistent. Its desalination process involves reverse osmosis tech. It provides water in the Cayman Islands, Belize, the Bahamas, the British Virgin Islands, and Bali. At 12/31/15, it operated 14 plants with a capacity of 26.5 million gallons per day. Inc.: Cayman Islands. Has 127 employees. President & Chief Executive Officer: Frederick McTaggart. Officers & directors own 3.2% of stock; (4/16 proxy). Address: Regatta Office Park Windward Three, 4th Floor, West Bay Road P.O. Box 1114 Grand Cayman, KYI-1102, Cayman Islands. Tel.: (345) 945-4277. Int.: www.cwco.com.

Construction should begin shortly on Consolidated Water's major new project. Another important contract was recently signed in late August with the authorities of the Mexican State of Baja, California for the Rosarito Seawater Desalination plant. Only customary closing conditions and financing, which seemed assured, are required before work can start on the nearly $500 million facility in early 2017. Through its NSC Aqua subsidiary, Consolidated will have a 12% equity stake in the desalination facility and remain the operator. The firm has spent six years developing, planning, and navigating the arduous regulatory process. Rosalita should be producing 50 million gallons of fresh water a day for the drought-stricken area only 36 months after construction begins. The company also plans on doubling the size of the plant over the next decade.

Consolidated carries much more risk than other companies in this industry. Water utilities in the U.S. have well-defined earnings and generally good relationships with the states in which they do business. This company operates in several Caribbean nations, which has sometimes proved difficult. Even though Consolidated appears to have the upper hand legally, it has been involved in extended litigation with the British Virgin Islands over the Baughers Bay desalination plant. In addition, there has been ongoing problems over the extension of its operating license in the Cayman Islands.

These neutrally ranked shares offer much-greater potential long-term returns than other stocks in this industry. Should all go well with the Rosalita project, Consolidated revenues could increase by $55 million annually when phase one is completed in about three years. Plus, the company's desalination project in Bali will likely be generating decent profits by that time. Completed last year, the facility was built on the high-end resort on speculation and has not yet been profitable. The island's potable water is very limited, and the population continues to grow. Hence, demand for water should increase. Thus, returns through 2019-2021 could prove substantial for investors willing to live with the added uncertainty.

James A. Flood *October 14, 2016*

(A) Fully diluted earnings. Next earnings report due early November. (B) Dividends historically paid in late January, April, July and October. ■ Dividend reinvestment plan available.
(C) In millions adjusted for stock split.
(D) Includes intangibles. As of 3/16, $18 million/$1.22 a share.

Company's Financial Strength	B+
Stock's Price Stability	30
Price Growth Persistence	15
Earnings Predictability	50

MIDDLESEX WATER NDQ-MSEX

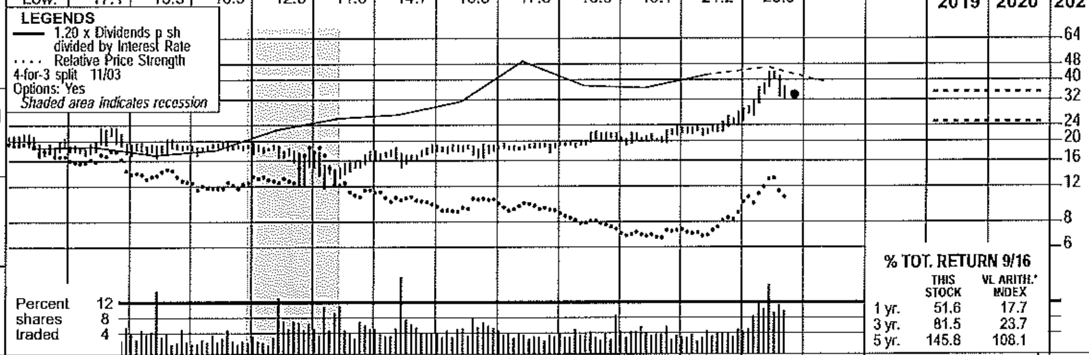
RECENT PRICE 34.04 | P/E RATIO 23.8 (Trailing: 25.4 / Median: 20.0) | RELATIVE P/E RATIO 1.29 | DIV'D YLD 2.4% | VALUE LINE

TIMELINESS 3 Lowered 10/14/16
SAFETY 2 New 10/21/11
TECHNICAL 2 Lowered 9/30/16
BETA .70 (1.00 = Market)

High:	23.5	20.5	20.2	19.8	17.9	19.3	19.4	19.6	22.5	23.7	28.0	44.1
Low:	17.1	16.5	16.9	12.0	11.6	14.7	16.5	17.5	18.6	19.1	21.2	25.0

Target Price Range 2019 | 2020 | 2021

LEGENDS
— 1.20 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
4-for-3 split 11/03
Options: Yes
Shaded area indicates recession



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+5%)	3%
Low	25	(-25%)	-4%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	1	0	0	0	0	0
Options	0	0	0	1	0	0	7	0	0
to Sell	1	0	0	1	2	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	41	62	59
to Sell	50	45	52
Hld's(000)	6584	6822	7208

Percent shares traded 12 / 8 / 4

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	51.6	17.7
3 yr.	81.5	23.7
5 yr.	145.8	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
5.39	5.87	5.98	6.12	6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	*8.05*	*8.05*	Revenues per sh	*9.40*
.99	1.18	1.20	1.15	1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	*2.20*	*2.30*	"Cash Flow" per sh	*2.55*
.51	.66	.73	.61	.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	*1.40*	*1.45*	Earnings per sh A	*1.50*
.61	.62	.63	.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	*.81*	*.84*	Div'd Decl'd per sh B■	*.91*
1.32	1.25	1.59	1.87	2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	*1.75*	*1.80*	Cap'l Spending per sh	*2.05*
6.98	7.11	7.39	7.60	8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	*13.15*	*13.35*	Book Value per sh	*15.60*
10.11	10.17	10.36	10.48	11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	*16.30*	*16.50*	Common Shs Outst'g C	*17.00*
28.7	24.6	23.5	30.0	26.4	27.4	22.7	21.6	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	*Bold figures are*		Avg Ann'l P/E Ratio	*21.0*
1.87	1.26	1.28	1.71	1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.97	*Value Line*		Relative P/E Ratio	*1.30*
4.2%	3.8%	3.7%	3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	*estimates*		Avg Ann'l Div'd Yield	*3.0%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $147.4 mill. Due in 5 Yrs $30.8 mill.
LT Debt $131.0 mill. LT Interest $5.6 mill.
(Total interest coverage: 7.4x)
(39% of Cap'l)

Pension Assets-12/15 $52.9 mill.
Oblig. $72.5 mill.
Pfd Stock $2.4 mill. Pfd Div'd: $.1 mill.

Common Stock 16,280,430 shs.
as of 7/31/16

MARKET CAP: $550 million (Small Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
81.1	86.1	91.0	91.2	102.7	102.1	110.4	114.8	117.1	126.0	*131*	*133*	Revenues ($mill)	*160*
10.0	11.8	12.2	10.0	14.3	13.4	14.4	16.6	18.4	20.0	*23.0*	*24.0*	Net Profit ($mill)	*25.5*
33.4%	32.6%	33.2%	34.1%	32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	*35.0%*	*35.0%*	Income Tax Rate	*35.0%*
--	--	--	--	6.8%	6.1%	3.4%	1.9%	1.7%	1.9%	*2.0%*	*2.0%*	AFUDC % to Net Profit	*2.5%*
49.5%	49.0%	45.6%	46.6%	43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	*38.5%*	*38.5%*	Long-Term Debt Ratio	*38.5%*
47.5%	49.6%	51.8%	52.1%	55.8%	56.6%	57.4%	58.7%	58.8%	59.8%	*61.5%*	*61.5%*	Common Equity Ratio	*61.5%*
264.0	268.8	259.4	267.9	310.5	312.5	316.5	321.4	335.8	345.4	*350*	*360*	Total Capital ($mill)	*430*
317.1	333.9	366.3	376.5	405.9	422.2	435.2	446.5	465.4	481.9	*495*	*515*	Net Plant ($mill)	*565*
5.1%	5.6%	5.8%	5.0%	5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	*7.5%*	*7.5%*	Return on Total Cap'l	*6.5%*
7.5%	8.6%	8.6%	7.0%	8.1%	7.5%	7.8%	8.7%	9.2%	9.6%	*10.5%*	*11.0%*	Return on Shr. Equity	*9.5%*
7.8%	8.7%	8.9%	7.0%	8.2%	7.5%	7.8%	8.7%	9.3%	9.6%	*10.5%*	*11.0%*	Return on Com Equity	*9.5%*
1.3%	1.8%	2.0%	.1%	2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	*4.5%*	*4.5%*	Retained to Com Eq	*4.0%*
84%	79%	78%	98%	75%	87%	83%	73%	67%	63%	*58%*	*58%*	All Div'ds to Net Prof	*61%*

CURRENT POSITION ($MILL.)

	2014	2015	6/30/16
Cash Assets	2.7	3.5	1.2
Other	20.2	20.9	27.1
Current Assets	22.9	24.4	28.3
Accts Payable	6.4	6.5	9.5
Debt Due	24.9	8.7	16.4
Other	12.6	13.1	13.2
Current Liab.	43.9	28.3	39.1

ANNUAL RATES

of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	2.0%	*4.0%*
"Cash Flow"	4.0%	4.5%	*5.5%*
Earnings	5.0%	5.5%	*5.0%*
Dividends	1.5%	1.5%	*3.0%*
Book Value	4.5%	3.0%	*4.0%*

QUARTERLY REVENUES ($ mill.)

Cal-endar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	27.0	29.1	31.3	27.4	114.8
2014	27.1	29.2	32.7	28.1	117.1
2015	28.8	31.7	34.7	30.8	126.0
2016	30.6	32.7	*35.5*	*32.2*	*131*
2017	*31.0*	*33.0*	*36.0*	*33.0*	*133*

EARNINGS PER SHARE A

Cal-endar	Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.20	.28	.36	.19	1.03
2014	.20	.29	.42	.22	1.13
2015	.22	.31	.41	.28	1.22
2016	.29	.36	*.43*	*.32*	*1.40*
2017	*.32*	*.34*	*.46*	*.33*	*1.45*

QUARTERLY DIVIDENDS PAID B■

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.185	.185	.185	.1875	.74
2013	.1875	.1875	.1875	.19	.75
2014	.19	.19	.19	.1925	.76
2015	.1925	.1925	.1925	.19875	.78
2016	.19875	.19875	.19875		

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 60,000 retail customers, primarily in Middlesex County, New Jersey. In 2015, the Middlesex System accounted for 59% of operating revenues. At 12/31/15, the company had 293 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.5% of the common stock; BlackRock Institutional Trust Co., 6.4% (4/16 proxy). Add.: 1500 Ronson Road, Iselin, NJ 08830. Tel.: 732-634-1500. Internet: www.middlesexwater.com.

Middlesex Water Company shares have taken a step back in price subsequent to registering strong gains over the past few quarters. Since our July review, MSEX stock shed nearly 15% in value. We think the selloff was somewhat warranted, given the equity's rich valuation (from a P/E standpoint). Nevertheless, the company delivered a slightly better-than-expected financial performance in the second quarter. Revenues of $32.7 million came in modestly above our call. Middlesex's New Jersey operations experienced strong demand for regulated water and from contract customers. Moreover, the rate increase implemented in August of last year by the Board of Public Utilities continues to be a net positive. On the earnings front, the company reported net income of $0.36 a share, $0.03 better than we had expected.

We are adding two pennies to our 2016 bottom-line estimate. Profit margins are being helped along by lower operation and maintenance expenses, as well as lighter employee benefit costs. This has more than offset higher labor costs. Indeed, we think year-over-year quarterly share-net comparables should be strong through the remainder of the year, resulting in earnings of $1.40 a share for 2016.

The infrastructure replacement project in Edison and South Amboy, New Jersey is under way. Eight miles and $12 million worth of water mains, valves, and service lines are being upgraded to support the company's distribution system in the area.

This equity has been lowered two notches for Timeliness, to 3. Now pegged to mirror the broader market averages over the coming six to 12 months, investors may want to stay on the sidelines, at this juncture. That said, we think conservative, income-seeking accounts should keep MSEX on their radar. We anticipate an above-average dividend yield over the pull to late decade. What's more, water utilities, in general, can be a safe haven in times of turbulent market conditions. Thus, given Middlesex's low Beta (0.70) and relatively noncyclical business model, investors could find these shares appealing should broader market indices take a turn for the worse.

Nicholas P. Patrikis — *October 14, 2016*

(A) Diluted earnings. May not sum due to rounding. Next earnings report due early November.
(B) Dividends historically paid in mid-Feb., May, Aug., and November.■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	40
Earnings Predictability	85

SJW CORP. NYSE-SJW

RECENT PRICE 42.19 | P/E RATIO 21.2 (Trailing: 18.9 / Median: 24.0) | RELATIVE P/E RATIO 1.15 | DIV'D YLD 1.9% | VALUE LINE

TIMELINESS 3 Lowered 5/6/16

SAFETY 3 New 4/22/11

TECHNICAL 2 Raised 10/14/16

BETA .70 (1.00 = Market)

High:	27.8	45.3	43.0	35.1	30.4	28.2	26.8	26.9	30.1	33.7	35.7	46.7
Low:	16.1	21.2	27.7	20.0	18.2	21.6	20.9	22.6	24.5	25.5	27.5	28.6

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

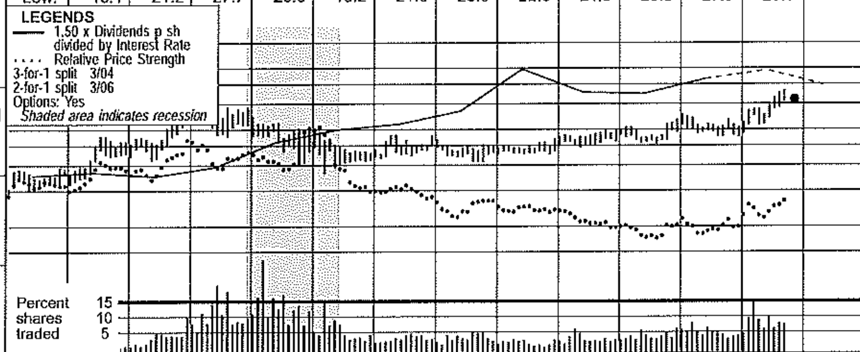
	Price	Gain	Ann'l Total Return
High	55	(+30%)	9%
Low	35	(-15%)	-2%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	3	0	0	0	0	0	0	0	0
Options	0	9	0	5	8	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	43	84	64
to Sell	59	41	68
Hld's(000)	8694	9256	9308



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	45.5	17.7
3 yr.	68.2	23.7
5 yr.	129.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
6.74	7.45	7.97	8.20	9.14	9.86	10.35	11.25	12.12	11.68	11.62	12.85	14.01	13.73	15.76	14.97	*15.10*	*15.00*	Revenues per sh	*18.50*
1.23	1.49	1.55	1.75	1.89	2.21	2.38	2.30	2.44	2.21	2.38	2.80	2.97	2.90	4.42	3.86	*3.95*	*4.00*	"Cash Flow" per sh	*3.95*
.58	.77	.78	.91	.87	1.12	1.19	1.04	1.08	.81	.84	1.11	1.18	1.12	2.54	1.85	*1.90*	*1.95*	Earnings per sh A	*2.00*
.41	.43	.46	.49	.51	.53	.57	.61	.65	.66	.68	.69	.71	.73	.75	.78	*.81*	*.84*	Div'd Decl'd per sh B■	*1.05*
1.89	2.63	2.06	3.41	2.31	2.83	3.87	6.62	3.79	3.17	5.65	3.75	5.67	4.68	5.02	5.24	*5.35*	*5.50*	Cap'l Spending per sh	*5.00*
7.90	8.17	8.40	9.11	10.11	10.72	12.48	12.90	13.99	13.66	13.75	14.20	14.71	15.92	17.75	18.83	*19.00*	*19.75*	Book Value per sh	*22.40*
18.27	18.27	18.27	18.27	18.27	18.27	18.28	18.36	18.18	18.50	18.55	18.59	18.67	20.17	20.29	20.38	*20.50*	*21.00*	Common Shs Outst'g C	*23.00*
33.1	18.5	17.3	15.4	19.6	19.7	23.5	33.4	26.2	28.7	29.1	21.2	20.4	24.3	11.2	16.6	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	*22.0*
2.15	.95	.94	.88	1.04	1.05	1.27	1.77	1.58	1.91	1.85	1.33	1.30	1.37	.59	.84	*estimates*		Relative P/E Ratio	*1.40*
2.1%	3.0%	3.4%	3.5%	3.0%	2.4%	2.0%	1.7%	2.3%	2.8%	2.8%	2.9%	3.0%	2.7%	2.6%	2.5%			Avg Ann'l Div'd Yield	*2.3%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $431.7 mill. Due in 5 Yrs $21.2 mill.
LT Debt $364.2 mill. LT Interest $21.0 mill.
(49% of Cap'l)

Leases, Uncapitalized: Annual rentals $6.6 mill.

Pension Assets-12/15 $105.0 mill.
Oblig. $164.3 mill.

Pfd Stock None.

Common Stock 20,442,128 shs.

MARKET CAP: $850 million (Small Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
189.2	206.6	220.3	216.1	215.6	239.0	261.5	276.9	319.7	305.1	*310*	*315*	Revenues ($mill)	*425*
22.2	19.3	20.2	15.2	15.8	20.9	22.3	23.5	51.8	37.9	*39.0*	*41.0*	Net Profit ($mill)	*46.0*
40.8%	39.4%	39.5%	40.4%	38.8%	41.1%	41.1%	38.7%	32.5%	38.1%	*39.0%*	*39.5%*	Income Tax Rate	*39.0%*
2.1%	2.7%	2.3%	2.0%	--	--	--	--	2.0%	1.0%	*1.5%*	*1.5%*	AFUDC % to Net Profit	*1.5%*
41.8%	47.7%	46.0%	49.4%	53.7%	56.6%	55.0%	51.1%	51.6%	49.8%	*49.0%*	*50.5%*	Long-Term Debt Ratio	*50.5%*
58.2%	52.3%	54.0%	50.6%	46.3%	43.4%	45.0%	48.9%	48.4%	50.2%	*51.0%*	*49.5%*	Common Equity Ratio	*49.5%*
391.8	453.2	470.9	499.6	550.7	607.9	610.2	656.2	744.5	764.6	*765*	*840*	Total Capital ($mill)	*1040*
541.7	645.5	684.2	718.5	785.5	756.2	831.6	898.7	963.0	1036.8	*1100*	*1200*	Net Plant ($mill)	*1325*
7.0%	5.7%	5.8%	4.4%	4.3%	4.9%	5.0%	5.0%	8.3%	6.3%	*6.5%*	*6.0%*	Return on Total Cap'l	*5.5%*
9.7%	8.2%	8.0%	6.0%	6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	*10.0%*	*10.0%*	Return on Shr. Equity	*9.0%*
9.7%	8.2%	8.0%	6.0%	6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	*10.0%*	*10.0%*	Return on Com Equity	*9.0%*
5.2%	3.5%	3.3%	1.2%	1.2%	3.1%	3.3%	2.8%	10.2%	5.7%	*5.5%*	*5.5%*	Retained to Com Eq	*4.0%*
46%	57%	59%	80%	80%	61%	59%	62%	29%	42%	*43%*	*43%*	All Div'ds to Net Prof	*53%*

CURRENT POSITION ($MILL.)

	2014	2015	6/30/16
Cash Assets	2.4	5.2	12.5
Accts Receivable	15.0	16.4	17.3
Other	50.7	51.8	62.9
Current Assets	68.1	73.4	92.7
Accts Payable	7.0	16.2	23.8
Debt Due	13.8	38.1	67.5
Other	23.9	25.3	28.8
Current Liab.	44.7	79.6	120.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	4.5%	*4.0%*
"Cash Flow"	6.5%	10.0%	*1.0%*
Earnings	6.5%	15.0%	*1.5%*
Dividends	4.0%	2.5%	*5.5%*
Book Value	6.0%	5.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	50.1	74.2	85.2	67.4	276.9
2014	54.6	70.4	125.4	69.3	319.7
2015	62.1	72.4	83.0	87.6	305.1
2016	61.1	86.9	*87.0*	*75.0*	*310*
2017	*66.0*	*77.0*	*90.0*	*82.0*	*315*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.07	.37	.44	.24	1.12
2014	.04	.34	1.88	.28	2.54
2015	.23	.36	.46	.80	1.85
2016	.16	.82	*.45*	*.47*	*1.90*
2017	*.25*	*.45*	*.65*	*.60*	*1.95*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.1775	.1775	.1775	.1775	.71
2013	.1825	.1825	.1825	.1825	.73
2014	.1875	.1875	.1875	.1875	.75
2015	.1950	.1950	.1950	.1950	.78
2016	.2025	.2025	.2025		

BUSINESS: SJW Corporation engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to approximately 229,000 connections with a total population of roughly one million people in the San Jose area and 12,000 connections that reaches about 36,000 residents in the region between San Antonio and Austin, Texas. The company also offers nonregulated water-related services and owns and operates commercial real estate investments. Has about 399 employees. Officers and directors (including Nancy O. Moss) own 28.3% of outstanding shares. Chairman: Charles J. Toeniskoetter. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

Shares of SJW Corp. are making up for their relatively lagging price performance over the first half of the year. The stock is up more than 10% in value since our July review, which compares favorably to the rest of the water utility industry that, on average, is down approximately 10% over the same time frame. To wit, SJW had not experienced as robust a price ascent as others in the early stages of 2016, but its most recent financial showing has undoubtedly given the stock support.

SJW Corp.'s second-quarter results were impressive. Revenues of about $87 million during the period improved 20%, year over year, driven primarily by true-up revenue recognition stemming from its California general rate case application, as well as revenue built up in the Water Conservation Memorandum account (also a form of special recognition). Between the two, a positive of nearly $8 million was recognized this quarter. Much of the quarter's revenue gains seemed to make their way to the bottom line, as operating and interest expenses remained relatively flat, on both a sequential and year-over-year basis. Net income of $0.82 a share more than doubled from the like 2015 figure. All things considered, we are raising our 2016 top- and bottom-line estimates by $5 million and $0.15, to $310 million and $1.90 a share, respectively.

The company is moving full steam ahead with its capital expenditure program. With more than $300 million earmarked for water system upgrades, just over $30 million was spent in the second quarter for utility plant improvements ($60 million year to date). A good portion of the funds will likely be allocated to new construction through the remainder of this year and next, which includes $25 million for its Montevina Water Treatment Plant project. All in all, we expect capital spending to be one of the main growth drivers over the pull to late decade.

At the moment, SJW stock does not stand out for either the short or long haul. The equity is ranked to be a market performer in the year ahead. Also, capital appreciation potential three to five years out is below *The Value Line Investment Survey* median.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Excludes nonrecurring losses: '03, $1.97; '04, $3.78; '05, $1.09; '06, $16.36; '08, $1.22; '10, $0.46. GAAP accounting as of 2013. Next earnings report due late November. Quarterly earnings may not add due to rounding.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for stock splits.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	25
Earnings Predictability	50

YORK WATER NDQ-YORW

RECENT PRICE	28.76	P/E RATIO	28.8 (Trailing: 29.6 / Median: 24.0)	RELATIVE P/E RATIO	1.56	DIV'D YLD	2.2%	VALUE LINE

TIMELINESS 3 Lowered 10/14/16
SAFETY 3 Lowered 7/17/15
TECHNICAL 3 Lowered 9/30/16
BETA .70 (1.00 = Market)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	17.9	21.0	18.5	16.5	18.0	18.0	18.1	18.5	22.0	24.3	26.7	33.4	
Low:	11.7	15.3	15.5	6.2	9.7	12.8	15.8	16.8	17.6	18.8	19.7	23.8	

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

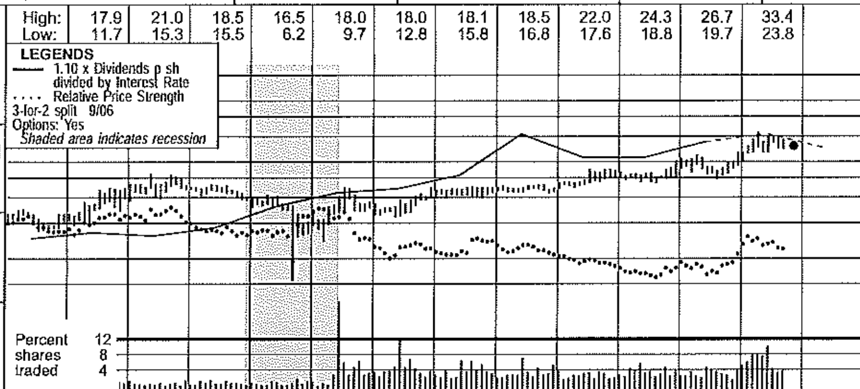
	Price	Gain	Ann'l Total Return
High	35	(+20%)	7%
Low	25	(-15%)	-1%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	36	43	44
to Sell	24	30	38
Hld's(000)	3820	3860	4006



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	44.2	17.7
3 yr.	59.3	23.7
5 yr.	108.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
--	2.05	2.05	2.17	2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	***3.80***	***4.10***	Revenues per sh	***5.40***
--	.59	.57	.65	.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.47	***1.50***	***1.65***	"Cash Flow" per sh	***1.90***
--	.43	.40	.47	.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	***.97***	***1.05***	Earnings per sh A	***1.25***
--	.34	.35	.37	.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	***.63***	***.66***	Div'd Decl'd per sh B	***.85***
--	.75	.66	1.07	2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.08	***1.60***	***1.10***	Cap'l Spending per sh	***.85***
--	3.79	3.90	4.06	4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.52	***8.75***	***8.95***	Book Value per sh	***10.15***
--	9.46	9.55	9.63	10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	***12.80***	***12.50***	Common Shs Outst'g C	***12.00***
--	17.8	26.9	24.5	25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	*Bold figures are*		Avg Ann'l P/E Ratio	***22.5***
--	.91	1.47	1.40	1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.19	*Value Line*		Relative P/E Ratio	***1.40***
--	4.4%	3.3%	3.2%	3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%	*estimates*		Avg Ann'l Div'd Yield	***3.4%***
						28.7	31.4	32.8	37.0	39.0	40.6	41.4	42.4	45.9	47.1	***48.5***	***51.0***	Revenues ($mill)	***65.0***
						6.1	6.4	6.4	7.5	8.9	9.1	9.3	9.7	11.5	12.6	***12.5***	***13.0***	Net Profit ($mill)	***15.0***
						34.4%	36.5%	36.1%	37.9%	38.5%	35.3%	37.6%	37.6%	29.8%	27.2%	***28.5%***	***29.0%***	Income Tax Rate	***32.5%***
						7.2%	3.6%	10.1%	--	1.2%	1.1%	1.1%	.8%	1.8%	1.6%	***1.5%***	***1.5%***	AFUDC % to Net Profit	***1.0%***
						48.3%	46.5%	54.5%	45.7%	48.3%	47.1%	46.0%	45.1%	44.8%	44.5%	***43.5%***	***46.0%***	Long-Term Debt Ratio	***47.0%***
						51.7%	53.5%	45.5%	54.3%	51.7%	52.9%	54.0%	54.9%	55.2%	55.5%	***56.5%***	***54.0%***	Common Equity Ratio	***53.0%***
						126.5	125.7	153.4	160.1	176.4	180.2	184.8	188.4	189.4	196.4	***195***	***205***	Total Capital ($mill)	***230***
						174.4	191.6	211.4	222.0	228.4	233.0	240.3	244.2	253.2	261.4	***270***	***275***	Net Plant ($mill)	***290***
						6.2%	6.7%	5.7%	6.2%	6.5%	6.4%	6.4%	6.5%	7.4%	7.7%	***7.5%***	***7.5%***	Return on Total Cap'l	***7.5%***
						9.3%	9.5%	9.2%	8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	***11.0%***	***11.5%***	Return on Shr. Equity	***12.5%***
						9.3%	9.5%	9.2%	8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	***11.0%***	***11.5%***	Return on Com Equity	***12.5%***
						2.2%	1.7%	1.4%	1.9%	2.7%	2.5%	2.4%	2.4%	3.9%	4.5%	***4.0%***	***4.5%***	Retained to Com Eq	***4.0%***
						77%	82%	85%	78%	72%	73%	74%	74%	64%	61%	***65%***	***63%***	All Div'ds to Net Prof	***68%***

CAPITAL STRUCTURE as of 6/30/16
Total Debt $84.6 mill. Due in 5 Yrs $30.5 mill.
LT Debt $84.6 mill. LT Interest $5.1 mill.
(44% of Cap'l)

Pension Assets 12/15 $31.8 mill.
Oblig. $39.5 mill.

Pfd Stock None

Common Stock 12,867,736 shs.

MARKET CAP: $375 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	1.5	2.9	5.0
Accounts Receivable	4.0	3.5	3.8
Inventory (Avg. Cost)	.8	.8	.8
Other	4.9	4.6	3.4
Current Assets	11.2	11.8	13.0
Accts Payable	1.6	1.8	1.6
Debt Due	--	--	--
Other	4.3	4.4	4.4
Current Liab.	5.9	6.2	6.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.5%	3.0%	*7.5%*
"Cash Flow"	7.0%	6.5%	*6.0%*
Earnings	5.5%	6.0%	*6.0%*
Dividends	4.0%	2.5%	*6.5%*
Book Value	6.5%	4.5%	*3.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	10.1	10.7	10.9	10.7	42.4
2014	10.6	11.8	12.0	11.5	45.9
2015	11.2	11.9	12.4	11.6	47.1
2016	11.3	11.8	***12.5***	***12.9***	***48.5***
2017	***12.0***	***12.5***	***13.0***	***13.5***	***51.0***

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.17	.18	.19	.21	.75
2014	.16	.22	.23	.28	.89
2015	.20	.22	.28	.27	.97
2016	.19	.23	***.28***	***.27***	***.97***
2017	***.22***	***.25***	***.30***	***.28***	***1.05***

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.134	.134	.134	.134	.535
2013	.138	.138	.138	.138	.552
2014	.1431	.1431	.1431	.1431	.572
2015	.1495	.1495	.1495	.1555	.604
2016	.1555	.1555	.1555		

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2015, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 194,000. Has more than 66,000 customers. Residential customers accounted for 63% of 2015 revenues; commercial and industrial (29%); other (8%). It also provides sewer billing services. Incorporated: PA. York had 108 full-time employees at 12/31/15. President/CEO: Jeffrey R. Hines. Officers/directors own 1.1% of the common stock (4/16 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water's second-quarter financial results were little changed from the prior year. The Pennsylvania-based operator generated revenues of $11.8 million, marginally lower than the comparable 2015 figure. There has been no movement on the rate hike front, and this, in conjunction with lower consumption, yielded a top-line contraction for the June period. In the same breath, earnings of $0.23 a share during the period, while improving by a penny, year over year, missed our mark by $0.03. Still, a higher tax rate continues to ail the bottom line, which more than outweighed benefits from lower operating expenses. This scenario of higher taxes and lackluster revenue growth ought to stay in place over the near term.

Therefore, we are reducing our full-year 2016 top- and bottom-line estimates accordingly. Earnings comparisons over the back half of the year ought to be flat, with revenues picking up slightly. We are trimming the latter by $1.5 million, to $48.5 million, representing modest growth, on an annual basis. Likewise, our 2016 earnings estimate is being lowered by $0.03, to $0.97 a share, in line with the prior year's profit figure. Looking further out, we think meaningful growth will likely come back into the picture in 2017.

Long-term growth will likely come from acquisitions and internal investments. York has spent about $5 million in capex through the first half of the year. For the remainder of 2016, management has guided expenditures of approximately $12 million. The use of these funds ought to oscillate between revamping its aging infrastructure, strengthening water treatment systems, and additional water mains if needed. Furthermore, acquisitions are likely in the cards over the pull to late decade. The company's balance sheet is in relatively good shape, and its cash reserves are abundant, when compared to normal levels.

This neutrally ranked issue lacks investment appeal at the moment. It is slated to be a market performer in the year ahead. Too, the stock is already trading inside of our 3- to 5-year Target Price Range, thereby discounting much of the growth we envision over that time frame.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Next earnings report due late November.
(B) Dividends historically paid in late-December, February, June, and September.
(C) In millions, adjusted for splits.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	60
Earnings Predictability	95

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 209

Value Line (VL)
Gas and Water Utility Profiles

Exhibits in Support
of Opening Testimony

March 1, 2017

NATURAL GAS UTILITY

Stocks in *Value Line's* Natural Gas Utility Industry have performed well, in general, during 2016. (At the time of this writing, a number of them were trading close to their historical highs.) We attribute that relative strength partly to turbulent financial markets, reflecting concern over such factors as the welfare of China's economy (the third largest in the world) and the United Kingdom's decision to exit the European Union. Indeed, during periods of uncertainty, which seem to be more common these days, the equities in this group appear more enticing than those of other industries mainly because they offer well-covered, appealing amounts of dividend income. Of course, no sector (even the most defensive) is completely immune to financial market fluctuations.

Natural Gas Prices

Despite recent strength, natural gas quotations are nowhere near the heights reached late last decade, and the situation might not improve very much for some time. Even though that scenario does not augur well for companies that produce this commodity, regulated utility units generally benefit. That's partially because lower gas pricing tends to lead to diminished prices for customers, which may well bring down bad-debt expense. Furthermore, there is an increased possibility that homeowners will switch from alternative fuel sources, such as oil or propane, to natural gas. (At the present time, it's estimated that more than half of all households within the United States use natural gas.) It is important to mention, however, that companies in our universe also possess nonregulated businesses (including pipelines and energy marketing & trading), which tend to underperform when gas prices are at subdued levels.

How's The Weather?

Weather is a factor that affects the demand for natural gas, particularly from small commercial businesses and consumers. Not surprisingly, profits for utilities are susceptible to seasonal temperature patterns, with consumption normally at its peak during the winter heating months. Unseasonably warm or cold weather can cause significant volatility in quarterly operating results. But some companies strive to counteract this exposure through temperature-adjusted rate mechanisms, which are available in a number of states.

Long-Term Prospects

Overall, we are optimistic about the industry's operating performance over the next three to five years. Natural gas should continue to be abundant in the United States, brought about by new technologies, so a shortage does not appear probable anytime soon. Furthermore, there are limited alternatives for the services the companies in this group offer. Too, it's a challenge for new entrants in the market, given such factors as the size of existing competitors and the considerable initial capital outlays that are required. Finally, the country's population (now numbering more than 320 million) ought to remain on a steady, upward course, which augurs well for future demand for utility services.

INDUSTRY TIMELINESS: 62 (of 97)

Nonetheless, there are some risks to consider. For a start, companies are subject to state and local regulatory authorities. That being the case, there are no guarantees that petitions for rate increases will be accepted or that certain favorable provisions (including temperature-adjusted rate mechanisms) will continue indefinitely. To further complicate matters, a slowdown in the economy may prompt customers to conserve gas and push up bad-debt expense. Lastly, operational difficulties created by leaks and other accidents could result in substantial financial losses (if not adequately covered by insurance).

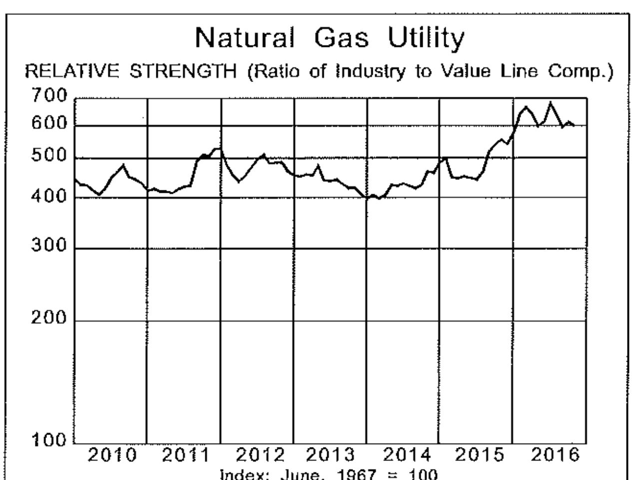
Appealing Dividends

The primary feature of utility equities is their dividend income, which is well covered by corporate profits. (It's important to mention that the Financial Strength ratings for the 10 companies in our universe are no lower than B+.) At the time of this report, the average yield for the group was about 2.8%, significantly above the *Value Line* median of 2.1%. Standouts include *South Jersey Industries, Northwest Natural Gas, Spire Inc.*, and *NiSource Inc.* When the financial markets experience heightened volatility, which seems to be more often the case these days, solid dividend yields tend to provide a measure of much-needed stability.

Conclusion

Stocks within the Natural Gas Utility Industry ought to draw the interest of income-focused accounts with a conservative bent, given that a number of these issues are ranked favorably for Safety and possess high marks for Price Stability. It is important to keep in mind that companies owning more-established nonregulated operations might offer a higher potential for returns, but profits could be more volatile than for firms with a greater emphasis on the more stable utility segment. As always, our readers are advised to carefully examine the following reports before committing funds.

Frederick L. Harris, III



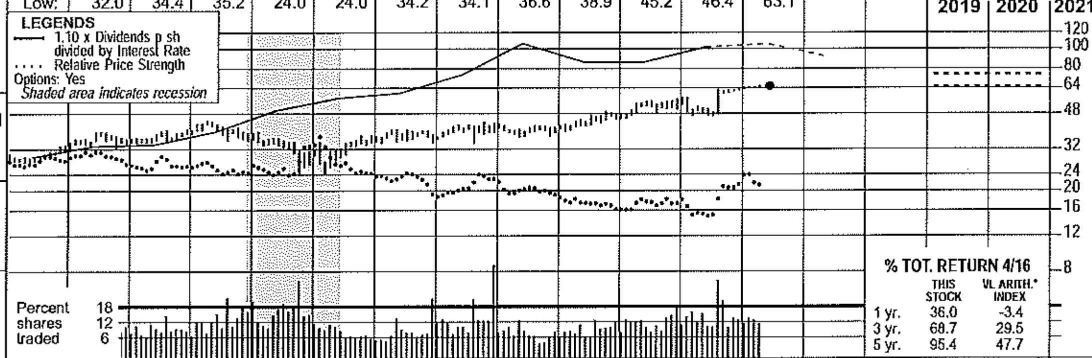
AGL RESOURCES NYSE-GAS

RECENT PRICE	P/E RATIO	RELATIVE P/E RATIO	DIV'D YLD
65.60	20.5 (Trailing: 23.1 Median: 14.0)	1.13	3.2%

VALUE LINE

TIMELINESS – Suspended 9/4/15
SAFETY 1 Raised 9/9/11
TECHNICAL – Suspended 9/4/15
BETA .60 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	39.3	40.1	44.7	39.1	37.5	40.1	43.7	42.9	49.3	56.7	64.0	66.5
Low:	32.0	34.4	35.2	24.0	24.0	34.2	34.1	36.6	38.9	45.2	46.4	63.1



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(+15%)	6%
Low	65	(Nil)	3%

Insider Decisions

	J	A	S	O	N	D	J	F	M
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	2	5	0	1	1	7	0
to Sell	1	3	1	0	0	1	0	0	1

Institutional Decisions

	2Q2015	3Q2015	4Q2015
to Buy	193	224	215
to Sell	197	209	217
Hld's(000)	75486	76517	77994

% TOT. RETURN 4/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	36.0	-3.4
3 yr.	68.7	29.5
5 yr.	95.4	47.7

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
11.25	19.04	15.32	15.25	23.89	34.98	33.73	32.64	36.41	29.88	30.42	19.97	33.28	38.83	45.01	32.74	**35.25**	**37.80**	Revenues per sh A	**44.00**
2.86	3.31	3.39	3.47	3.29	4.20	4.50	4.65	4.68	4.90	5.05	3.06	5.82	6.15	7.87	6.23	**6.70**	**7.40**	"Cash Flow" per sh	**8.80**
1.29	1.50	1.82	2.08	2.28	2.48	2.72	2.72	2.71	2.88	3.00	2.12	2.31	2.64	4.71	2.94	**3.20**	**3.60**	Earnings per sh A B	**4.65**
1.08	1.08	1.08	1.11	1.15	1.30	1.48	1.64	1.68	1.72	1.76	1.90	1.74	1.88	1.96	2.04	**2.12**	**2.16**	Div'ds Decl'd per sh CF■	**2.40**
2.92	2.83	3.30	2.46	3.44	3.44	3.26	3.39	4.84	6.14	6.54	3.65	6.64	6.30	6.43	8.53	**7.40**	**7.30**	Cap'l Spending per sh	**7.20**
11.50	12.19	12.52	14.66	18.06	19.29	20.71	21.74	21.48	22.95	23.24	28.33	28.96	30.54	31.63	32.64	**33.35**	**35.05**	Book Value per sh D	**40.15**
54.00	55.10	56.70	64.50	76.70	77.70	77.70	76.40	76.90	77.54	78.00	117.10	117.86	118.89	119.65	120.38	**122.00**	**123.00**	Common Shs Outst'g E	**125.00**
13.6	14.6	12.5	12.5	13.1	14.3	13.5	14.7	12.3	11.2	12.5	18.8	17.2	16.7	10.9	18.5	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	**15.0**
.88	.75	.68	.71	.69	.76	.73	.78	.74	.75	.80	1.18	1.09	.94	.57	.95	*estimates*		Relative P/E Ratio	**.95**
6.2%	4.9%	4.7%	4.3%	3.9%	3.7%	4.0%	4.1%	5.0%	5.4%	4.7%	4.8%	4.4%	4.3%	3.8%	3.8%			Avg Ann'l Div'd Yield	**3.4%**

CAPITAL STRUCTURE as of 3/31/16
Total Debt $4300 mill. Due in 5 Yrs $2764 mill.
LT Debt $3273 mill. LT Interest $181 mill.
(Total interest coverage: 4.1x)

Leases, Uncapitalized Annual rentals $33 mill.
Pension Assets-12/15 $847 mill.
Oblig. $1067 mill.
Pfd Stock None

Common Stock 120,680,030 shs.
as of 4/29/16
MARKET CAP: $7.9 billion (Large Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
2621.0	2494.0	2800.0	2317.0	2373.0	2338.0	3922.0	4617.0	5385.0	3941.0	**4300**	**4650**	Revenues ($mill) A	**5500**
212.0	211.0	207.6	222.0	234.0	172.0	271.0	313.0	562.0	353.0	**390**	**445**	Net Profit ($mill)	**580**
37.8%	37.6%	40.5%	35.2%	35.9%	40.2%	36.4%	36.6%	37.6%	36.3%	**33.0%**	**38.0%**	Income Tax Rate	**38.0%**
8.1%	8.5%	7.4%	9.6%	9.9%	7.4%	6.9%	6.8%	10.4%	9.0%	**9.1%**	**9.5%**	Net Profit Margin	**10.5%**
50.2%	50.2%	50.3%	52.6%	48.0%	51.8%	49.4%	51.2%	48.8%	45.5%	**48.0%**	**48.0%**	Long-Term Debt Ratio	**47.0%**
49.8%	49.8%	49.7%	47.4%	52.0%	48.2%	50.6%	48.8%	51.2%	54.5%	**52.0%**	**52.0%**	Common Equity Ratio	**53.0%**
3231.0	3335.0	3327.0	3754.0	3486.0	6879.0	6740.0	7444.0	7386.0	7204.0	**7835**	**8270**	Total Capital ($mill)	**9605**
3436.0	3566.0	3816.0	4146.0	4405.0	7900.0	8347.0	8781.0	9090.0	9791.0	**10475**	**11105**	Net Plant ($mill)	**13225**
8.0%	7.7%	7.4%	6.9%	7.6%	3.1%	5.4%	5.4%	8.8%	6.1%	**6.5%**	**7.0%**	Return on Total Cap'l	**7.5%**
13.2%	12.7%	12.6%	12.5%	12.9%	5.2%	7.9%	8.6%	14.9%	9.0%	**9.5%**	**10.5%**	Return on Shr. Equity	**11.5%**
13.2%	12.7%	12.6%	12.5%	12.9%	5.2%	7.9%	8.6%	14.9%	9.0%	**9.5%**	**10.5%**	Return on Com Equity	**11.5%**
6.3%	5.3%	5.1%	5.3%	5.6%	.7%	2.0%	2.5%	8.7%	2.8%	**3.0%**	**4.0%**	Retained to Com Eq	**5.5%**
52%	58%	60%	57%	57%	86%	75%	71%	41%	69%	**66%**	**60%**	All Div'ds to Net Prof	**52%**

CURRENT POSITION ($MILL.)	2014	2015	3/31/16
Cash Assets	39	27	20
Other	2851	2088	1517
Current Assets	2890	2115	1537
Accts Payable	312	673	613
Debt Due	2152	1555	1027
Other	755	772	849
Current Liab.	3219	3000	2489
Fix. Chg. Cov.	611%	465%	415%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.5%	4.0%	*2.0%*
"Cash Flow"	6.5%	6.5%	*4.5%*
Earnings	4.0%	3.5%	*5.0%*
Dividends	5.0%	2.5%	*3.5%*
Book Value	6.0%	7.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1709	904	675	1329	4617
2014	2462	889	589	1445	5385
2015	1721	674	584	962	3941
2016	1334	**850**	**700**	**1416**	**4300**
2017	**1700**	**900**	**700**	**1350**	**4650**

Cal-endar	EARNINGS PER SHARE AB Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.31	.41	.24	.68	2.64
2014	2.81	.48	.19	1.24	4.71
2015	1.62	.35	.09	.89	2.94
2016	1.51	**.40**	**.19**	**1.10**	**3.20**
2017	**1.80**	**.40**	**.20**	**1.20**	**3.60**

Cal-endar	QUARTERLY DIVIDENDS PAID CF■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.36	.46	.46	.46	1.74
2013	.47	.47	.47	.47	1.88
2014	.49	.49	.49	.49	1.96
2015	.51	.51	.51	.51	2.04
2016	.53	.53			

BUSINESS: AGL Resources Inc. is a public utility holding company. Distribution subsidiaries include Atlanta Gas Light, Chattanooga Gas, Elizabethtown Gas, Virginia Natural Gas, Florida City Gas and Elkton Gas. Acquired Nicor in 2011. The utilities have more than 4.5 million customers in Georgia, Virginia, Tennessee, New Jersey, Florida, and Illinois. Engaged in nonregulated natural gas marketing and other allied services. Deregulated subsidiaries: Georgia Natural Gas markets natural gas at retail. BlackRock Inc. owns 8.0% of common stock; officers/directors, less than 1.0% (3/15 Proxy). President & CEO: John W. Somerhalder II. Inc.: GA. Addr.: Ten Peachtree Place N.E., Atlanta, GA 30309. Telephone: 404-584-4000. Internet: www.aglresources.com.

The takeover of AGL Resources by Southern Company appears to be on track. Indeed, the company has reached agreements with both the New Jersey Board of Public Utilities and the Georgia Public Service Commission, which would ease their concerns with the merger continuing. In addition, the company has approval from Maryland authorities. The deal has already received shareholder and antitrust approval. This move would create the nation's second-largest public utility company. Management thinks it will likely close in the second half of 2016, and we think this may be toward the earlier half of that range. Still, risks still exist here until the deal is completed.

First-quarter results underwhelmed. Temperatures were warmer than usual during the period, while lower gross contributions hurt the bottom line, and additional costs related to the company's pending merger (see below) were incurred. These caused earnings to fall to $1.51 a share. However, the bad news was partially offset by lower maintenance expenses, as warmer temperatures allowed for lower overtime expense.

The company appears poised for better results in the coming years. AGL Resources is investing in pipelines to its coverage areas, which should both lower costs of natural gas and lead to higher allowable returns on equity. Too, the company appears likely to benefit from more normal temperatures in the years ahead. All told, we think it will be able to earn $4.65 a share by the end of the decade.

We believe that there is little reason to own shares of AGL Resources at the recent quotation. Indeed, these shares are trading just under the proposed all-cash acquisition price of $66, so little appreciation potential exists here. However, should anything cause the deal to falter, these shares could tumble, though we think this possibility is remote. In the meantime, the yield here does not stand out for a utility. Longer-term investors should look elsewhere in the industry, while those who still hold the stock should consider selling their shares given the small discount to the deal price. The stock's Timeliness rank is suspended pending the takover agreement.

John E. Seibert III *June 3, 2016*

(A) Fiscal year ends December 31st. Ended September 30th prior to 2002.
(B) Diluted earnings per share. May not add up due to rounding. Excl. nonrecurring gains (losses): '00, $0.13; '01, $0.13; '03, ($0.07); '08, $0.13; '14, ($0.67). Next earnings report due late July. (C) Dividends historically paid early March, June, Sept., and Dec. ■ Div'd reinvest. plan available. (D) Includes intangibles. In 2015: $1,922 million, $15.97/share.(E) In millions. (F) Excluding special dividends from the Nicor merger.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	55
Earnings Predictability	55

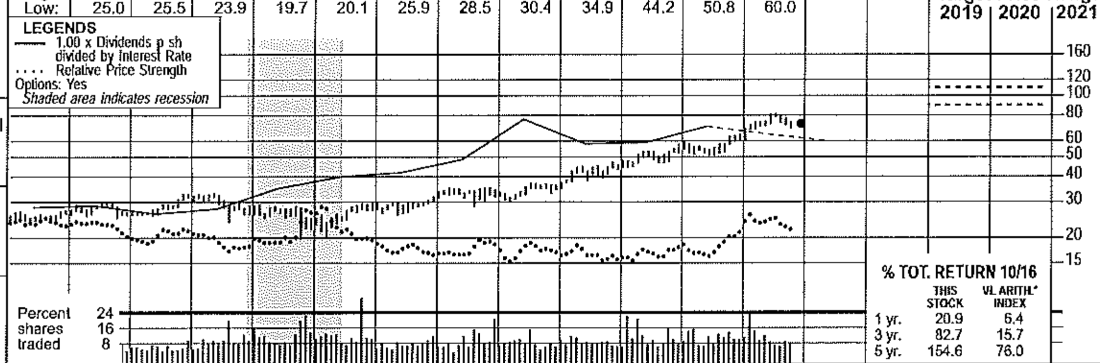
ATMOS ENERGY CORP. NYSE-ATO

RECENT PRICE 72.84 | P/E RATIO 20.8 (Trailing: 21.4, Median: 15.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 2.5% | VALUE LINE

TIMELINESS 3 Lowered 9/16/16
SAFETY 1 Raised 6/6/14
TECHNICAL 3 Lowered 9/30/16
BETA .70 (1.00 = Market)

High:	30.0	33.1	33.5	29.3	30.3	32.0	35.6	37.3	47.4	58.2	64.8	82.0
Low:	25.0	25.5	23.9	19.7	20.1	25.9	28.5	30.4	34.9	44.2	50.8	60.0

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	110	(+50%)	13%
Low	90	(+25%)	8%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	2	0	0	2	6	0	2	0	0
to Sell	0	0	0	0	1	0	0	2	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	159	212	188
to Sell	133	142	148
Hld's(000)	70628	71888	73716

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	20.9	6.4
3 yr.	82.7	15.7
5 yr.	154.6	76.0

Atmos Energy's history dates back to 1906 in the Texas Panhandle. Over the years, through various mergers, it became part of Pioneer Corporation, and, in 1981, Pioneer named its gas distribution division Energas. In 1983, Pioneer organized Energas as a separate subsidiary and distributed the outstanding shares of Energas to Pioneer shareholders. Energas changed its name to Atmos in 1988. Atmos acquired Trans Louisiana Gas in 1986, Western Kentucky Gas Utility in 1987, Greeley Gas in 1993, United Cities Gas in 1997, and others.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
75.27	66.03	79.52	53.69	53.12	48.15	38.10	42.88	49.22	40.82	32.20	33.65	Revenues per sh A	45.85
4.26	4.14	4.19	4.29	4.64	4.72	4.76	5.14	5.42	5.81	6.20	6.50	"Cash Flow" per sh	7.25
2.00	1.94	2.00	1.97	2.16	2.26	2.10	2.50	2.96	3.09	3.38	3.55	Earnings per sh A B	4.20
1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.48	1.56	1.68	1.80	Div'ds Decl'd per sh C■	2.15
5.20	4.39	5.20	5.51	6.02	6.90	8.12	9.32	8.32	9.61	10.45	11.00	Cap'l Spending per sh	10.60
20.16	22.01	22.60	23.52	24.16	24.98	26.14	28.47	30.74	31.48	33.30	31.25	Book Value per sh	36.65
81.74	89.33	90.81	92.55	90.16	90.30	90.24	90.64	100.39	101.48	104.00	107.00	Common Shs Outst'g D	120.00
13.5	15.9	13.6	12.5	13.2	14.4	15.9	15.9	16.1	17.5	20.8		Avg Ann'l P/E Ratio	24.0
.73	.84	.82	.83	.84	.90	1.01	.89	.85	.89	1.11		Relative P/E Ratio	1.50
4.7%	4.2%	4.8%	5.3%	4.7%	4.2%	4.1%	3.5%	3.1%	2.9%	2.4%		Avg Ann'l Div'd Yield	2.1%
6152.4	5898.4	7221.3	4969.1	4789.7	4347.6	3438.5	3886.3	4940.9	4142.1	3349.9	3600	Revenues ($mill) A	5500
162.3	170.5	180.3	179.7	201.2	199.3	192.2	230.7	289.8	315.1	350.1	380	Net Profit ($mill)	500
37.6%	35.8%	38.4%	34.4%	38.5%	36.4%	33.8%	38.2%	39.2%	38.3%	36.4%	37.0%	Income Tax Rate	40.0%
2.6%	2.9%	2.5%	3.6%	4.2%	4.6%	5.6%	5.9%	5.9%	7.6%	10.5%	10.6%	Net Profit Margin	9.1%
57.0%	52.0%	50.8%	49.9%	45.4%	49.4%	45.3%	48.8%	44.3%	43.5%	39.0%	42.0%	Long-Term Debt Ratio	45.0%
43.0%	48.0%	49.2%	50.1%	54.6%	50.6%	54.7%	51.2%	55.7%	56.5%	61.0%	58.0%	Common Equity Ratio	55.0%
3828.5	4092.1	4172.3	4346.2	3987.9	4461.5	4315.5	5036.1	5542.2	5650.2	5655	5765	Total Capital ($mill)	8000
3629.2	3836.8	4136.9	4439.1	4793.1	5147.9	5475.6	6030.7	6725.9	7430.6	8280	9060	Net Plant ($mill)	11500
6.1%	5.9%	5.9%	5.9%	6.9%	6.1%	6.1%	5.9%	6.4%	6.6%	7.5%	8.0%	Return on Total Cap'l	7.5%
9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	10.0%	11.5%	Return on Shr. Equity	11.5%
9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	10.0%	11.5%	Return on Com Equity	11.5%
3.6%	3.0%	3.1%	2.7%	3.5%	3.3%	2.8%	4.0%	4.7%	4.9%	5.0%	5.5%	Retained to Com Eq	5.5%
63%	65%	65%	68%	62%	62%	65%	56%	50%	51%	50%	51%	All Div'ds to Net Prof	52%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $3126.1 mill. Due in 5 Yrs $1157.9 mill.
LT Debt $2205.6 mill. LT Interest $135.0 mill.
(LT interest earned: 5.4x; total interest coverage: 5.4x)
Leases, Uncapitalized Annual rentals $16.5 mill.
Pfd Stock None
Pension Assets-9/15 $450.9 mill. Oblig. $508.6 mill.
Common Stock 103,847,858 shs. as of 7/29/16
MARKET CAP: $7.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	42.3	28.7	66.2
Other	733.5	602.3	582.7
Current Assets	775.8	631.0	648.9
Accts Payable	311.6	238.9	198.9
Debt Due	196.7	457.9	920.5
Other	402.4	458.0	410.4
Current Liab.	910.7	1154.8	1529.8
Fix. Chg. Cov.	637%	743%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-2.0%	-6.5%	.5%
"Cash Flow"	5.0%	4.5%	5.0%
Earnings	5.5%	7.0%	6.5%
Dividends	2.0%	2.5%	6.5%
Book Value	5.0%	5.0%	3.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1034.2	1309.0	857.9	685.2	3886.3
2014	1255.1	1964.3	942.7	778.8	4940.9
2015	1258.8	1540.1	686.4	656.8	4142.1
2016	906.2	1132.3	632.9	678.5	3349.9
2017	930	1250	720	700	3600

Fiscal Year Ends	EARNINGS PER SHARE A B E Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.85	1.23	.36	.08	2.50
2014	.95	1.38	.45	.23	2.96
2015	.96	1.35	.55	.23	3.09
2016	1.00	1.38	.69	.33	3.38
2017	1.05	1.41	.72	.37	3.55

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.345	.345	.345	.35	1.39
2013	.35	.35	.35	.37	1.42
2014	.37	.37	.37	.39	1.50
2015	.39	.39	.39	.42	1.59
2016	.42	.42	.42	.45	

BUSINESS: Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to roughly three million customers through six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Gas sales breakdown for fiscal 2015: 66%, residential; 29%, commercial; 3%, industrial; and 2% other. The company has around 4,760 employees. Officers and directors own approximately 1.5% of common stock (12/15 Proxy). President and Chiaf Executive Officer: Kim R. Cocklin. Incorporated: Texas. Address: Three Lincoln Centre, Suite 1800, 5430 LBJ Freeway, Dallas, Texas 75240. Telephone: 972-934-9227. Internet: www.atmosenergy.com.

Atmos Energy may well post respectable results in fiscal 2017 (started October 1st). The natural gas distribution division, accounting for the largest portion of revenues, stands to benefit from a rise in throughput, assuming that both the weather and economic environment are generally favorable (leading to a boost in consumption levels). Also, we look for reasonably decent performances from the other segments, including the regulated pipeline unit. At this juncture, full-year profits might advance around 5%, to $3.55 a share, versus the fiscal 2016 tally of $3.38. Concerning fiscal 2018, we believe the bottom line can grow at a similar percentage rate, to $3.75 a share, if operating margins expand.

There are plans to sell Atmos Energy Marketing (AEM) to a subsidiary of CenterPoint Energy. The transaction involves the transfer of 800 delivered gas customers and AEM's related asset optimization business at an all-cash price of $40 million plus working capital at the closing date (anticipated during the first calendar quarter of 2017). Proceeds are to be utilized for infrastructure investment in the core regulated units. Note that we estimate the pending divestiture's impact on earnings per share would be minimal.

The fiscal 2017 capital expenditures budget is expected to lie between $1.1 billion and $1.25 billion. That would be some 8% higher than the previous year's figure, assuming the midpoint of that range is used. Similar to fiscal 2016, a meaningful portion of the resources will be deployed to enhance the safety and reliability of Atmos' natural gas distribution and transmission systems.

The quarterly common stock dividend was raised a few cents, to $0.45 a share. Moreover, our 2019-2021 projections indicate that additional, steady increases in the distribution will take place. The payout ratio over that period ought to be roughly 50%, which should not place a substantial financial burden on the energy company.

These top-quality shares hold decent, risk-adjusted long-term total return potential. That reflects the healthy dividend and worthwhile capital gains possibilities here.

Frederick L. Harris, III *December 2, 2016*

(A) Fiscal year ends Sept. 30th. (B) Diluted shrs. Excl. nonrec. items: '06, d18¢; '07, d2¢; '09, 12¢; '10, 5¢; '11, (1¢). Excludes discontinued operations: '11, 10¢; '12, 27¢; '13, 14¢. Next egs. rpt. due early Feb.
(C) Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan. Direct stock purchase plan avail.
(D) In millions.
(E) Qtrs may not add due to change in shrs outstanding.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	90

Formerly: Laclede Group

SPIRE INC. NYSE-SR

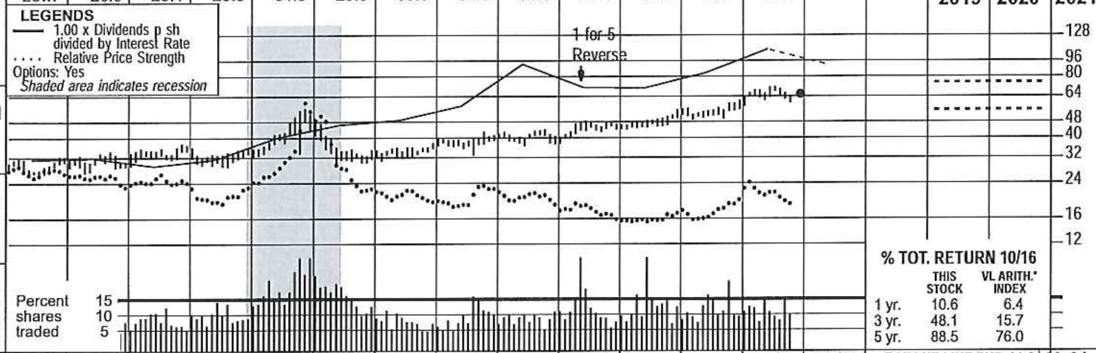
RECENT PRICE 65.60 | P/E RATIO 18.8 (Trailing: 19.8 Median: 15.0) | RELATIVE P/E RATIO 0.98 | DIV'D YLD 3.2% | VALUE LINE

TIMELINESS	3	Lowered 8/12/16
SAFETY	2	Raised 6/20/03
TECHNICAL	3	Lowered 10/7/16

BETA .70 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	34.3	37.5	36.0	55.8	48.3	37.8	42.8	44.0	48.5	55.2	61.0	71.2
Low:	26.9	29.1	28.8	31.9	29.3	30.8	32.9	36.5	37.4	44.0	49.1	57.1

LEGENDS
— 1.00 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(+15%)	6%
Low	55	(-15%)	-1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	114	109	142
to Sell	86	104	83
Hld's(000)	34753	35632	36826

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.6	6.4
3 yr.	48.1	15.7
5 yr.	88.5	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
29.99	53.08	39.84	54.95	59.59	75.43	93.51	93.40	100.44	85.49	77.83	71.48	49.90	31.10	37.68	45.59	33.68	*40.45*	Revenues per sh A	*53.00*
2.68	3.00	2.56	3.15	2.79	2.98	3.81	3.87	4.22	4.56	4.11	4.62	4.58	3.12	3.87	6.15	6.16	*6.55*	"Cash Flow" per sh	*7.40*
1.37	1.61	1.18	1.82	1.82	1.90	2.37	2.31	2.64	2.92	2.43	2.86	2.79	2.02	2.35	3.16	3.24	*3.50*	Earnings per sh A B	*4.20*
1.34	1.34	1.34	1.34	1.35	1.37	1.40	1.45	1.49	1.53	1.57	1.61	1.66	1.70	1.76	1.84	1.96	*2.10*	Div'ds Decl'd per sh C■	*2.30*
2.77	2.51	2.80	2.67	2.45	2.84	2.97	2.72	2.57	2.36	2.56	3.02	4.83	4.00	3.96	6.68	6.42	*6.90*	Cap'l Spending per sh	*7.10*
14.99	15.26	15.07	15.65	16.96	17.31	18.85	19.79	22.12	23.32	24.02	25.56	26.67	32.00	34.93	36.30	38.73	*40.65*	Book Value per sh D	*45.55*
18.88	18.88	18.96	19.11	20.98	21.17	21.36	21.65	21.99	22.17	22.29	22.43	22.55	32.70	43.18	43.36	45.65	*47.00*	Common Shs Outst'g E	*50.00*
14.9	14.5	20.0	13.6	15.7	16.2	13.6	14.2	14.3	13.4	13.7	13.0	14.5	21.3	19.8	16.5	19.6		Avg Ann'l P/E Ratio	*15.5*
.97	.74	1.09	.78	.83	.86	.73	.75	.86	.89	.87	.82	.92	1.20	1.04	.83	1.05		Relative P/E Ratio	*.95*
6.6%	5.7%	5.7%	5.4%	4.7%	4.4%	4.3%	4.4%	3.9%	3.9%	4.7%	4.3%	4.1%	4.0%	3.8%	3.5%	3.1%		Avg Ann'l Div'd Yield	*3.5%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $2482.4 mill. **Due in 5 Yrs** $400.0 mill.
LT Debt $1833.7 mill. **LT Interest** $70.0 mill.
(Total interest coverage: 3.7x)

Leases, Uncapitalized Annual rentals $11.0 mill.
Pension Assets-9/16 $540.5 mill.
Oblig. $724.5 mill.
Pfd Stock None
Common Stock 45,656,218 shs.
as of 11/11/16

MARKET CAP: $3.0 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1997.6	2021.6	2209.0	1895.2	1735.0	1603.3	1125.5	1017.0	1627.2	1976.4	1537.3	*1900*	Revenues ($mill) A	*2650*
50.5	49.8	57.6	64.3	54.0	63.8	62.6	52.8	84.6	136.9	144.2	*165*	Net Profit ($mill)	*210*
32.5%	33.4%	31.3%	33.6%	33.4%	31.4%	29.6%	25.0%	27.6%	31.2%	32.5%	*28.0%*	Income Tax Rate	*30.0%*
2.5%	2.5%	2.6%	3.4%	3.1%	4.0%	5.6%	5.2%	5.2%	6.9%	9.4%	*8.7%*	Net Profit Margin	*7.9%*
49.5%	45.3%	44.4%	42.9%	40.5%	38.9%	36.1%	46.6%	55.1%	53.0%	50.9%	*50.0%*	Long-Term Debt Ratio	*50.0%*
50.4%	54.6%	55.5%	57.1%	59.5%	61.1%	63.9%	53.4%	44.9%	47.0%	49.1%	*50.0%*	Common Equity Ratio	*50.0%*
798.9	784.5	876.1	906.3	899.9	937.7	941.0	1959.0	3359.4	3345.1	3601.9	*3835*	Total Capital ($mill)	*4505*
763.8	793.8	823.2	855.9	884.1	928.7	1019.3	1776.6	2759.7	2941.2	3300.9	*3465*	Net Plant ($mill)	*4010*
8.4%	8.5%	8.1%	8.7%	7.4%	8.1%	7.9%	3.3%	3.1%	5.1%	4.9%	*5.0%*	Return on Total Cap'l	*5.5%*
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	*8.5%*	Return on Shr. Equity	*9.0%*
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	*8.5%*	Return on Com Equity	*9.0%*
5.1%	4.3%	5.2%	5.9%	3.6%	4.9%	4.3%	1.0%	1.5%	3.7%	3.3%	*3.5%*	Retained to Com Eq	*4.0%*
59%	63%	56%	53%	64%	56%	59%	81%	73%	58%	59%	*60%*	All Div'ds to Net Prof	*55%*

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	16.1	13.8	5.2
Other	588.8	516.3	564.4
Current Assets	604.9	530.1	569.6
Accts Payable	176.7	146.5	210.9
Debt Due	287.1	418.0	648.7
Other	319.0	289.3	301.7
Current Liab.	782.8	853.8	1161.3
Fix. Chg. Cov.	360%	365%	366%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16 to '19-'21
Revenues	-6.5%	-13.0%	*6.5%*
"Cash Flow"	5.5%	4.0%	*9.5%*
Earnings	3.5%	1.5%	*9.0%*
Dividends	3.0%	3.5%	*3.5%*
Book Value	7.5%	8.5%	*4.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.)A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	307.0	397.6	165.3	147.1	1017.0
2014	468.6	694.5	241.8	222.3	1627.2
2015	619.6	877.4	275.2	204.2	1976.4
2016	399.4	609.3	249.3	279.3	1537.3
2017	*475*	*775*	*250*	*400*	*1900*

Fiscal Year Ends	EARNINGS PER SHARE A B F Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1.14	1.34	.25	d.30	2.02
2014	1.09	1.59	.33	d.35	2.35
2015	1.09	2.18	.32	d.43	3.16
2016	1.08	2.31	.24	d.31	3.24
2017	*1.20*	*2.30*	*.30*	*d.30*	*3.50*

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.425	.425	.425	.425	1.70
2014	.44	.44	.44	.44	1.76
2015	.46	.46	.46	.46	1.84
2016	.49	.49	.49	.49	
2017	.525				

BUSINESS: Spire Inc., formerly known as the Laclede Group, Inc., is a holding company for natural gas utilities, which distributes natural gas across Missouri, including the cities of St. Louis and Kansas City. Has roughly 1.6 million customers. Acquired Missouri Gas 9/13, Alabama Gas Co 9/14. Utility therms sold and transported in fiscal 2016: 2.6 bill. Revenue mix for regulated operations: residential, 67%; commercial and industrial, 23%; transportation, 2%; other, 8%. Has around 3,078 employees. Officers and directors own 3.2% of common shares (1/16 proxy). Chairman: Edward Glotzbach; CEO: Suzanne Sitherwood. Inc.: Missouri. Address: 700 Market Street, St. Louis, Missouri 63101. Telephone: 314-342-0500. Internet: www.thelacledegroup.com.

Spire Inc. reported mixed fiscal fourth-quarter results (ended September 30th). Revenues were kept in check by lower commodity prices, and 20% warmer-than-usual weather during the period. But the total was supported by better gas marketing revenues and additional contributions from the MobileGas and Willmut Gas acquisitions. Overall, the company had better operational performance across the board, including strong results in its gas marketing division, which allowed for losses of $0.31 a share.

Near-term results will be driven by regulatory outcomes. Spire has filed for infrastructure replacement surcharges on its Laclede and Missouri Gas subsidiaries, which would boost results if approved. Too, changes in the utility regulatory environment in Missouri may change ratemaking mechanisms. The company will file its next general rates cases in April, which could allow for better profitability. Those outcomes are uncertain, but we think the company will earn $3.50 a share in fiscal 2017.

The integrations of Willmut Gas and MobileGas are occurring. Completion of the purchases boosted utility incomes in Alabama and Mississippi. This deal could be earnings accretive sooner than fiscal 2018 thanks to the early accord completion, and cost synergies are expected to emerge shortly.

The build out of the STL pipeline remains on track. An environmental assessment and route refinements are being nailed down in anticipation of the January filing with FERC. This project should cost between $190 million and $210 million, and be put into service during fiscal 2019. As pipelines generally have higher allowable returns, we expect this would provide an ample boost to long-term results.

The company has raised the dividend 7% to $0.525 quarterly. This represents a decent bump in the payout, and should appeal to investors. This marks the 14th year in a row of dividend increases.

Shares of Spire Inc. do not stand out for Timeliness. Though they offer a decent yield and steady dividend growth, the shares offer little total return potential. Most investors would be best served waiting for a price dip.

John E. Seibert III | *December 2, 2016*

(A) Fiscal year ends Sept. 30th. (B) Based on diluted shares outstanding. Excludes nonrecurring loss: '06, 7¢. Excludes gain from discontinued operations: '08, 94¢. Next earnings report due late January. (C) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available. (D) Incl. deferred charges. In '14: $383.8 mill., $8.85/sh. (E) In millions. (F) Qtly. egs. may not sum due to rounding or change in shares outstanding in 2013, 2014, 2016.

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	40
Earnings Predictability	80

NEW JERSEY RES. NYSE-NJR

RECENT PRICE 33.50 | P/E RATIO 19.7 (Trailing: 20.9 Median: 16.0) | RELATIVE P/E RATIO 1.03 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS 3 Lowered 10/28/16
SAFETY 1 Raised 9/15/06
TECHNICAL 3 Lowered 10/28/16
BETA .80 (1.00 = Market)

High:	16.4	17.7	18.8	20.6	21.2	22.0	25.2	25.1	23.8	32.1	34.1	38.9
Low:	13.6	13.8	15.2	12.3	15.0	16.7	19.8	19.3	19.5	21.9	26.8	30.5

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

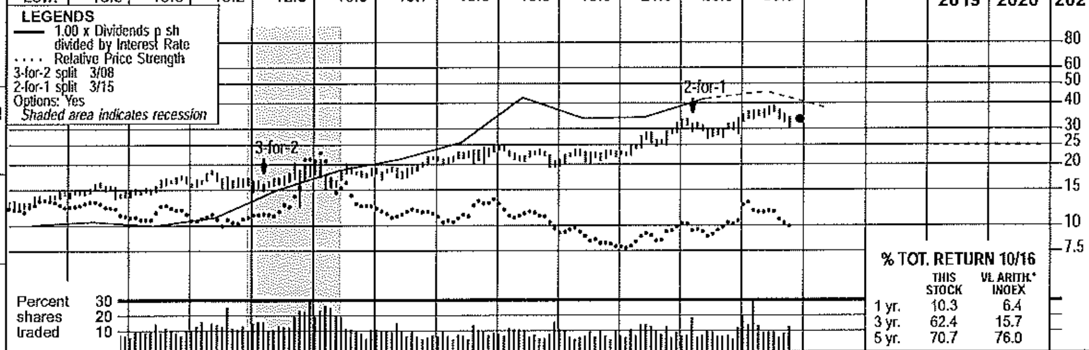
	Price	Gain	Ann'l Total Return
High	30	(-10%)	Nil
Low	25	(-25%)	-4%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	6	0	0	0	0	0	0	0	0
to Sell	0	0	4	0	1	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	117	114	103
to Sell	94	114	107
Hld's(000)	49713	51216	52551



% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.3	6.4
3 yr.	62.4	15.7
5 yr.	70.7	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.71	25.61	22.06	31.14	30.44	38.10	39.81	36.31	45.37	31.17	32.05	36.30	27.08	38.38	44.40	32.09	21.90	27.35	Revenues per sh A	29.85
1.00	1.06	1.07	1.19	1.25	1.31	1.37	1.22	1.81	1.58	1.63	1.70	1.86	1.93	2.73	2.52	2.45	2.50	"Cash Flow" per sh	2.85
.60	.65	.70	.79	.85	.88	.93	.78	1.35	1.20	1.23	1.29	1.36	1.37	2.08	1.78	1.61	1.75	Earnings per sh B	2.10
.38	.39	.40	.41	.43	.45	.48	.51	.56	.62	.68	.72	.77	.81	.86	.93	.98	1.02	Div'ds Decl'd per sh C ■	1.05
.62	.55	.51	.57	.72	.64	.64	.73	.86	.90	1.05	1.13	1.26	1.33	1.52	3.76	1.70	1.75	Cap'l Spending per sh	1.80
4.14	4.40	4.35	5.13	5.62	5.30	7.50	7.75	8.64	8.29	8.81	9.36	9.80	10.65	11.48	12.99	13.80	14.55	Book Value per sh D	17.40
79.17	79.99	83.00	81.70	83.22	82.64	82.88	83.22	84.12	83.17	82.35	82.89	83.05	83.32	84.20	85.19	85.88	86.00	Common Shs Outst'g E	86.00
14.7	14.2	14.7	14.0	15.3	16.8	16.1	21.6	12.3	14.9	15.0	16.8	16.8	16.0	11.7	16.6	21.3		Avg Ann'l P/E Ratio	14.0
.96	.73	.80	.80	.81	.89	.87	1.15	.74	.99	.95	1.05	1.07	.90	.62	.84	1.17		Relative P/E Ratio	.90
4.4%	4.2%	3.9%	3.7%	3.3%	3.1%	3.2%	3.0%	3.3%	3.5%	3.7%	3.3%	3.4%	3.7%	3.5%	3.1%	2.9%		Avg Ann'l Div'd Yield	3.6%
						3299.6	3021.8	3816.2	2592.5	2639.3	3009.2	2248.9	3198.1	3738.1	2734.0	1880.9	2350	Revenues ($mill) A	2565
						78.5	65.3	113.9	101.0	101.8	106.5	112.4	113.7	176.9	153.7	138.1	150	Net Profit ($mill)	180
						38.9%	38.8%	37.8%	27.1%	41.4%	30.2%	7.1%	25.4%	30.2%	26.3%	32.0%	32.0%	Income Tax Rate	32.0%
						2.4%	2.2%	3.0%	3.9%	3.9%	3.5%	5.0%	3.6%	4.7%	5.6%	7.3%	6.4%	Net Profit Margin	7.0%
						34.8%	37.3%	38.5%	39.8%	37.2%	35.5%	39.2%	36.6%	38.2%	43.2%	43.0%	43.0%	Long-Term Debt Ratio	40.5%
						65.2%	62.7%	61.5%	60.2%	62.8%	64.5%	60.8%	63.4%	61.8%	56.8%	57.0%	57.0%	Common Equity Ratio	59.5%
						954.0	1028.0	1182.1	1144.8	1154.4	1203.1	1339.0	1400.3	1564.4	1950.6	2085	2200	Total Capital ($mill)	2495
						934.9	970.9	1017.3	1064.4	1135.7	1295.9	1484.9	1643.1	1884.1	2128.3	2170	2215	Net Plant ($mill)	2350
						9.6%	7.7%	10.7%	9.7%	9.7%	9.7%	9.2%	9.0%	12.1%	8.6%	7.5%	8.0%	Return on Total Cap'l	8.0%
						12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	12.0%	Return on Shr. Equity	12.0%
						12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	12.0%	Return on Com Equity	12.0%
						6.3%	3.6%	9.5%	7.2%	6.7%	6.2%	6.2%	5.2%	11.0%	6.8%	4.6%	5.0%	Retained to Com Eq	6.0%
						50%	64%	40%	50%	52%	55%	55%	59%	40%	50%	61%	58%	All Div'ds to Net Prof	50%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1223.8 mill. **Due in 5 Yrs** $321.9 mill.
LT Debt $967.8 mill. **LT Interest** $25.4 mill.
Incl. $53.2 mill. capitalized leases.
(LT interest earned: 7.5x; total interest coverage: 7.5x)
Pension Assets-9/15 $256.4 mill.
Oblig. $394.4 mill.
Pfd Stock None

Common Stock 86,150,280 shs.
as of 8/1/16
MARKET CAP: $2.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.2	4.9	94.8
Other	680.5	539.6	509.9
Current Assets	682.7	544.5	604.7
Accts Payable	330.3	273.2	216.0
Debt Due	335.5	77.5	256.0
Other	125.3	85.4	129.5
Current Liab.	791.1	436.1	601.5
Fix. Chg. Cov.	1007%	750%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.0%	-4.0%
"Cash Flow"	6.5%	7.5%	3.0%
Earnings	7.5%	6.5%	3.0%
Dividends	7.0%	7.0%	3.5%
Book Value	8.0%	6.5%	7.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	736.0	960.9	767.5	733.7	3198.1
2014	878.4	1579.6	688.3	591.9	3738.1
2015	824.1	1013.1	458.5	438.3	2734.0
2016	444.3	574.2	393.2	469.2	1880.9
2017	560	690	510	590	2350

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.43	.82	.12	d.01	1.37
2014	.47	1.79	.05	d.23	2.08
2015	.65	1.16	.03	d.06	1.78
2016	.58	.91	.13	d.02	1.61
2017	.60	.95	.17	.03	1.75

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.19	.19	.19	.40	.97
2013	--	.20	.20	.20	.60
2014	.21	.21	.21	.23	.86
2015	.23	.23	.23	.24	.93
2016	.24	.24	.24	.255	

BUSINESS: New Jersey Resources Corp. is a holding company providing retail/wholesale energy svcs. to customers in New Jersey, and in states from the Gulf Coast to New England, and Canada. New Jersey Natural Gas had about 512,300 customers at 9/30/15 in Monmouth and Ocean counties, and other N.J. counties. Fiscal 2015 volume: 341 bill. cu. ft. (14% interruptible, 21% residential and commercial and electric utility, 65% incentive programs). N.J. Natural Energy subsidiary provides unregulated retail/wholesale natural gas and related energy svcs. 2015 dep. rate: 2.5%. Has 991 empls. Off./dir. own about 1.4% of common (12/15 Proxy). Chrmn., CEO & Pres.: Laurence M. Downes. Inc.: NJ Addr.: 1415 Wyckoff Road, Wall, NJ 07719. Tel.: 732-938-1480. Web: www.njresources.com.

New Jersey Resources faced a difficult operating environment in fiscal 2016 (ended September 30th). Indeed, the company posted a downturn in both revenues and earnings this past year. What's more, since our September review, the stock has registered a modest 5% pullback, likely as a reflection of the slowdown in the retail/wholesale energy business. Revenues declined more than 30% on a year-over-year basis, to $1.88 billion. This largely stemmed from the warmer-than-normal weather patterns that existed across NJR's service territory. This trend was further exacerbated by the falloff of natural gas and commodity prices when compared to 2015's levels. Despite these challenges, the New Jersey Natural Gas (NJNG), regulated utility business added 8,170 new customer accounts in 2016. A bit more than 55% of those came from new construction. Still, on the profitability front, the sharp downturn in volumes weighed on both fixed- and variable-cost absorption. In fact, operating expenses ticked 20 basis points higher, when viewed as a percentage of the top line. Combined, these factors equated to an earnings reduction of almost 10%, to $1.61 per share. This was in line with our expectation.

That said, we have adjusted our outlook for this year. The company appears poised to log a rebound in revenues of about 25%, to $2.35 billion, due primarily to new NJNG customer accounts. Management estimates roughly 24,000-27,000 accounts will be added between fiscal 2017 and 2019. Elsewhere, the regulated utility division received approval of a rate reduction as well as a bill credit, that will have a net impact on the typical residential heating customer lowering a bill about 2% annually. This helps to put rates more in line with the current natural gas pricing environment. Finally, we have trimmed a nickel off our 2017 share-net estimate, to $1.75, placing it near the top end of management's recently issued guidance range of $1.65-$1.75. This would represent an annual increase of almost 9%.

We think most investors' funds could be better utilized elsewhere. Neutrally ranked NJR is lacking upside potential based on our projections. And the dividend yield is a bit light for a utility.

Bryan J. Fong *December 2, 2016*

(A) Fiscal year ends Sept. 30th.
(B) Diluted earnings. Qtly egs may not sum to total due to change in shares outstanding. Next earnings report due late Jan.
(C) Dividends historically paid in early Jan., April, July, and October. 1Q '13 div'd paid in 4Q '12. ■ Dividend reinvestment plan available.
(D) Includes regulatory assets in 2015: $410.2 million, $4.82/share.
(E) In millions, adjusted for splits.

Company's Financial Strength	A+
Stock's Price Stability	85
Price Growth Persistence	55
Earnings Predictability	55

NISOURCE INC. NYSE-NI

RECENT PRICE 21.89 | P/E RATIO 20.8 (Trailing: 23.8 / Median: 19.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS – F Suspended 6/5/15
SAFETY 3 New 9/4/15
TECHNICAL – F Suspended 6/5/15
BETA NMF (1.00 = Market)

High:	25.5	24.8	25.4	19.8	15.8	18.0	24.0	26.2	33.5	44.9	49.2	26.9
Low:	20.4	19.5	17.5	10.4	7.8	14.1	17.7	22.3	24.8	32.1	16.0	19.0

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

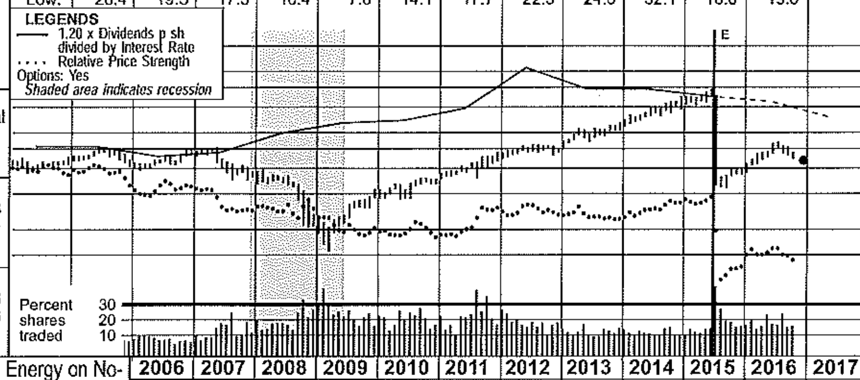
	Price	Gain	Ann'l Total Return
High	25	(+15%)	6%
Low	18	(-20%)	-1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	8	1	0	9	0	0	0	0
to Sell	0	0	2	0	0	0	0	0	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	192	219	226
to Sell	171	165	181
Hld's(000)	263849	264916	265637



% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	24.8	6.4
3 yr.	-19.7	15.7
5 yr.	21.7	76.0

NiSource acquired Columbia Energy on November 1, 2000, paying approximately $6 billion in cash and stock. Columbia shareholders who chose cash received $70 a share, plus a security with a face value of $2.60. Those who chose stock received $74 a share in NiSource common stock. Shareholders' selections were prorated to reflect a 30% stock portion of the transaction. In 2003, NiSource sold Columbia's exploration and production business.

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
27.37	28.96	32.36	24.02	22.99	21.33	16.31	18.04	20.47	14.58	13.95	16.15	Revenues per sh	18.20
3.18	3.20	3.32	2.96	3.19	2.98	3.13	3.41	3.60	2.27	2.60	2.95	"Cash Flow" per sh	3.25
1.14	1.14	1.34	.84	1.06	1.05	1.37	1.57	1.67	.63	1.05	1.15	Earnings per sh A	1.40
.92	.92	.92	.92	.92	.92	.94	.98	1.02	.83	.64	.68	Div'd Decl'd per sh B ■	.80
2.33	2.88	3.54	2.81	2.88	3.99	4.83	5.99	6.42	4.26	4.35	4.60	Cap'l Spending per sh	5.45
18.32	18.52	17.24	17.54	17.63	17.71	17.90	18.77	19.54	12.04	11.70	12.40	Book Value per sh C	12.90
273.65	274.18	274.26	276.79	279.30	282.18	310.28	313.68	316.04	319.11	323.00	325.00	Common Shs Outst'g D	330.00
19.2	18.8	12.1	14.3	15.3	19.4	17.9	18.9	22.7	37.3	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
1.04	1.00	.73	.95	.97	1.22	1.14	1.06	1.19	1.89			Relative P/E Ratio	1.00
4.2%	4.3%	5.7%	7.6%	5.7%	4.5%	3.8%	3.3%	2.7%	3.5%			Avg Ann'l Div'd Yield	3.6%
7490.0	7939.8	8874.2	6649.4	6422.0	6019.1	5061.2	5657.3	6470.6	4651.8	4500	5250	Revenues ($mill)	6000
314.6	312.0	369.8	231.2	294.6	303.8	410.6	490.9	530.7	198.6	340	360	Net Profit ($mill)	460
35.2%	35.6%	33.4%	41.8%	32.4%	35.0%	34.4%	34.8%	36.9%	41.6%	33.5%	35.5%	Income Tax Rate	37.5%
4.2%	6.6%	--	--	--	--	--	--	2.9%	2.9%	2.0%	2.0%	AFUDC % to Net Profit	2.0%
50.7%	52.4%	55.7%	55.1%	54.7%	55.6%	55.1%	56.3%	56.9%	60.7%	63.5%	63.5%	Long-Term Debt Ratio	64.5%
49.3%	47.6%	44.3%	44.9%	45.3%	44.4%	44.9%	43.7%	43.1%	39.3%	36.5%	36.5%	Common Equity Ratio	35.5%
10160	10671	10673	10819	10859	11264	12373	13480	14331	9792.0	10225	10775	Total Capital ($mill)	12060
9694.5	10032	10276	10592	11097	11800	12916	14365	16017	12112	12595	13100	Net Plant ($mill)	14595
4.8%	4.6%	5.2%	4.0%	4.5%	4.4%	5.0%	5.2%	5.3%	4.0%	5.0%	5.5%	Return on Total Cap'l	5.5%
6.3%	6.1%	7.8%	4.8%	6.0%	6.1%	7.4%	8.3%	8.6%	5.2%	9.0%	9.5%	Return on Shr. Equity	11.0%
6.3%	6.1%	7.8%	4.8%	6.0%	6.1%	7.4%	8.3%	8.6%	5.2%	9.0%	9.5%	Return on Com Equity	11.0%
1.2%	1.2%	2.5%	NMF	.8%	.9%	2.5%	3.1%	3.4%	NMF	3.5%	4.0%	Retained to Com Eq	4.5%
80%	81%	68%	110%	87%	85%	67%	62%	61%	NMF	60%	58%	All Div'ds to Net Prof	57%

CAPITAL STRUCTURE as of 9/30/16
Total Debt $7737.8 mill. Due in 5 Yrs $2598.8 mill.
LT Debt $6096.2 mill. LT Interest $450 mill.
(Interest cov. earned: 2.4x) (67% of Cap'l)

Leases, Uncapitalized Annual rentals $18.4 mill.
Pension Assets-12/15 $1.75 bill. Oblig. $2.21 bill.

Pfd Stock None

Common Stock 322,737,775 shs.
as of 10/25/16

MARKET CAP: $7.1 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	25.4	15.5	29.9
Other	2441.1	1561.7	1348.6
Current Assets	2466.5	1577.2	1378.5
Accts Payable	670.6	433.4	352.2
Debt Due	1843.5	1001.1	1641.6
Other	1440.8	1223.0	917.8
Current Liab.	3954.9	2657.5	2911.6
Fix. Chg. Cov.	274%	210%	240%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-3.5%	-7.5%	.5%
"Cash Flow"	-1.0%	-.5%	1.0%
Earnings	-1.0%	3.5%	1.5%
Dividends	-.5%	.5%	-2.5%
Book Value	-.5%	-1.0%	-4.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1782.2	1201.5	1076.8	1596.8	5657.3
2014	2320.5	1335.1	1123.9	1691.1	6470.6
2015	1852.2	884.6	817.2	1097.8	4651.8
2016	1436.6	897.6	861.3	1304.5	4500
2017	1750	950	950	1600	5250

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.69	.23	.16	.49	1.57
2014	.85	.25	.10	.49	1.67
2015	.61	d.23	.05	.20	.63
2016	.56	.09	.07	.33	1.05
2017	.55	.10	.10	.40	1.15

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.23	.23	.24	.24	.94
2013	.24	.24	.25	.25	.98
2014	.25	.25	.26	.26	1.02
2015	.26	.26	.155	.155	.83
2016	.155	.155	.165	.165	

BUSINESS: NiSource Inc. is a holding company for Northern Indiana Public Service Company (NIPSCO), which supplies electricity and gas to the northern third of Indiana. Customers: 461,000 electric in Indiana, 3.4 million gas in Indiana, Ohio, Pennsylvania, Kentucky, Virginia, Maryland, Massachusetts through its Columbia subsidiaries. Revenue breakdown, 2015: electrical, 34%; gas, 66%; other, less than 1%. Generating sources, 2015: coal, 77.3%; purchased & other, 22.7%. 2015 reported depreciation rates: 3.0% electric, 1.8% gas. Has 7,596 employees. Chairman: Ian M. Rolland. President & Chief Executive Officer: Robert C. Skaggs, Jr. Incorporated: Indiana. Address: 801 East 86th Ave., Merrillville, Indiana 46410. Telephone: 877-647-5990. Internet: www.nisource.com.

NiSource reported solid third-quarter results. Revenues increased to $861.3 million, boosted by higher base rates and better electric operations. Though elevated maintenance expense and depreciation were incurred, the company achieved improved operating income, which allowed earnings to rise to $0.07 a share. The company should benefit from cooler weather and better rates in the fourth quarter, with spending of around $1.5 billion on infrastructure, which should drive revenues higher. Altogether, we expect NiSource will earn $0.33 a share in the fourth quarter.

Rate cases should allow for better results in the years ahead. New base rates in Massachusetts and Maryland were enacted, and the approvals received in Pennsylvania will drive revenues higher by around $35 million. Too, NiSource will receive an additional $3.7 million in Maryland. Regulatory relief should allow for much-better infrastructure replacement-related revenues in the coming years. Moreover, decisions are pending in Virginia, Kentucky and elsewhere over the next six months, which would allow for an additional $110 million in infrastructure replacement revenues. These factors should boost earnings in 2017, which we now think will be $1.15 a share. The company has NIPSCO Gas approval for $800 million in projects over several years, too, which should provide for better revenues over the long haul. NiSource also launched pilot programs in Pennsylvania and Indiana to increase natural gas conversions. All told, earnings per share may reach $1.40 by decade's end.

Financial leverage has continued to increase. Debt has risen to around 67% of total capital recently, which has driven interest expense higher. Still, the company may be able to refinance some older, higher-cost debt at lower rates over the coming years.

Shares of NiSource are not attractive at the recent quotation. They are trading within our long-term Target Price Range, and the yield does not stand out. The increasing debt load likely raises financial risk, as well. Long-term investors would be best served waiting for a further dip in price.

John E. Seibert III *December 2, 2016*

(A) Dil. EPS. Excl. nonrec. gains (losses): '05, (4¢); gains (losses) on disc. ops.: '05, 10¢; '06, (11¢); '07, 3¢; '08, ($1.14); '15, (30¢). Next egs. report due late January. Qtl'y egs. may not sum to total due to rounding.
(B) Div'ds historically paid in mid-Feb., May, Aug., Nov. ■ Div'd reinv. avail.
(C) Incl. intang in '15: $1944.4 million, $6.08/sh.
(D) In mill.
(E) Spun off Columbia Pipeline Group (7/15)
(F) Suspended due to spinoff of CPGX

Company's Financial Strength	B+
Stock's Price Stability	NMF
Price Growth Persistence	NMF
Earnings Predictability	NMF

N.W. NAT'L GAS NYSE-NWN

RECENT PRICE 57.95 | P/E RATIO 26.3 (Trailing: 26.5 Median: 18.0) | RELATIVE P/E RATIO 1.38 | DIV'D YLD 3.2% | VALUE LINE

TIMELINESS 3 Lowered 8/12/16
SAFETY 1 Raised 3/18/05
TECHNICAL 2 Raised 12/2/16
BETA .65 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	39.6	43.7	52.8	55.2	46.5	50.9	49.0	50.8	46.6	52.6	52.3	66.2
Low:	32.4	32.8	39.8	37.7	37.7	41.1	39.6	41.0	40.0	40.1	42.0	48.9

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

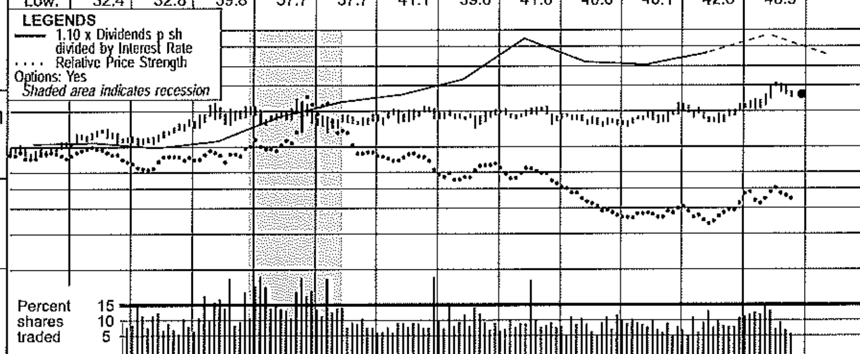
	Price	Gain	Ann'l Total Return
High	60	(+5%)	4%
Low	50	(-15%)	Nil

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	4	12	3	0	4	6	1	0	0
to Sell	0	0	4	0	2	7	1	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	81	98	118
to Sell	65	65	80
Hld's(000)	16813	15946	16937



% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	27.3	6.4
3 yr.	51.8	15.7
5 yr.	51.2	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
21.09	25.78	25.07	23.57	25.69	33.01	37.20	39.13	39.16	38.17	30.56	31.72	27.14	28.02	27.64	26.39	23.45	25.15	Revenues per sh	28.90
3.68	3.86	3.65	3.85	3.92	4.34	4.76	5.41	5.31	5.20	5.18	5.00	4.94	5.04	5.05	4.91	4.50	4.85	"Cash Flow" per sh	6.05
1.79	1.88	1.62	1.76	1.86	2.11	2.35	2.76	2.57	2.83	2.73	2.39	2.22	2.24	2.16	1.96	2.15	2.35	Earnings per sh A	3.15
1.24	1.25	1.26	1.27	1.30	1.32	1.39	1.44	1.52	1.60	1.68	1.75	1.79	1.83	1.85	1.86	1.87	1.88	Div'ds Decl'd per sh B■	2.05
3.46	3.23	3.11	4.90	5.52	3.48	3.56	4.48	3.92	5.09	9.35	3.76	4.91	5.13	4.40	4.37	4.50	6.20	Cap'l Spending per sh	6.35
17.93	18.56	18.88	19.52	20.64	21.28	22.01	22.52	23.71	24.88	26.08	26.70	27.23	27.77	28.12	28.47	27.40	28.40	Book Value per sh D	30.55
25.23	25.23	25.59	25.94	27.55	27.58	27.24	26.41	26.50	26.53	26.58	26.76	26.92	27.08	27.28	27.43	29.00	29.00	Common Shs Outst'g C	28.00
12.4	12.9	17.2	15.8	16.7	17.0	15.9	16.7	18.1	15.2	17.0	19.0	21.1	19.4	20.7	23.7	Bold figures are	Value Line	Avg Ann'l P/E Ratio	17.0
.81	.66	.94	.90	.88	.91	.86	.89	1.09	1.01	1.08	1.19	1.34	1.09	1.09	1.19	estimates		Relative P/E Ratio	1.05
5.6%	5.1%	4.5%	4.6%	4.2%	3.7%	3.7%	3.1%	3.3%	3.7%	3.6%	3.9%	3.8%	4.2%	4.1%	4.0%			Avg Ann'l Div'd Yield	3.7%

CAPITAL STRUCTURE as of 9/30/16
Total Debt $790.1 mill. Due in 5 Yrs $360.0 mill.
LT Debt $530.2 mill. LT Interest $45.0 mill.

(Total interest coverage: 3.5x)

Pension Assets-12/15 $249.4 mill. Oblig. $445.6 mill.

Pfd Stock None

Common Stock 27,557,756 shares as of 10/21/16

MARKET CAP $1.6 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1013.2	1033.2	1037.9	1012.7	812.1	848.8	730.6	758.5	754.0	723.8	680	730	Revenues ($mill)	865
65.2	74.5	68.5	75.1	72.7	63.9	59.9	60.5	58.7	53.7	62.0	68.0	Net Profit ($mill)	86.0
36.3%	37.2%	36.9%	38.3%	40.5%	40.4%	42.4%	40.8%	41.5%	40.0%	35.0%	35.0%	Income Tax Rate	35.0%
6.4%	7.2%	6.6%	7.4%	8.9%	7.5%	8.2%	8.0%	7.8%	7.4%	9.2%	9.3%	Net Profit Margin	10.9%
46.3%	46.3%	44.9%	47.7%	46.1%	47.3%	48.5%	47.6%	44.8%	42.5%	43.0%	43.0%	Long-Term Debt Ratio	43.0%
53.7%	53.7%	55.1%	52.3%	53.9%	52.7%	51.5%	52.4%	55.2%	57.5%	57.0%	57.0%	Common Equity Ratio	57.0%
1116.5	1106.8	1140.4	1261.8	1284.8	1356.2	1424.7	1433.6	1389.0	1357.7	1390	1445	Total Capital ($mill)	1605
1425.1	1495.9	1549.1	1670.1	1854.2	1893.9	1973.6	2062.9	2121.6	2182.7	2270	2360	Net Plant ($mill)	2655
7.1%	8.5%	7.7%	7.3%	7.0%	6.2%	5.7%	5.8%	5.8%	5.5%	5.5%	6.0%	Return on Total Cap'l	7.5%
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	8.0%	8.0%	Return on Shr. Equity	10.5%
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	8.0%	8.0%	Return on Com Equity	10.5%
4.5%	6.0%	4.5%	5.0%	4.0%	2.4%	1.6%	1.5%	1.1%	.6%	1.0%	1.5%	Retained to Com Eq	3.5%
59%	52%	59%	56%	61%	73%	80%	81%	85%	92%	87%	80%	All Div'ds to Net Prof	65%

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	9.5	4.2	6.2
Other	353.1	327.9	204.4
Current Assets	362.6	332.1	210.6
Accts Payable	91.4	73.2	55.9
Debt Due	274.7	295.0	259.9
Other	103.3	109.5	86.9
Current Liab.	469.4	477.7	402.7
Fix. Chg. Cov.	321%	300%	350%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	--	-5.5%	1.0%
"Cash Flow"	2.0%	-1.0%	3.0%
Earnings	1.0%	-5.0%	7.0%
Dividends	3.5%	3.0%	2.0%
Book Value	3.0%	2.5%	1.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	277.9	131.7	88.2	260.7	758.5
2014	293.4	133.1	87.2	240.3	754.0
2015	261.7	138.3	93.1	230.7	723.8
2016	255.5	99.2	87.7	237.6	680
2017	255	130	95.0	250	730

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.40	.08	d.31	1.07	2.24
2014	1.40	.04	d.32	1.04	2.16
2015	1.04	.08	d.24	1.08	1.96
2016	1.33	.07	d.29	1.04	2.15
2017	1.35	.10	d.25	1.15	2.35

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.445	.445	.445	.455	1.79
2013	.455	.455	.455	.460	1.83
2014	.460	.460	.460	.465	1.85
2015	.465	.465	.465	.4675	1.86
2016	.4675	.4675	.4675	.470	

BUSINESS: Northwest Natural Gas Co. distributes natural gas to 90 communities, 704,000 customers, in Oregon (89% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 2.5 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 35%; commercial, 22%; industrial, gas transportation, and other, 43%. Employs 1,092. BlackRock Inc. owns 10.0% of shares; officers and directors, 2.1% (4/16 proxy). CEO: Gregg S. Kantor. Inc.: Oregon. Address: 220 NW 2nd Ave., Portland, OR 97209. Telephone: 503-226-4211. Internet: www.nwnatural.com.

Northwest Natural Gas reported lackluster third-quarter results. Revenues fell 6% year over year, hurt by lower commodity prices. Still, the company had better gross profits, aided by stronger gas storage results. Operating expenses increased during the quarter, while bottom-line results were hurt by a $1.2 million environmental remediation charge. This caused losses to expand to $0.29 a share. Still, cooler weather is expected in the fourth quarter, which should help drive revenues higher. We have lowered our 2016 full-year estimate by a nickel to $2.15 a share.

Near-term results should benefit from improvements in the Portland market. Unemployment there has continued to drop, and construction in the area continues to be strong, as building permits were up 20% year over year. Too, the company should continue to benefit from decent conversion efforts, which ought to drive usage growth. These efforts will likely allow for better earnings in 2017.

Meanwhile, the Mist expansion plant has received its notice to proceed from Portland General Electric. This project will provide up to 120 million cubic feet of gas per day through a 13-mile pipeline, and will cost around $128 million. The company has already started to raise the funds required through equity sales, as it will sell up to 1.01 million shares, largely paying for the early buildout of the system. The facility is on track to be in service by the winter of 2018-2019, and will allow for a sizable bump in earnings.

The company raised its quarterly dividend to $0.47 a share (up 1%). This marks the 61st annual increase for the dividend aristocrat. The yield remains average for a utility, and will likely grow at modest rates until the Mist facility comes on line. Too, higher market interest rates are expected, which should decrease the appeal of the slow-growing dividend.

Shares of Northwest Natural Gas do not hold much appeal at the recent quotation. They are trading within our long-term Target Price Range, and the yield does not stand out among utilities. Long-term accounts would be best served waiting for a dip in price.

John E. Seibert III *December 2, 2016*

(A) Diluted earnings per share. Excludes nonrecurring items: '00, $0.11; '06, ($0.06); '08, ($0.03); '09, 6¢; May not sum due to rounding. Next earnings report due in early February.
(B) Dividends historically paid in mid-February, May, August, and November.
■ Dividend reinvestment plan available.
(C) In millions.
(D) Includes intangibles. In 2015: $370.7 million, $13.52/share.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	25
Earnings Predictability	85

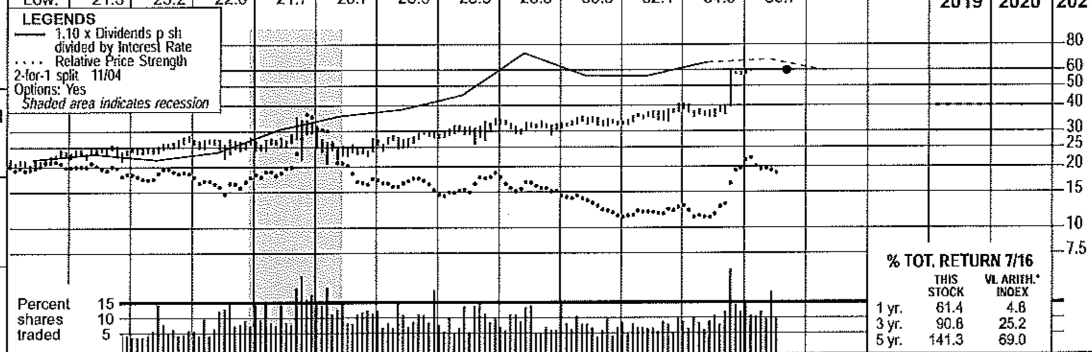
PIEDMONT NAT'L. GAS NYSE-PNY

RECENT PRICE 59.92 | P/E RATIO 30.0 (Trailing: 35.0, Median: 19.0) | RELATIVE P/E RATIO 1.57 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS – Suspended 11/6/15
SAFETY 2 New 7/27/90
TECHNICAL – Suspended 11/6/15
BETA .70 (1.00 = Market)

High:	25.8	28.4	28.0	35.3	32.0	30.1	34.7	34.6	35.5	41.0	59.1	60.3
Low:	21.3	23.2	22.0	21.7	20.7	23.9	25.9	28.5	30.9	32.1	34.9	56.7

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(-35%)	-6%
Low	30	(-50%)	-12%

Insider Decisions

	O	N	D	J	F	M	A	M	J
to Buy	0	0	0	0	0	0	0	0	0
Options	12	12	29	12	12	12	12	12	12
to Sell	1	1	1	1	1	3	2	0	1

Institutional Decisions

	3Q2015	4Q2015	1Q2016
to Buy	112	132	118
to Sell	91	129	114
Hld's(000)	46102	46867	50644

% TOT. RETURN 7/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	61.4	4.6
3 yr.	90.6	25.2
5 yr.	141.3	69.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
13.01	17.06	12.57	18.14	19.95	22.96	25.80	23.37	28.52	22.36	21.48	19.83	15.54	17.07	18.87	17.38	14.70	17.05	Revenues per sh A	18.00
1.77	1.81	1.81	2.04	2.31	2.43	2.51	2.64	2.77	3.01	2.91	2.99	3.09	3.29	3.37	3.36	3.50	3.65	"Cash Flow" per sh	3.70
1.01	1.01	.95	1.11	1.27	1.32	1.28	1.40	1.49	1.67	1.55	1.57	1.66	1.78	1.84	1.73	1.90	2.00	Earnings per sh AB	1.95
.72	.76	.80	.82	.85	.91	.95	.99	1.03	1.07	1.11	1.15	1.19	1.23	1.27	1.31	1.35	1.39	Div'ds Decl'd per sh C■	1.51
1.65	1.29	1.21	1.16	1.85	2.50	2.74	1.85	2.47	1.76	2.75	3.37	7.33	8.01	5.91	5.62	5.85	5.80	Cap'l Spending per sh	5.60
8.26	8.63	8.91	9.36	11.15	11.53	11.83	11.99	12.11	12.67	13.35	13.79	14.21	15.87	16.80	18.07	19.25	20.15	Book Value per sh D	22.65
63.83	64.93	66.18	67.31	76.67	76.70	74.61	73.23	73.26	73.27	72.28	72.32	72.25	74.88	77.88	78.94	81.00	82.00	Common Shs Outst'g E	85.00
14.3	16.7	18.4	16.7	16.6	17.9	19.2	18.7	18.2	15.4	17.1	18.9	19.2	18.5	18.9	22.1	Bold figures are	Value Line	Avg Ann'l P/E Ratio	18.0
.93	.86	1.01	.95	.88	.95	1.04	.99	1.10	1.03	1.09	1.19	1.22	1.04	.99	1.12	estimates		Relative P/E Ratio	1.13
5.0%	4.5%	4.6%	4.4%	4.1%	3.8%	3.9%	3.8%	3.8%	4.1%	4.2%	3.9%	3.7%	3.7%	3.7%	3.4%			Avg Ann'l Div'd Yield	4.3%

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
1924.6	1711.3	2089.1	1638.1	1552.3	1433.9	1122.8	1278.2	1470.0	1371.7	1190	1400	Revenues ($mill) A	1530
97.2	104.4	110.0	122.8	111.8	113.6	119.8	134.4	143.8	136.4	155	165	Net Profit ($mill)	165
34.2%	33.0%	36.3%	28.5%	23.4%	24.6%	29.7%	32.6%	34.5%	.5%	25.0%	25.0%	Income Tax Rate	25.0%
5.0%	6.1%	5.3%	7.5%	7.2%	7.9%	10.7%	10.5%	9.8%	9.9%	13.0%	10.8%	Net Profit Margin	10.8%
48.3%	48.4%	47.2%	44.1%	41.0%	40.4%	48.7%	49.7%	52.1%	51.7%	49.5%	48.0%	Long-Term Debt Ratio	45.5%
51.7%	51.6%	52.8%	55.9%	59.0%	59.6%	51.3%	50.3%	47.9%	48.3%	50.5%	52.0%	Common Equity Ratio	54.5%
1707.9	1703.3	1681.5	1660.5	1636.9	1671.9	2002.0	2363.5	2733.0	2950.0	3085	3180	Total Capital ($mill)	3525
2075.3	2141.5	2240.8	2304.4	2437.7	2627.3	3105.1	3634.5	3989.4	4348.0	4400	4500	Net Plant ($mill)	4750
7.2%	7.8%	8.2%	9.1%	8.4%	8.2%	7.0%	6.8%	6.4%	5.8%	6.5%	6.5%	Return on Total Cap'l	6.0%
11.0%	11.9%	12.4%	13.2%	11.6%	11.4%	11.7%	11.3%	11.0%	9.6%	10.0%	10.0%	Return on Shr. Equity	8.5%
11.0%	11.9%	12.4%	13.2%	11.6%	11.4%	11.7%	11.3%	11.0%	9.6%	10.0%	10.0%	Return on Com Equity	8.5%
2.8%	3.5%	3.9%	4.8%	3.3%	3.1%	3.3%	3.6%	3.4%	2.3%	3.0%	3.0%	Retained to Com Eq	2.0%
74%	70%	69%	64%	72%	73%	72%	69%	69%	76%	71%	70%	All Div'ds to Net Prof	78%

CAPITAL STRUCTURE as of 4/30/16
Total Debt $1954.1 mill. Due in 5 Yrs $410.0 mill.
LT Debt $1524.1 mill. LT Interest $61.6 mill.
(LT interest earned: 4.1x; total interest coverage: 3.4x)

Pension Assets-10/15 $356.9 mill. Oblig. $354.6 mill.

Pfd Stock None

Common Stock 81,199,179 shs. as of 5/31/16

MARKET CAP: $4.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	4/30/16
Cash Assets	9.6	13.7	12.3
Other	338.4	242.2	266.7
Current Assets	348.0	255.9	279.0
Accts Payable	139.7	152.0	117.1
Debt Due	355.0	380.0	430.0
Other	127.3	103.6	105.8
Current Liab.	622.0	635.6	652.9
Fix. Chg. Cov.	325%	325%	325%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-1.5%	-6.0%	Nil
"Cash Flow"	4.0%	3.0%	1.5%
Earnings	4.0%	2.5%	1.5%
Dividends	4.0%	3.5%	3.0%
Book Value	4.5%	6.0%	5.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Jan.31	Apr.30	Jul.31	Oct.31	Full Fiscal Year
2013	515.9	399.4	162.9	200.0	1278.2
2014	657.7	462.2	164.2	185.8	1469.9
2015	607.3	424.9	158.3	181.2	1371.7
2016	461.3	350.2	180	198.5	1190
2017	515	405	230	250	1400

Fiscal Year Ends	EARNINGS PER SHARE AB Jan.31	Apr.30	Jul.31	Oct.31	Full Fiscal Year
2013	1.18	.74	d.03	d.11	1.78
2014	1.26	.80	d.09	d.13	1.84
2015	1.18	.84	d.10	d.18	1.73
2016	1.21	.78	d.02	d.07	1.90
2017	1.24	.85	d.04	d.05	2.00

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.29	.30	.30	.60	1.49
2013	--	.31	.31	.31	.93
2014	.31	.32	.32	.32	1.27
2015	.32	.33	.33	.33	1.31
2016	.33	.34	.34		

BUSINESS: Piedmont Natural Gas Company is primarily a regulated natural gas distributor, serving over 992,551 customers in North Carolina, South Carolina, and Tennessee. 2015 revenue mix: residential (48%), commercial (27%), industriel (15%), other (10%). Principal suppliers: Transco and Tennessee Pipeline. Gas costs: 47.0% of revenues. '15 deprec. rate: 2.5%. Estimated plant age: 10 years. Non-regulated operations: sale of gas-powered heating equipment; natural gas brokering; propane sales. Has 1,879 employees. Off./dir. own about 1.4% of common stock, BlackRock; 8.2% (2/16 proxy). Chmn., CEO & Pres.: Thomas E. Skains. Inc.: NC. Addr.: 4720 Piedmont Row Drive, Charlotte, NC 28210. Telephone: 704-364-3120. Internet: www.piedmonlng.com.

Piedmont Natural Gas continues to face a difficult operating environment this year. Revenues fell almost 18% for the April quarter, to $350 million, the last period for which financial information was available. However, this can largely be attributed to the sharp drop in commodity prices when compared to 2015's figures, as a result, we view it more as a technicality. Piedmont's strength is evidenced by its rising number of customer accounts. That metric rose about 2% during the quarter. Consequently, overall system throughput ticked more than 3% higher, to 274,751 dekatherms. On the profitability front, the weaker revenues did result in an 8.2% rise in operating costs when viewed as a percentage of the top line. A downturn in income from the company's equity investments also weighed on results for the April period. After accounting for the steadily rising share count, PNY's second-quarter earnings fell 7.1% on a year-over-year basis, to $0.78 a share. This was markedly below our earlier call.

As a result, we have reduced our fiscal 2016 (ends October 31st) bottom line estimate by a nickel, to $1.90 a share. This would still represent a healthy almost 10% improvement when viewed against 2015's somewhat easy comparison. This year continues to be impacted by the soft natural gas prices. Meanwhile, the company's return in its investment in the Constitution Pipeline is being hurt by the New York State Department of Environmental Conservation's denial of a necessary water quality certificate. The company is appealing that decision, although how long this could delay progress on this venture is unclear.

Piedmont's acquisition is moving along nicely. The company entered into an agreement to be acquired by Duke Energy (DUK) back in October for $60.00 per share, and the assumption of about $1.8 billion in PNY's debt, effectively valuing the company at about $6.7 billion. The proposed transaction already has approval from shareholders and the Tennessee Regulatory Authority. Assuming the North Carolina Utilities Commission gives the deal a green light, we look for it to close before the end of 2016. The stock's quotation remains near the takeout price.

Bryan J. Fong | *September 2, 2016*

(A) Fiscal year ends October 31st.
(B) Diluted earnings. Excl. extraordinary item: '00, 8¢. Excl. nonrecurring gains (losses): '10, 41¢. Next earnings report due mid-Oct.
Quarters may not add to total due to change in shares outstanding.
(C) Dividends historically paid early-January, April, July, October. 2013 Q1 dividend paid in Q4 of 2012. ■ Div'd reinvest. plan available; 5% discount. (D) Includes deferred charges. In 2015: $861.6 million, $10.92/share.
(E) In millions, adjusted for stock split.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	50
Earnings Predictability	95

SOUTH JERSEY INDS. NYSE-SJI

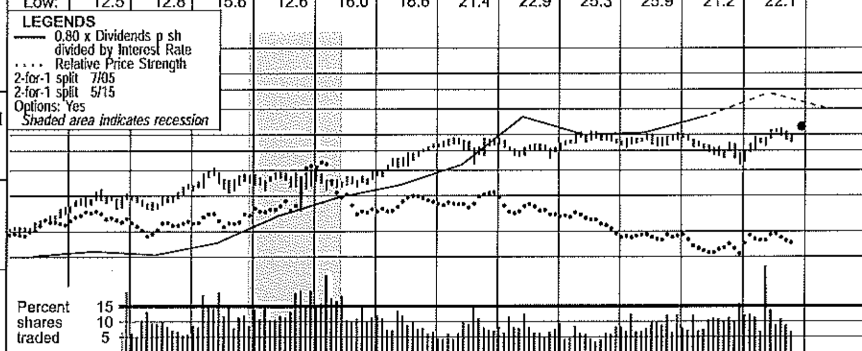
RECENT PRICE 32.95 | P/E RATIO 22.4 (Trailing: 20.7 Median: 17.0) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 3.3% | VALUE LINE

TIMELINESS 2 Lowered 10/28/16
SAFETY 2 Lowered 1/4/91
TECHNICAL 3 Lowered 11/18/16
BETA .80 (1.00 = Market)

High:	16.2	17.1	20.6	20.3	20.4	27.1	29.0	29.0	31.1	30.6	30.4	32.9
Low:	12.5	12.8	15.6	12.6	16.0	18.6	21.4	22.9	25.3	25.9	21.2	22.1

Target Price Range 2019 | 2020 | 2021

LEGENDS
—— 0.80 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 7/05
2-for-1 split 5/15
Options: Yes
Shaded area indicates recession



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+5%)	5%
Low	25	(-25%)	-2%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	9	0	9	0	0	1	0	0	0
to Sell	0	0	1	1	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	105	109	129
to Sell	72	77	61
Hld's(000)	43333	46585	56193

Percent shares traded 15 10 5

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	16.3	6.4
3 yr.	11.3	15.7
5 yr.	25.4	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
11.22	17.65	10.35	13.17	14.75	15.89	15.88	16.15	16.18	14.19	15.48	13.71	11.16	11.18	12.98	13.52	*12.40*	*12.80*	Revenues per sh	*15.10*
.97	.95	1.06	1.12	1.22	1.25	1.75	1.60	1.74	1.86	2.10	2.23	2.34	2.48	2.67	2.42	*2.45*	*2.55*	"Cash Flow" per sh	*2.95*
.54	.57	.61	.68	.79	.86	1.23	1.05	1.14	1.19	1.35	1.45	1.52	1.52	1.57	1.44	*1.45*	*1.50*	Earnings per sh A	*1.80*
.37	.37	.38	.39	.41	.43	.46	.51	.56	.61	.68	.75	.83	.90	.96	1.02	*1.06*	*1.10*	Div'ds Decl'd per sh B ■	*1.30*
1.11	1.41	1.74	1.18	1.34	1.60	1.26	.94	1.04	1.83	2.79	3.20	4.01	4.84	5.01	4.87	*3.25*	*3.90*	Cap'l Spending per sh	*5.10*
3.62	3.91	4.84	5.63	6.20	6.75	7.55	8.12	8.67	9.12	9.54	10.33	11.63	12.64	13.65	14.62	*16.90*	*18.30*	Book Value per sh C	*21.50*
46.00	47.44	48.83	52.92	55.52	57.96	58.65	59.22	59.46	59.59	59.75	60.43	63.31	65.43	68.33	70.97	*80.00*	*82.00*	Common Shs Outst'g D	*86.00*
13.0	13.6	13.5	13.3	14.1	16.6	11.9	17.2	15.9	15.0	16.8	18.4	16.9	18.9	18.0	17.9	*Bold figures are*		Avg Ann'l P/E Ratio	*16.0*
.85	.70	.74	.76	.74	.88	.64	.91	.96	1.00	1.07	1.15	1.08	1.06	.95	.90	*Value Line*		Relative P/E Ratio	*1.00*
5.2%	4.7%	4.6%	4.3%	3.7%	3.0%	3.2%	2.8%	3.1%	3.4%	3.0%	2.8%	3.2%	3.1%	3.4%	3.9%	*estimates*		Avg Ann'l Div'd Yield	*4.5%*
						931.4	956.4	962.0	845.4	925.1	828.6	706.3	731.4	887.0	959.6	*990*	*1050*	Revenues ($mill)	*1300*
						72.0	61.8	67.7	71.3	81.0	87.0	93.3	97.1	104.0	99.0	*110*	*120*	Net Profit ($mill)	*150*
						41.3%	41.9%	47.7%	23.0%	15.2%	22.4%	10.8%	- -	10.8%	5.9%	*25.0%*	*25.0%*	Income Tax Rate	*25.0%*
						7.7%	6.5%	7.0%	8.4%	8.8%	10.5%	13.2%	13.3%	11.7%	10.3%	*11.1%*	*11.4%*	Net Profit Margin	*11.5%*
						44.7%	42.7%	39.2%	36.5%	37.4%	40.5%	45.0%	45.1%	48.0%	49.2%	*41.5%*	*42.5%*	Long-Term Debt Ratio	*45.0%*
						55.3%	57.3%	60.8%	63.5%	62.6%	59.5%	55.0%	54.9%	52.0%	50.8%	*58.5%*	*57.5%*	Common Equity Ratio	*55.0%*
						801.1	839.0	848.0	856.4	910.1	1048.3	1337.6	1507.4	1791.9	2043.9	*2300*	*2600*	Total Capital ($mill)	*3350*
						920.0	948.9	982.6	1073.1	1193.3	1352.4	1578.0	1859.1	2134.1	2448.1	*2580*	*2700*	Net Plant ($mill)	*3000*
						10.1%	8.6%	8.9%	9.0%	9.5%	8.9%	7.4%	6.8%	6.4%	5.4%	*5.5%*	*5.0%*	Return on Total Cap'l	*5.0%*
						16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Shr. Equity	*8.0%*
						16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Com Equity	*8.0%*
						10.2%	6.7%	6.7%	6.4%	7.1%	6.7%	5.8%	4.8%	4.3%	2.8%	*2.0%*	*2.0%*	Retained to Com Eq	*2.0%*
						37%	48%	49%	51%	50%	52%	55%	59%	61%	71%	*77%*	*75%*	All Div'ds to Net Prof	*75%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1270.8 mill. **Due in 5 Yrs** $1140 mill.
LT Debt $808.7 mill. **LT Interest** $25.0 mill.
(Total interest coverage: 6.1x)

Leases, Uncapitalized Annual rentals $.8 mill.
Pension Assets-12/15 $184.8 mill.
Oblig. $254.2 mill.

Pfd Stock None

Common Stock 79,477,822 shs.
as of 11/1/16

MARKET CAP: $2.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	4.2	3.9	6.9
Other	562.5	427.4	350.9
Current Assets	566.7	431.3	357.8
Accts Payable	273.0	186.4	141.1
Debt Due	395.6	461.2	462.1
Other	181.6	184.9	209.2
Current Liab.	850.2	832.5	812.4
Fix. Chg. Cov.	432%	496%	572%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-1.5%	-4.0%	*3.0%*
"Cash Flow"	7.5%	6.0%	*2.5%*
Earnings	7.0%	4.0%	*3.0%*
Dividends	9.0%	9.5%	*6.5%*
Book Value	8.0%	8.5%	*8.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	255.6	122.6	128.8	224.4	731.4
2014	350.2	133.3	122.4	281.1	887.0
2015	383.0	177.7	141.1	257.8	959.6
2016	333.0	154.4	219.1	*283.5*	*990*
2017	*350*	*175*	*200*	*325*	*1050*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.76	.16	d.02	.62	1.52
2014	1.01	.15	d.05	.47	1.57
2015	.86	.03	d.07	.62	1.44
2016	.80	.12	.05	*.48*	*1.45*
2017	*.82*	*.12*	*Nil*	*.56*	*1.50*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	- -	.202	.202	.423	.83
2013	- -	.222	.222	.458	.90
2014	- -	.237	.237	.488	.96
2015	- -	.251	.251	.515	1.02
2016	- -	.264	.264	.536	

BUSINESS: South Jersey Industries, Inc. is a holding company. Its subsidiary, South Jersey Gas Co., distributes natural gas to 373,100 customers in New Jersey's southern counties. Gas revenue mix '15: residential, 45%; commercial, 22%; cogeneration and electric generation, 12%; industrial, 21%. Non-utility operations include: South Jersey Energy, South Jersey Resources Group, South Jersey Exploration, Marina Energy, South Jersey Energy Service Plus, and SJI Midstream. Has about 720 employees. Off./dir. own less than 1% of common shares; BlackRock, Inc., 10.5%; The Vanguard Group, Inc., 7.7% (3/16 proxy). Pres. & CEO: Michael J. Renna. Inc.: NJ. Address: 1 South Jersey Plaza, Folsom, NJ 08037. Tel.: 609-561-9000. Internet: www.sjindustries.com.

Shares of South Jersey Industries are trading near an all-time high price. The company posted impressive results for the September interim. This was largely due to performance at SJ Energy Services. This line benefited from strong production from its solar fleet and improved SREC (Solar Renewable Energy Credit) prices. A recovery related to the writedown of an energy facility and investment tax credits associated with solar project development also boosted results here. Both SJ Energy Group and utility South Jersey Gas reported lower operating losses for the period. The third quarter is traditionally weak for the utility.

South Jersey Gas has received regulatory approval to continue its Accelerated Infrastructure Replacement Program and to adjust rates to reflect prior investments. This allows the utility to invest up to $302.5 million over the next five years to continue the accelerated replacement of aging bare steel and cast iron mains with plastic pipe, which is more durable. It will recover these investments though annual rate adjustments, the first of which will occur next October. South Jersey Gas is also to recover $74.5 million in safety and reliability investments not previously reflected in rates through a base rate adjustment. In addition, the utility will issue customers a $10 million credit, mainly due to lower-than-expected wholesale gas costs.

We expect healthy operating improvement to late decade. The utility should further benefit from infrastructure investment and customer additions. Natural gas remains the fuel of choice within its service territory, and this business should continue to gain from customer conversions. Meanwhile, growth in the number of fuel management contracts augurs well for volumes and margins at SJ Energy Group. Elsewhere, SJ Energy Services should benefit from the healthy performance of its energy production assets.

This timely stock offers a good dividend yield. Moreover, South Jersey earns favorable marks for Safety, Financial Strength, Price Stability, and Earnings Predictability. But capital gains potential is underwhelming at this juncture, following a run-up in the share price.

Michael Napoli, CFA *December 2, 2016*

(A) Based on GAAP egs. through 2006, economic egs. thereafter. GAAP EPS: '07, $1.05; '08, $1.29; '09, $0.97; '10, $1.11; '11, $1.49; '12, $1.49; '13, $1.28; '14, $1.46; '15, $1.52. Excl. nonrecur. gain (loss): '01, $0.07; '08, $0.16; '09, ($0.22); '10, ($0.24); '11, $0.04; '12, ($0.03); '13, ($0.24); '14, ($0.11); '15, $0.08. Egs. may not sum due to rounding. Next egs. report due late February. (B) Div'ds paid early April, July, Oct., and late Dec. ■ Div. reinvest. plan avail. (C) Incl. reg. assets. In 2015: $521.0 mill., $7.34 per shr. (D) In mill., adj. for split.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	40
Earnings Predictability	80

SOUTHWEST GAS NYSE-SWX

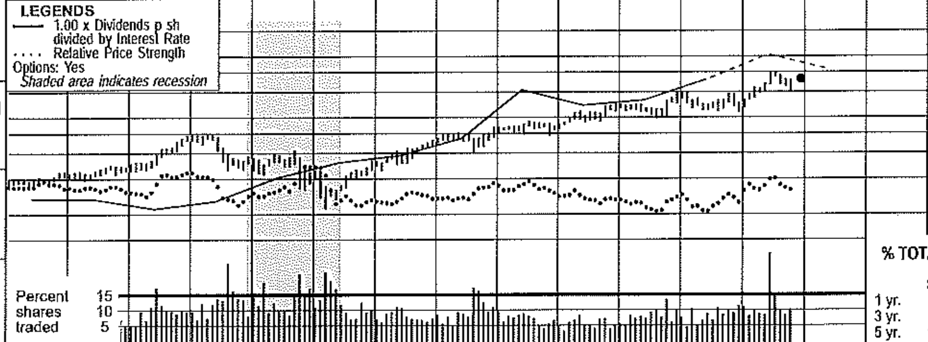
RECENT PRICE 74.45 | P/E RATIO 22.4 (Trailing: 23.3; Median: 16.0) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 2.5% | VALUE LINE

TIMELINESS 3 Lowered 9/30/16
SAFETY 3 Lowered 1/4/91
TECHNICAL 4 Lowered 11/18/16
BETA .75 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	28.1	39.4	39.9	33.3	29.5	37.3	43.2	46.1	56.0	64.2	63.7	79.6
Low:	23.5	26.0	26.5	21.1	17.1	26.3	32.1	39.0	42.0	47.2	50.5	53.5

Target Price Range 2019 | 2020 | 2021

LEGENDS
— 1.00 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+5%)	5%
Low	55	(-25%)	-3%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	8	20	10	0	1	1	0	1	1
to Sell	0	0	9	0	3	5	0	1	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	99	108	111
to Sell	87	85	102
Hld's(000)	37256	37942	37855

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	21.1	6.4
3 yr.	44.8	15.7
5 yr.	110.0	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
32.61	42.98	39.68	35.96	40.14	43.59	48.47	50.28	48.53	42.00	40.18	41.07	41.77	42.08	45.61	52.00	**52.60**	**53.55**	Revenues per sh	**61.55**
4.57	4.79	5.07	5.11	5.57	5.20	5.97	6.21	5.76	6.16	6.46	6.81	7.73	8.24	8.47	8.62	**9.25**	**10.10**	"Cash Flow" per sh	**12.30**
1.21	1.15	1.16	1.13	1.66	1.25	1.98	1.95	1.39	1.94	2.27	2.43	2.86	3.11	3.01	2.92	**3.20**	**3.50**	Earnings per sh A	**4.50**
.82	.82	.82	.82	.82	.82	.82	.86	.90	.95	1.00	1.06	1.18	1.32	1.46	1.62	**1.76**	**1.90**	Div'ds Decl'd per sh B■†	**2.40**
7.04	8.17	8.50	7.03	8.23	7.49	8.27	7.96	6.79	4.81	4.73	8.29	8.57	7.86	8.53	10.30	**11.25**	**11.75**	Cap'l Spending per sh	**13.10**
16.82	17.27	17.91	18.42	19.18	19.10	21.58	22.98	23.49	24.44	25.62	26.66	28.35	30.47	31.95	33.61	**34.90**	**36.20**	Book Value per sh	**40.40**
31.71	32.49	33.29	34.23	36.79	39.33	41.77	42.81	44.19	45.09	45.56	45.96	46.15	46.36	46.52	47.38	**48.00**	**49.00**	Common Shs Outst'g C	**52.00**
16.0	19.0	19.9	19.2	14.3	20.6	15.9	17.3	20.3	12.2	14.0	15.7	15.0	15.8	17.9	19.4	*Bold figures are*		Avg Ann'l P/E Ratio	**15.0**
1.04	.97	1.09	1.09	.76	1.10	.86	.92	1.22	.81	.89	.98	.95	.89	.94	.98	*Value Line*		Relative P/E Ratio	**.95**
4.2%	3.8%	3.6%	3.8%	3.5%	3.2%	2.6%	2.6%	3.2%	4.0%	3.2%	2.8%	2.8%	2.7%	2.7%	2.9%	*estimates*		Avg Ann'l Div'd Yield	**3.6%**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
2024.7	2152.1	2144.7	1893.8	1830.4	1887.2	1927.8	1950.8	2121.7	2463.6	**2525**	**2625**	Revenues ($mill)	**3200**
80.5	83.2	61.0	87.5	103.9	112.3	133.3	145.3	141.1	138.3	**155**	**175**	Net Profit ($mill)	**240**
37.3%	36.5%	40.1%	34.0%	34.7%	36.2%	36.2%	35.0%	35.7%	36.4%	**35.0%**	**35.0%**	Income Tax Rate	**35.0%**
4.0%	3.9%	2.8%	4.6%	5.7%	6.0%	6.9%	7.4%	6.7%	5.6%	**6.1%**	**6.7%**	Net Profit Margin	**7.5%**
60.6%	58.1%	55.3%	53.5%	49.1%	43.2%	49.2%	49.4%	52.4%	49.3%	**49.0%**	**49.0%**	Long-Term Debt Ratio	**49.0%**
39.4%	41.9%	44.7%	46.5%	50.9%	56.8%	50.8%	50.6%	47.6%	50.7%	**51.0%**	**51.0%**	Common Equity Ratio	**51.0%**
2287.8	2349.7	2323.3	2371.4	2291.7	2155.9	2576.9	2793.7	3123.9	3143.5	**3275**	**3475**	Total Capital ($mill)	**4100**
2668.1	2845.3	2983.3	3034.5	3072.4	3218.9	3343.8	3486.1	3658.4	3891.1	**4080**	**4275**	Net Plant ($mill)	**4850**
5.5%	5.5%	4.5%	5.4%	6.1%	6.4%	6.4%	6.3%	5.7%	5.5%	**6.0%**	**6.0%**	Return on Total Cap'l	**7.0%**
8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	**9.5%**	**10.0%**	Return on Shr. Equity	**11.5%**
8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	**9.5%**	**10.0%**	Return on Com Equity	**11.5%**
5.2%	4.8%	2.1%	4.1%	5.1%	5.3%	6.1%	6.1%	5.0%	4.0%	**4.0%**	**4.5%**	Retained to Com Eq	**5.5%**
42%	44%	63%	48%	43%	43%	40%	41%	47%	54%	**55%**	**53%**	All Div'ds to Net Prof	**52%**

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1642.4 mill. **Due in 5 Yrs** $525.0 mill.
LT Debt $1592.9 mill. **LT Interest** $72.0 mill.
(Total interest coverage: 4.3x) (49% of Cap'l)
Leases, Uncapitalized Annual rentals $7.0 mill.
Pension Assets-12/15 $780.5 mill.
Oblig. $1117.4 mill.
Pfd Stock None

Common Stock 47,482,068 shs.
as of 10/28/16

MARKET CAP: $3.5 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	39.6	36.0	85.2
Other	567.2	522.2	459.1
Current Assets	606.8	558.2	544.3
Accts Payable	168.0	164.9	138.8
Debt Due	24.2	37.5	49.5
Other	277.9	332.6	424.7
Current Liab.	470.1	535.0	613.0
Fix. Chg. Cov.	395%	401%	411%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.5%	5.0%
"Cash Flow"	5.0%	6.5%	6.5%
Earnings	8.5%	10.0%	7.0%
Dividends	6.0%	9.0%	8.5%
Book Value	5.5%	5.5%	4.0%

Calendar	QUARTERLY REVENUES ($ mill.) D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	613.5	411.6	387.3	538.4	1950.8
2014	608.4	453.2	432.5	627.7	2121.7
2015	734.2	538.6	505.4	685.4	2463.6
2016	731.2	547.7	540.0	**706.1**	**2525**
2017	**765**	**575**	**560**	**725**	**2625**

Calendar	EARNINGS PER SHARE A D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.73	.22	d.06	1.22	3.11
2014	1.51	.21	.04	1.25	3.01
2015	1.53	.10	d.10	1.38	2.92
2016	1.58	.19	.05	**1.38**	**3.20**
2017	**1.68**	**.22**	**.10**	**1.50**	**3.50**

Calendar	QUARTERLY DIVIDENDS PAID B■† Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.265	.295	.295	.295	1.15
2013	.295	.330	.330	.330	1.29
2014	.330	.365	.365	.365	1.43
2015	.365	.405	.405	.405	1.58
2016	.405	.450	.450	.450	

BUSINESS: Southwest Gas Corporation is a regulated gas distributor serving approximately 2.0 million customers in sections of Arizona, Nevada, and California. Comprised of two business segments: natural gas operations and construction services. 2015 margin mix: residential and small commercial, 85%; large commercial and industrial, 4%; transportation, 11%. Total throughput: 2.1 billion therms. Has 5,876 employees. Officers & directors own 1.3% of common stock; BlackRock Inc., 9.6%; The Vanguard Group, Inc., 7.4%; GAMCO Investors, Inc., 6.4% (3/16 Proxy). Chairman: Michael J. Melarkey. Pres. & CEO: John Hester. Inc.: CA. Address: 5241 Spring Mountain Road, Las Vegas, Nevada 89193. Tel.: 702-876-7237. Internet: www.swgas.com.

Shares of Southwest Gas have come off a high-water mark in recent months. The company reported favorable comparisons for the September quarter. The construction services segment, Centuri, benefited from additional pipe replacement work with existing customers, incremental work from awarded bid contracts, and growth in the customer base. Earnings of $14.9 million here more than offset a net loss of $12.4 million at the natural gas operation due to seasonal factors. Nevertheless, the utility reported a lower deficit, thanks to positive returns on company-owned life insurance policies. Performance here was also supported by rate relief and customer additions. Looking forward, we expect that earnings per share will match the prior-year figure for the December quarter. For the full year, we look for healthy bottom-line improvement for Southwest Gas, on modest top-line gains.

Prospects appear favorable for the long term. The company's natural gas business ought to further benefit from customer growth, infrastructure tracker mechanisms, and expansion projects. Elsewhere, Centuri should continue to report solid performance. This business operates in 20 major markets in the United States and two major markets in Canada. Fundamentals appear solid here, considering the need to replace aging infrastructure. Centuri has a strong base of large utility clients to sustain and grow its operation. Many of these are multiyear pipe replacement programs.

The stock does not stand out at this time. The equity is ranked to perform in line with the broader market for the coming six to 12 months. Moreover, appreciation potential is subpar, as the shares are trading well within our Target Price Range. Though we anticipate healthy growth for the company in the coming years, the issue is currently trading at a premium valuation. The dividend yield is nothing special for a utility, either. However, it's worth mentioning that Southwest Gas earns favorable marks for Price Stability, Growth Persistence, and Earnings Predictability. A pullback in the share price may present conservative investors with a better entry point.

Michael Napoli, CFA *December 2, 2016*

(A) Diluted earnings. Excl. nonrec. gains (losses): '02, (10¢); '05, (11¢); '06, 7¢. Next egs. report due late February. (B) Dividends historically paid early March, June, September, and December. ■† Div'd reinvestment and stock purchase plan avail. (C) In millions. (D) Totals may not sum due to rounding.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	90
Earnings Predictability	85

UGI CORP. NYSE-UGI

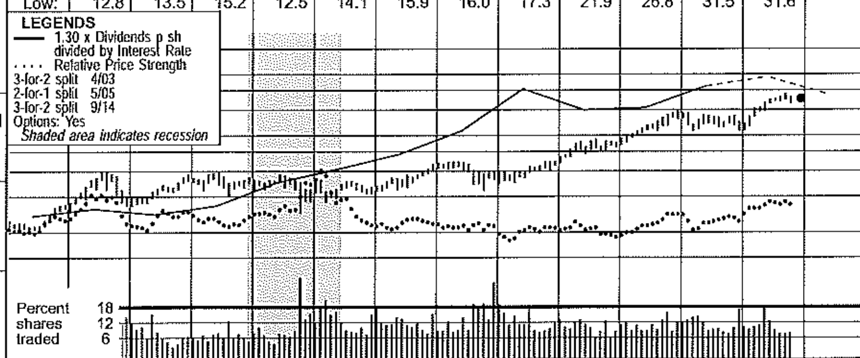
RECENT PRICE 45.67 | P/E RATIO 20.9 (Trailing: 22.2; Median: 15.0) | RELATIVE P/E RATIO 1.09 | DIV'D YLD 2.1% | VALUE LINE

TIMELINESS 4 Lowered 11/18/16
SAFETY 2 Raised 9/17/04
TECHNICAL 3 Lowered 11/18/16
BETA .90 (1.00 = Market)

High:	20.0	19.3	19.8	19.2	18.3	21.7	22.4	22.4	28.8	39.7	38.6	48.1	
Low:	12.8	13.5	15.2	12.5	14.1	15.9	16.0	17.3	21.9	26.8	31.5	31.6	

Target Price Range 2019 | 2020 | 2021

LEGENDS
— 1.30 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
3-for-2 split 4/03
2-for-1 split 5/05
3-for-2 split 9/14
Options: Yes
Shaded area indicates recession



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(-10%)	-1%
Low	30	(-35%)	-7%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	7	4	1	0	3	2	0	1	2
to Sell	0	2	2	0	3	2	0	1	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	170	170	229
to Sell	141	158	148
Hld's(000)	133006	134051	135283

Percent shares traded 18 / 12 / 6

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	29.3	6.4
3 yr.	80.9	15.7
5 yr.	179.1	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.50	20.09	17.76	23.62	24.63	31.10	33.01	34.24	41.27	35.25	34.01	36.31	38.56	42.10	47.92	38.65	32.84	38.25	Revenues per sh A	43.05
1.16	1.32	1.36	1.59	1.63	2.09	2.05	2.26	2.48	2.82	2.87	2.75	3.05	3.75	4.05	4.20	4.35	4.80	"Cash Flow" per sh	5.30
.35	.47	.60	.76	.81	1.15	1.10	1.18	1.33	1.57	1.59	1.37	1.17	1.59	1.92	2.01	2.05	2.35	Earnings per sh AB	2.80
.34	.35	.36	.38	.40	.43	.46	.48	.50	.52	.60	.68	.71	.74	.79	.89	.94	.95	Div'ds Decl'd per sh C ■	1.04
.58	.64	.76	.79	.87	1.01	1.21	1.39	1.44	1.85	2.11	2.15	2.01	2.84	2.64	2.83	3.00	3.25	Cap'l Spending per sh	3.25
2.04	2.08	2.55	4.45	5.43	6.35	6.95	8.26	8.80	9.78	11.10	11.79	13.21	14.59	15.39	15.55	17.05	17.65	Book Value per sh D	22.70
121.47	122.83	124.66	128.10	153.63	157.20	158.18	159.97	161.09	162.78	164.38	167.75	169.06	170.88	172.73	173.12	173.15	170.00	Common Shs Outst'g E	170.00
13.6	12.1	11.4	12.6	13.4	13.8	14.0	15.1	13.3	10.3	10.9	15.0	16.4	15.4	15.8	17.7	19.3		Avg Ann'l P/E Ratio	12.0
.88	.62	.62	.72	.71	.73	.76	.80	.80	.69	.69	.94	1.04	.87	.83	.90	1.06		Relative P/E Ratio	.75
7.0%	6.2%	5.3%	3.9%	3.7%	2.7%	3.0%	2.7%	2.9%	3.2%	3.5%	3.3%	3.7%	3.0%	2.6%	2.5%	2.4%		Avg Ann'l Div'd Yield	3.1%

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
5221.0	5476.9	6648.2	5737.8	5591.4	6091.3	6519.2	7194.7	8277.3	6691.1	5685.7	6505	Revenues ($mill) A	7315
176.2	191.8	215.5	258.5	261.0	232.9	199.4	278.1	337.2	353.8	360.0	410	Net Profit ($mill)	485
30.5%	23.8%	30.6%	29.4%	32.0%	29.8%	34.8%	27.6%	30.6%	30.0%	30.0%	30.0%	Income Tax Rate	30.0%
3.4%	3.5%	3.2%	4.5%	4.7%	3.8%	3.1%	3.9%	4.1%	5.3%	6.3%	6.3%	Net Profit Margin	6.6%
64.1%	60.7%	58.4%	56.2%	44.0%	51.6%	60.0%	58.7%	56.4%	56.1%	56.5%	55.5%	Long-Term Debt Ratio	49.5%
35.9%	39.3%	41.6%	43.8%	56.0%	48.4%	40.0%	41.3%	43.6%	43.9%	43.5%	44.5%	Common Equity Ratio	50.5%
3064.6	3360.7	3405.0	3630.0	3256.7	4088.0	5580.7	6034.7	6092.7	6133.8	6665	6775	Total Capital ($mill)	7660
2214.7	2397.4	2449.5	2903.6	3053.2	3204.5	4233.1	4480.2	4543.7	4994.1	5490	6035	Net Plant ($mill)	8000
7.5%	7.4%	7.9%	8.9%	10.1%	7.4%	5.6%	6.6%	7.5%	7.7%	5.5%	6.0%	Return on Total Cap'l	6.4%
16.0%	14.5%	15.2%	16.2%	14.3%	11.8%	8.9%	11.2%	12.7%	13.1%	12.5%	13.5%	Return on Shr. Equity	12.5%
16.0%	14.5%	15.2%	16.2%	14.3%	11.8%	8.9%	11.2%	12.7%	13.1%	12.5%	13.5%	Return on Com Equity	12.5%
9.4%	8.7%	9.5%	10.9%	8.9%	6.0%	3.6%	6.1%	7.6%	7.4%	7.0%	8.5%	Retained to Com Eq	8.0%
41%	40%	38%	33%	38%	49%	60%	45%	40%	43%	45%	39%	All Div'ds to Net Prof	36%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $4300.9 mill. Due in 5 Yrs $2124 mill.
LT Debt $3774.7 mill. LT Interest $242 mill.
(Total interest coverage: 4.2x)

Leases, Uncapitalized Annual rentals $73.4 mill.
Pension Assets-9/15 $472 mill. Oblig. $466 mill.

Pfd Stock None

Common Stock 173,246,168 shares as of 7/31/16

MARKET CAP: $7.9 bill. (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	419.5	369.7	909.2
Other	1243.5	1090.1	972.9
Current Assets	1663.0	1459.8	1882.1
Accts Payable	459.8	392.9	337.0
Debt Due	288.0	447.9	526.2
Other	683.1	838.1	726.1
Current Liab.	1430.9	1678.9	1589.3
Fix. Chg. Cov.	338%	338%	340%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	3.0%	1.0%
"Cash Flow"	8.5%	8.0%	4.5%
Earnings	7.5%	4.0%	4.5%
Dividends	7.0%	8.5%	4.0%
Book Value	11.0%	9.0%	7.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	2018	2542	1374	1259	7194.7
2014	2316	3163	1486	1311	8277.3
2015	2005	2456	1148	1082	6691.1
2016	1607	1972	1131	976	5685.7
2017	1810	2175	1335	1185	6505

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.60	.99	.09	d.09	1.59
2014	.70	1.23	.10	d.11	1.92
2015	.66	1.23	.03	.01	2.01
2016	.64	1.24	.23	d.05	2.05
2017	.68	1.28	.27	.02	2.25

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.175	.175	.18	.18	.71
2013	.18	.18	.19	.19	.74
2014	.19	.19	.20	.22	.80
2015	.22	.22	.23	.23	.90
2016	.23	.238	.238	.238	

BUSINESS: UGI Corp. operates six business segments: AmeriGas Propane (accounted for 21.7% of net income in 2015), UGI International (18.8%), Gas Utility (41.2%), Midstream & Marketing (38.8%), and Corp. & Other -21%. UGI Utilities distributes natural gas and electricity to over 617,000 customers mainly in Pennsylvania; 27%-owned AmeriGas Partners is the largest U.S. propane marketer, serving about 1.3 million users in 50 states. Acquired remaining 80% interest in Antargaz (3/04); Energy Transfer Partners (1/12). Wellington Management Co. holds 9.6% of stock; officers/dir., about 3% (12/15 proxy). Has 8,500 empls. CEO: John L. Walsh. Inc.: PA. Address: 460 N. Gulph Rd., King of Prussia, PA 19406. Telephone: 610-337-1000. Internet: www.ugicorp.com.

Since our September review, shares of UGI Corp. are trading relatively unchanged. This comes after the company registered mixed financial results for the fourth quarter and the fiscal year, ended September 30th.

Both the top line and volumes were impacted by warmer-than-normal weather patterns. With the exception of UGI International, all of the company's operating segments experienced a downturn in revenue contributions. The former has been getting a boost from the previously completed Finagaz acquisition. Meanwhile, the AmeriGas Propane division, which represents the lion's share of overall operations, saw its revenues drop almost 20% this past year. Weather patterns drove down consumer demand, and the year-to-year downturn in commodity prices, when compared to 2015's figures, further exacerbated this problem. On balance, retail gallons sold fell by double digits across the company's domestic operations. And overall system throughput on the UGI Utilities arm fell off, as well. Despite the lower volumes, a tight hold on cost controls and a reduced share count equated to a modest 2% rise in earnings, to $2.05 a share, slightly below our call.

That said, the company appears poised to show improvement in fiscal 2017. UGI's revenues ought to rebound nicely this year, as market rates for propane and other fossil fuels have been on the mend since March of this year. Meanwhile, we look for recent acquisitions to be further integrated with existing operations. Finally, we have raised our earnings outlook for this year by a dime to $2.35. This would represent an annual increase of almost 15%, and falls more in line with management's recently issued guidance range of $2.30-$2.45.

Since our last review, these shares have fallen two notches in Timeliness. They are now ranked to lag the broader market averages in the coming year. What's more, UGI stock has been trading above our Target Price Range for some time now. As a result, it offers unattractive appreciation potential for the pull to 2019-2021. The yield is modest, too. We think most investors would be better served elsewhere.

Bryan J. Fong — *December 2, 2016*

(A) Fiscal year ends Sept. 30. Quarterly sales and earnings may not sum to total due to rounding and/or change in share count. (B) Diluted earnings. Excludes nonrecur. items: '99, 13¢; '01, d1¢; '03, 22¢; '04, d6¢; '05, 3¢; '06, 5¢; '07, 12¢. Next egs. report due late Jan. (C) Dividends historically paid in early Jan., April, July, and Oct. ■ Div. reinvest. plan available. (D) Incl. intang. At 9/15: $3,564 mill., $20.61/sh. (E) In mill., adjusted for stock splits.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	85
Earnings Predictability	70

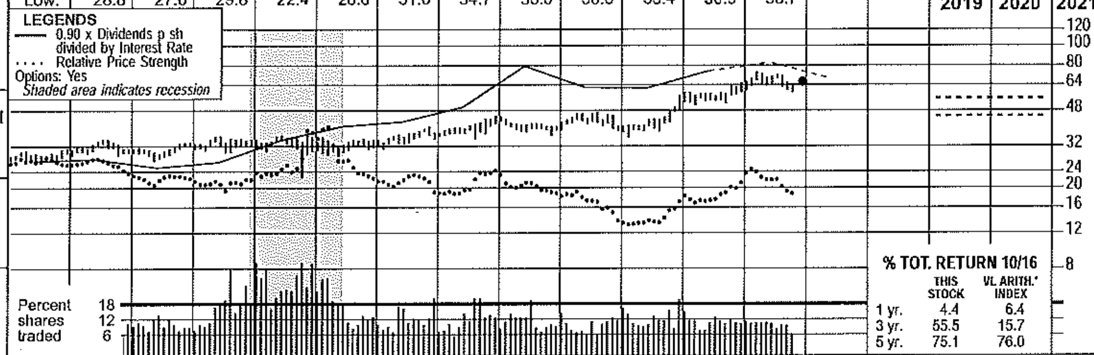
WGL HOLDINGS NYSE-WGL

RECENT PRICE **66.57** | P/E RATIO **19.8** (Trailing: 20.3; Median: 15.0) | RELATIVE P/E RATIO **1.04** | DIV'D YLD **2.9%** | **VALUE LINE**

TIMELINESS **3** Lowered 11/25/16
SAFETY **1** Raised 4/2/93
TECHNICAL **3** Lowered 10/28/16
BETA .75 (1.00 = Market)

High:	34.8	33.6	35.9	37.1	35.5	40.0	45.0	45.0	47.0	56.8	65.6	74.1
Low:	28.8	27.0	29.8	22.4	28.6	31.0	34.7	36.0	38.0	35.4	50.9	58.7

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(-15%)	-1%
Low	45	(-30%)	-5%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	9	0	0	0	0	0	0	0	0
to Sell	0	1	2	0	1	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	123	126	123
to Sell	106	121	106
Hld's(000)	33248	34219	34930

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	4.4	6.4
3 yr.	55.5	15.7
5 yr.	75.1	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
22.19	29.80	32.63	42.45	42.93	44.94	53.96	53.51	52.65	53.98	53.60	53.75	47.07	47.70	53.73	53.43	46.55	51.90	Revenues per sh A	53.65
3.20	3.24	2.63	4.00	3.87	3.97	3.84	3.89	4.34	4.44	4.11	4.01	4.53	4.29	4.80	5.60	5.50	5.70	"Cash Flow" per sh	6.00
1.79	1.88	1.14	2.30	1.98	2.13	1.94	2.09	2.44	2.53	2.27	2.25	2.68	2.31	2.68	3.16	3.27	3.40	Earnings per sh B	3.30
1.24	1.26	1.27	1.28	1.30	1.32	1.35	1.37	1.41	1.47	1.50	1.55	1.59	1.66	1.72	1.83	1.93	1.99	Div'ds Decl'd per sh C ■	2.05
2.67	2.68	3.34	2.65	2.33	2.32	3.27	3.33	2.70	2.77	2.57	3.94	4.87	6.04	7.63	9.33	16.35	17.30	Cap'l Spending per sh	19.10
15.31	16.24	15.78	16.25	16.95	17.80	18.86	19.83	20.99	21.89	22.82	23.49	24.64	24.65	24.08	24.97	27.00	29.00	Book Value per sh D	34.60
46.47	48.54	48.56	48.63	48.67	48.65	48.89	49.45	49.92	50.14	50.54	51.20	51.52	51.70	51.76	49.78	51.00	52.00	Common Shs Outst'g E	55.00
14.6	14.7	23.1	11.1	14.2	14.7	15.5	15.6	13.7	12.6	15.1	17.0	15.3	18.2	15.2	17.0	20.0		Avg Ann'l P/E Ratio	15.0
.95	.75	1.26	.63	.75	.78	.84	.83	.82	.84	.96	1.07	.97	1.02	.80	.86	1.10		Relative P/E Ratio	.95
4.8%	4.6%	4.8%	5.0%	4.6%	4.2%	4.5%	4.2%	4.2%	4.6%	4.4%	4.1%	3.9%	3.9%	4.2%	3.4%	2.9		Avg Ann'l Div'd Yield	4.1%
						2637.9	2646.0	2628.2	2706.9	2708.9	2751.5	2425.3	2466.1	2780.9	2659.8	2349.6	2700	Revenues ($mill) A	2950
						96.0	102.9	122.9	128.7	115.0	115.5	138.4	119.7	139.0	158.2	155	175	Net Profit ($mill)	185
						39.0%	39.1%	37.1%	39.1%	38.7%	42.4%	40.1%	30.2%	29.0%	39.9%	39.0%	39.0%	Income Tax Rate	39.0%
						3.6%	3.9%	4.7%	4.8%	4.2%	4.2%	5.7%	4.9%	5.0%	5.9%	6.6%	6.5%	Net Profit Margin	6.2%
						37.8%	37.9%	35.9%	33.3%	33.4%	32.3%	31.2%	28.7%	34.8%	42.6%	41.5%	41.5%	Long-Term Debt Ratio	43.5%
						60.4%	60.3%	62.4%	65.0%	65.0%	66.2%	67.3%	69.8%	63.8%	56.1%	57.5%	57.0%	Common Equity Ratio	55.5%
						1526.1	1625.4	1679.5	1687.7	1774.4	1818.1	1886.9	1826.8	1954.0	2215.6	2405	2635	Total Capital ($mill)	3430
						2067.9	2150.4	2208.3	2269.1	2346.2	2489.9	2667.4	2907.5	3314.4	3672.7	4070	4510	Net Plant ($mill)	6135
						7.6%	7.6%	8.5%	8.8%	7.6%	7.5%	8.3%	7.5%	8.1%	8.3%	8.0%	7.5%	Return on Total Cap'l	7.0%
						10.1%	10.2%	11.4%	11.4%	9.7%	9.4%	10.7%	9.2%	10.9%	12.4%	11.5%	11.0%	Return on Shr. Equity	9.5%
						10.3%	10.4%	11.6%	11.6%	9.9%	9.5%	10.8%	9.3%	11.0%	12.6%	11.5%	11.0%	Return on Com Equity	9.5%
						3.2%	3.5%	5.0%	5.0%	3.3%	3.4%	4.8%	2.6%	4.3%	5.4%	4.0%	4.5%	Retained to Com Eq	3.5%
						69%	66%	57%	57%	67%	64%	56%	72%	62%	58%	63%	61%	All Div'ds to Net Prof	62%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1552.6 mill. **Due in 5 Yrs** $329.3 mill.
LT Debt $1194.3 mill. **LT Interest** $50.5 mill.
(LT interest earned: 6.2x; total interest coverage: 5.7x) (45% of Total Capital)
Pension Assets-9/15 $1,218.7 mill.
Oblig. $1,218.7 mill.
Preferred Stock $28.2 mill. **Pfd. Div'd** $1.3 mill.

Common Stock 51,059,773 shs.
as of 7/31/16

MARKET CAP: $3.4 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	8.8	6.7	16.5
Other	826.7	774.7	804.1
Current Assets	835.5	781.4	820.6
Accts Payable	313.2	325.1	333.2
Debt Due	473.5	357.0	358.3
Other	233.6	300.8	303.4
Current Liab.	1020.3	982.9	994.9
Fix. Chg. Cov.	535%	535%	535%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	-.5%	0.5%
"Cash Flow"	2.0%	2.5%	3.5%
Earnings	2.5%	2.5%	3.5%
Dividends	3.0%	3.5%	2.5%
Book Value	4.0%	2.5%	6.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	686.7	891.4	478.1	409.9	2466.1
2014	680.5	1174.0	467.5	458.9	2780.9
2015	749.2	1001.7	441.2	467.7	2659.8
2016	613.4	835.7	440.6	459.9	2349.6
2017	695	915	520	570	2700

Fiscal Year Ends	EARNINGS PER SHARE A B Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1.14	1.75	d.03	d.55	2.31
2014	.99	1.84	.02	d.17	2.68
2015	1.16	2.02	.22	d.23	3.16
2016	1.18	1.78	.33	d.01	3.27
2017	1.21	1.81	.36	.02	3.40

Cal-endar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.39	.40	.40	.40	1.59
2013	.40	.42	.42	.42	1.66
2014	.42	.44	.44	.44	1.74
2015	.44	.463	.463	.463	1.83
2016	.463	.488	.488	.488	

BUSINESS: WGL Holdings, Inc. is the parent of Washington Gas Light, a natural gas distributor in Washington, D.C. and adjacent areas of VA and MD to resident'l and comm'l users (1,129,865 meters). Hampshire Gas, a federally regulated sub., operates an underground gas-storage facility in WV. Non-regulated subs.: Wash. Gas Energy Svcs. sells and delivers natural gas and provides energy-related products in the D.C. metro area; Wash. Gas Energy Sys. designs/installs comm'l heating, ventilating, and air cond. systems. BlackRock, Inc. owns 8.7% of common stock; Off./dir. less than 1% (1/16 proxy). Chrmn. & CEO: Terry D. McCallister. Inc.: D.C. and VA. Addr.: 101 Const. Ave., N.W., Washington, D.C. 20080. Tel.: 202-624-6410. Internet: www.wglholdings.com.

Shares of WGL Holdings are trading modestly higher in price since our September review. Indeed, the stock registered a gain of approximately 3%-5% over that time frame. In comparison, the S&P 500 Index was basically unchanged for this same period, logging an advance of roughly 0.5%.

Meanwhile, the company's fourth-quarter and fiscal-year (ended September 30th) financial results lined up with our expectations. On the downside, annual revenues fell 11.7%, to $2.349 billion. This reflected a downturn in utility and nonutility volumes of 19.9% and 3.8%, respectively. However, we view this apparent weakness in the regulated utility business as more of technicality, owing to the year-over-year decline in natural gas prices. On the profitability front, overall expenses declined 300 basis points, as a percentage of the top line. All told, these factors sent the bottom line 3.5% higher, to $3.27 a share. This was modestly above our earlier call of $3.10 for the year.

We have increased our outlook for fiscal 2017 accordingly. In fact, we added a dime to our earnings estimate, to $3.40 a share. This falls broadly in line with management's recently issued guidance range of $3.30-$3.50. WGL Holdings ought to benefit from continued additions of active customer meters. Over the course of fiscal 2016, the company increased its number of meters by 12,500. We look for similar growth to continue in 2017 and beyond. At the same time, management has been quite successful at identifying attractive capital growth projects needed to boost its geographic footprint in the D.C. region, and overall system throughput. On the downside, the Constitution Pipeline continues to be delayed as WGL works through some red tape with the NY State Department of Environmental Conservation.

At the recent quotation, we think most investors' funds could be better utilized elsewhere. The stock is ranked to just mirror the broader market averages in the coming year. And at this price point, it is trading above our Target Price Range, thus suggesting that it lacks appreciation potential for the pull to 2019-2021.

Bryan J. Fong *December 2, 2016*

(A) Fiscal years end Sept. 30th.
(B) Based on diluted shares. Excludes nonrecurring losses: '01, (13¢); '02, (34¢); '07, (4¢); '08, (14¢) discontinued operations: '06, (15¢). Qtly egs. may not sum to total, due to change in shares outstanding. Next earnings report due late Jan. (C) Dividends historically paid early February, May, August, and November. ■ Dividend reinvestment plan available.
(D) Includes deferred charges and intangibles. '15: $705.8 million, $14.18/sh.
(E) In millions.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	55
Earnings Predictability	75

October 14, 2016

WATER UTILITY INDUSTRY

INDUSTRY TIMELINESS: 44 (of 97)

The market sentiment for the Water Utility Industry has changed dramatically since we last reported on the group in July. Indeed, the value of almost all equities in this sector have declined by double digits on average, while the broader market averages have advanced modestly.

The underlying fundamentals of this sector remain basically unchanged. Following decades of underinvestment in new water infrastructure, utilities have substantially increased capital budgets to replace aging pipelines. As internally generated funds are not sufficient to fund all of the construction costs, debt and equity offerings are often required. Still, the financial condition of the industry remains very stable.

Most authorities realize that the capital being spent to modernize systems in their states are necessary and have generally had a constructive working relationship with water utilities they regulate.

Traditionally, a haven for conservative, income-oriented investors, we continue to urge subscribers to use more caution when getting involved in this sector because the low Beta coefficients can sometimes be misleading. Due to the industry's small market capitalization, a shift in institutional investor sentiment, can move the prices of stocks widely in a short period of time.

A Major Retreat

When we went to press last July, institutional investors, spurred by low rates on U.S. Treasury securities, had plowed large amounts of funds into this relatively minor segment of the U.S. equity market. Consisting of only nine stocks, the industry has a combined market capitalization of less than $25 billion. Long known to many retail investors for their modest, but well-defined earnings, many accounts have also been attracted to these shares because of their higher-than-average yields, solid dividend growth prospects, low volatility, and defensive nature. During the first half of 2016, however, demand for certain income-generating stocks reached peak levels. Indeed, the price of the equities in this industry were pushed to such all time highs, that their yields (the primary reason to buy the stocks) fell below the median of the *Value Line* universe. Over the past quarter, the stocks in this industry have declined 12.0% on average, while the S&P 500 Index has increased by about 3%.

Capital Expenditures And Balance Sheets

Currently, the average utility is in the process of replacing aging pipelines systems, upgrading and expanding wastewater facilities, and spending funds to be in compliance in EPA regulations. As an example, *American Water Works*, the largest and one of the best run utilities in the country broke out the age of its pipeline system at a recent presentation. (Keep in mind that the following numbers come from a company that has been spending heavily to upgrade its assets.) The age of its pipes are as follows: 21%, 30 years old or less; 51%, 31-69 years; 24%, 70 to 90 years; and 4%, at least 100 years. Over 25% of this elite utility's pipe are 70 years or older. So, clearly America's water infrastructure is aging and huge sums of capital will have to be invested for a long period of time. Fortunately, the industry and regulators are in agreement that not enough maintenance capital had been spent during the previous decades, as customers water bills, in many parts of the country were kept artificially low. An emphasis has been placed on modernizing most water districts at a gradual, but determined pace.

All of the regulated utilities in this group have relatively sound balance sheets. Capital outlays have increased for most companies, but they haven't had to take on excessive amounts of debt or issue too much new equity. We expect this trend to continue with companies probably being marginally more leveraged later in the decade.

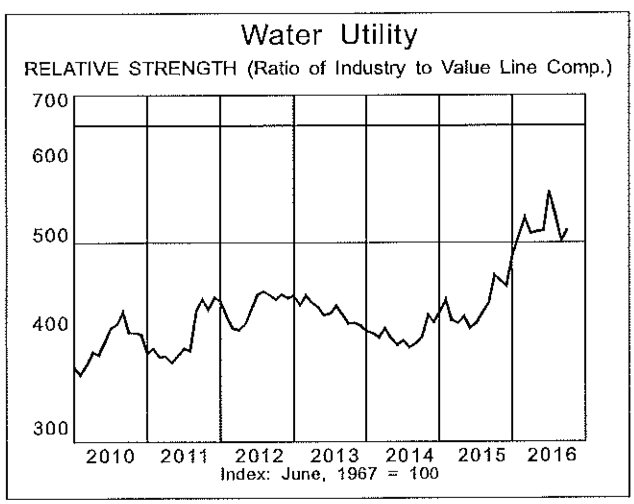
Regulation Continues To Be Reasonable

Utilities are governed by authorities in the state in which they operate. In addition to setting the rates for what water users pay, these regulatory bodies also have the power to set the return a company can earn. Even a very well run utility can have a difficult time being successful in a harsh regulatory climate. Fortunately, in this industry, both the utilities and regulator seem to be working toward a common goal. As we often point out, the regulatory impact on a utility's bottom line should never be underestimated.

Conclusion

The industry ranking here has plunged from among the highest of all those followed by *Value Line* to somewhere around the middle of the pack. Actually, we do not have a negative outlook on the operational side of the business. Our problem is simply that the valuations are too rich. And, while the recent sell off has improved the prospects of these stocks over the pull to 2019-2021, there is still not one that has above-average capital appreciation to that time. *Aqua American* comes close, and still may interest some conservative investors, willing to sacrifice some capital appreciation in return for safety. Also, of the nine equities, only *California Water* is expected to outperform the broader market averages in the year ahead.

James A. Flood



AMER. STATES WATER NYSE-AWR

RECENT PRICE 38.62 | P/E RATIO 22.7 (Trailing: 24.1 / Median: 20.0) | RELATIVE P/E RATIO 1.23 | DIV'D YLD 2.4% | VALUE LINE

TIMELINESS 3 Raised 8/19/16
SAFETY 2 Raised 7/20/12
TECHNICAL 2 Raised 10/14/16
BETA .70 (1.00 = Market)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	17.3	21.9	23.1	21.0	19.4	19.8	18.2	24.1	33.1	38.7	44.1
Low:	12.2	15.1	16.8	13.5	14.9	15.6	15.3	17.0	24.0	27.0	35.8

High 47.2, Low 37.3 (2016 to date)

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

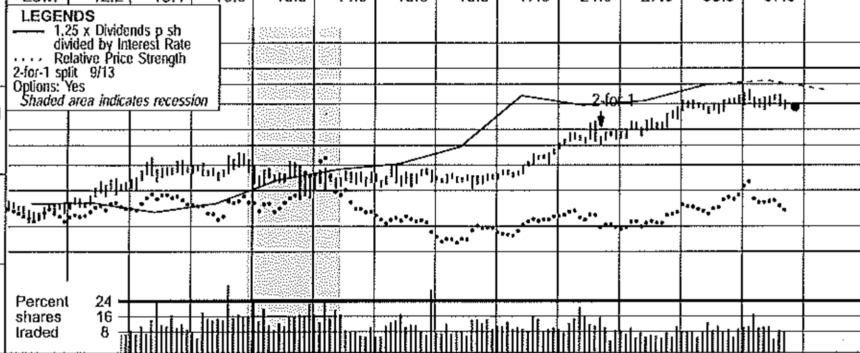
	Price	Gain	Ann'l Total Return
High	50	(+30%)	9%
Low	40	(+5%)	4%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	2	11	1	10	1	8	4	1	1
to Sell	1	2	1	2	2	2	3	2	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	88	100	95
to Sell	88	96	90
Hld's(000)	23016	22935	23585



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-1.2	17.7
3 yr.	56.2	23.7
5 yr.	169.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
6.08	6.53	6.89	6.99	6.81	7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	**12.35**	**12.90**	Revenues per sh	**15.50**
1.10	1.26	1.27	1.04	1.11	1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	**2.75**	**2.90**	"Cash Flow" per sh	**3.80**
.64	.67	.67	.39	.53	.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.60	**1.65**	**1.75**	Earnings per sh A	**2.25**
.43	.43	.44	.44	.44	.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	**.91**	**.96**	Div'd Decl'd per sh B■	**1.25**
1.51	1.59	1.34	1.88	2.51	2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	**2.45**	**2.45**	Cap'l Spending per sh	**2.75**
6.37	6.61	7.02	6.98	7.51	7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	**13.70**	**14.50**	Book Value per sh	**16.45**
30.24	30.24	30.36	30.42	33.50	33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	**36.50**	**36.50**	Common Shs Outst'g C	**37.00**
15.9	16.7	18.3	31.9	23.2	21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	**21.0**
1.03	.86	1.00	1.82	1.23	1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.25	*estimates*		Relative P/E Ratio	**1.30**
4.2%	3.9%	3.6%	3.5%	3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%			Avg Ann'l Div'd Yield	**2.6%**

CAPITAL STRUCTURE as of 6/30/16
Total Debt $384.7 mill. Due in 5 Yrs $41.6 mill.
LT Debt $320.9 mill. LT Interest $21.1 mill.
(40% of Cap'l)

Leases, Uncapitalized: Annual rentals $2.5 mill.
Pension Assets-12/15 $142.2 mill.
Oblig. $168.9 mill.
Pfd Stock None.

Common Stock 36,558,468 shs.
as of 8/1/16

MARKET CAP: $1.4 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
268.6	301.4	318.7	361.0	398.9	419.3	466.9	472.1	465.8	458.6	**450**	**470**	Revenues ($mill)	**575**
23.1	28.0	26.8	29.5	41.4	42.0	54.1	62.7	61.1	60.5	**60.0**	**64.0**	Net Profit ($mill)	**83.0**
40.5%	42.6%	37.8%	38.9%	43.2%	41.7%	39.9%	36.3%	38.4%	38.4%	**33.0%**	**36.0%**	Income Tax Rate	**36.0%**
12.2%	8.5%	6.9%	3.2%	5.8%	2.0%	2.5%	--	2.5%	.5%	**1.0%**	**1.5%**	AFUDC % to Net Profit	**1.0%**
48.6%	46.9%	46.2%	45.9%	44.3%	45.4%	42.2%	39.8%	39.1%	41.1%	**41.5%**	**42.5%**	Long-Term Debt Ratio	**57.0%**
51.4%	53.1%	53.8%	54.1%	55.7%	54.6%	57.8%	60.2%	60.9%	58.9%	**58.5%**	**57.5%**	Common Equity Ratio	**43.0%**
551.6	569.4	577.0	665.0	677.4	749.1	787.0	818.4	832.6	791.5	**855**	**920**	Total Capital ($mill)	**1065**
750.6	776.4	825.3	866.4	855.0	896.5	917.8	981.5	1003.5	1060.8	**1110**	**1150**	Net Plant ($mill)	**1370**
6.0%	6.7%	6.4%	5.9%	7.6%	7.1%	8.3%	8.9%	8.6%	9.0%	**8.5%**	**8.5%**	Return on Total Cap'l	**9.5%**
8.1%	9.3%	8.6%	8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	**12.0%**	**12.0%**	Return on Shr. Equity	**13.5%**
8.1%	9.3%	8.6%	8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	**12.0%**	**12.0%**	Return on Com Equity	**13.5%**
2.7%	3.9%	3.1%	3.2%	5.8%	5.3%	6.6%	6.8%	5.7%	6.0%	**5.5%**	**5.5%**	Retained to Com Eq	**6.0%**
67%	58%	64%	61%	47%	49%	45%	47%	53%	54%	**55%**	**55%**	All Div'ds to Net Prof	**56%**

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	76.0	4.4	4.5
Accts Receivable	18.8	18.9	20.4
Other	114.7	109.4	107.9
Current Assets	209.5	132.7	132.8
Accts Payable	41.9	50.6	54.0
Debt Due	.3	28.3	63.8
Other	57.1	44.6	42.4
Current Liab.	99.3	123.5	160.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	6.0%	4.5%	*4.0%*
"Cash Flow"	9.0%	8.0%	*6.0%*
Earnings	12.0%	12.0%	*6.0%*
Dividends	6.5%	10.0%	*7.0%*
Book Value	5.5%	6.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	110.6	120.7	130.9	109.9	472.1
2014	102.0	115.6	138.3	109.9	465.8
2015	100.9	114.6	133.0	110.1	458.6
2016	93.5	112.0	**134.5**	**115**	**450**
2017	**98.0**	**117**	**143**	**117**	**475**

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.35	.43	.53	.30	1.61
2014	.28	.39	.54	.36	1.57
2015	.32	.41	.56	.31	1.60
2016	.28	.45	**.58**	**.34**	**1.65**
2017	**.33**	**.47**	**.62**	**.33**	**1.75**

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.14	.14	.1775	.1775	.64
2013	.1775	.1775	.2025	.2025	.76
2014	.2025	.2025	.213	.213	.83
2015	.213	.213	.224	.224	.87
2016	.224	.224	.224		

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden States Water Company, it supplies water to 260,151 customers in 75 cities and 10 counties. Service areas include the greater metropolitan areas of Los Angeles and Orange Counties. The company also provides electric utility services to 23,846 customers in the city of Big Bear Lake and in areas of San Bernardino County. Sold Chaparral City Water of Arizona (6/11). Has 707 employees. Blackrock Inc., owns 9.9% of out. shares; Vanguard, 9.4%; off. & dir. 1.4%. (4/16 Proxy). Chairman: Lloyd Ross. President & Chief Executive Officer: Robert J. Sprowls. Inc: CA. Address: 630 East Foothill Boulevard, San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water did not raise the dividend at the last board meeting. Over the past four years, the company has increased the payout annually, but chose not to do so in August. We do not think that investors should be too concerned as management is probably awaiting a decision on a pending rate case and it also kept the dividend the same for five straight quarters in 2011-2012.

The long-awaited outcome of an important rate case should be revealed in the coming months. We have been anticipating this for quite some time now. Through its Golden State Water Company (GSWC), the company filed a petition for rate relief for the years 2016 to 2018. The original filing was made in 2014, but the drought in California led to complications as consumers were ordered to reduce water usage. In any case, California regulators have acted constructively with water utilities in the recent past.

Earnings will probably be flat this year. By the time any rate hike is implemented, it will be too late to have a major impact on 2016's bottom line. (We are assuming that the utility doesn't take the gain all at once or restate 2016 financials.) So, for now, we are sticking with our share-net estimate of $1.65.

Next year should be better. No matter how American States chooses to recognize the 2016 rate relief, higher tariffs for two years should be in effect for 2017. As a result, share earnings could rise 6% to $1.75.

The nonregulated sector of the business should continue to grow. The ASUS subsidiary was established to use the company's expertise in the private segment of the economy where it can earn higher returns on equity. The focus here has been the privatization of the water systems at U.S. Army facilities. Thus far, ASUS has won 10 contracts, and many more bases are in the process of placing contracts out in a formal bidding process. American States seems to be holding its own as it recently won a 50-year contract with the Elgin Air Force Base.

These shares do not stand out for either short- or long-term potential performance. The Timeliness rank is 3 (Average), and return prospects to 2019-2021 are subpar.

James A. Flood *October 14, 2016*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢) '11, 10¢. Next earnings report due early November.

(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.

(C) In millions, adjusted for split.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	75
Earnings Predictability	85

AMERICAN WATER NYSE-AWK

RECENT PRICE 71.91 | P/E RATIO 24.9 (Trailing: 26.1; Median: NMF) | RELATIVE P/E RATIO 1.35 | DIV'D YLD 2.2% | VALUE LINE

TIMELINESS 4 Lowered 9/30/16
SAFETY 3 New 7/25/08
TECHNICAL 3 Lowered 9/30/16
BETA .65 (1.00 = Market)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	23.7	23.0	25.8	32.8	39.4	45.1	56.2	61.2	85.2
Low:	16.5	16.2	19.4	25.2	31.3	37.0	41.1	48.4	58.9

Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

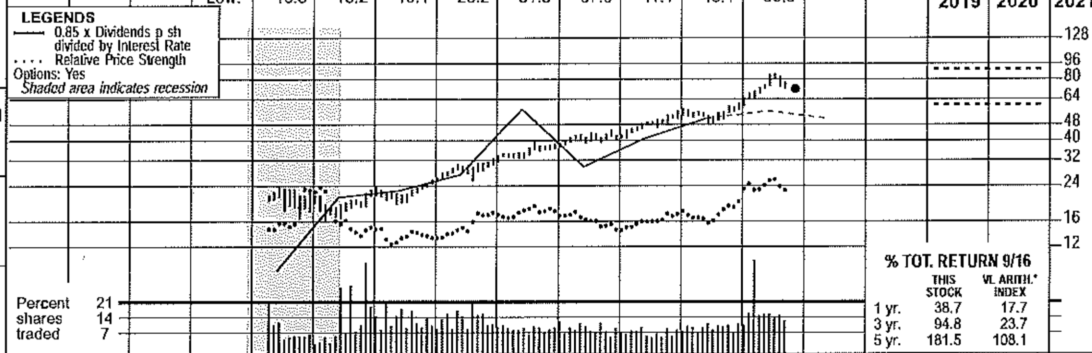
	Price	Gain	Ann'l Total Return
High	90	(+25%)	8%
Low	60	(-15%)	-1%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	10	6	0	10	0	0	2
to Sell	0	0	0	6	0	3	0	0	2

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	241	313	280
to Sell	227	232	254
Hld's(000)	147408	158854	150627



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	38.7	17.7
3 yr.	94.8	23.7
5 yr.	181.5	108.1

2000	2001	2002	2003	2004	2005	2006	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
--	--	--	--	--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	*18.75*	*19.30*	Revenues per sh	*22.20*
--	--	--	--	--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	*5.45*	*5.75*	"Cash Flow" per sh	*6.55*
--	--	--	--	--	--	d.97	d2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	*2.85*	*3.05*	Earnings per sh A	*3.75*
--	--	--	--	--	--	--	--	.40	.82	.86	.90	1.21	.84	1.21	1.33	*1.47*	*1.61*	Div'd Decl'd per sh B■	*2.05*
--	--	--	--	--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	*7.25*	*7.10*	Cap'l Spending per sh	*6.00*
--	--	--	--	--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	*29.05*	*30.95*	Book Value per sh D	*34.60*
--	--	--	--	--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	*178.50*	*180.00*	Common Shs Outst'g C	*187.50*
--	--	--	--	--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	*Bold figures are*		Avg Ann'l P/E Ratio	*20.0*
--	--	--	--	--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.04	*Value Line*		Relative P/E Ratio	*1.25*
--	--	--	--	--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	*estimates*		Avg Ann'l Div'd Yield	*2.7%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $6854.0 mil. Due in 5 Yrs $1272.0 mil.
LT Debt $5850.0 mil. LT Interest $297.0 mil.
(53% of Cap'l)

Leases, Uncapitalized: Annual rentals $14.0 mill.
Pension Assets 12/15 $1376.0 mill
Oblig. $1584.0 mill.
Pfd Stock $11.0 mill. **Pfd Div'd** $.2 mill

Common Stock 177,902,408 shs.
as of 7/28/16

MARKET CAP: $12.8 billion (Large Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
2093.1	2214.2	2336.9	2440.7	2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	*3345*	*3475*	Revenues ($mill)	*4160*
d155.8	d342.3	187.2	209.9	267.8	304.9	374.3	369.3	429.8	476.0	*505*	*550*	Net Profit ($mill)	*700*
--	--	37.4%	37.9%	40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	*39.0%*	*38.5%*	Income Tax Rate	*37.0%*
--	--	--	--	--	--	6.2%	5.1%	5.1%	1.4%	*2.5%*	*3.0%*	AFUDC % to Net Profit	*3.0%*
56.1%	50.9%	53.1%	56.9%	56.8%	55.7%	53.9%	52.4%	52.4%	53.7%	*55.0%*	*55.0%*	Long-Term Debt Ratio	*55.0%*
43.9%	49.1%	46.9%	43.1%	43.2%	44.2%	46.1%	47.6%	47.4%	46.2%	*45.0%*	*45.0%*	Common Equity Ratio	*45.0%*
8692.8	9245.7	8750.2	9289.0	9561.3	9580.3	9635.5	9940.7	10364	10911	*11610*	*12300*	Total Capital ($mill)	*14540*
8720.6	9318.0	9991.8	10524	11059	11021	11739	12391	12900	13933	*14600*	*15400*	Net Plant ($mill)	*17200*
NMF	NMF	3.7%	3.8%	4.4%	4.8%	5.4%	5.1%	5.5%	5.7%	*5.5%*	*6.0%*	Return on Total Cap'l	*6.0%*
NMF	NMF	4.6%	5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	*9.5%*	*10.0%*	Return on Shr. Equity	*10.5%*
NMF	NMF	4.6%	5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	*9.5%*	*10.0%*	Return on Com Equity	*10.5%*
NMF	NMF	3.0%	1.8%	2.8%	3.5%	3.6%	4.7%	4.3%	4.7%	*4.5%*	*5.0%*	Retained to Com Eq	*5.0%*
--	--	34%	65%	56%	52%	57%	40%	50%	50%	*52%*	*53%*	All Div'ds to Net Prof	*55%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	23.1	45.0	75.0
Accts Receivable	267.1	255.0	240.0
Other	638.3	357.0	376.0
Current Assets	661.4	657.0	691.0
Accts Payable	285.8	126.0	148.0
Debt Due	511.1	682.0	1004.0
Other	444.1	725.0	588.0
Current Liab.	1241.0	1533.0	1740.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	--	3.0%	4.5%
"Cash Flow"	--	9.0%	5.5%
Earnings	--	13.0%	8.0%
Dividends	--	10.0%	10.5%
Book Value	--	2.5%	4.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	636.1	724.3	829.2	712.3	2901.9
2014	679.0	754.8	846.1	731.4	3011.3
2015	698.0	782.0	896.0	783.0	3159.0
2016	743.0	827.0	*945*	*830*	*3345*
2017	*760*	*870*	*990*	*855*	*3475*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.32	.57	.84	.33	2.06
2014	.39	.62	.86	.52	2.39
2015	.44	.68	.96	.56	2.64
2016	.46	.77	*1.00*	*.62*	*2.85*
2017	*.50*	*.82*	*1.08*	*.65*	*3.05*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.23	.23	.25	.50	1.21
2013	--	.28	.28	.28	.84
2014	.28	.31	.31	.31	1.21
2015	.31	.34	.34	.34	1.33
2016	.34	.375	.375		

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in over 47 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military basas with the maintenance and upkeep as well. Regulated operations made up 86.8% of 2015 revenues. New Jarsey is its largest market accounting for 25.7% of regulated revenues. Has 6,700 employees. BlackRock, Inc., owns 10.2% of outstanding shares; Vanguard, 7.2%; officers & directors, less than 1.0%. (4/16 Proxy). President & CEO: Susan Story. Chairman: George Mackenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com.

Acquisitions and cost controls remain key earnings drivers for American Water Works. The domestic water industry in the U.S. is dominated by small municipally-run authorities. Many of these water districts do not have the financial wherewithal to replace aging pipeline infrastructures and to make costly adjustments to be in compliance with EPA regulations. This is a major advantage for American Water, by far the largest of investor-owned water utilities in the U.S., as it buys small (and lately mid sized) water authorities on a continual basis, which gradually increases the company customer base. Also, because there are such redundancies in the water industry, the purchased utility can be absorbed and run substantially more efficiently.

American Water Works should post another solid bottom-line gain in 2016. Management uses an internal "operational and maintenance expense-to-operating revenues" ratio as a measure of how it's performing on the cost front. The ratio has declined from 44.2% in 2010 to 35.9% at year-end 2015. At June 30th, the percentage improved 70 basis points to 35.2%. All told, we now think the company's share net can rise 8%, to $2.85 this year.

We expect 2017 to be strong, too. Through its many subsidiaries, the company is currently seeking $100 million in higher rates in five different states. With all of this in effect for the full year, some subject to refund, we think American Water's share earnings can climb another 7%, to $3.05.

The capital budget is large, but manageable. Over the five-year period from 2016 to 2020, the company projects that $5.5 billion will be required for upgrading its infrastructure along with another $600 million more needed for acquisitions. Internal funds will be able to finance a majority of these expenditures, but the rest will probably mostly come from the debt markets, as the company is not prone to issue new equity. (Since 2009, shares outstanding have increased by less than 2%.)

These shares are ranked to not keep pace with the broader market averages in the year ahead. Moreover, the stock's prospects to 2019-2021 are subpar.

James A. Flood *October 14, 2016*

(A) Diluted earnings. Excludes nonrecurring losses: '08, $4.62; '09, $2.63; '11, $0.07. Discontinued operations: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due early November. Quarterly earnings may not sum due to rounding. (B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available. Two payments made in 4th quarter of 2012. (C) In millions. (D) Includes intangibles. In 6/16: $1.31 billion, $7.38/share. (E) Pro forma numbers for '06 & '07.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	90
Earnings Predictability	95

AQUA AMERICA NYSE-WTR

RECENT PRICE 29.73 | P/E RATIO 21.7 (Trailing: 25.4 Median: 22.0) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 2.6% | VALUE LINE

TIMELINESS 3 Lowered 8/26/16
SAFETY 2 Raised 4/20/12
TECHNICAL 3 Lowered 10/7/16
BETA .70 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	45	(+50%)	13%
Low	35	(+20%)	7%

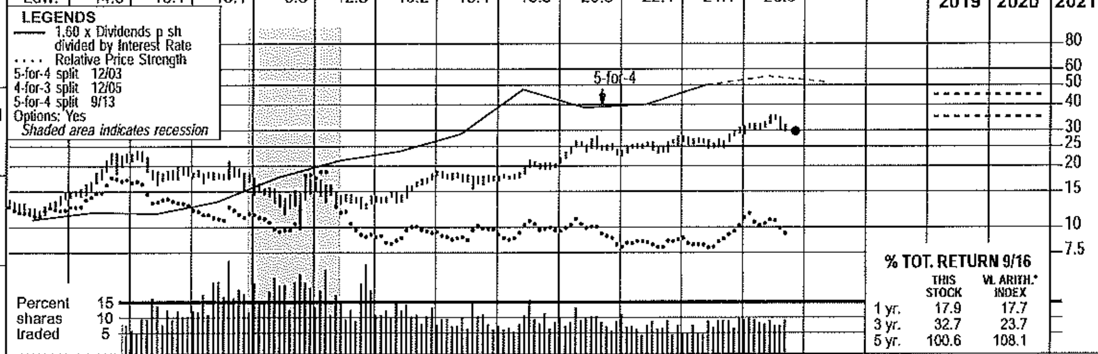
Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	1	0	8	13	1	0	7	0
to Sell	1	0	0	4	0	3	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	182	190	179
to Sell	149	147	152
Hld's(000)	83005	85054	85171

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	23.4	23.8	21.3	17.6	17.2	18.4	19.0	21.5	28.1	28.2	31.1	35.8	
Low:	14.0	16.1	15.1	9.8	12.3	13.2	15.4	16.8	20.6	22.4	24.4	28.3	



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	17.9	17.7
3 yr.	32.7	23.7
5 yr.	100.6	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
1.97	2.16	2.28	2.38	2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	*4.70*	*4.95*	Revenues per sh	*5.85*
.61	.69	.76	.77	.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	*2.10*	*2.25*	"Cash Flow" per sh	*2.65*
.37	.41	.43	.46	.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	*1.35*	*1.45*	Earnings per sh A	*1.75*
.23	.24	.26	.28	.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	*.74*	*.80*	Div'd Decl'd per sh B■	*1.05*
.93	.87	.96	1.06	1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	*2.00*	*2.00*	Cap'l Spending per sh	*2.10*
3.08	3.32	3.49	4.27	4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	*10.45*	*11.10*	Book Value per sh	*13.75*
139.78	142.47	141.49	154.31	158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	*177.50*	*178.00*	Common Shs Outst'g C	*180.00*
18.2	23.6	23.6	24.5	25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	*Bold figures are*		Avg Ann'l P/E Ratio	*22.5*
1.18	1.21	1.29	1.40	1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.19	*Value Line*		Relative P/E Ratio	*1.40*
3.3%	2.5%	2.5%	2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	*estimates*		Avg Ann'l Div'd Yield	*2.7%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1840.4 mill. Due in 5 Yrs $441.5 mill.
LT Debt $1775.9 mill. LT Interest $78.6 mill.
(50% of Cap'l)

Pension Assets-12/15 $238.6 mill.
Oblig. $306.5 mill.
Pfd Stock None
Common Stock 177,329,959 shares
as of 7/20/16

MARKET CAP: $5.3 billion (Large Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
533.5	602.5	627.0	670.5	726.1	712.0	757.8	768.6	779.9	814.2	*830*	*875*	Revenues ($mill)	*1050*
92.0	95.0	97.9	104.4	124.0	144.8	153.1	205.0	213.9	201.8	*240*	*260*	Net Profit ($mill)	*315*
39.6%	38.9%	39.7%	39.4%	39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	*7.0%*	*7.0%*	Income Tax Rate	*20.0%*
--	--	--	--	--	--	--	1.1%	2.4%	3.1%	*2.0%*	*2.5%*	AFUDC % to Net Profit	*3.0%*
51.6%	55.4%	54.1%	55.6%	56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	*50.0%*	*51.0%*	Long-Term Debt Ratio	*51.5%*
48.4%	44.6%	45.9%	44.4%	43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	*50.0%*	*49.0%*	Common Equity Ratio	*48.5%*
1904.4	2191.4	2306.6	2495.5	2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	*3700*	*4040*	Total Capital ($mill)	*5100*
2506.0	2792.8	2997.4	3227.3	3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	*4700*	*5075*	Net Plant ($mill)	*5700*
6.4%	5.9%	5.7%	5.6%	5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	*7.5%*	*7.5%*	Return on Total Cap'l	*7.5%*
10.0%	9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	*13.0%*	*13.0%*	Return on Shr. Equity	*12.5%*
10.0%	9.7%	9.3%	9.4%	10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	*13.0%*	*13.0%*	Return on Com Equity	*12.5%*
3.7%	3.2%	2.8%	2.7%	3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	*6.0%*	*6.0%*	Retained to Com Eq	*5.0%*
63%	67%	70%	72%	65%	60%	61%	50%	52%	60%	*55%*	*55%*	All Div'ds to Net Prof	*60%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	4.1	3.2	4.9
Receivables	97.0	99.1	99.7
Inventory (AvgCst)	12.8	12.4	11.7
Other	38.6	13.7	16.1
Current Assets	152.5	128.4	132.4
Accts Payable	60.0	56.5	40.7
Debt Due	70.0	52.3	64.5
Other	95.3	84.4	74.0
Current Liab.	225.3	193.2	179.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	2.5%	4.5%
"Cash Flow"	8.0%	8.0%	6.0%
Earnings	8.5%	13.0%	7.0%
Dividends	8.0%	7.5%	9.0%
Book Value	7.0%	7.0%	7.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	180.0	195.7	204.3	188.6	768.6
2014	182.7	195.3	210.5	191.4	779.9
2015	190.3	205.8	221.0	197.1	814.2
2016	192.6	208.4	*227*	*202*	*830*
2017	*205*	*220*	*240*	*210*	*875*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.26	.30	.36	.24	1.16
2014	.24	.31	.38	.27	1.20
2015	.27	.32	.38	.17	1.14
2016	.29	.33	*.42*	*.31*	*1.35*
2017	*.31*	*.37*	*.45*	*.32*	*1.45*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.132	.132	.132	.14	.54
2013	.14	.14	.152	.152	.58
2014	.152	.152	.165	.165	.63
2015	.165	.165	.178	.178	.69
2016	.178	.178	.1913		

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Has 1,617 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues '2015: residential, 69%; commercial, 18%; industrial & other, 13%. Officers and directors own less than 1% of the common stock; Vangurad Group, 7.7%; Blackrock, Inc, 7.3%; State Street Capital, 5.5% (3/16 Proxy). President & Chief Executive Officer: Christopher Franklin. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Tel.: 610-525-1400. Internet: www.aquaamerica.com.

Aqua America should maintain its solid dividend growth rate, in our opinion. Last quarter, the company raised the interim payout to $0.1913 a share, a healthy 7.5% increase. This hike was in line with Aqua's historical dividend policy over the past 10-year period. We project the annual advance will be in the 7.5%-9.0% range through 2019-2021.

Earnings are on track for a solid comeback in 2016. We expect the positive earnings momentum from the first two quarters to pick up steam in the second half of the year. The utility, through its various subsidiaries, has received permission to charge higher fees in five separate states this year. With all of these increases in effect for the second half and an easy final-quarter comparison, Aqua's share net will likely climb 18%, compared to 2015's depressed level.

Additional rate relief should make 2017 a good year, too. Large rate cases are currently pending in New Jersey and Ohio. While we don't believe state regulators will grant the utility its full revenue requests, Aqua's constructive relationship with state authorities ought to help. All told, for the full year, we think the increased tariffs from these two states, together with the increases from 2016, should enable the company's share net to rise 7%-8%, to $1.35.

Shares of Aqua have performed poorly of late. The price of WTR (like others in the water utility group) spiked in the first half of the year due in part to strong demand for higher-yielding stocks with solid dividend growth prospects resulting from, in part, low interest rates on U.S Treasuries. As a result of institutional investors recently reducing their positions in this sector significantly, the prices of water stocks have tumbled. Indeed, WTR has declined about 20% in value since our July report. By comparison, the S&P 500 Index has risen roughly 3%.

This equity is ranked to mirror the market in the coming year. Over the next 3- to 5-year period, conservative, income-oriented investors may want to take a look here, however. Capital appreciation is a tad below the *Value Line* median, but the stock has a 2 (Above Average) rank for Safety and a solid balance sheet.

James A. Flood *October 14, 2016*

(A) Diluted egs. Excl. nonrec. gains: '00, 2¢; '01, 2¢; '02, 4¢; '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due early November.
(B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount).
(C) In millions, adjusted for stock splits.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	70
Earnings Predictability	90

CALIFORNIA WATER NYSE-CWT

RECENT PRICE 30.96 | P/E RATIO 28.9 (Trailing: 33.7 Median: 20.0) | RELATIVE P/E RATIO 1.56 | DIV'D YLD 2.2% | VALUE LINE

TIMELINESS 1 Raised 8/19/16
SAFETY 3 Lowered 7/27/07
TECHNICAL 2 Lowered 9/30/16
BETA .75 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	45	(+45%)	12%
Low	30	(-5%)	2%

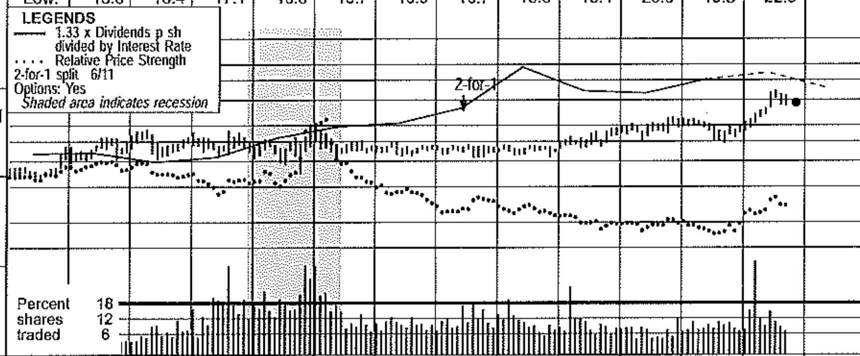
Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	1	1	1	4	1	1	1	1	1
Options	0	0	0	25	0	0	0	0	0
to Sell	0	0	0	2	0	2	1	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	69	100	87
to Sell	75	72	78
Hld's(000)	30579	34783	35876

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	21.1	22.9	22.7	23.3	24.1	19.8	19.4	19.3	23.4	26.4	26.0	35.6		
Low:	15.6	16.4	17.1	13.8	16.7	16.9	16.7	16.8	18.4	20.3	19.5	22.5		



Target Price Range 2019 | 2020 | 2021

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	48.9	17.7
3 yr.	71.6	23.7
5 yr.	110.5	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
8.08	8.13	8.67	8.18	8.59	8.72	8.10	8.88	9.90	10.82	11.05	12.00	13.34	12.23	12.50	12.29	*12.60*	*13.00*	Revenues per sh	*14.70*
1.26	1.10	1.32	1.26	1.42	1.52	1.36	1.56	1.66	1.93	1.93	2.07	2.32	2.21	2.47	2.22	*2.30*	*2.65*	"Cash Flow" per sh	*3.25*
.66	.47	.63	.61	.73	.74	.67	.75	.95	.98	.91	.86	1.02	1.02	1.19	.94	*1.00*	*1.35*	Earnings per sh A	*1.60*
.55	.56	.56	.56	.57	.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	*.69*	*.71*	Div'd Decl'd per sh B ■	*.99*
1.23	2.04	2.91	2.19	1.87	2.01	2.14	1.84	2.41	2.66	2.97	2.83	3.04	2.58	2.76	3.69	*3.65*	*3.55*	Cap'l Spending per sh	*3.30*
6.45	6.48	6.56	7.22	7.83	7.90	9.07	9.25	9.72	10.13	10.45	10.76	11.28	12.54	13.11	13.41	*13.55*	*14.25*	Book Value per sh C	*16.00*
30.29	30.36	30.36	33.86	36.73	36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	47.74	47.81	47.88	*48.00*	*48.00*	Common Shs Outst'g D	*50.00*
19.6	27.1	19.8	22.1	20.1	24.9	29.2	26.1	19.8	19.7	20.3	21.3	17.9	20.1	19.7	24.8	*Bold figures are*		Avg Ann'l P/E Ratio	*23.0*
1.27	1.39	1.08	1.26	1.06	1.33	1.58	1.39	1.19	1.31	1.29	1.34	1.14	1.13	1.04	1.26	*Value Line*		Relative P/E Ratio	*1.45*
4.3%	4.4%	4.5%	4.2%	3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	*estimates*		Avg Ann'l Div'd Yield	*2.6%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $637.0 mill. Due in 5 Yrs $175.3 mill.
LT Debt $555.8 mill. LT Interest $27.2 mill.
(47% of Cap'l)

Pension Assets-12/15 $328.6 mill.
Oblig. $501.9 mill.

Pfd Stock None

Common Stock 47,971,000 shs.

MARKET CAP: $1.5 billion (Mid Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
334.7	367.1	410.3	449.4	460.4	501.8	560.0	584.1	597.5	588.3	*605*	*625*	Revenues ($mill) E	*735*
25.6	31.2	39.8	40.6	37.7	36.1	42.6	47.3	56.7	45.0	*48.0*	*65.0*	Net Profit ($mill)	*80.0*
37.4%	39.9%	37.7%	40.3%	39.5%	40.5%	37.5%	30.3%	33.0%	35.3%	*32.0%*	*32.0%*	Income Tax Rate	*35.0%*
10.6%	8.3%	8.6%	7.6%	4.2%	7.6%	8.0%	4.3%	2.7%	4.2%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
43.5%	42.9%	41.6%	47.1%	52.4%	51.7%	47.8%	41.6%	40.1%	44.4%	*46.0%*	*45.0%*	Long-Term Debt Ratio	*42.0%*
55.9%	56.6%	58.4%	52.9%	47.6%	48.3%	52.2%	58.4%	59.9%	55.6%	*54.0%*	*55.0%*	Common Equity Ratio	*58.0%*
670.1	674.9	690.4	794.9	914.7	931.5	908.2	1024.9	1045.9	1154.5	*1200*	*1250*	Total Capital ($mill)	*1375*
941.5	1010.2	1112.4	1198.1	1294.3	1381.1	1457.1	1515.8	1590.4	1701.8	*1775*	*1815*	Net Plant ($mill)	*1900*
5.2%	5.9%	7.1%	6.5%	5.5%	5.5%	6.3%	6.0%	6.3%	5.1%	*5.0%*	*6.5%*	Return on Total Cap'l	*7.0%*
6.8%	8.1%	9.9%	9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	*7.5%*	*9.5%*	Return on Shr. Equity	*10.0%*
6.8%	8.1%	9.9%	9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	*7.5%*	*9.5%*	Return on Com Equity	*10.0%*
1.0%	1.8%	3.8%	3.8%	3.0%	2.3%	3.4%	3.4%	4.1%	2.0%	*2.5%*	*4.5%*	Retained to Com Eq	*4.0%*
86%	77%	61%	60%	66%	71%	62%	56%	55%	71%	*69%*	*52%*	All Div'ds to Net Prof	*62%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	19.6	8.8	30.8
Other	134.5	118.8	128.2
Current Assets	154.1	127.6	159.0
Accts Payable	59.4	66.4	77.6
Debt Due	85.7	40.2	81.2
Other	72.6	41.9	43.2
Current Liab.	217.7	148.5	202.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.0%	5.0%	3.0%
"Cash Flow"	6.0%	5.5%	6.0%
Earnings	5.0%	4.0%	7.5%
Dividends	1.5%	2.0%	7.0%
Book Value	5.5%	5.0%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	111.4	154.6	184.4	133.7	584.1
2014	110.5	158.4	191.2	137.4	597.5
2015	122.0	144.4	183.5	138.4	588.3
2016	121.7	152.4	*190*	*140.9*	*605*
2017	*130*	*155*	*195*	*145*	*625*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.01	.28	.61	.12	1.02
2014	d.11	.36	.70	.24	1.19
2015	.03	.21	.52	.18	.94
2016	d.02	.24	*.58*	*.20*	*1.00*
2017	*.05*	*.35*	*.65*	*.30*	*1.35*

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.1575	.1575	.1575	.1575	.63
2013	.16	.16	.16	.16	.64
2014	.1625	.1625	.1625	.1625	.65
2015	.1675	.1675	.1675	.1675	.67
2016	.1725	.1725	.1725		

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 477,900 customers in 85 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '15: residential, 70%; business, 20%; industrial, 5%; public authorities, 4%; other 1%. '15 reported depreciation rate: 4.0%. Has 1,155 employees. President, Chairman, and CEO: Peter C. Nelson. Inc.: DE. Address: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group shares have dipped about 10% in price since our July review. Similar to a handful of other equities in the utility industry, CWT stock recently etched an all-time high in 2016, and investors unsurprisingly took this opportune time to take some profits off the table. However, California posted better-than-anticipated financial results in the second quarter, leading us to believe the selloff may be short-lived.

Revenues and earnings improved nicely compared to prior-year figures. California Water generated $152 million in sales during the second quarter (a 6% annual increase), largely due to higher accrued unbilled revenues. Moreover, we are lifting our full-year revenue call by $5 million, to $605 million, supported by continued collections on drought expenses (conditions that have yet to improve), as well as potentially positive rate activity on the horizon for 2017. On the earnings front, second-quarter net income was $0.02 better than we expected, at $0.24 a share, marking a healthy double-digit improvement over the year-earlier tally. Thinner operating and maintenance expenses, namely pension costs, gave the bottom line a boost. Though, at this time, our 2016 share net estimate remains unchanged, at $1.00.

Capital investment will likely be the main theme in California's long-term story. Over the 3- to 5-year stretch, it is probable that CWT will spend more than $3.00 per share annually to revitalize aging infrastructure, water tanks, and water supply. The company has already spent more in the first half of 2016 than it has in past years, and we think this trend ought to continue further out. In addition, acquisitions are likely to be an supplemental growth avenue. The balance sheet is in good shape, with a decent amount of cash on hand and less than 50% of its total capital comprised of debt.

These favorably ranked shares are best suited for near-term accounts. Meanwhile, those looking to add a security to the buy-and-hold portion of their portfolio should exercise patience, as the stock is already trading inside of our 3- to 5-year Target Price Range.

Nicholas P. Patrikis *October 14, 2016*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (4¢); '01, 2¢; '02, 4¢; '11, 4¢. Next earnings report due late November.
(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. intangible assets. In '15 : $7.5 mill., $0.16/sh.
(D) In millions, adjusted for splits.
(E) Excludes non-reg. rev.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	35
Earnings Predictability	75

CONNECTICUT WATER NDQ-CTWS

RECENT PRICE 49.21 | P/E RATIO 22.2 (Trailing: 22.8, Median: 20.0) | RELATIVE P/E RATIO 1.20 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS 3 Lowered 9/2/16
SAFETY 3 New 1/18/13
TECHNICAL 3 Lowered 10/7/16
BETA .60 (1.60 = Market)

High:	28.2	27.7	25.6	29.0	26.4	27.9	29.1	32.8	36.4	37.5	39.9	56.6			Target Price Range	
Low:	21.9	20.3	22.4	19.3	17.3	20.0	23.3	26.2	27.8	31.0	33.2	37.5			2019 | 2020 | 2021	

2019-21 PROJECTIONS

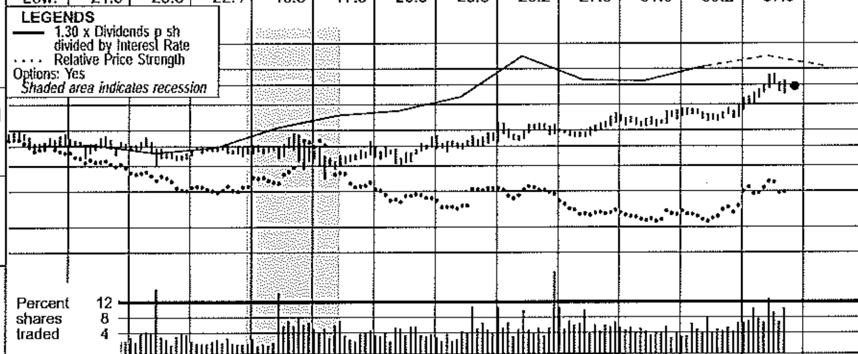
	Price	Gain	Ann'l Total Return
High	55	(+10%)	5%
Low	40	(-20%)	-2%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	2	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	51	45	49
to Sell	44	48	52
Hld's(000)	4535	4728	5138



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	39.7	17.7
3 yr.	68.4	23.7
5 yr.	131.0	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
5.70	5.93	5.77	5.91	6.04	5.81	5.68	7.05	7.24	6.93	7.65	7.93	9.47	8.29	8.45	8.58	*8.70*	*9.20*	Revenues per sh	*13.35*
1.73	1.78	1.78	1.89	1.91	1.62	1.52	1.90	1.95	1.93	2.04	2.11	2.64	2.63	2.97	3.18	*3.35*	*3.45*	"Cash Flow" per sh	*3.75*
1.09	1.13	1.12	1.15	1.16	.88	.81	1.05	1.11	1.19	1.13	1.13	1.53	1.66	1.92	2.04	*2.20*	*2.25*	Earnings per sh A	*2.50*
.79	.80	.81	.83	.84	.85	.86	.87	.88	.90	.92	.94	.96	.98	1.01	1.05	*1.12*	*1.20*	Div'd Decl'd per sh B■	*1.35*
1.43	1.86	1.98	1.49	1.58	1.96	1.96	2.24	2.44	3.28	3.06	2.61	2.79	3.02	4.11	4.29	*5.80*	*4.35*	Cap'l Spending per sh	*3.35*
8.92	9.25	10.06	10.46	10.94	11.52	11.60	11.95	12.23	12.67	13.05	13.50	20.95	17.92	18.83	20.02	*20.70*	*21.75*	Book Value per sh D	*22.90*
7.28	7.65	7.94	7.97	8.04	8.17	8.27	8.38	8.46	8.57	8.68	8.76	8.85	11.04	11.12	11.19	*11.35*	*11.50*	Common Shs Outst'g C	*12.00*
18.2	21.5	24.3	23.5	22.9	28.6	29.0	23.0	22.2	18.4	20.7	23.0	19.4	18.4	17.5	17.6	*Bold figures are*		Avg Ann'l P/E Ratio	*19.0*
1.18	1.10	1.33	1.34	1.21	1.52	1.57	1.22	1.34	1.23	1.32	1.44	1.23	1.03	.92	.89	*Value Line*		Relative P/E Ratio	*1.20*
4.0%	3.3%	3.0%	3.0%	3.1%	3.4%	3.6%	3.6%	3.6%	4.1%	3.9%	3.6%	3.2%	3.2%	3.0%	2.9%	*estimates*		Avg Ann'l Div'd Yield	*2.8%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $203.8 mill. Due in 5 Yrs $19.3 mill.
LT Debt $200.9 mill. LT Interest $8.0 mill.
(47% of Cap'l)

Leases, Uncapitalized: Annual rentals $.3 mill.
Pension Assets-12/15 $56.6 mill.
Oblig. $75.8 mill.

Pfd Stock $0.8 mill. Pfd Divd NMF

Common Stock 11,231,037 shs.

MARKET CAP: $550 million (Small Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
46.9	59.0	61.3	59.4	66.4	69.4	83.8	91.5	94.0	96.0	*99.0*	*106*	Revenues ($mill)	*160*
6.7	8.8	9.4	10.2	9.8	9.9	13.6	18.3	21.3	22.7	*25.0*	*26.0*	Net Profit ($mill)	*30.0*
23.5%	32.4%	27.2%	19.5%	35.2%	41.3%	32.0%	28.0%	14.4%	4.2%	*7.5%*	*19.0%*	Income Tax Rate	*28.0%*
--	--	1.7%	--	--	--	1.7%	2.0%	2.4%	2.2%	*2.5%*	*2.5%*	AFUDC % to Net Profit	*2.0%*
44.4%	47.8%	46.9%	50.6%	49.5%	53.2%	49.0%	46.9%	45.7%	44.2%	*46.0%*	*47.0%*	Long-Term Debt Ratio	*47.5%*
55.1%	51.8%	52.7%	49.1%	50.2%	46.5%	50.8%	52.9%	54.1%	55.8%	*54.0%*	*53.0%*	Common Equity Ratio	*52.5%*
174.1	193.2	196.5	221.3	225.6	254.2	364.6	373.6	386.8	401.7	*435*	*470*	Total Capital ($mill)	*525*
268.1	284.3	302.3	325.2	344.2	362.4	447.9	471.9	506.9	546.3	*565*	*590*	Net Plant ($mill)	*675*
4.9%	5.5%	5.9%	5.5%	5.4%	4.9%	4.8%	5.9%	6.4%	6.6%	*6.5%*	*6.5%*	Return on Total Cap'l	*6.5%*
6.9%	8.7%	9.0%	9.3%	8.6%	8.3%	7.3%	9.2%	10.1%	10.1%	*10.5%*	*10.5%*	Return on Shr. Equity	*11.0%*
7.0%	8.7%	9.1%	9.4%	8.7%	8.3%	7.3%	9.2%	10.2%	10.1%	*10.5%*	*10.5%*	Return on Com Equity	*11.0%*
NMF	1.6%	1.9%	2.3%	1.6%	1.4%	2.8%	3.8%	4.8%	4.9%	*5.0%*	*5.0%*	Retained to Com Eq	*5.0%*
105%	82%	79%	76%	81%	83%	62%	59%	53%	52%	*51%*	*53%*	All Div'ds to Net Prof	*54%*

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.5	.7	1.1
Accounts Receivable	12.0	11.0	11.6
Other	21.7	15.3	18.2
Current Assets	36.2	27.0	30.9
Accts Payable	10.0	11.9	11.6
Debt Due	4.4	2.8	2.9
Other	9.2	22.2	15.8
Current Liab.	23.6	36.9	30.3

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.0%	4.5%	*8.0%*
"Cash Flow"	4.0%	7.5%	*4.0%*
Earnings	4.0%	9.0%	*5.0%*
Dividends	2.0%	2.0%	*5.0%*
Book Value	6.5%	9.5%	*3.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	19.7	22.6	27.6	21.6	91.5
2014	20.3	25.4	27.6	20.7	94.0
2015	20.0	26.6	28.4	21.0	96.0
2016	21.6	26.1	*29.0*	*22.3*	*99.0*
2017	*23.0*	*28.0*	*32.0*	*23.0*	*106*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.24	.39	.86	.17	1.66
2014	.27	.67	.76	.22	1.92
2015	.28	.77	.79	.20	2.04
2016	.28	.89	*.83*	*.20*	*2.20*
2017	*.30*	*.79*	*.88*	*.28*	*2.25*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.238	.238	.2425	.2425	.962
2013	.2425	.2425	.2475	.2475	.98
2014	.2475	.2475	.2575	.2575	1.01
2015	.2575	.2575	.2675	.2675	1.05
2016	.2675	.2825	.2825		

BUSINESS: Connecticut Water Service, Inc. is a non-operating holding company, whose income is derived from earnings of its wholly-owned subsidiary companies (regulated water utilities). In 2015, 92% of net income was derived from these activities. Provides water services to 400,000 people in 77 municipalities throughout Connecticut and Maine. Acquired The Maine Water Company, January, 2012; Biddeford and Saco Water, December, 2012. Incorporated: Connecticut. Has 266 employees. Chairman/President/Chief Executive Officer: Eric W. Thornburg. Officers and directors own 2.6% of the common stock; BlackRock, Inc. 7.0%; (4/16 proxy). Address: 93 West Main Street, Clinton, CT 06413. Telephone: (860) 669-8636. Internet: www.ctwater.com.

Connecticut Water Service delivered mixed results in the second quarter. The New England water utility owner registered better-than-expected share-net of $0.89, well above our $0.72 call. The outperformance can largely be attributed to slimmer operating and maintenance expenses (nearly 20% lower than the prior year), coupled with reduced pension costs. On the other hand, revenues contracted slightly, on an annual basis, to about $26 million. The manner in which Connecticut Water is required to recognize revenues, mainly unbilled, resulted in a softer top-line figure for the June period. This was partly offset by beneficial surcharges in Maine and Connecticut.

As a consequence, we are simultaneously lowering and raising our 2016 top- and bottom-line outlooks, respectively. Unfavorable accounting methods may persist in the near term, spurring us to trim $2 million from this year's revenue estimate, to $99 million. Conversely, we are tacking a dime onto our full-year earnings estimate, to $2.20 a share, stemming largely from CTWS' drastically higher profits in the most recent quarter.

Robust capital spending and tuck-in acquisitions are likely to remain in the spotlight over the foreseeable future. The company is patiently awaiting town approval for its purchase of Heritage Village Water Company, a $20 million stock-for-stock transaction that would add approximately 40,000 people to its total service count. The deal is slated to close within the year. What's more, we think CTWS will be actively sourcing new opportunities to expand its footprint over the pull to late decade. On top of that, due to the industry's capital-intensive nature, investment in its aging infrastructure should be par for the course. In fact, we think the company could spend upward of $150 million over that time frame.

The stock price has cooled a bit since our July review. These neutrally ranked shares have declined roughly 10% in value over the past three months, scaling back from all-time highs set earlier this year. At recent levels, our model projects limited upside out to 2019-2021. Thus, we advise investors to wait for a more attractive entry point before committing funds.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Next earnings report due late November.
(B) Dividends historically paid in mid-March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) Includes intangibles. In 2015: $30.4 million/$2.72 a share.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	50
Earnings Predictability	85

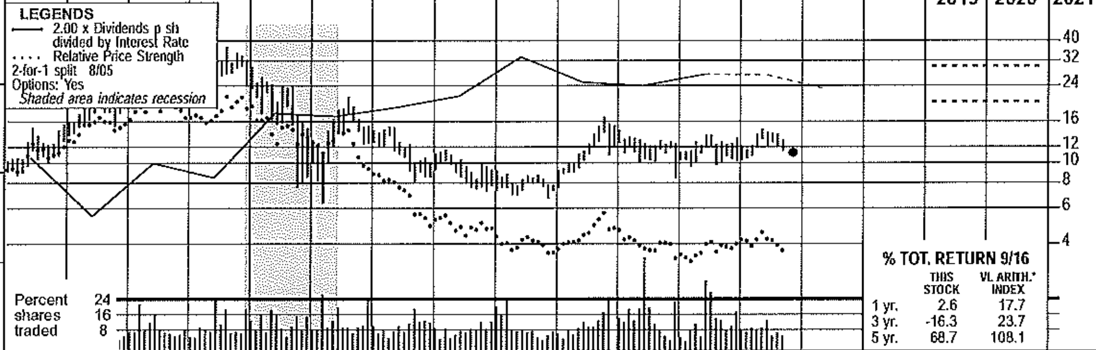
CONSOL. WATER CO. NDQ-CWCO

RECENT PRICE **11.25** | P/E RATIO **17.9** (Trailing: 21.6; Median: 25.0) | RELATIVE P/E RATIO **0.97** | DIV'D YLD **2.7%** | VALUE LINE

High:	22.5	31.8	37.5	29.8	21.3	15.1	11.7	9.2	16.9	14.5	13.8	14.7
Low:	13.6	19.8	23.3	7.6	6.4	8.1	7.3	6.7	7.5	8.4	9.6	10.3

TIMELINESS 3 Lowered 8/19/16
SAFETY 3 New 1/17/14
TECHNICAL 2 Raised 10/14/16
BETA .95 (1.00 = Market)

LEGENDS
— 2.00 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 8/05
Options: Yes
Shaded area indicates recession



Target Price Range 2019 | 2020 | 2021

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(+165%)	30%
Low	20	(+80%)	18%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	7	0	1	0	0	2	10	0	0
to Sell	0	0	0	0	0	2	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	34	37	43
to Sell	27	30	29
Hld's(000)	6793	6967	6934

Percent shares traded 24 16 8

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	2.6	17.7
3 yr.	-16.3	23.7
5 yr.	68.7	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
1.24	1.41	1.52	1.68	2.02	1.12	2.71	3.41	4.52	3.99	3.49	3.79	4.49	4.35	4.46	3.86	4.45	4.80	Revenues per sh	9.40
.46	.52	.50	.63	.77	.37	.87	1.20	.95	1.18	.86	.83	1.17	.96	.80	.88	1.00	1.10	"Cash Flow" per sh	1.60
.34	.35	.32	.42	.49	.23	.59	.79	.50	.74	.43	.42	.64	.58	.42	.51	.60	.67	Earnings per sh A	1.20
.17	.20	.21	.21	.23	.12	.24	.20	.33	.28	.30	.30	.30	.30	.30	.30	.30	.30	Div'd Decl'd per sh B■	.40
.30	.24	.39	.19	.24	.77	1.83	.54	.46	.18	.09	.96	.31	.29	.32	.21	.65	1.35	Cap'l Spending per sh	.40
2.30	2.45	2.64	3.89	4.20	2.54	7.49	8.21	8.36	8.53	8.69	8.83	9.20	9.44	9.58	9.81	10.10	10.65	Book Value per sh D	11.85
7.73	7.84	7.99	11.37	11.51	23.46	14.13	14.40	14.53	14.54	14.55	14.57	14.59	14.69	14.72	14.78	14.90	15.00	Common Shs Outst'g C	16.00
10.4	13.9	21.6	19.3	23.1	NMF	43.0	35.4	37.8	19.0	26.9	22.4	12.4	20.0	28.3	22.7	Bold figures are		Avg Ann'l P/E Ratio	21.0
.68	.71	1.18	1.10	1.22	NMF	2.32	1.88	2.27	1.27	1.71	1.41	.79	1.12	1.49	1.15	Value Line		Relative P/E Ratio	1.30
4.9%	4.2%	3.1%	2.6%	2.0%	.7%	.9%	.7%	1.7%	2.0%	2.6%	3.2%	3.8%	2.6%	2.5%	2.6%	estimates		Avg Ann'l Div'd Yield	1.6%
						38.2	49.2	65.7	58.0	50.7	55.2	65.5	63.8	65.6	57.1	61.0	65.0	Revenues ($mill)	150
						7.5	11.4	7.2	10.8	6.3	6.1	9.3	8.6	6.3	7.5	9.0	10.0	Net Profit ($mill)	19.0
						--	--	--	--	--	--	--	--	--	--	NMF	NMF	Income Tax Rate	NMF
						--	--	--	--	--	4.0%	--	--	--	--	NMF	NMF	AFUDC % to Net Profit	NMF
						18.2%	15.9%	14.8%	13.8%	11.8%	5.1%	3.7%	--	3.7%	--	Nil	Nil	Long-Term Debt Ratio	Nil
						81.8%	84.1%	85.2%	86.2%	88.2%	94.9%	96.3%	99.8%	99.8%	100.0%	100%	100%	Common Equity Ratio	100%
						129.3	140.7	142.7	143.9	143.3	135.6	139.4	138.9	141.2	145.0	150	155	Total Capital ($mill)	190
						63.6	65.0	65.1	61.2	56.2	64.3	61.6	58.6	56.4	53.7	57.0	75.0	Net Plant ($mill)	240
						6.5%	8.8%	5.7%	8.1%	4.9%	5.0%	7.0%	6.2%	4.4%	5.2%	6.0%	6.5%	Return on Total Cap'l	10.0%
						7.1%	9.6%	5.9%	8.7%	5.0%	4.7%	6.9%	6.2%	4.4%	5.2%	6.0%	6.5%	Return on Shr. Equity	10.0%
						7.1%	9.6%	5.9%	8.7%	5.0%	4.7%	6.9%	6.2%	4.4%	5.1%	6.0%	6.5%	Return on Com Equity	10.0%
						4.2%	6.5%	2.8%	4.6%	1.5%	1.0%	3.6%	3.0%	1.2%	2.1%	3.0%	3.5%	Retained to Com Eq	6.5%
						41%	33%	52%	46%	69%	79%	48%	51%	73%	60%	50%	45%	All Div'ds to Net Prof	33%

CAPITAL STRUCTURE as of 6/30/16
Total Debt $0.5 mill. Due in 5 Yrs $0.5 mill.
LT Debt None LT Interest None

Leases, Uncapitalized: Annual rentals $.7 mill.

No Defined Benefit Pension Plan

Pfd Stock NMF (38,804 shares out.) **Div'd** NMF

Common Stock 14,815,530 shs. as of 8/5/16

MARKET CAP: $175 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	40.7	50.4	37.1
Accts Receivable	11.8	9.5	13.7
Other	6.9	5.5	5.8
Current Assets	59.4	65.4	56.6
Accts Payable	6.0	4.8	4.1
Debt Due	9.0	7.0	.5
Other	1.2	1.4	1.1
Current Liab.	16.2	13.2	5.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	10.0%	1.0%	14.5%
"Cash Flow"	4.0%	-2.5%	10.5%
Earnings	3.0%	-2.0%	15.5%
Dividends	5.0%	--	5.0%
Book Value	10.5%	2.5%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	16.6	16.6	15.4	15.2	63.8
2014	16.3	16.9	17.0	15.4	65.6
2015	14.7	14.4	14.6	13.4	57.1
2016	14.0	15.4	15.6	16.0	61.0
2017	15.0	16.0	17.0	17.0	65.0

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.26	.19	.06	.07	.58
2014	.04	.19	.13	.06	.42
2015	.13	.15	.12	.11	.51
2016	.14	.15	.16	.15	.60
2017	.17	.17	.17	.16	.67

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.075	.075	.075	.075	.30
2013	.075	.075	.075	.075	.30
2014	.075	.075	.075	.075	.30
2015	.075	.075	.075	.075	.30
2016	.075	.075	.075		

BUSINESS: Consolidated Water Co. Ltd. develops and operates seawater desalination plants and water distribution systems in areas where naturally occurring supplies of potable water are scarce or nonexistent. Its desalination process involves reverse osmosis tech. It provides water in the Cayman Islands, Belize, the Bahamas, the British Virgin Islands, and Bali. At 12/31/15, it operated 14 plants with a capacity of 26.5 million gallons per day. Inc.: Cayman Islands. Has 127 employees. President & Chief Executive Officer: Frederick McTaggart. Officers & directors own 3.2% of stock; (4/16 proxy). Address: Regatta Office Park Windward Three, 4th Floor, West Bay Road P.O. Box 1114 Grand Cayman, KYI-1102, Cayman Islands. Tel.: (345) 945-4277. Int.: www.cwco.com.

Construction should begin shortly on Consolidated Water's major new project. Another important contract was recently signed in late August with the authorities of the Mexican State of Baja, California for the Rosarito Seawater Desalination plant. Only customary closing conditions and financing, which seemed assured, are required before work can start on the nearly $500 million facility in early 2017. Through its NSC Aqua subsidiary, Consolidated will have a 12% equity stake in the desalination facility and remain the operator. The firm has spent six years developing, planning, and navigating the arduous regulatory process. Rosalita should be producing 50 million gallons of fresh water a day for the drought-stricken area only 36 months after construction begins. The company also plans on doubling the size of the plant over the next decade.

Consolidated carries much more risk than other companies in this industry. Water utilities in the U.S. have well-defined earnings and generally good relationships with the states in which they do business. This company operates in several Caribbean nations, which has sometimes proved difficult. Even though Consolidated appears to have the upper hand legally, it has been involved in extended litigation with the British Virgin Islands over the Baughers Bay desalination plant. In addition, there has been ongoing problems over the extension of its operating license in the Cayman Islands.

These neutrally ranked shares offer much-greater potential long-term returns than other stocks in this industry. Should all go well with the Rosalita project, Consolidated revenues could increase by $55 million annually when phase one is completed in about three years. Plus, the company's desalination project in Bali will likely be generating decent profits by that time. Completed last year, the facility was built on the high-end resort on speculation and has not yet been profitable. The island's potable water is very limited, and the population continues to grow. Hence, demand for water should increase. Thus, returns through 2019-2021 could prove substantial for investors willing to live with the added uncertainty.

James A. Flood *October 14, 2016*

(A) Fully diluted earnings. Next earnings report due early November. (B) Dividends historically paid in late January, April, July and October. ■ Dividend reinvestment plan available.
(C) In millions adjusted for stock split.
(D) Includes intangibles. As of 3/16, $18 million/$1.22 a share.

Company's Financial Strength	B+
Stock's Price Stability	30
Price Growth Persistence	15
Earnings Predictability	50

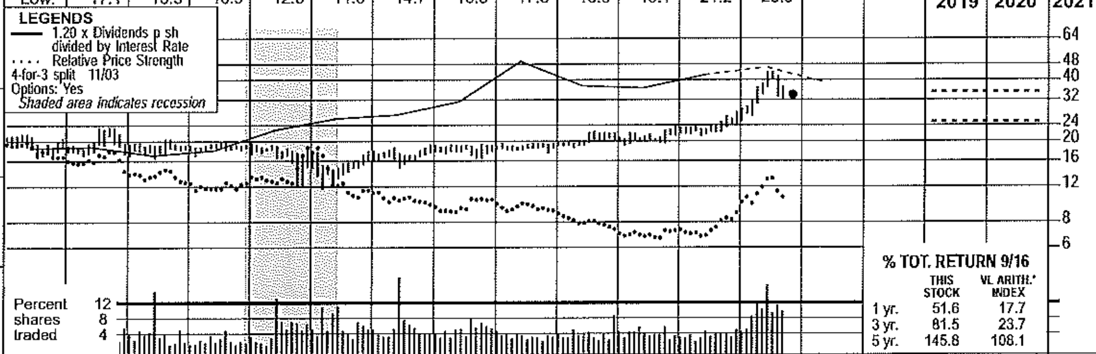
MIDDLESEX WATER NDQ-MSEX

RECENT PRICE 34.04 | P/E RATIO 23.8 (Trailing: 25.4 Median: 20.0) | RELATIVE P/E RATIO 1.29 | DIV'D YLD 2.4% | VALUE LINE

TIMELINESS 3 Lowered 10/14/16
SAFETY 2 New 10/21/11
TECHNICAL 2 Lowered 9/30/16
BETA .70 (1.00 = Market)

High:	23.5	20.5	20.2	19.8	17.9	19.3	19.4	19.6	22.5	23.7	28.0	44.1
Low:	17.1	16.5	16.9	12.0	11.6	14.7	16.5	17.5	18.6	19.1	21.2	25.0

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+5%)	3%
Low	25	(-25%)	-4%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	1	0	0	0	0	0
Options	0	0	0	1	0	0	7	0	0
to Sell	1	0	0	1	2	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	41	62	59
to Sell	50	45	52
Hld's(000)	6584	6822	7208

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	51.6	17.7
3 yr.	81.5	23.7
5 yr.	145.8	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
5.39	5.87	5.98	6.12	6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	*8.05*	*8.05*	Revenues per sh	*9.40*
.99	1.18	1.20	1.15	1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	*2.20*	*2.30*	"Cash Flow" per sh	*2.55*
.51	.66	.73	.61	.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	*1.40*	*1.45*	Earnings per sh A	*1.50*
.61	.62	.63	.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	*.81*	*.84*	Div'd Decl'd per sh B■	*.91*
1.32	1.25	1.59	1.87	2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	*1.75*	*1.80*	Cap'l Spending per sh	*2.05*
6.98	7.11	7.39	7.60	8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	*13.15*	*13.35*	Book Value per sh	*15.60*
10.11	10.17	10.36	10.48	11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	*16.30*	*16.50*	Common Shs Outst'g C	*17.00*
28.7	24.6	23.5	30.0	26.4	27.4	22.7	21.6	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	*Bold figures are*		Avg Ann'l P/E Ratio	*21.0*
1.87	1.26	1.28	1.71	1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.97	*Value Line*		Relative P/E Ratio	*1.30*
4.2%	3.8%	3.7%	3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	*estimates*		Avg Ann'l Div'd Yield	*3.0%*
						81.1	86.1	91.0	91.2	102.7	102.1	110.4	114.8	117.1	126.0	*131*	*133*	Revenues ($mill)	*160*
						10.0	11.8	12.2	10.0	14.3	13.4	14.4	16.6	18.4	20.0	*23.0*	*24.0*	Net Profit ($mill)	*25.5*
						33.4%	32.6%	33.2%	34.1%	32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	*35.0%*	*35.0%*	Income Tax Rate	*35.0%*
						--	--	--	--	6.8%	6.1%	3.4%	1.9%	1.7%	1.9%	*2.0%*	*2.0%*	AFUDC % to Net Profit	*2.5%*
						49.5%	49.0%	45.6%	46.6%	43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	*38.5%*	*38.5%*	Long-Term Debt Ratio	*38.5%*
						47.5%	49.6%	51.8%	52.1%	55.8%	56.6%	57.4%	58.7%	58.8%	59.8%	*61.5%*	*61.5%*	Common Equity Ratio	*61.5%*
						264.0	268.8	259.4	267.9	310.5	312.5	316.5	321.4	335.8	345.4	*350*	*360*	Total Capital ($mill)	*430*
						317.1	333.9	366.3	376.5	405.9	422.2	435.2	446.5	465.4	481.9	*495*	*515*	Net Plant ($mill)	*565*
						5.1%	5.6%	5.8%	5.0%	5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	*7.5%*	*7.5%*	Return on Total Cap'l	*6.5%*
						7.5%	8.6%	8.6%	7.0%	8.1%	7.5%	7.8%	8.7%	9.2%	9.6%	*10.5%*	*11.0%*	Return on Shr. Equity	*9.5%*
						7.8%	8.7%	8.9%	7.0%	8.2%	7.5%	7.8%	8.7%	9.3%	9.6%	*10.5%*	*11.0%*	Return on Com Equity	*9.5%*
						1.3%	1.8%	2.0%	.1%	2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	*4.5%*	*4.5%*	Retained to Com Eq	*4.0%*
						84%	79%	78%	98%	75%	87%	83%	73%	67%	63%	*58%*	*58%*	All Div'ds to Net Prof	*61%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $147.4 mill. Due in 5 Yrs $30.8 mill.
LT Debt $131.0 mill. LT Interest $5.6 mill.
(Total interest coverage: 7.4x)
(39% of Cap'l)

Pension Assets-12/15 $52.9 mill.
Oblig. $72.5 mill.
Pfd Stock $2.4 mill. Pfd Div'd: $.1 mill.

Common Stock 16,280,430 shs.
as of 7/31/16

MARKET CAP: $550 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.7	3.5	1.2
Other	20.2	20.9	27.1
Current Assets	22.9	24.4	28.3
Accts Payable	6.4	6.5	9.5
Debt Due	24.9	8.7	16.4
Other	12.6	13.1	13.2
Current Liab.	43.9	28.3	39.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	2.0%	*4.0%*
"Cash Flow"	4.0%	4.5%	*5.5%*
Earnings	5.0%	5.5%	*5.0%*
Dividends	1.5%	1.5%	*3.0%*
Book Value	4.5%	3.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	27.0	29.1	31.3	27.4	114.8
2014	27.1	29.2	32.7	28.1	117.1
2015	28.8	31.7	34.7	30.8	126.0
2016	30.6	32.7	*35.5*	*32.2*	*131*
2017	*31.0*	*33.0*	*36.0*	*33.0*	*133*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.20	.28	.36	.19	1.03
2014	.20	.29	.42	.22	1.13
2015	.22	.31	.41	.28	1.22
2016	.29	.36	*.43*	*.32*	*1.40*
2017	*.32*	*.34*	*.46*	*.33*	*1.45*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.185	.185	.185	.1875	.74
2013	.1875	.1875	.1875	.19	.75
2014	.19	.19	.19	.1925	.76
2015	.1925	.1925	.1925	.19875	.78
2016	.19875	.19875	.19875		

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 60,000 retail customers, primarily in Middlesex County, New Jersey. In 2015, the Middlesex System accounted for 59% of operating revenues. At 12/31/15, the company had 293 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.5% of the common stock; BlackRock Institutional Trust Co., 6.4% (4/16 proxy). Add.: 1500 Ronson Road, Iselin, NJ 08830. Tel.: 732-634-1500. Internet: www.middlesexwater.com.

Middlesex Water Company shares have taken a step back in price subsequent to registering strong gains over the past few quarters. Since our July review, MSEX stock shed nearly 15% in value. We think the selloff was somewhat warranted, given the equity's rich valuation (from a P/E standpoint). Nevertheless, the company delivered a slightly better-than-expected financial performance in the second quarter. Revenues of $32.7 million came in modestly above our call. Middlesex's New Jersey operations experienced strong demand for regulated water and from contract customers. Moreover, the rate increase implemented in August of last year by the Board of Public Utilities continues to be a net positive. On the earnings front, the company reported net income of $0.36 a share, $0.03 better than we had expected.

We are adding two pennies to our 2016 bottom-line estimate. Profit margins are being helped along by lower operation and maintenance expenses, as well as lighter employee benefit costs. This has more than offset higher labor costs. Indeed, we think year-over-year quarterly share-net comparables should be strong through the remainder of the year, resulting in earnings of $1.40 a share for 2016.

The infrastructure replacement project in Edison and South Amboy, New Jersey is under way. Eight miles and $12 million worth of water mains, valves, and service lines are being upgraded to support the company's distribution system in the area.

This equity has been lowered two notches for Timeliness, to 3. Now pegged to mirror the broader market averages over the coming six to 12 months, investors may want to stay on the sidelines, at this juncture. That said, we think conservative, income-seeking accounts should keep MSEX on their radar. We anticipate an above-average dividend yield over the pull to late decade. What's more, water utilities, in general, can be a safe haven in times of turbulent market conditions. Thus, given Middlesex's low Beta (0.70) and relatively noncyclical business model, investors could find these shares appealing should broader market indices take a turn for the worse.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. May not sum due to rounding. Next earnings report due early November.
(B) Dividends historically paid in mid-Feb., May, Aug., and November.■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	40
Earnings Predictability	85

SJW CORP. NYSE-SJW

RECENT PRICE 42.19 | P/E RATIO 21.2 (Trailing: 18.9, Median: 24.0) | RELATIVE P/E RATIO 1.15 | DIV'D YLD 1.9% | VALUE LINE

TIMELINESS 3 Lowered 5/6/16
SAFETY 3 New 4/22/11
TECHNICAL 2 Raised 10/14/16
BETA .70 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+30%)	9%
Low	35	(-15%)	-2%

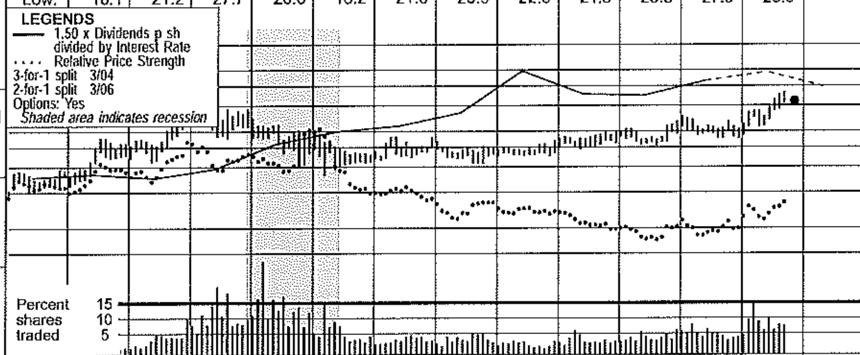
Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	3	0	0	0	0	0	0	0	0
Options	0	9	0	5	8	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	1

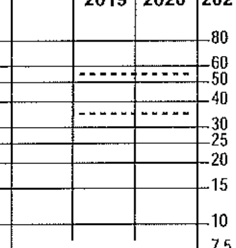
Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	43	84	64
to Sell	59	41	68
Hld's(000)	8694	9256	9308

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	27.8	45.3	43.0	35.1	30.4	28.2	26.8	26.9	30.1	33.7	35.7	46.7
Low:	16.1	21.2	27.7	20.0	18.2	21.6	20.9	22.6	24.5	25.5	27.5	28.6



Target Price Range
2019 | 2020 | 2021



% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	45.5	17.7
3 yr.	68.2	23.7
5 yr.	129.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
6.74	7.45	7.97	8.20	9.14	9.86	10.35	11.25	12.12	11.68	11.62	12.85	14.01	13.73	15.76	14.97	**15.10**	**15.00**	Revenues per sh	**18.50**
1.23	1.49	1.55	1.75	1.89	2.21	2.38	2.30	2.44	2.21	2.38	2.80	2.97	2.90	4.42	3.86	**3.95**	**4.00**	"Cash Flow" per sh	**3.95**
.58	.77	.78	.91	.87	1.12	1.19	1.04	1.08	.81	.84	1.11	1.18	1.12	2.54	1.85	**1.90**	**1.95**	Earnings per sh A	**2.00**
.41	.43	.46	.49	.51	.53	.57	.61	.65	.66	.68	.69	.71	.73	.75	.78	**.81**	**.84**	Div'd Decl'd per sh B■	**1.05**
1.89	2.63	2.06	3.41	2.31	2.83	3.87	6.62	3.79	3.17	5.65	3.75	5.67	4.68	5.02	5.24	**5.35**	**5.50**	Cap'l Spending per sh	**5.00**
7.90	8.17	8.40	9.11	10.11	10.72	12.48	12.90	13.99	13.66	13.75	14.20	14.71	15.92	17.75	18.83	**19.00**	**19.75**	Book Value per sh	**22.40**
18.27	18.27	18.27	18.27	18.27	18.27	18.28	18.36	18.18	18.50	18.55	18.59	18.67	20.17	20.29	20.38	**20.50**	**21.00**	Common Shs Outst'g C	**23.00**
33.1	18.5	17.3	15.4	19.6	19.7	23.5	33.4	26.2	28.7	29.1	21.2	20.4	24.3	11.2	16.6	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	**22.0**
2.15	.95	.94	.88	1.04	1.05	1.27	1.77	1.58	1.91	1.85	1.33	1.30	1.37	.59	.84	*estimates*		Relative P/E Ratio	**1.40**
2.1%	3.0%	3.4%	3.5%	3.0%	2.4%	2.0%	1.7%	2.3%	2.8%	2.8%	2.9%	3.0%	2.7%	2.6%	2.5%			Avg Ann'l Div'd Yield	**2.3%**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
189.2	206.6	220.3	216.1	215.6	239.0	261.5	276.9	319.7	305.1	**310**	**315**	Revenues ($mill)	**425**
22.2	19.3	20.2	15.2	15.8	20.9	22.3	23.5	51.8	37.9	**39.0**	**41.0**	Net Profit ($mill)	**46.0**
40.8%	39.4%	39.5%	40.4%	38.8%	41.1%	41.1%	38.7%	32.5%	38.1%	**39.0%**	**39.5%**	Income Tax Rate	**39.0%**
2.1%	2.7%	2.3%	2.0%	--	--	--	--	2.0%	1.0%	**1.5%**	**1.5%**	AFUDC % to Net Profit	**1.5%**
41.8%	47.7%	46.0%	49.4%	53.7%	56.6%	55.0%	51.1%	51.6%	49.8%	**49.0%**	**50.5%**	Long-Term Debt Ratio	**50.5%**
58.2%	52.3%	54.0%	50.6%	46.3%	43.4%	45.0%	48.9%	48.4%	50.2%	**51.0%**	**49.5%**	Common Equity Ratio	**49.5%**
391.8	453.2	470.9	499.6	550.7	607.9	610.2	656.2	744.5	764.6	**765**	**840**	Total Capital ($mill)	**1040**
541.7	645.5	684.2	718.5	785.5	756.2	831.6	898.7	963.0	1036.8	**1100**	**1200**	Net Plant ($mill)	**1325**
7.0%	5.7%	5.8%	4.4%	4.3%	4.9%	5.0%	5.0%	8.3%	6.3%	**6.5%**	**6.0%**	Return on Total Cap'l	**5.5%**
9.7%	8.2%	8.0%	6.0%	6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	**10.0%**	**10.0%**	Return on Shr. Equity	**9.0%**
9.7%	8.2%	8.0%	6.0%	6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	**10.0%**	**10.0%**	Return on Com Equity	**9.0%**
5.2%	3.5%	3.3%	1.2%	1.2%	3.1%	3.3%	2.8%	10.2%	5.7%	**5.5%**	**5.5%**	Retained to Com Eq	**4.0%**
46%	57%	59%	80%	80%	61%	59%	62%	29%	42%	**43%**	**43%**	All Div'ds to Net Prof	**53%**

CAPITAL STRUCTURE as of 6/30/16
Total Debt $431.7 mill. **Due in 5 Yrs** $21.2 mill.
LT Debt $364.2 mill. **LT Interest** $21.0 mill.
(49% of Cap'l)

Leases, Uncapitalized: Annual rentals $6.6 mill.

Pension Assets-12/15 $105.0 mill.
Oblig. $164.3 mill.

Pfd Stock None.

Common Stock 20,442,128 shs.

MARKET CAP: $850 million (Small Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.4	5.2	12.5
Accts Receivable	15.0	16.4	17.3
Other	50.7	51.8	62.9
Current Assets	68.1	73.4	92.7
Accts Payable	7.0	16.2	23.8
Debt Due	13.8	38.1	67.5
Other	23.9	25.3	28.8
Current Liab.	44.7	79.6	120.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	5.0%	4.5%	*4.0%*
"Cash Flow"	6.5%	10.0%	*1.0%*
Earnings	6.5%	15.0%	*1.5%*
Dividends	4.0%	2.5%	*5.5%*
Book Value	6.0%	5.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	50.1	74.2	85.2	67.4	276.9
2014	54.6	70.4	125.4	69.3	319.7
2015	62.1	72.4	83.0	87.6	305.1
2016	61.1	86.9	*87.0*	*75.0*	*310*
2017	*66.0*	*77.0*	*90.0*	*82.0*	*315*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.07	.37	.44	.24	1.12
2014	.04	.34	1.88	.28	2.54
2015	.23	.36	.46	.80	1.85
2016	.16	.82	*.45*	*.47*	*1.90*
2017	*.25*	*.45*	*.65*	*.60*	*1.95*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.1775	.1775	.1775	.1775	.71
2013	.1825	.1825	.1825	.1825	.73
2014	.1875	.1875	.1875	.1875	.75
2015	.1950	.1950	.1950	.1950	.78
2016	.2025	.2025	.2025		

BUSINESS: SJW Corporation engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to approximately 229,000 connections with a total population of roughly one million people in the San Jose area and 12,000 connections that reaches about 36,000 residents in the region between San Antonio and Austin, Texas. The company also offers nonregulated water-related services and owns and operates commercial real estate investments. Has about 399 employees. Officers and directors (including Nancy O. Moss) own 28.3% of outstanding shares. Chairman: Charles J. Toeniskoetter. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

Shares of SJW Corp. are making up for their relatively lagging price performance over the first half of the year. The stock is up more than 10% in value since our July review, which compares favorably to the rest of the water utility industry that, on average, is down approximately 10% over the same time frame. To wit, SJW had not experienced as robust a price ascent as others in the early stages of 2016, but its most recent financial showing has undoubtedly given the stock support.

SJW Corp.'s second-quarter results were impressive. Revenues of about $87 million during the period improved 20%, year over year, driven primarily by true-up revenue recognition stemming from its California general rate case application, as well as revenue built up in the Water Conservation Memorandum account (also a form of special recognition). Between the two, a positive of nearly $8 million was recognized this quarter. Much of the quarter's revenue gains seemed to make their way to the bottom line, as operating and interest expenses remained relatively flat, on both a sequential and year-over-year basis. Net income of $0.82 a share more than doubled from the like 2015 figure. All things considered, we are raising our 2016 top- and bottom-line estimates by $5 million and $0.15, to $310 million and $1.90 a share, respectively.

The company is moving full steam ahead with its capital expenditure program. With more than $300 million earmarked for water system upgrades, just over $30 million was spent in the second quarter for utility plant improvements ($60 million year to date). A good portion of the funds will likely be allocated to new construction through the remainder of this year and next, which includes $25 million for its Montevina Water Treatment Plant project. All in all, we expect capital spending to be one of the main growth drivers over the pull to late decade.

At the moment, SJW stock does not stand out for either the short or long haul. The equity is ranked to be a market performer in the year ahead. Also, capital appreciation potential three to five years out is below *The Value Line Investment Survey* median.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Excludes nonrecurring losses: '03, $1.97; '04, $3.78; '05, $1.09; '06, $16.36; '08, $1.22; '10, $0.46. GAAP accounting as of 2013. Next earnings report due late November. Quarterly earnings may not add due to rounding.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for stock splits.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	25
Earnings Predictability	50

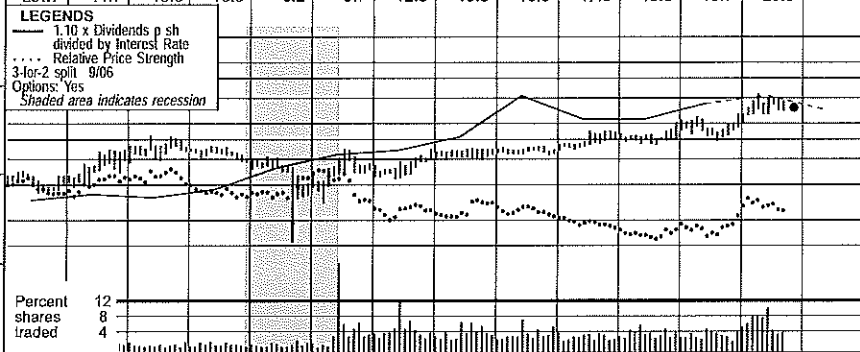
YORK WATER NDQ-YORW

RECENT PRICE **28.76** | P/E RATIO **28.8** (Trailing: 29.6 Median: 24.0) | RELATIVE P/E RATIO **1.56** | DIV'D YLD **2.2%** | VALUE LINE

TIMELINESS 3 Lowered 10/14/16
SAFETY 3 Lowered 7/17/15
TECHNICAL 3 Lowered 9/30/16
BETA .70 (1.00 = Market)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High:	17.9	21.0	18.5	16.5	18.0	18.0	18.1	18.5	22.0	24.3	26.7	33.4
Low:	11.7	15.3	15.5	6.2	9.7	12.8	15.8	16.8	17.6	18.8	19.7	23.8

Target Price Range 2019 | 2020 | 2021



2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+20%)	7%
Low	25	(-15%)	-1%

Insider Decisions

	D	J	F	M	A	M	J	J	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	36	43	44
to Sell	24	30	38
Hld's(000)	3820	3860	4006

% TOT. RETURN 9/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	44.2	17.7
3 yr.	59.3	23.7
5 yr.	108.3	108.1

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
--	2.05	2.05	2.17	2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	**3.80**	**4.10**	Revenues per sh	**5.40**
--	.59	.57	.65	.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.47	**1.50**	**1.65**	"Cash Flow" per sh	**1.90**
--	.43	.40	.47	.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	**.97**	**1.05**	Earnings per sh A	**1.25**
--	.34	.35	.37	.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	**.63**	**.66**	Div'd Decl'd per sh B	**.85**
--	.75	.66	1.07	2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.08	**1.60**	**1.10**	Cap'l Spending per sh	**.85**
--	3.79	3.90	4.06	4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.52	**8.75**	**8.95**	Book Value per sh	**10.15**
--	9.46	9.55	9.63	10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	**12.80**	**12.50**	Common Shs Outst'g C	**12.00**
--	17.8	26.9	24.5	25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**22.5**
--	.91	1.47	1.40	1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.19			Relative P/E Ratio	**1.40**
--	4.4%	3.3%	3.2%	3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%			Avg Ann'l Div'd Yield	**3.4%**

CAPITAL STRUCTURE as of 6/30/16
Total Debt $84.6 mill. Due in 5 Yrs $30.5 mill.
LT Debt $84.6 mill. LT Interest $5.1 mill.
(44% of Cap'l)
Pension Assets 12/15 $31.8 mill.
Oblig. $39.5 mill.
Pfd Stock None
Common Stock 12,867,736 shs.
MARKET CAP: $375 million (Small Cap)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		19-21
28.7	31.4	32.8	37.0	39.0	40.6	41.4	42.4	45.9	47.1	**48.5**	**51.0**	Revenues ($mill)	**65.0**
6.1	6.4	6.4	7.5	8.9	9.1	9.3	9.7	11.5	12.6	**12.5**	**13.0**	Net Profit ($mill)	**15.0**
34.4%	36.5%	36.1%	37.9%	38.5%	35.3%	37.6%	37.6%	29.8%	27.2%	**28.5%**	**29.0%**	Income Tax Rate	**32.5%**
7.2%	3.6%	10.1%	--	1.2%	1.1%	1.1%	.8%	1.8%	1.6%	**1.5%**	**1.5%**	AFUDC % to Net Profit	**1.0%**
48.3%	46.5%	54.5%	45.7%	48.3%	47.1%	46.0%	45.1%	44.8%	44.5%	**43.5%**	**46.0%**	Long-Term Debt Ratio	**47.0%**
51.7%	53.5%	45.5%	54.3%	51.7%	52.9%	54.0%	54.9%	55.2%	55.5%	**56.5%**	**54.0%**	Common Equity Ratio	**53.0%**
126.5	125.7	153.4	160.1	176.4	180.2	184.8	188.4	189.4	196.4	**195**	**205**	Total Capital ($mill)	**230**
174.4	191.6	211.4	222.0	228.4	233.0	240.3	244.2	253.2	261.4	**270**	**275**	Net Plant ($mill)	**290**
6.2%	6.7%	5.7%	6.2%	6.5%	6.4%	6.4%	6.5%	7.4%	7.7%	**7.5%**	**7.5%**	Return on Total Cap'l	**7.5%**
9.3%	9.5%	9.2%	8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	**11.0%**	**11.5%**	Return on Shr. Equity	**12.5%**
9.3%	9.5%	9.2%	8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	**11.0%**	**11.5%**	Return on Com Equity	**12.5%**
2.2%	1.7%	1.4%	1.9%	2.7%	2.5%	2.4%	2.4%	3.9%	4.5%	**4.0%**	**4.5%**	Retained to Com Eq	**4.0%**
77%	82%	85%	78%	72%	73%	74%	74%	64%	61%	**65%**	**63%**	All Div'ds to Net Prof	**68%**

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	1.5	2.9	5.0
Accounts Receivable	4.0	3.5	3.8
Inventory (Avg. Cost)	.8	.8	.8
Other	4.9	4.6	3.4
Current Assets	11.2	11.8	13.0
Accts Payable	1.6	1.8	1.6
Debt Due	--	--	--
Other	4.3	4.4	4.4
Current Liab.	5.9	6.2	6.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	4.5%	3.0%	7.5%
"Cash Flow"	7.0%	6.5%	6.0%
Earnings	5.5%	6.0%	6.0%
Dividends	4.0%	2.5%	6.5%
Book Value	6.5%	4.5%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	10.1	10.7	10.9	10.7	42.4
2014	10.6	11.8	12.0	11.5	45.9
2015	11.2	11.9	12.4	11.6	47.1
2016	11.3	11.8	**12.5**	**12.9**	**48.5**
2017	**12.0**	**12.5**	**13.0**	**13.5**	**51.0**

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2013	.17	.18	.19	.21	.75
2014	.16	.22	.23	.28	.89
2015	.20	.22	.28	.27	.97
2016	.19	.23	**.28**	**.27**	**.97**
2017	**.22**	**.25**	**.30**	**.28**	**1.05**

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.134	.134	.134	.134	.535
2013	.138	.138	.138	.138	.552
2014	.1431	.1431	.1431	.1431	.572
2015	.1495	.1495	.1495	.1555	.604
2016	.1555	.1555	.1555		

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2015, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 194,000. Has more than 66,000 customers. Residential customers accounted for 63% of 2015 revenues; commercial and industrial (29%); other (8%). It also provides sewer billing services. Incorporated: PA. York had 108 full-time employees at 12/31/15. President/CEO: Jeffrey R. Hines. Officers/directors own 1.1% of the common stock (4/16 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water's second-quarter financial results were little changed from the prior year. The Pennsylvania-based operator generated revenues of $11.8 million, marginally lower than the comparable 2015 figure. There has been no movement on the rate hike front, and this, in conjunction with lower consumption, yielded a top-line contraction for the June period. In the same breath, earnings of $0.23 a share during the period, while improving by a penny, year over year, missed our mark by $0.03. Still, a higher tax rate continues to ail the bottom line, which more than outweighed benefits from lower operating expenses. This scenario of higher taxes and lackluster revenue growth ought to stay in place over the near term.

Therefore, we are reducing our full-year 2016 top- and bottom-line estimates accordingly. Earnings comparisons over the back half of the year ought to be flat, with revenues picking up slightly. We are trimming the latter by $1.5 million, to $48.5 million, representing modest growth, on an annual basis. Likewise, our 2016 earnings estimate is being lowered by $0.03, to $0.97 a share, in line with the prior year's profit figure. Looking further out, we think meaningful growth will likely come back into the picture in 2017.

Long-term growth will likely come from acquisitions and internal investments. York has spent about $5 million in capex through the first half of the year. For the remainder of 2016, management has guided expenditures of approximately $12 million. The use of these funds ought to oscillate between revamping its aging infrastructure, strengthening water treatment systems, and additional water mains if needed. Furthermore, acquisitions are likely in the cards over the pull to late decade. The company's balance sheet is in relatively good shape, and its cash reserves are abundant, when compared to normal levels.

This neutrally ranked issue lacks investment appeal at the moment. It is slated to be a market performer in the year ahead. Too, the stock is already trading inside of our 3- to 5-year Target Price Range, thereby discounting much of the growth we envision over that time frame.

Nicholas P. Patrikis *October 14, 2016*

(A) Diluted earnings. Next earnings report due late November.
(B) Dividends historically paid in late-December, February, June, and September.
(C) In millions, adjusted for splits.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	60
Earnings Predictability	95

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 210

Security Markets
(News Investors Are Experiencing)

Exhibits in Support
of Opening Testimony

March 1, 2017

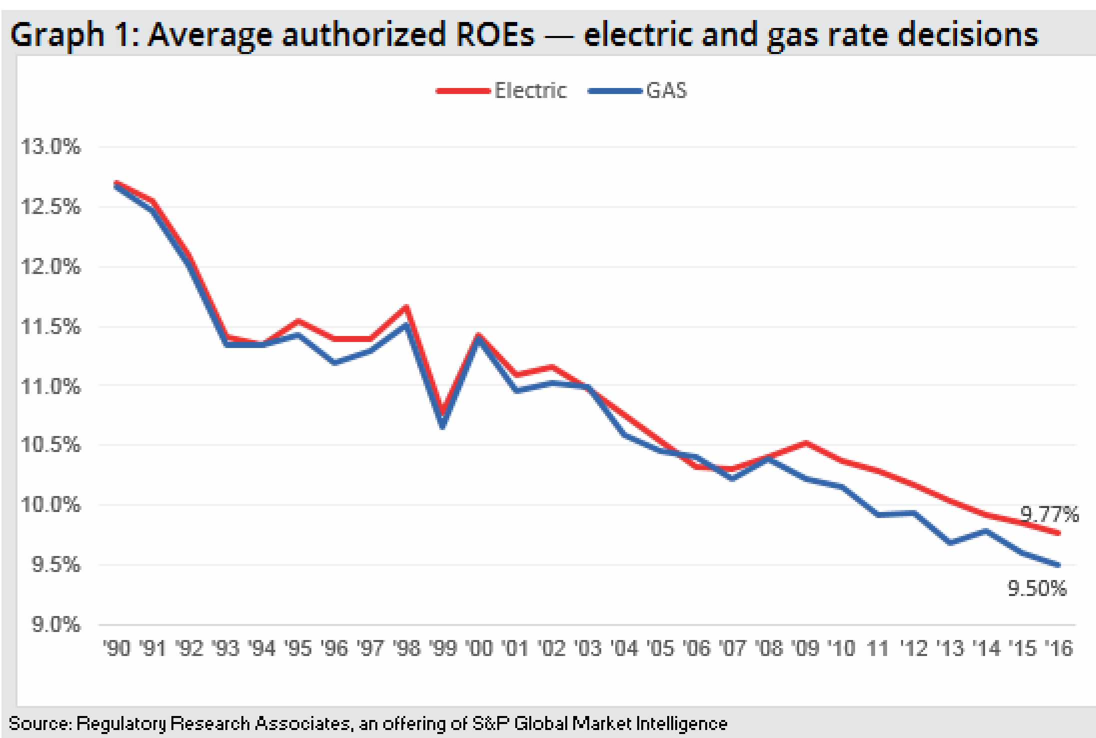
Security Market News

ROE Authorizations in 2016 Slightly Below Those in 2015

by Dennis Sperduto — Regulatory Research Associates (RRA)
An Affiliate of SNL Financial LC and S&P Global Market Intelligence, Jan. 19, 2017
https://www.snl.com/web/client?auth=inherit#news/article?id=39089209&KeyProductLinkType=4

The **average ROE authorized for electric utilities** was 9.77% in rate cases decided in 2016, compared to 9.85% in 2015. There were 42 electric ROE determinations in 2016, versus 30 in 2015. This data includes several **limited issue rider** cases; **excluding** these cases from the data, the average authorized ROE was **9.6% in rate cases decided in 2016, the same as in 2015**. RRA notes that this differential in electric authorized ROEs is largely driven by **Virginia** statutes that authorize the Virginia State Corporation Commission to approve **ROE premiums** of **up to 200 basis points for certain generation projects** (see the Virginia Commission Profile). The **average ROE authorized gas utilities was 9.5% in 2016 versus 9.6% in 2015**. There were 24 gas cases that included an ROE determination in 2016, versus 16 in 2015.

This data is included in a study titled "Major Rate Case Decisions — January-December 2016" issued Jan. 18 by Regulatory Research Associates, an offering of S&P Global Market Intelligence.



In the report, RRA notes that since 2010, the number of rate cases has moderated somewhat but has been 90 or more in the last five calendar years. There were 111 electric and gas rate cases resolved in 2016, 92 in 2015, 99 in both 2014 and 2013, and 110 in 2012, and this level of rate case activity remains robust compared to the late 1990s/early 2000s. Increased costs associated with environmental compliance, including possible CO2 reduction mandates, generation and delivery infrastructure upgrades and expansion, renewable generation mandates and employee benefits argue for the continuation of an active rate case agenda over the next few years.

RRA also notes that **interest rates have declined significantly since 2008** and **average authorized ROEs have declined modestly**. In addition, the report notes the increased utilization of limited issue rider proceedings that allow utilities to recover certain costs outside of a general rate case and typically incorporate previously determined return parameters.

If the Federal Reserve continues its policy initiated in December 2015 to gradually raise the federal funds rate, utilities eventually would face higher capital costs and would need to initiate rate cases to reflect the higher capital costs in rates. However, the magnitude and pace of any additional Federal Reserve action to raise the federal funds rate is quite uncertain.

The report compares, since 2006, average authorized ROEs by settled versus fully litigated cases, general rate cases versus limited issues rider proceedings, and vertically integrated cases versus delivery only cases. For both electric and gas cases, no pattern exists in average annual authorized ROEs in cases that were settled versus those that were fully litigated. In some years, the average authorized ROE was higher for fully litigated cases, in others it was higher for settled cases, and in a few years the authorized ROE was similar for fully litigated versus settled cases.

Regarding electric cases that involve limited issue riders, over the last several years the annual average authorized ROEs in these cases was typically at least 100 basis points higher than in general rate cases, driven by the ROE premiums authorized in Virginia. Limited issue rider cases in which an ROE is determined have had extremely limited use in the gas industry.

Comparing electric vertically integrated cases versus delivery only proceedings, RRA finds that the annual average authorized ROEs in vertically integrated cases are from roughly 40 to 70 basis points higher than in delivery only cases, arguably reflecting the increased risk associated with generation assets.

A chronological listing of the major rate case decisions during 2016 is provided in the report, as well as historical summary data going back to 1990.

For a complete, searchable listing of RRA's in-depth research and analysis, please go to the SNL Research Library.

For a full listing of Past and Pending Rate Cases, rate case statistics, and upcoming events, visit RRA's Home Page.

Census Says U.S. Population Grew at Lowest Rate Since Great Depression This Year

by Janet Adamy and Paul Overberg — WSJ — Dec. 20, 2016

New York State shrunk for first time in decade, while Utah and other western states grew.

The U.S. population this year grew at its lowest rate since the Great Depression, and the state of New York shrunk for the first time in a decade, according to Census Bureau figures released Tuesday.

An uptick in deaths, a **slowdown in births** and a slight drop in immigration all damped American population growth for the year ended July 1. The **0.7% increase in the U.S. population, to 323.1 million people, was the smallest rise on record since 1936-37**, according to William Frey, a demographer at the Brookings Institution.

The new figures show Americans continue to leave the north for western states, with Utah, Nevada, Idaho, and several others in that region topping the country in percentage growth of their populations. Besides New York, Pennsylvania and Illinois also shrunk in notable ways, with the land of Lincoln losing more people than any other state.

New York, whose loss of 1,900 people put its population at 19.7 million, is suffering from an outflow of residents to other states. It has an aging population that is leaving to retire in warmer places such as Florida, or staying put and dying.

“As a state that has more people leaving than going [in], that is not a good thing,” said Jan Vink, a researcher at Cornell University’s program on applied demographics. “People claim it’s about the taxes, it’s about the weather. There are many reasons.”

Utah, the fastest-growing state this year, with a **2% gain**, added almost 61,000 people to bump its population to 3.1 million people. Gains in technology and other jobs have led to tighter labor markets, housing shortages, and rising school enrollments, said Pamela Perlich, director of demographic research at the University of Utah’s Kem C. Gardner Policy Institute.

“There is a new economy being created out of the carnage of the Great Recession, and in a lot of those new growth areas, Utah seems to be at the forefront,” Ms. Perlich said. “You roll back 40 years ago, and we were really pretty isolated and much more parochial here.”

The Passivists

A Series Exploring the Rise of Passive Investing.

Wall Street's "Do-Nothing" Investing Revolution

by Dennis K. Berman and Jamie Heller — WSJ — Oct. 18, 2016

Picking stocks is at heart an **arrogant** act.

It **requires in the stock picker a confidence that most others are dunces**, **and** that **riches await those with better information and sharper instincts**.

Entire cities — notably **New York and London** — have been **erected in service of this belief**. And the **image of the clever, dauntless stock maestro is embedded in the American ideal**.

Yet there is a simple, destructive idea taking over Wall Street: that **stock pickers can't pick stocks** well — or at least **well enough for the fees they charge. And even those who do can't sustain it year after year**. In short, the idea of the "active manager" is rapidly losing its intellectual legitimacy to the primacy of the "passive investor" who merely buys an index of shares. That has certainly been true for the last 10 years, when between 71% and 93% of U.S. stock mutual funds either closed or failed to beat their closest index funds.

What's also dying is the idea that some swashbuckling genius or market hero can ride to your rescue and make you rich: The responsibility for becoming wealthy is instead devolving back onto you. **People have largely given up on** the quest, which used to be so common, for "the **next Peter Lynch**" **or** "the **next Warren Buffett**."

As The Wall Street Journal shows in its series this week, this change has deep **effects** on everything from the outcome of shareholder votes to how **pension funds** manage teachers' retirement money to which investing firms have a future and which will struggle to hang on.

A key finding is this: Government mandates, lawsuits and an ever-more available slew of mounting data are leading managers to turn to passive investing as the lower-cost, default options for more Americans each year. Stock picking isn't going away, and there is still room for active hedge funds and other operators, but the **burden of proof** is **shifting** for them. They must continually show their worth or face elimination.

It still seems hard to enshrine the idea of doing nothing as a revolution. For those who make money in the finance industry — and for those who depend on its fruits for wealth and income — it most certainly is.

Using proprietary analysis of Morningstar Inc. and other data, the Journal found that the portion of the S&P 500 owned by passive mutual funds and ETFs has more than doubled since 2005, from 4.6% to 11.6% today. The pace is only accelerating. Today **passive funds** in our analysis from just **one manager**—**Vanguard**—**control 5% or more of shares in 468 companies in the S&P 500**. In 2005, the number of companies was three.

As the change to passive rewires investing, it is also rewiring the inner life of each investor. Eventually each must confront the question that challenges our human instinct: Is it really true that the best choice is to abdicate choice?

Central Bank Nudges Up Benchmark Federal-Funds Rate by a Quarter Percentage Point to between 0.50% and 0.75%

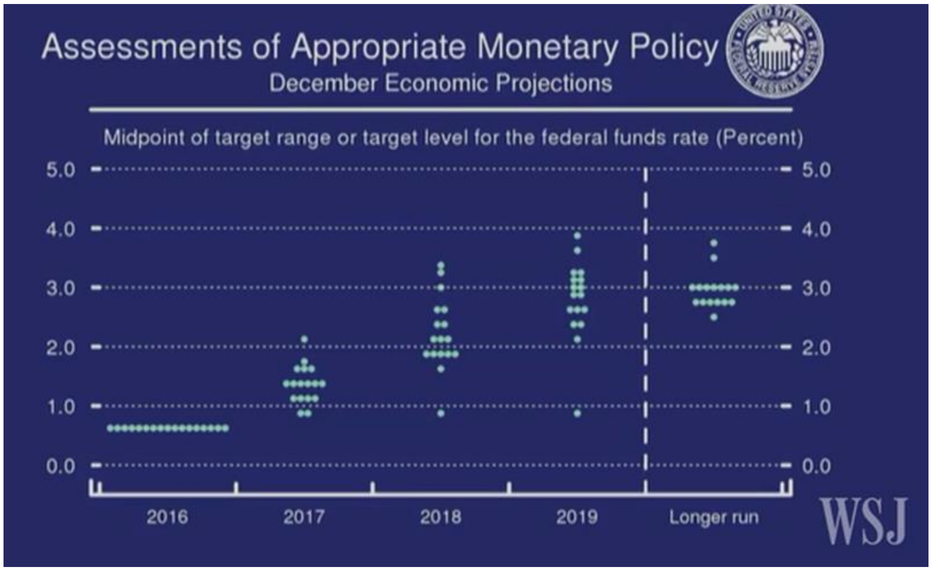
by Harriet Torry — WSJ — Dec 14, 2016

Here are a few takeaways from today's meeting.

The Federal Reserve is in wait-and-see mode on the Trump economy. They're clearly paying attention to the debate over fiscal policy but aren't ready to move forecasts yet until they have a clearer idea what the president will do.

Janet Yellen isn't picking any fights with President-elect Trump. She had several opportunities to offer critiques of some of the ideas that have been floated for economic policy but refrained from taking the bait. She emphasized the importance of the Federal Reserve's independence several times, a possible signal that she would be happy to leave President Trump alone so long as he returns the favor.

Don't read too much into the Fed's plan to raise rates three times, instead of two times, next year. She emphasized that she considers it a "very modest adjustment" with only some people on the Federal Open Market Committee moving their projections. That will put even more emphasis on the economic projections the Fed will release **in March**. By then, they'll have a much **better idea** how changes in the economy are shaping up.

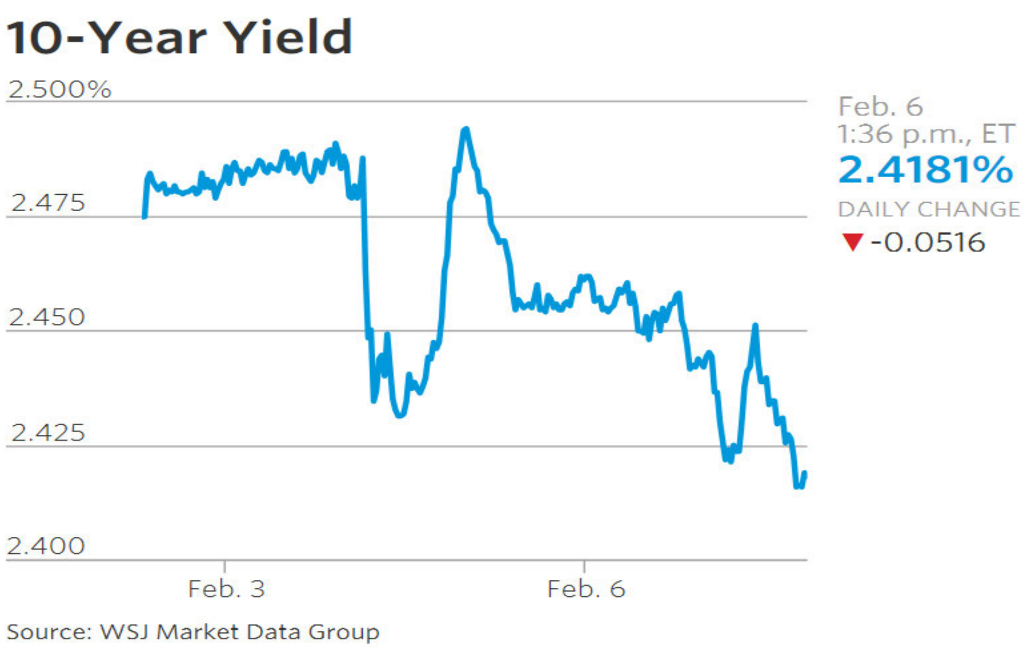


It may have been an omission because so many questions were focused on the election, but Ms. Yellen didn't mention any particular downside risks to the economy right now. (Typically something about China's slowdown or Europe's debt crisis creeps into her remarks.) That just goes to show how much the emphasis has shifted.

Investors Embrace U.S. Government Bonds, Bunds as French Bonds Slump

by Min Zeng — WSJ — Feb. 6, 2017

Political uncertainty in Europe stokes demand for haven assets.



Prices of U.S. government bonds and German bunds rallied Monday, as political **uncertainty in Europe sent investors piling into assets considered as harbors** to protect capital.

Reflecting the angst, investors sold government bonds in France, Italy, Spain, and Greece, sending the yield on the 10-year French bond to the highest since September 2015. The yield premium investors demanded to hold the 10-year French bond relative to the 10-year German bund, the benchmark for debt markets in the euro-zone, widened to the highest level since November 2012.

The main boost for haven flows is the **muddy presidential election outlook in France** amid a rise in populist politics that resulted in the U.K.'s referendum to exit from the European Union and a victory by Donald Trump in the U.S. Election.

French presidential candidate François Fillon faced mounting calls to resign the center-right Republican nomination under allegations of improper use of taxpayer funds. Marine Le Pen, a far right leader, has threatened to pull France out of the euro-zone. **Investors** are **concerned** that if **populism** prevailed in France, it would **threaten** the **stability of the countries that share euro as the common currency**.

"If France leaves the euro, it likely will be the beginning of the end for the euro as we know it," said Larry Milstein, head of government and agency trading at R.W. Pressprich & Co. "The polls currently show that in a runoff election Le Pen will not win, but we have seen these polls be wrong in the past and that concerns investors in this case."

In recent trading, the **yield** on the benchmark **10-year Treasury note** was 2.426%, according to Tradeweb, compared with 2.496% Friday. Yields fall as bond prices rise.

The **10-year German bund** yield recently **fell** to 0.371%, according to Tradeweb.

"We have rising political jitters, which is favorable" for asset allocation into Treasurys and bunds, **said Boris Rjavinski, interest-rate strategist at Wells Fargo** Securities LLC.

The yield on the 10-year French government bond Monday touched 1.156%, the highest since September 2015, according to Tradeweb. It was recently at 1.140%, up from 0.685% at the end of 2016.

The yield premium investors demanded to hold the 10-year French bond relative to the 10-year German bund was 0.77 percentage point recently, up from 0.47 percentage point at the end of December, according to Tradeweb.

The selling in French bonds rippled into government bond markets in Spain, Italy, Portugal, and Greece, sending yields higher.

Bond yields in the euro-zone remain at low levels from a historical standpoint thanks to large bond buying from the European Central Bank and the broader picture of low yields globally.

Concerns over Greece's debt payments added to investors' migration into Treasurys and bunds, said traders. Greece is struggling under its austerity regime, and new questions are mounting as to whether it can satisfy its bailout terms.

"What makes it contain potential seeds of instability for financial markets is that the Greek story will be playing out in the midst of some broader uneasiness in the euro-zone," said Anthony Karydakis, chief economic strategist at Miller Tabak & Co.

Policy uncertainty in the U.S. has been whipsawing the U.S. bond market. The 10-year Treasury yield reached a two-year high of 2.6% in mid-December from 1.867% on the U.S. Election Day. The yield has been gyrating largely between 2.3% and 2.6% over the past weeks.

Selling Treasury bonds had been the popular trade for investors to bet that the prospect of large fiscal spending, lower taxes and lighter regulation would lead to stronger economic growth. But the reflation trade has been tempered by concerns over Mr. Trump's protectionism on trade and his action to curb immigration and tighten border control.

"The more time Trump devotes to the issues of immigration, health care and other 'non-pro-business' initiatives, the less likely those economy-friendly changes become," said Ian Lyngen, head of U.S. rates strategy at BMO Capital Markets. "Markets have nonetheless been dutifully awaiting more evidence that a round of economic stimulus is forthcoming."

The Federal Reserve's gradual approach in raising short-term interest rates also reduces the risk of a swift rise in bond yields, say analysts.

Friday's employment report showed solid jobs growth, yet wage inflation pressure remained relatively contained, bolstering **market expectation that the Fed is likely to wait until this summer to raise interest rates**. The fiscal policy **uncertainty added to the Fed's case to wait** for a few more months **before tightening monetary policy**, say analysts.

Fed Leaves Policy Rate Unchanged, Offers No Hint on When It Might Next Move

by David Harrison — WSJ — Feb. 1, 2017

The central bank says it expects inflation to rise to 2% 'over the medium term'

Left: Federal Reserve Chair Janet Yellen discussed monetary policy and economic outlook Jan. 19 at Stanford University.

The Federal Reserve said Wednesday it remains on track to **gradually raise short-term interest rates**

this year and gave no hint about when the next increase might come.

Following a two-day policy meeting, officials unanimously held their benchmark rate steady in a range between 0.50% and 0.75%, while noting in a statement some recent improvements in the economy. They lifted rates by a quarter percentage point in December and penciled in three quarter-point moves in 2017.

Investors hadn't expected the Fed to move Wednesday and were looking for a signal about their next meeting on March 14-15. As of Wednesday morning, investors placed a roughly 25% probability of a rate increase then.

The central bank's meeting this week came as the U.S. economy shows signs of strengthening. Several officials have said the labor market is now operating at close to full strength with strong job growth keeping the unemployment rate at 4.7%. Inflation has also moved closer to the Fed's 2% target, coming in at 1.6% in December over the previous year. Some of the rise can be attributed to stabilizing oil prices. The Fed said it expects "inflation will rise to 2% over the medium term."

Economic growth, which slumped in the first part of 2016, appears to have found a firmer footing, with the economy growing at 1.9% in the fourth quarter from the fourth quarter of 2015.

The statement also noted that "measures of consumer and business sentiment have improved of late."

A gauge of consumer confidence hit a 15-year-high in December. Recent data also suggest that investors and consumers see stronger growth ahead. Market-based measures of inflation expectations have been rising in recent months.

The Fed didn't mention any new developments that would knock it off its anticipated path of rate increases. The central bank statement described the risks to its outlook as "roughly balanced," meaning officials consider it equally likely that the economy will perform better or worse than projected. Officials said they would continue to "closely monitor inflation indicators and global economic and financial developments."

But economic volatility can emerge unpredictably.

In December **2015**, for instance, **Fed** officials saw enough reason for **optimism** that they raised interest rates for the first time in nearly a decade and **anticipated four quarter-point rate increases in 2016**. That **optimism faded** in the first few months of 2016, when **economic turmoil in China** sent shivers through global markets. That was **followed by a U.S. hiring slump** in the spring, **market turbulence following the U.K.'s Brexit vote in June** and uncertainty about the possible effects of the **U.S. presidential election in November**—all of which led the Fed to hold off on raising rates through most of the year. **In the end**, it **lifted borrowing costs just once in 2016**.

Some officials have said President Donald Trump's proposed tax cuts and spending increases could cause the economy to grow faster than projected, which could cause too much inflation and lead the Fed to raise rates more than anticipated. Mr.

Trump has also vowed to rewrite trade agreements, which could lead to more economic and financial uncertainty.

In a recent speech in San Francisco, Federal Reserve Chairwoman Janet Yellen mentioned "the **potential for changes in fiscal policy to affect the economic outlook** and the appropriate policy path."

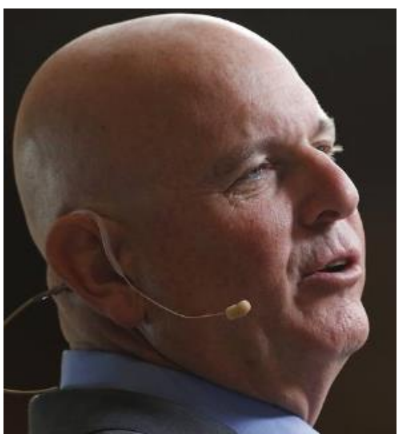
The Fed's statement Wednesday made no mention of fiscal policy or of Mr. Trump's proposals.

Officials are set to release updated economic projections following their March meeting and Ms. Yellen is expected to hold her quarterly press conference. By then, officials will have inflation data for January as well as two more employment reports, for January and February.

Ms. Yellen is also scheduled to speak before Congress on Feb. 14 and 15, where she could offer an update on the economy's progress and the Fed's plans for interest rates.

CALSTRS Says It Can No Longer Earn 7.5%

by Heather Gillers — WSJ — Feb 2, 2017



America's second-largest pension fund cuts **target** for investment **returns to 7% over next two years** after assessment for slower growth in broader economy

Left: Christopher Ailman is chief investment officer of **California State Teachers' Retirement System**.

The board of the nation's second-largest pension fund voted Wednesday to drop its investment target **from 7.5% to 7%** over two years, **driving up pension costs for the state of California and some of its teachers**.

The move by the California State Teachers' Retirement System is **more aggressive than** a **recommendation** made last week **by its outside consultant** Milliman, which **suggested** a pullback to **7.25%.**

Milliman advised the fund to reconsider the outlook based on its expectations for **slower growth in** prices, wages, and investment returns in the **broader economy**. The fund, known by its **acronym CALSTRS**, said Wednesday it had a less than 50% chance of meeting its old investment targets.

CALSTRS' shift brings it in line with the California Public Employees' Retirement System, the nation's largest public pension. That fund, known by its acronym **CALPERS**, decided in December to **lower** its **expected rate of return to 7% from 7.5% over three years**.

Many other public pensions around the U.S. are reconsidering their return targets as they concede that investment gains alone won't be enough to fund hundreds of billions in liabilities.

Approximately 80,000 current members of CALSTRS could see an increase in their yearly pension contributions of $200 or more as a result of Thursday's move, CALSTRS said. The state of California has already budgeted an extra $153 million for its pension contribution to cover the rate change, bringing the total contribution to $2.8 billion.

The Economy's People Problem

by Justin Lahart — WSJ — Feb 3, 2017

Productivity data are weak again, showing the challenges faced by President Trump to boost growth, especially if he cuts immigration.

Work at a Boeing Co. aircraft-interior facility in South Carolina.
The U.S. has been struggling to raise the size and productivity of its workforce

The U.S. economy has a people problem. There may not be much that President Donald Trump can do to improve the situation, and there is a danger he could make it even worse.

People drive the pace of economic growth, and they do it in three main ways: First, they can add to their numbers — **more workers produce more goods**. Second, a

greater share the population can hold jobs. And third, the people working can **do** their **jobs more efficiently, boosting productivity**.

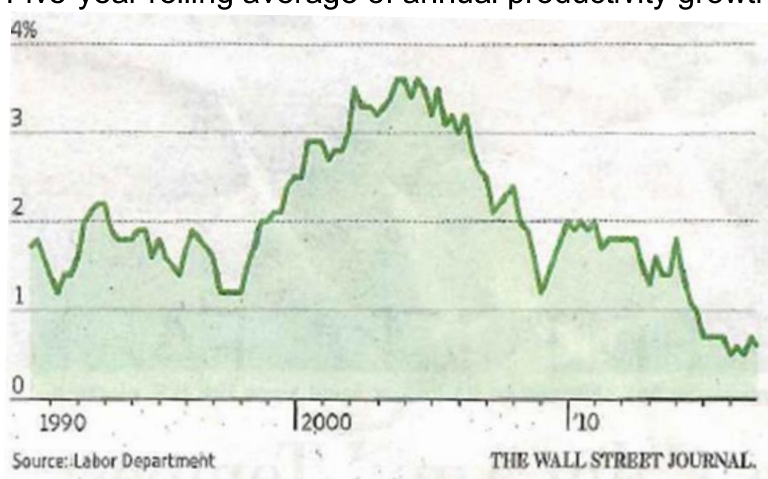
On all those fronts, the U.S. has been struggling.

Population growth has slowed, and is forecast to slow further in the decades ahead. By 2026 the population will be growing about 0.2% a year, according to Census projections, versus 0.7% last year. Those projections are based in part on expectations that the U.S. will have net immigration of about 1.3 million people a year over the next decade. If Mr. Trump follows through with his hard line on immigration, those projections may be too high.

The share of the population in the labor force has fallen over the past decade, partly because of the damage exacted by the financial crisis, but also because the population is aging. So while it is possible that, if the job market keeps improving more people could be drawn into the workforce, there is a limit on any gains. Many of the people on the sidelines may at least initially lack the skills to do available jobs well.

Efficient Frontier

Five-year rolling average of annual productivity growth



Finally, **efficiency gains have weakened**. The Labor Department on Wednesday reported that productivity, as measured by what the average worker produces in an hour, was up just 1% in the fourth quarter from a year earlier. That is about the pace of the past few years, and compares with average annual productivity gains of 2.1% during the 1990s.

Getting productivity going again won't be easy. Companies' capital spending has been weak for over a decade, meaning **workers aren't getting cutting-edge technology that could boost their productivity**. Mr. Trump's promised tax cuts and regulation rollbacks could at least temporarily lift capital spending, which could boost productivity and growth.

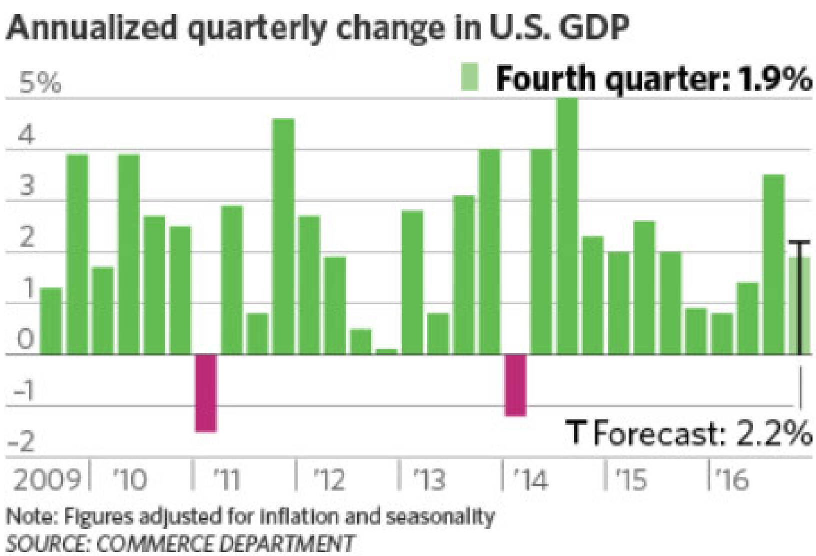
But productivity gains could be offset by more restrictive trade policies. That is because the big benefit of trade is that it allows countries to focus on what they do best — that is, allocate their workers to the areas where they can be most productive.

Investors are focused on how Mr. Trump's tax and fiscal policies might boost the economy. But ultimately, economic growth will be set by how much of a people person Mr. Trump turns out to be.

GDP Expands Tepid 1.9% on Wider Trade Deficit

by Ben Leubsdorf — WSJ — Jan. 27, 2017

The U.S. economy decelerated in the final three months of 2016, returning to a lackluster growth rate



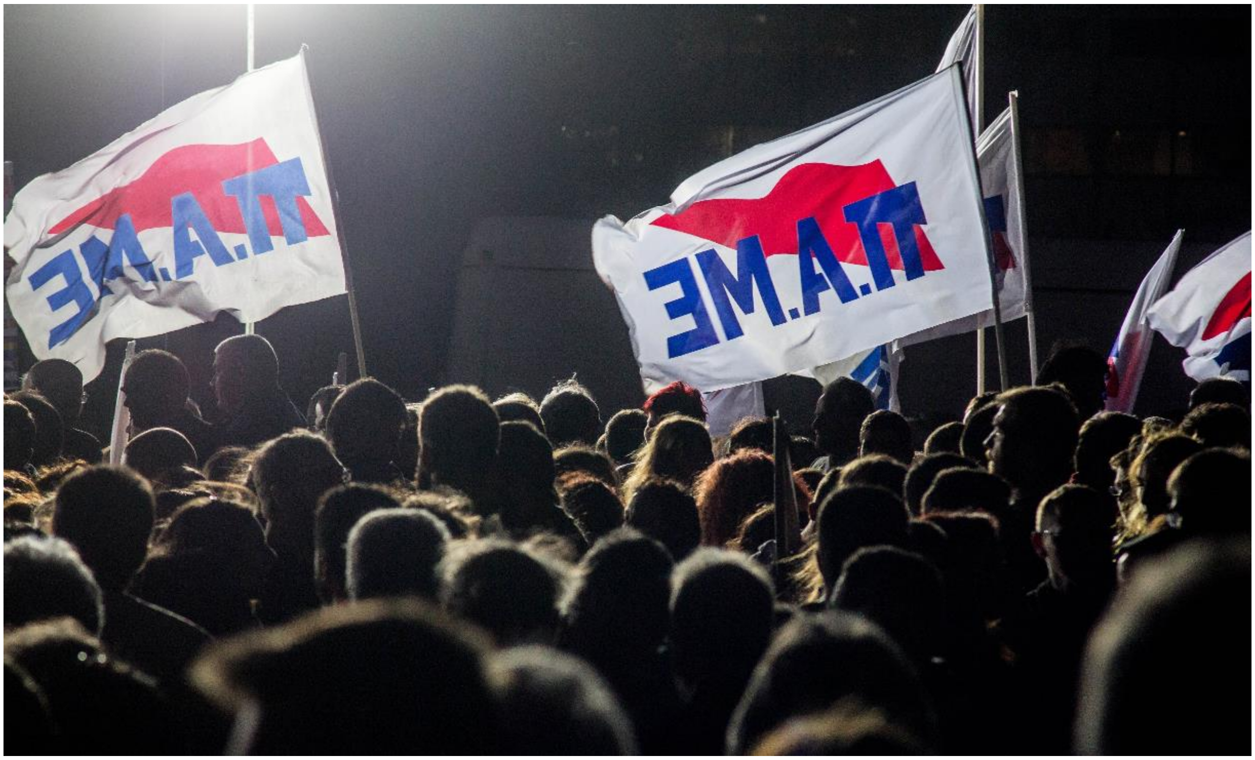
Gross domestic product, a broad measure of the goods and services produced across the economy, expanded at an inflation rate and seasonally adjusted annual rate of **1.9% in the fourth quarter**, the Commerce Department said Friday.

That was a slowdown from the third quarter's 3.5% growth rate, which had been the strongest reading in two years, and was **in line with the 2% growth rates that have prevailed through most of the expansion which began in mid-2009**. Economists surveyed by The Wall Street Journal had expected a 2.2% growth rate in the final three months of 2016.

Greek Bond Could Set Deadline on Country's Talks with Creditors

by Christopher Whittall — WSJ — Feb. 10, 2017

Trading in the €2 billion bond has been volatile



Greek unions protest against the arrival of the country's creditors' representatives in Athens during talks last October

Greece made a triumphant return to bond markets in 2014, proclaiming it had turned the corner two years after its near-exit from the euro.

Fast forward to 2017 and **one of those bonds** has come back to haunt it, acting as a hard deadline for when Greece must get money from its creditors.

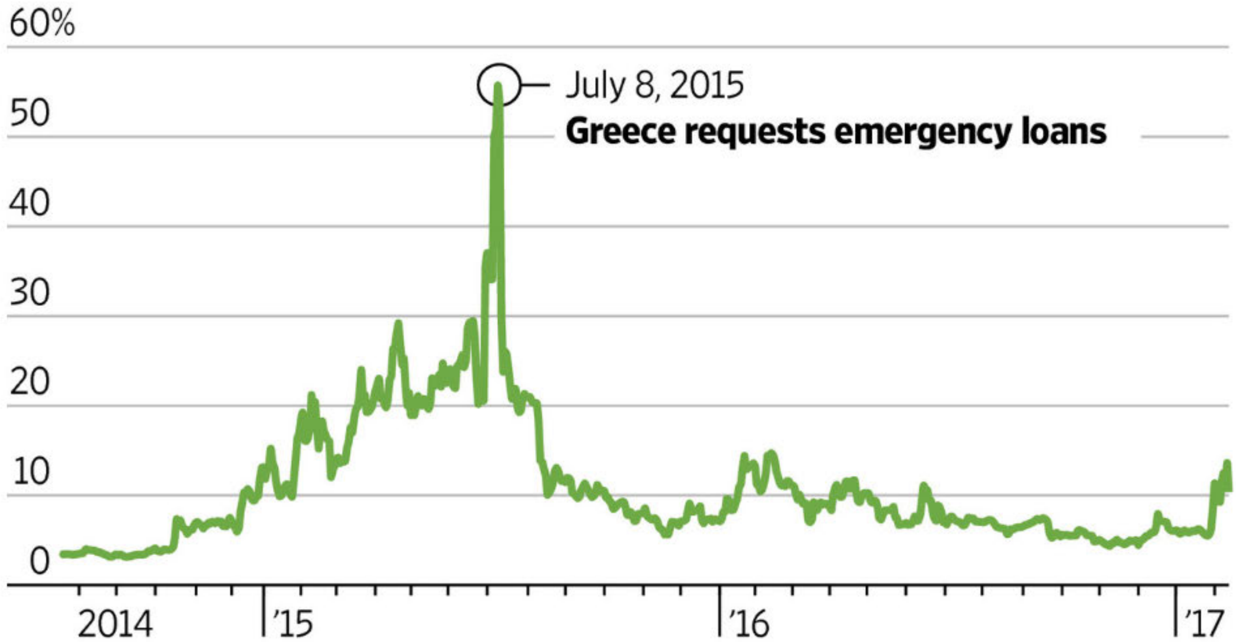
Trading in the €2 billion (**$2.13 billion**) bond in question — which **matures in July** — has been volatile. In recent days the **yield has shot above 15%** from as low as 5% in late January, according to Tradeweb. Rising yields mean falling prices. The yield declined to 10.4% Friday from 13.6% at the previous day's close following reports that the International Monetary Fund and Greece's European creditors had agreed on a common stance on negotiations with the country.

But as ever with **Greece, analysts predict a bumpy road ahead**.

Greece needs to secure a deal to pay private investors holding the debt coming due in July, along with a chunk of money owed to its public creditors, including the European Central Bank and the IMF.

Counting Down

Yields on a €2 billion ($2.12 billion) Greek bond maturing in July have been volatile ahead of the latest bailout talks.



Source: Tradeweb THE WALL STREET JOURNAL.

Clouding the picture are a series of **elections** in the rest of the euro-zone, including the **Netherlands** in March, **France** in the spring and **Germany** in September. **Leaders in Germany, in particular, won't want to appear to voters to be letting Greece off the hook**.

€1.40 billion on Feb. 10, 2017
Owed to: Treasury bill holders

€1.62 billion on Feb. 27, 2017
Owed to: European Stability Mechanisr

€1.40 billion on March 3, 2017
Owed to: Treasury bill holders

Greek politicians are facing domestic political pressures as well to stand their ground. The left-wing Syriza government is behind in the polls and some analysts say the chance of early elections has increased in the coming months.

The political situation inside and outside of Greece "makes concluding the review very difficult," said Athanasios Vamvakidis, head of G-10 foreign-exchange strategy at Bank of America Merrill Lynch.

The main points of contention revolve around Greece's budgetary finances, structural reforms and the thorniest issue of all: debt relief.

Mr. Vamvakidis said pressures on the Greek government's finances will be needed for an agreement to be concluded, a familiar playbook seen during previous Greek bailout talks. That will likely begin in **May or June** as **Greece starts to run out of money**, he says.

"**July is the real deadline** because this is when, **if** you **don't repay bonds**, you're going to **have to default**," he said.

Kathrin Muehlbronner, senior vice president at Moody's Investors Service, said Thursday she expects Greece to implement measures required by its creditors such as labor-market reforms. But the risk of early elections is increasing, she said.

That could bring in a more reform-minded government. But meanwhile: "Greece's economy would be hit again by prolonged uncertainty after having just started to record positive growth," she said.

Despite the gyrations in Greece's short-term debt, many investors still think a last-ditch agreement before the 2017 bond matures is the most likely outcome.

Greek bonds also weakened ahead of a similar bailout review last year, before rallying later in the year. The 2017 bond still yields far below the roughly 56% level it spiked to during the summer of 2015. Back then, Greece flirted with an exit from the euro area amid fractious talks with its creditors that were eventually resolved.

Some investors think Greece will again muddle through.

Mark Dowding, co-head of investment-grade debt at BlueBay Asset Management, said he plans to keep the small amount of Greek long-dated government bonds he holds as part of some of the firm's hedge-fund strategies.

"I don't see Greece leaving the euro for the time being. I don't see them defaulting on their debt. Therefore it's an attractive yield," he said.

Analysts say this shouldn't be the last time Greek bailout talks dominate news headlines though, **predicting** the **contentious issue of debt relief** is **unlikely to be resolved**.

"It is **very difficult for the Europeans to agree on** this **ahead of the German elections**," said Mr. Vamvakidis.

On that issue, at least, he says the **most likely outcome** is once again "to **kick the can down the road**."

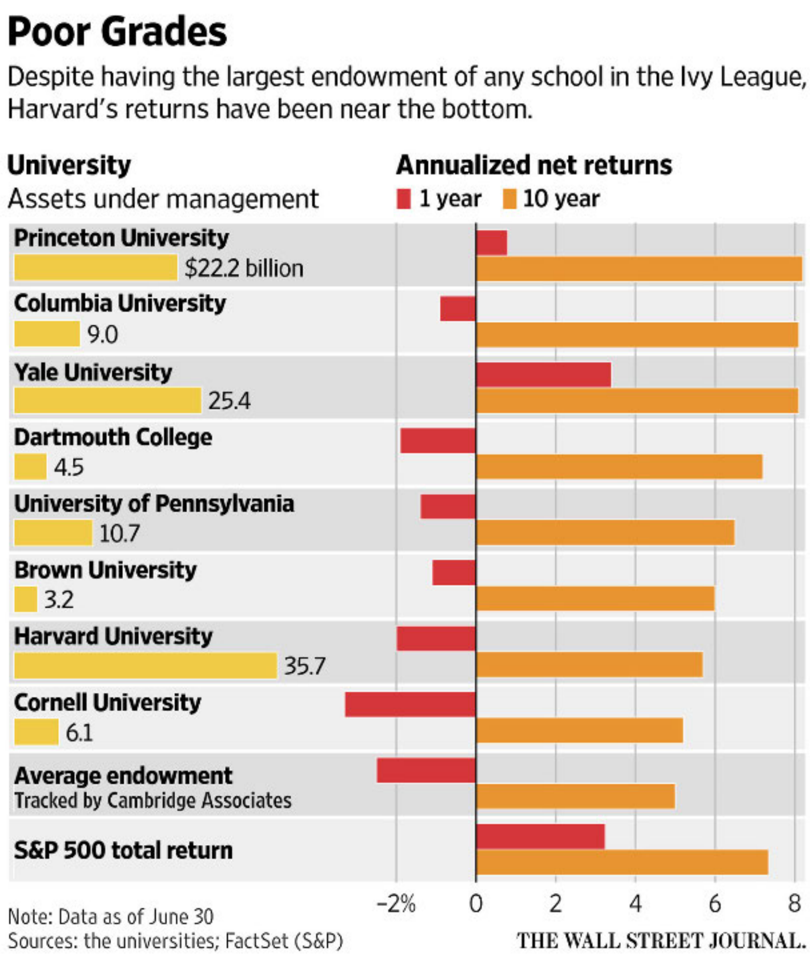
Harvard Outsources Endowment

by Juliet Chung and Dawn Lim — WSJ — Jan. 26, 2017

Left: The school fund will lay off half of its staff and ask outside funds to run its investments. The endowment covers over a third of Harvard's operating budget.

Harvard University's endowment plans to outsource management of most of its assets and lay off roughly half the staff, in a radical overhaul of the way the world's wealthiest school invests its money.

About half the 230 employees at **Harvard Management** Co. will leave as part of a sweeping change by the university's new endowment chief, N.P. "Narv" Narvekar. The endowment will shut down its internal hedge funds and let go traders by the middle of the year, said one of the people, with other layoffs occurring by year-end, Mr. Narvekar said in a Wednesday letter to Harvard endowment employees, certain alumni, and university administrators.



The internal team in charge of direct real-estate investments is expected to spin out into an independent entity that Harvard is likely to invest with. Only management of Harvard's natural resources portfolio and passively managed exchange-traded funds will remain in house.

The changes are a break with the university's long-held approach to managing its wealth. While Yale University and others park nearly all their money with outside managers, Harvard for decades deployed a "hybrid" approach, relying in part on its own traders to wager on assets such as stocks and bonds. It stuck with that model even after incurring deep losses in the 2008-2009 financial crisis, though the amount managed in-house has fluctuated over the years.

“We can no longer justify the organizational complexity and resources necessary to support the investing activities of these portfolios,” Mr. Narvekar said in his letter, referring to the in-house hedge funds.

Harvard’s returns have trailed rivals’ in recent years. The **endowment’s annualized gains of 5.7% over the 10 years ended June 30, 2016 are second-lowest in the Ivy League and below the comparable 8.1% returns of Yale** University **and Columbia** University.

The $35.7 billion endowment currently provides more than a third of Harvard’s operating budget and contributes to the costs of student financial aid, research and professor salaries.

Mr. Narvekar’s decision to shut Harvard’s internal trading program reflects the challenges even the most sophisticated institutions face in actively managing their assets. Some alumni and faculty have criticized Harvard for paying its traders too much for returns that have lagged Ivy League peers’. At the same time, others have questioned Harvard’s ability to attract top talent with pay that is less than what hedge fund firms can afford.

The moves represent a dramatic start for Mr. Narvekar, 54, who began in December after 14 years running Columbia University’s endowment. Harvard’s fourth endowment head in a decade, he arrived with a broad mandate to boost returns.

Mr. Narvekar has dispensed with some traditions in his short time in Boston, where the endowment operates out of four floors in the Federal Reserve Bank of Boston’s building.

He postponed the endowment’s annual winter party, prompting staffers to hold an alternate get-together, one person said. And he has hired several people who have experience investing with outside money managers to help restructure the endowment’s portfolio and approach

Richard Slocum, who most recently invested the personal wealth of New York Jets owner Woody Johnson, will in March become the endowment’s chief investment officer, according to people familiar with the matter. The position is a new role for Harvard and reports to Mr. Narvekar. Messrs. Narvekar and Slocum previously worked together at J.P. Morgan Chase & Co.

Harvard’s hybrid approach took off in the 1990s when the endowment’s then-chief, Jack Meyer, built a large in-house hedge-fund to invest directly. He also oversaw the endowment’s early embrace of alternative investments like timber, hedge funds, and private-equity funds.

But after successive leadership shakeups, including the resignation of its most recent chief after less than two years, the board of Harvard’s endowment wanted a new leader to take a hard look at the hybrid model.

Mr. Narvekar’s decision means some internal teams that leave Harvard may launch their own firms. Some may receive money from Harvard, according to people familiar with the matter. Harvard is expected to be a significant investor in the real-estate team if it spins out, the people said.

Mr. Narvekar intends to keep Harvard's portfolio broadly diversified and has yet to determine where Harvard will redeploy the money its internal hedge funds currently manage, a person familiar with the matter said. Longer-term, the endowment's asset allocations and current line-up of external money managers could change, the person said. "Nothing is out of bounds in the future," Mr. Narvekar wrote, saying the endowment could even hire people to start trading a small amount of its assets internally again.

Reshaping the endowment's portfolio is expected to take about five years.

Remaining staffers will focus on Harvard's portfolio overall instead of on specific asset classes. Mr. Narvekar plans to tie staffers' pay to the endowment's overall performance instead of that of their asset class starting in fiscal year 2018.

It is expected to take approximately five years to reshape the $35.7 billion endowment portfolio of Harvard University.

Rates Likely to be Left Alone in Uncertain Times

by Martin Crutsinger, Associated Press — Oregonian — February 1, 2017

The Federal Reserve is all but sure to leave interest rates alone when it ends a policy meeting Wednesday, at a time of steady gains for the U.S. economy, but also heightened uncertainty surrounding the new Trump administration.

The Fed will likely signal that it wants further time to monitor the progress of the economy and that it still envisions a **gradual pace of rate increases ahead**.

"I don't look for the Fed to do anything this week," said Sung Won Sohn, an economics professor at the Martin Smith School of Business at California State University. "They are starting to get their ducks in a row for further rate hikes, but it will be too soon to pull the trigger."

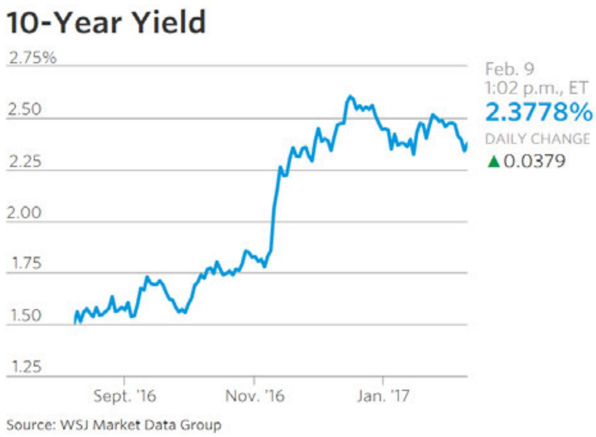
The Fed's two-day meeting will end with a policy statement that will be studied for any signals of its outlook or intentions. At the moment, **most economists foresee no rate increase even at the Fed's next meeting in March**, especially given the unknowns about how President Donald Trump's ambitious agenda will fare or whether his drive to cancel or rewrite trade deals will slow the economy or unsettle investors.

Last month, the Fed modestly raised its benchmark short-term rate for the first time since December 2015. It had kept the rate at a record low near zero for seven years, to help rescue the banking system and energize the economy after the 2008 financial crisis and ensuing recession.

When it raised rates last month, the Fed indicated that it expected to do so three more times in 2007.

Treasury Yields Fall As Inflation Signs Ease

by Sam Goldfarb — WSJ — Feb. 8, 2017



U.S. government bonds strengthened Wednesday, extending recent gains as **investors** further **dialed back expectations for higher inflation and tighter monetary policy**.

The **yield on the benchmark 10-year Treasury note settled at 2.349%,** its lowest close since Jan. 17, compared with 2.389% Tuesday. It fell as low as 2.325% earlier in the day, according to Tradeweb, but rebounded following a lackluster auction of new 10-year notes.

Yields fall when bond prices rise.

Though still within their range for this year, Treasury yields have declined in recent days due to a variety of **factors**, including **mounting political risks in Europe**, **uncertain fiscal policy in the U.S**. and signs that **wages in the U.S. aren't rising** as **fast** as many economists had expected.

The bond market's recent momentum arguably started **last Wednesday** when the **Federal Reserve kept interest rates steady and gave little indication about when it will next raise rates**. That surprised some investors who had expected a stronger signal that a March rate increase is possible.

The market got another boost Friday when the latest jobs report showed disappointing wage growth. It then began a more robust rally Monday amid concerns that the far right **French** presidential candidate Marine Le Pen could win the French **election** and make good on her promise to pull France out of the euro-zone — an outcome that could destabilize the financial markets and drive investors to the safety of haven debt.

Against this backdrop, investors have continued to be frustrated by developments in Washington, where lawmakers appear to be making slow progress on policies, such as an overhaul of the tax code, which could lead to faster economic growth, higher inflation and more bond issuance.

Higher inflation erodes the fixed returns of bonds and **can lead the Fed to tighten monetary policy**, further **diminishing the value of government debt**. **Larger budget deficits also tend to lead to higher bond yields due to the increased**

supply of bonds, **while faster economic growth can enhance the appeal of riskier assets at the expense of Treasurys**.

Hopes for more expansive fiscal policies were a main reason why the **10-year yield soared to 2.6% in mid-December from 1.867% on Election Day. Yet those expectations have since been tempered** as the political debate has largely centered on President Donald Trump's protectionist stance on trade and his action to curb immigration.

"The constant to and fro in Washington on issues that aren't immediately related to fiscal stimulus, tax reform and other things that comprised the Trump trade is backing people away from some of their inflation expectations," said Jim Vogel, interest-rates strategist at FTN Financial.

Investors have pared bets on inflation by selling **Treasury inflation-protected securities** and buying Treasury bonds.

The **10-year break-even rate, the yield premium investors demand to hold the benchmark 10-year Treasury note relative to the 10-year TIPS, fell to 1.964 percentage points Wednesday** from 1.991 percentage points Tuesday and its recent high of 2.069 percentage points on Jan. 27, according to Tradeweb. **That implies investors now expect inflation to run below the Fed's 2% annual target over the next 10 years.**

Meanwhile, **Fed-fund futures**, which are used to place bets on central bank policy, **showed Wednesday that investors and traders see a 59% likelihood of a rate increase by the Fed's policy meeting in June, according to CME Group**. The odds were 65% Tuesday and **above 70% in late January**.

Ultra-long Debt Sells Despite Politics

by Christopher Whittall and Emese Bartha — WSJ — Feb. 7, 2017

Flurry of long-bond sales underlines strong appetite for yield even amid concern of pickup in inflation:

Political risk is on the rise in Europe and bonds have been selling off. But that hasn't stopped **investors** from **snapping up ultra-long-dated debt** — a trend that emerged in 2016 when investors were more concerned with hunting for returns than shielding themselves from losses.

Belgium on Tuesday became the latest euro-zone country **to sell** long-dated bonds, including one slug of **debt that doesn't come due until 2057**. It **follows** a string of **long bonds that France issued in January**, despite the country facing presidential elections in April that this week helped push yields on the country's 10-year government bond to their largest premium over German yields since late 2012, according to Tradeweb.

Other countries have found buyers for long-dated debt despite bond yields moving higher in recent months from their record lows reached last summer. Yields rise when bond prices fall.

Some of the largest U.S. companies are also still **raising money at long maturities**. In the U.S., where the $13 trillion U.S. Treasury market led the lurch higher in global yields, January marked the busiest start to the year on record for high-grade dollar-denominated corporate debt issuance, according to Dealogic data going back to 1995.

Last week alone, Apple Inc., AT&T Inc., and Microsoft Corp. sold $37 billion of bonds between them, including tranches of debt that didn't mature for 40 years in some cases.

The flurry of long-bond deals underlines the strong appetite for yield despite widespread concern that bonds could continue to weaken over the course of the year if global inflation starts to pick up. Inflation erodes the value of the payments that fixed-rate bond investors receive over many years.

Also fueling demand for longer-dated bonds are investors such as pension funds or insurance companies that need to match lengthy liabilities.

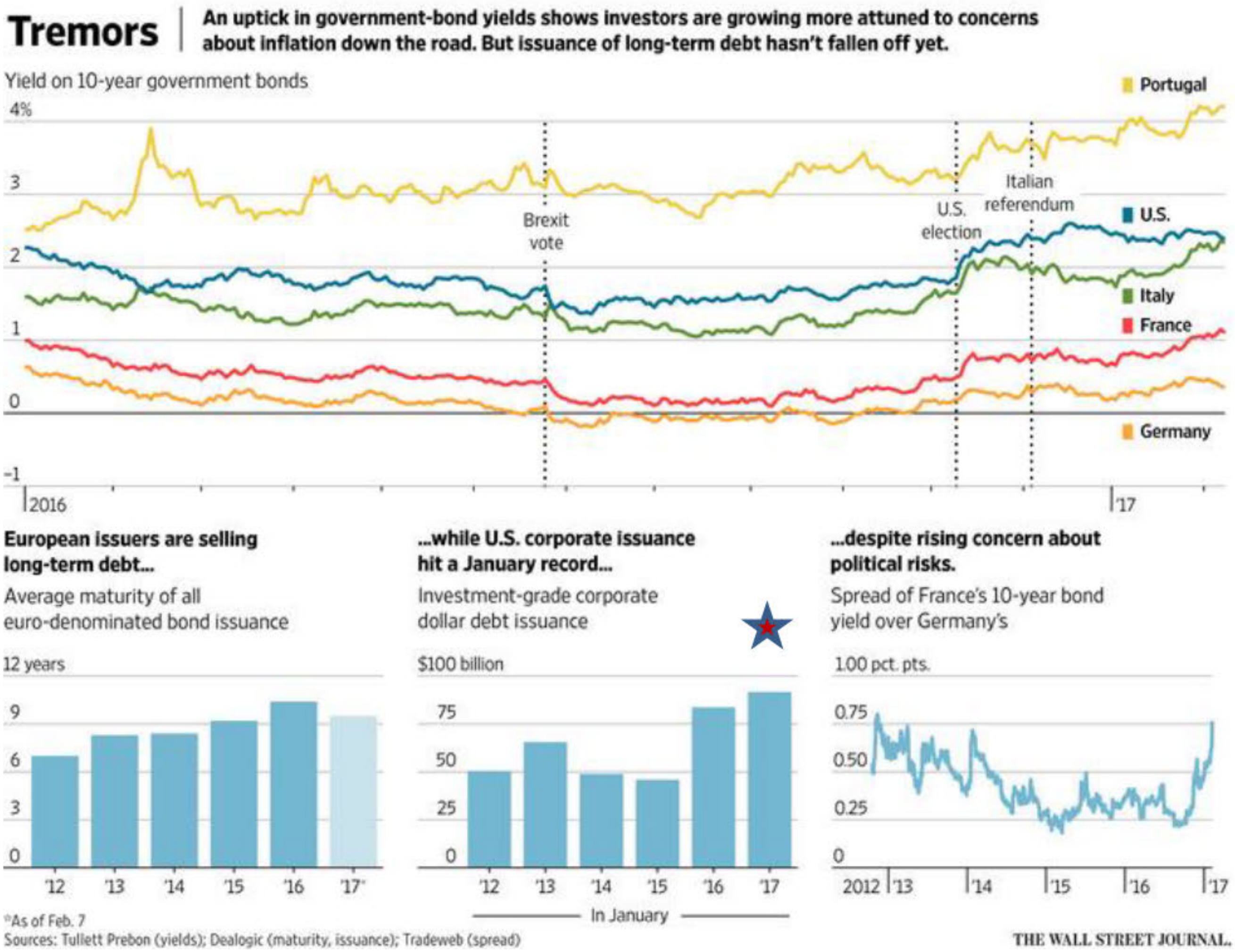
"Fixed income is still a place investors want to be," said Lee Cumbes, head of public-sector debt for Europe, Middle East and Africa at Barclays.

Meanwhile, **issuers** still **want to** take the opportunity to "**term out** [their] **debt whilst** the **demand for that yield and duration is there**," Mr. Cumbes added. **Duration is the sensitivity of a bond's price to changes in interest rates**.

That **demand** was again **evident** in Belgium's bond deal Tuesday. There were more orders for the 2057 bond than for another tranche of debt maturing in 2024, according to bankers on the deal, **allowing** Belgium to **lower** the **interest rate** it paid on the bond to around 2.3% from initial guidance that was slightly higher.

Belgium is no stranger to long-dated debt issuance. **Last y**ear, it **sold** a €100 million ($107.5 million) **century bond in** a **privately placed deal, as well as** 30-year and **50-year debt in public markets**.

That put the euro-zone's sixth-largest economy at the forefront of a trend that also saw **Italy and Spain** issue **50-year debt** for the first time and **Austria** sell a **70-year bond**. Finland has hired banks for a dual bond transaction, looking to issue new bonds that mature in 2022 and 2047, according to a deal announcement on Tuesday.



Other prominent long-dated deals in 2017 include 30-year and 26-year bonds issued by the European Stability Mechanism and European Financial Stability Facility, respectively, two of the euro area's bailout funds.

The average maturity for all euro-denominated debt sales in 2016 was 10.4 years, according to Dealogic, compared with an average of 7.9 years for the previous five years. The average maturity so far in 2017 is 9.5 years.

The continued demand for long debt comes despite heightened debate over when the **European Central Bank may scale back its stimulus**, which has supported bond markets in recent years, and growing political risk on the Continent.

For many, the **French elections** are a major source of **concern**. The leader of France's far-right National Front party, Marine Le Pen, who supports the removal of France from the euro, is riding high in the polls, though she isn't currently projected to win the country's presidency.

The gap in yield between the 10-year bonds of France and Germany has risen to more than 0.7 percentage point, compared with around 0.2 percentage point in September.

Still, **France** auctioned 20-, 30- and **50-year bonds in January and** investors then placed €23 billion of orders for an **inaugural** 22-year "**green**" **bond** from the country later that month, suggesting the **securities** are **still in high demand** from some quarters. **Proceeds** of the green bond **go toward environmentally friendly projects**.

French debt out to 5½ years in maturity yields less than zero, underlining the strength of the European Central Bank's stimulus and the impetus for investors to purchase longer-dated debt that is offering positive returns.

Political risks have also failed to shut some countries out of capital markets — a contrast to the height of the euro-zone's sovereign-debt crisis of 2010 to 2012. **Italian** bonds have been hammered as the chances have grown of **elections** later this year that could see the antiestablishment 5 Star Movement win a large slice of the vote. Even so, Italy managed to sell a 15-year bond in January.

Political risks have hardly affected the **Netherlands** despite coming **elections** in which another euro-skeptic party will be on the ballot. On Tuesday, the Dutch Treasury sold €5.7 billion in new 10-year bonds at a yield of 0.707%.

Vanguard Reaches $4 Trillion for First Time

by Sarah Krouse — WSJ — Feb. 10, 2017

Assets at Vanguard Group climbed to $4 trillion for the first time, a fresh high for the index-fund giant.

Left: Jack Bogle, founder and retired CEO of the Vanguard Group, speaks during the Global Wealth Management Summit in New York in 2014

The Malvern, Pa.-based firm pulled in roughly $49 billion in net new money in January, according to preliminary numbers from a spokeswoman, boosting its assets under management to the new firm record.

That **new marker follows a year when Vanguard's funds pulled in more new money than all of its competitors combined**, according to one industry total.

Of the $533 billion that flowed into all mutual funds and exchange-traded funds tracked by research firm Morningstar Inc., **a net $289 billion went to funds**

managed by Vanguard in 2016. The company's own tally for the year was even bigger, at $322.8 billion.

Vanguard's rise is largely the result of a rush by investors to embrace lower-cost index-tracking products such as exchange-traded funds. Vanguard started the first index-mutual fund for retail investors 40 years ago.

That **growth of low-cost index-tracking funds and a prolonged bull market** since the financial crisis have **helped push assets at** the **two largest money managers in the world to fresh highs** in recent months. The **No. 1 asset manager by size**, **BlackRock** Inc., said late last year that its **assets** had **topped $5 trillion for** the **first time**, helped by its large iShares ETF unit.

Of the roughly $49 billion in fresh cash investors plowed into Vanguard funds in January, about $45 billion went into index funds, while the balance went to actively managed funds.

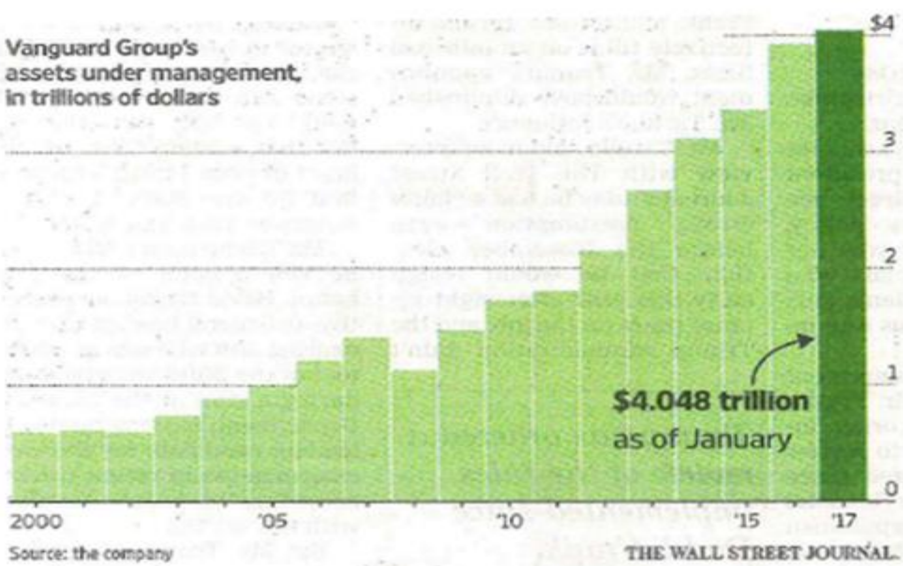
A spokeswoman for the firm said it is "grateful" to investors for the assets, but said growth isn't the firm's goal.

That rapid growth has led to an increase in client calls and some customer complaints about long wait times when calling the company. Vanguard doesn't have a network of retail branches like some of its rivals.

Vanguard executives said in a client webinar early this year that the firm had received "unprecedented phone volumes" but that it doesn't trade cost for service.

Vanguard, which has a staff of about 15,000, hired more than 1,700 new full-time staff members last year and said it expects to hire a similar number of new "crew members" in 2017.

"We've definitely ramped up hiring in our call centers and processing groups, but we're also continuing to add talent across a range of specialties, including experienced investment roles," the spokeswoman said in an email.



Vanguard Hits a $4 Trillion Milestone

Indexing pioneer Vanguard Group has climbed above $4 trillion in assets as investors increasingly turn to money managers who mimic indexes. In 2016, the firm's funds pulled in more money than all its competitors combined, according to researcher Morningstar Inc. B1

Avista Issues 175M of 1st Mortgage Bonds
by Saad A. Sulehri — SNL — Dec. 17, 2016

Avista Corp. issued and sold $175 million of 3.54% first mortgage bonds due in 2051, according to a Dec. 16 Form 8-K filing.

Proceed from the issuance will be **used to repay a $70.0 million term loan with a commercial bank with a maturity date of Dec. 30 and to repay a portion of the borrowings outstanding under the company's $400.0 million committed line of credit**.

In connection with the pricing of the bonds in August, **Avista settled seven interest rate swap contracts** and **paid $54.0 million in cash**, **which will be amortized as a component of interest expense over the life of the debt**.

CASE: UG 325
WITNESS: MATT MULDOON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 211

REDACTED
Pensions & Retirement Medical Expense

Exhibits in Support
of Opening Testimony

March 1, 2017

Staff Exhibit 211 is confidential and

Is subject to Protective Order No.16-460.

(Provided in electronic format)

CASE: UG 325
WITNESS: LISA GORSUCH

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 300

Gas Storage in Rate Base, Underground Storage Operating Expenses, Other Gas Expense, Purchased Gas Expense, Integrated Resource Plan

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Lisa Gorsuch. I am employed as a Senior Utility Analyst with the Energy Resources and Planning Division of the Public Utility Commission of Oregon. My business address is 201 High Street, SE Suite 100, Salem, Oregon 97301-3612.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set for in my Witness Qualification Statement, which is found in Exhibit Staff/301.

Q. What is the purpose of your testimony?

A. I present Staff's recommendations regarding the rate treatment of gas storage in rate base, "underground storage operating expense,""other gas supply expense," "purchased gas expense," and the Integrated Resource Plan (IRP).

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared Exhibits Staff/301, Staff/302 and Staff 303. Exhibit Staff/301, Witness Qualification Statement, consists of one page. Exhibit Staff/302 contains the Company's responses to Staff data request (SDR) numbers 255, 256 and a portion of the Company's response to SDR 257. The response to SDR 255 includes: Other gas supply expense results, includes a breakdown of the other gas supply expense into other gas purchases, purchased gas expenses, natural gas storage transactions, gas used for products extraction, other gas expenses, and Gas Technology Institute categories.

The response to SDR 256 includes: Underground storage operating expense results, includes a breakdown of the underground storage operating expense into supervision and engineering, other expenses, and other equipment categories.

The response to SDR 257 provides Oregon storage inventory account totals, including volumes and prices.

Finally, Exhibit Staff/303 illustrates the Company's Gas Storage in Rate Base, Gas Storage Operating Expense, and Other Gas Supply Expense, and it consists of three pages.

Q. How is your testimony organized?

A. My testimony is organized as follows:

Q. Please summarize your recommendations regarding each of these issues.

A. With respect to the first issue, as a result of my analysis of the issue, I have no proposed adjustment at this time. I recommend the Commission adopt the amount of $2,450,000.00. The $2,450,000.00 includes $1,189,000.00 in Working Gas and $1,261,000.00 in Base Gas (Cushion Gas).

With respect to the second issue, Underground Storage, Staff proposes to reduce Avista's requested "underground storage operating expense" by $20,000, from $156,000 to $136,000.

With respect to the third issue, Other Gas Supply Expense, Staff proposes to reduce Avista's requested "other gas expense" by $114,000, from $671,000 to $557,000.

With respect to the fourth issue 4, Purchased Gas Expense, the actual cost of gas is reconciled with customers each year in the Purchased Gas Adjustment (See Order No. 14-238 in Docket No. UM 1286). Therefore, Staff has no proposed adjustment for "purchased gas expense" in this rate case at this time.

With respect to the fifth issue, IRP, the IRP does not identify a need for new resources within the 20-year planning period. There is no connection made in the IRP presentation to the rate case.

ISSUE 1. GAS STORAGE IN RATE BASE

Q. Please describe the gas storage costs at issue.

A. Storage gas consists of two components, "cushion gas" and "working gas inventory." Cushion gas is permanently retained in storage to maintain operational pressure and prevent water deterioration in an underground storage reservoir. "Working gas inventory" is the gas that flows in and out of the storage reservoir (or Liquid Natural Gas (LNG) tank) to serve customer loads.

Q. Please summarize Avista's and your proposed rate treatment of Avista's gas storage costs.

A. Avista includes $2,450,000 for gas storage in its rate base.[1] This amount is the twelve month base year ended June 30, 2016 for Avista's working gas

[1] Exhibit Avista/501, Smith/4-13, lines 247-250.

inventory. Staff supports including the cost of working gas inventory in rate base. Staff does not recommend an adjustment to the amount included in rate base as proposed by Avista.

Q. Please summarize the Commission's historical treatment of gas storage in rate base.

A. There are a few orders[2], also cited by Staff in Avista's last general rate case, Docket UG 288, that specifically address the appropriate regulatory treatment of working gas inventory costs. All of the three gas utilities serving in Oregon and regulated by the PUC currently include these costs in rate base.[3] In 1977, the Commission expressly allowed Cascade to include its gas storage costs as an asset in rate base.[4]

Q. Please summarize your analysis of the amount that should be included in rate base for working gas inventory.

A. Staff has previously testified that its "analysis in Docket No. UM 1651 showed that year-to-year variations in average annual gas storage are caused by variations in weather from that forecasted and spot market gas prices falling below the average cost of gas in storage."[5] Staff's analysis in that docket and this one shows that the amount a gas utility may include in rate base should be calculated using forecasted average working gas inventory balances for a

[2] See *In the Matter of Cascade Natural Gas Corporation*, OPUC Docket No. UF 3246, Order No. 77-125 (February 22, 1977) and *In the Matter of Northwest Natural,* OPUC Docket No. UM 1651, Order No. 13-349 (September 30, 2013).
[3] See e.g., *In the Matter of Northwest Natural,* Order No. 13-349 at 5 (Commission adopting stipulation including NW Natural Gas Company's working gas inventory in rate base).
[4] *In the Matter of* Cascade Natural Gas Corporation, Order No. 77-125 (1977 WL 440903 at 3).
[5] *In the Matter of Avista Corporation*, OPUC Docket No. UG 288, Exhibit Staff/700, Colville/4.

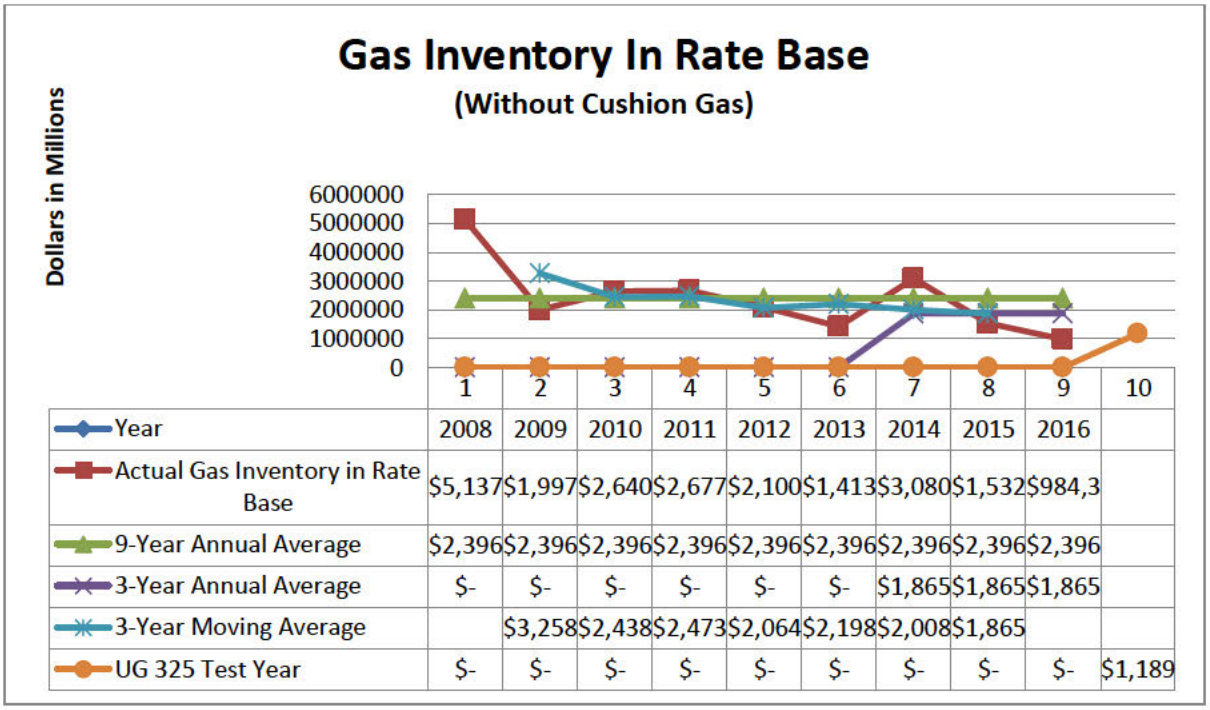
recent or a forecasted 12-month time period. Staff supports using the most recent three-year moving average to calculate average annual gas storage.

Q. Did you issue data requests to Avista about the working gas inventory issue?

A. Yes. Staff issued SDR 257 to Avista requesting monthly storage inventory levels as well as the monthly storage guideline for each storage facility. Based upon Avista's responses to SDR 257, cushion gas is valued in this rate case at its cost when placed in the reservoir. Please refer to pages 4 and 5 of Exhibit Staff/302 for the relevant SDR responses.

Q. Please summarize Staff's analysis of Avista's responses to SDR 257.

A. Using data provided in Avista's response to SDR 257 to calculate the annual averages, Staff's practice to consider the previous three year's results more heavily than a long-term trend was used as the basis to calculate an adjustment to Avista's request for gas storage in rate base. Staff's recommendation is based on review of Avista's actual gas storage in rate base for the previous three years. The most recent three-year moving average value is $2,009,000.00, and could be justified in rates.



Q. What is your proposed adjustment to Gas Storage in Rate Base?

A. As a result of Staff's analysis of the issue, no adjustment is proposed at this time. Staff proposes to allow the amount of $2,450,000.00 in Rate Base, as requested by Avista, which includes $1,189,000.00 in Working Gas and $1,261,000.00 in Base Gas (Cushion Gas).

<u>ISSUE 2. UNDERGROUND STORAGE OPERATING EXPENSE</u>

Q. What is "underground storage operating expense?"

A. "Underground storage operating expense" is expense recorded in FERC Accounts 814, 824, and 837 and includes: the cost of labor and expenses incurred in the general supervision and direction of underground storage operations; the cost of labor, material used and expenses incurred in operating underground storage plant, and other underground storage operating expenses, not includible in any of the foregoing accounts, including research, development, and demonstration expenses; and the cost of labor, materials used and expenses incurred in the maintenance of equipment, the book cost of which is includible in Account 357, Other Equipment.[6]

Q. Please summarize Avista's proposal related to "underground storage operating expense."

A. Avista proposes to begin with the Total Underground Storage Operating Expense from its 2015 Results Of Operation (ROO), and to apply adjustments, which results in a Restated twelve month base year ended June 30, 2016 average of monthly averages (AMA) Test Period Total Underground Storage Operating Expense of $156,000.[7]

Q. Please summarize the Commission's historical treatment of "underground storage operating expense."

A. I was unable to find a Commission order specifically on this point, addressing how to determine the proper amount of "underground storage operating expense" that should be included in revenue requirement.

Q. What is your recommendation?

A. Staff practice is to consider the previous three years' expense results more heavily than any long-term trend, unless there is a reason not to do so. My recommendation is based on review of Avista's actual "underground storage operating expense" for the previous three years.

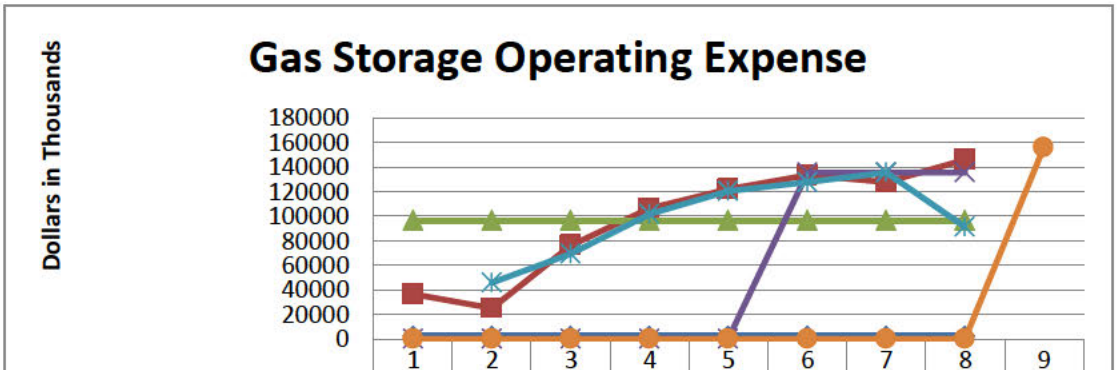
Q. Please summarize your analysis.

---

[6] See 18 C.F.R. FERC Accounts 814, 824, and 837.
[7] Exhibit Avista/501, Smith/4-13, line 45.

A. As in its last rate case, Avista did not initially provide any detail for supervision and engineering, other expenses, or other equipment.[8] Staff issued SDR 256 seeking 10-year historical “underground storage operating expense” results, as well as a breakdown of “underground storage operating expense” into supervision and engineering, other expenses, and other equipment categories. The breakdown provided in response to SDR 256 is shown in the following table and on the following figure. Please refer to Exhibit Staff/302 for the SDR 256 response at page 2.

Supervision and engineering was $0 in each year, so that detail is omitted. In addition, there were no Oregon ratepayer expenses for storage prior to 2009, thus there is no detail prior to 2009.



Year	2009	2010	2011	2012	2013	2014	2015	2016	
Actual Gas Storage Operating Expense	$36,82	$25,08	$75,99	$106,6	$121,9	$133,6	$128,0	$145,7	
8-Year Annual Average	$96,74	$96,74	$96,74	$96,74	$96,74	$96,74	$96,74	$96,74	
3-Year Annual Average	$-	$-	$-	$-	$-	$135,8	$135,8	$135,8	
3-Year Moving Average		$45,97	$69,26	$101,5	$120,7	$127,8	$135,8	$91,27	
UG 325 Test Year	$-	$-	$-	$-	$-	$-	$-	$-	$156,0

[8] See Docket No. UG 288, Exhibit Staff/700, Colville/4.

Q. Please continue with explaining your analysis.

A. Oregon's increasing share of Jackson Prairie operating and maintenance expenses from 3.08 percent to 9.65 percent, corresponding with the increase in capacity for Oregon customers is reflected in the dip in "underground storage operating expense" for 2010, as indicated in Avista's response to SDR 256. This increase in allocation percentage is the primary reason for the increase in expenses between 2010 and 2011. In addition, there is a timing lag associated with invoice processing and expense recognition because Avista is not the operating partner for Jackson Prairie. For example, $46,000 of costs incurred in 2010 were expensed in 2011.[9]

Q. Please summarize your proposed adjustment to "underground storage operating expense."

A. I propose to reduce Avista's requested "underground storage operating expense" by $20,000, from $156,000 to $136,000. The $136,000 reflects a three-year moving average value.

ISSUE 3. OTHER GAS EXPENSE

Q. What is "other gas expense?"

A. "Other gas expense" is expense recorded in FERC Account 813, and includes the cost of labor, materials used and expenses incurred in connection with gas supply functions, including, research and development expenses, not provided for in any other FERC account for gas expense.[10]

Q. Please summarize Avista's proposal related to other gas expense.

[9] Exhibit Staff/302.
[10] See 18 C.F.R. FERC Account 813.

A. Avista proposes to begin with the Total Other Gas Supply Expense from its 2015 ROO, to apply adjustments, which results in a Restated September 30, 2018 AMA Test Period Total Other Gas Supply Expense of $671,000.[11]

Q. Please summarize Commission historical treatment of "other gas expense."

A. As previously stated in Docket No. UG 288, Staff has not been able to find a Commission order expressly addressing how to determine the proper amount of "other gas supply expense" that should be included in revenue requirement.

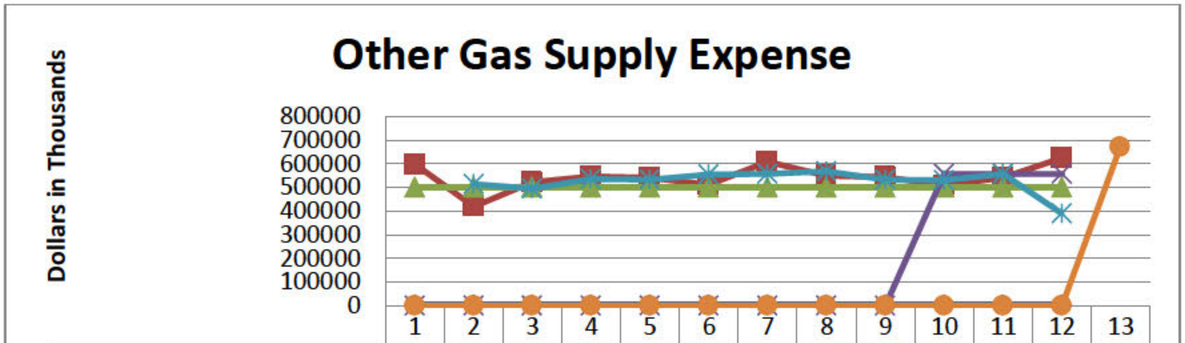
Q. Please summarize your analysis.

A. The Company's proposed "other gas supply expense" amount in this rate case is $671,000. I issued SDR 255 seeking 10-year historical "other gas expense" results, as well as a breakdown of the "other gas expense" into Other Gas Purchases, Purchased Gas Expenses, Natural Gas Storage Transactions, Gas Used for Products Extraction, Other Gas Expenses, and Gas Technology Institute Expense categories. Of these six expense subcategories, only Other Gas Expenses, and Gas Technology Institute (GTI) Expenses remain after the various rate case adjustments. Please refer to page 1 of Exhibit Staff/302 for the Company's SDR 255 response.

Q. What was Avista's response to SDR 255?

A. Avista's response to SDR 255 is depicted in the figure below, and in Exhibit Staff/303, page 1.

[11] Exhibit Avista/501, Smith/4-13, line 37.



	1	2	3	4	5	6	7	8	9	10	11	12	13
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Actual Other Gas Supply Expense	$595	$417	$521	$544	$541	$509	$607	$548	$543	$506	$539	$623	
12-Year Annual Average	$499	$499	$499	$499	$499	$499	$499	$499	$499	$499	$499	$499	
3-Year Annual Average	$-	$-	$-	$-	$-	$-	$-	$-	$-	$556	$556	$556	
3-Year Moving Average		$511	$494	$535	$531	$552	$554	$566	$532	$529	$556	$387	
UG 325 Test Year	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$671

Q. What is your recommendation?

A. Staff's practice is to consider the previous three year's expense results more heavily than a long term trend, unless there is a reason not to do so. Thus, I conclude that Avista's proposal to use the adjusted ROO expense is not the optimum way to calculate the appropriate amount to include in revenue requirement. Therefore, my recommendation is based on review of Avista's actual "other gas expense" for the average of the previous three years. As a result, I propose to reduce Avista's requested "other gas expense" by $114,000, from $671,000 to $557,000.

ISSUE 4. Purchased Gas Expense

Q. Please describe your proposed adjustment of "purchased gas expense."

A. The actual cost of gas is reconciled with customers each year in the Purchased Gas Adjustment[12] (Order No. 14-238 in Docket No. UM 1286). Therefore, Staff has no proposed adjustment for "purchased gas expense" in this rate case at this time.

ISSUE 5. IRP

Q. Does Avista make a proposal related to its IRP in this rate case?

A. No.

Q. Do you have an IRP-related concern?

A. No. In Avista/400, Moorehouse/10-11, the Company states that Avista filed its 2016 IRP on August 31, 2016, and that the IRP does not identify a need for new resources within the 20-year planning period. There is no connection made in the presentation to the rate case.

Q. Does this conclude your testimony?

A. Yes.

[12] Docket No. UG 314/Advice No. 16-08-G, reflects changes in the cost of purchased gas and the amortization rate for the Purchased Gas Adjustment balancing account that went into effect on November 1, 2016.

CASE: UG 325
WITNESS: LISA GORSUCH

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 301

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Lisa M. Gorsuch
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Utility Analyst Energy Resources & Planning Division
ADDRESS:	201 High Street SE. Suite 100 Salem, OR. 97301
EDUCATION:	College-level coursework in financial accounting, business law, business management, and economics. The Center for Public Utilities at New Mexico University. The National Association of Regulatory Utility Commissioners' (NARUC) Annual Regulatory Studies Program at Michigan State University.
EXPERIENCE:	Utility Analyst with the Public Utility Commission of Oregon (PUC) since April 2008. Primarily responsible for review of electric and natural gas company tariff filings, other electric and natural gas company rates and costs, and integrated resource planning. Serving as natural gas subcommittee member for NARUC from 2013 to present. Compliance Specialist with the PUC from June 2004 until April 2008. Responsibilities included acting as a liaison between the public, regulated utilities and various Commission staff. Review of proposed tariffs, administrative rules, and policies for evaluation of the potential impact on consumers and the regulated utilities. Identified trends, services, and policies where no statute, rule or precedent applied and recommended the appropriate action.
OTHER EXPERIENCE:	Senior Enforcement Agent with the Oregon Department of Revenue as a member of a multijurisdictional task force from 1999 - 2004. Responsibilities included, but were not limited to, investigating criminal cases for prosecution. In addition, served as liaison between task force and Oregon State Legislators.

CASE: UG 325
WITNESS: LISA GORSUCH

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 302

Exhibits in Support
Of Opening Testimony

March 1, 2017

Pages 1 to 5 of Exhibit 302

are Excel spreadsheets

(Provided in electronic format)

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/18/2016
CASE NO:	UG 325	WITNESS:	Jody Morehouse
REQUESTER:	PUC Staff - Gorsuch	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State& Federal Regulation
REQUEST NO.:	Staff – 257	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Please provide, in a single electronic spreadsheet format:

a. Monthly historical working gas inventory balances (excluding labor dollars) for each storage facility (in both volume and in dollars) and the monthly working gas storage guideline, or goal or target, for each storage facility (in the same volume units as used for the inventory). Provide the monthly data requested above from the first date each storage facility was placed in operation through 2015, and to the extent as available monthly through 2016. Please indicate whether the values given above are for beginning or end of month. Separately identify any related labor expense for each calendar year from 2005 through 2015, and to the extent as available monthly through 2016. Provide results separately for total company and for Oregon; and

b. Historical cushion gas inventory balances for each storage facility (in both volume and in dollars), by month from the first date each storage facility was placed in operation through 2015, and to the extent as available monthly through 2016. For the dollar values provided, please provide an explanation as to how the dollar value was derived. Please indicate whether the values given above are for beginning or end of month. Separately identify any related labor expense for each calendar year from 2005 through 2015, and to the extent as available monthly through 2016. Provide results separately for total company and for Oregon.

RESPONSE:

a. Please see the following attachments:

Please see Staff_DR_257 Attachment A for Storage detail for 09/1999-12/2006.
Please see Staff_DR_257 Attachment B for Storage detail for 01/2007-12/2008.
Please see Staff_DR_257 Attachment C for Storage detail for 01/2008-12/2016.

Data is provided in electronic format as requested. The information provided includes all storage facilities in which Oregon customers held capacity[1]. This includes leased capacity at

[1] Attachments A and B have individual tabs for each storage field. Attachment C represents total Jackson Prairie capacity, including both owned and leased.

Plymouth from 1999-2007, leased capacity at Mist for 2007-2010, leased capacity at Jackson Prairie for 1999-2016, and Jackson Prairie owned capacity from 2009-2016.

Monthly and annual data is provided inclusive of monthly injections, withdrawals (volumes and dollars), monthly balances and year end balances. Costs represents the natural gas commodity cost of natural gas; labor dollars are not included in working gas inventory. Avista injects gas yearly in accordance with operating procedures which require 35% of the facility be full by June 30, 80% by August 31, and 100% by September 30.

b. Working gas volume capacity (see part a.) changes every month based on daily/monthly injections and withdrawals. Cushion gas, however, remains constant unless there is a major expansion completed. Oregon customers have participated in two expansions of the facility. Balances are summarized in the table below:

	Ending Balance 10/31/2008	Ending Balance 05/31/2011
Cushion Gas Dth	174,964	495,223
Cushion Gas $	$976,027	$1,711,623

The cushion gas value is based on the cost of the cushion gas as it was being injected into the facility in accordance with GAAP. No labor dollars are included. The above balances include both recoverable account 117.1 and non-recoverable 352.3.

CASE: UG 325
WITNESS: LISA GORSUCH

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 303

Exhibits in Support
Of Opening Testimony

March 1, 2017

Exhibit 303

are Excel spreadsheets

(Provided in electronic format)

CASE: UG 325
WITNESS: JUDY JOHNSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 400

Opening Testimony

REDACTED
March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Judy Johnson. I am a Senior Economist employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE., Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience is set forth in my witness qualification statement, which is found in Exhibit Staff/401.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to review and propose necessary adjustments for Director's and Officer's (D&O) Liability Insurance and other insurance not related to employee benefits.

Q. Did you prepare exhibits for this docket?

A. Yes. I prepared confidential Exhibit Staff/402, consisting of 3 pages of confidential material describing the cost of D&O liability insurance and Exhibit Staff/403, consisting of 1 page which shows the Company's response to Staff Data Request 68 with information on the vendors and costs of different types of insurance, not including employee benefits.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, D&O INSURANCE

Q. What is the purpose of D&O Insurance?

A. D&O Insurance shields Avista's directors and officers against the risks associated with managing the Company's business.

Q. Briefly describe your recommendation related to D&O Insurance.

A. Avista included in its filed case $[redacted] in total company D&O Insurance expense, which is $[redacted] on an Oregon-allocated basis.[1] This amount represents the first layer (premium layer) as well as first, second, third, fourth, and fifth excess layers. My recommendation is that 50 percent of the total cost of all layers of D&O Insurance should be removed from A&G, which is consistent with Commission past practice, as described below. Based on my analysis, removing 50 percent of D&O Insurance would result in an Oregon-allocated adjustment of $[redacted]. See Confidential Exhibit Staff/402, consisting of three pages.

Q. What is your Adjustment Number?

A. My adjustment number is S-16. The adjustment is confidential.

Q. Why is D&O Insurance layered?

A. Within the utility industry, the ability to sufficiently insure a loss exposure often requires capacity that is beyond the underwriting ability of a single insurer. This is because most insurance companies manage their exposure to risk by limiting the amount of insurance capacity that they provide to any one company. To acquire adequate coverage limits, diversify exposure, and

[1] *See* Confidential Exhibit/402, pages 1 – 3.

reduce risk, an insurance structure is assembled where the primary insurer provides specific coverage terms and capacity limits, but less than the total needed. Additional insurers provide supplemental capacity limits that are in addition to the primary layer while still following the basic terms and conditions of the primary layer.

Q. What is your reason for recommending the removal of 50 percent of D&O Insurance?

A. My recommendation is consistent with prior Commission decisions. In Docket UE 197, Staff proposed that customers and ratepayers share the cost of D&O liability insurance. The Commission agreed that the cost of D&O liability insurance should be shared between ratepayers and shareholders.

> We concur with Staff that the cost of D&O insurance should be shared equally between shareholders and ratepayers to properly reflect the benefits and burdens of that expense. We eliminate 50 percent of the D&O insurance as a shareholder cost.[2]

In that case, the Commission found compelling Staff's argument that customers who have no say in electing or appointing utility Directors or Officers should not be held financially responsible for covering 100 percent of the insurance costs to cover against business decisions or improprieties by management that result in lawsuits.[3] This methodology has been followed by Staff in subsequent dockets in both electric and natural gas utility general rate cases.

[2] *In re Portland General Electric Company*, OPUC Docket No. UE 197, Order No. 09-020 at 19-20 (Jan. 22, 2009).
[3] Order 09-020 at 20.

ISSUE 2, OTHER INSURANCE

Q. Please explain what other types of insurance you are reviewing.

A. I am also reviewing property insurance, liability insurance, terrorism insurance, workers' compensation insurance, and other risk management insurance. Please see Exhibit Staff/403 for a list of these various types of insurances and a chart comparing premiums for these insurances over the last five years.

Q. Is Staff proposing an adjustment involving any of these types of insurances?

A. No. In reviewing the premiums paid for each of the different types of insurance, Staff concluded that the Company's decision to carry these types of insurance is prudent and that the insurance premiums are reasonable as they have fluctuated only slightly from year-to-year. There is no evidence that any of the insurances deviated drastically over the five year period. Therefore, Staff has concluded that no adjustment is necessary.

Q. Does this conclude your opening testimony?

A. Yes.

CASE: UG 325
WITNESS: JUDY JOHNSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 401

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Judy A. Johnson	
EMPLOYER:	Public Utility Commission of Oregon	
TITLE:	Senior Economist Energy Rates, Finance and Audit Division	
ADDRESS:	201 High Street SE., Suite 100 Salem, OR. 97301	
EDUCATION:	MBA with an emphasis in Statistics from Eastern Washington University Cheney, Washington BA in Accounting from Eastern Washington University Cheney, Washington	
EXPERIENCE:	3/95-Present	I have been employed by the Oregon Public Utility Commission since March of 1995. My current position is as a Senior Economist in Energy, Rates, Finance, and Audit.
	6/77-2/95	I was employed by Avista Corporation, an electric and natural gas utility located in Spokane, Washington. The majority of my employment was spent in the Rates and Regulatory Affairs Department as a Senior Rate Analyst. I have prepared testimony and exhibits in numerous electric and natural gas rate cases, primarily in the area of results of operations and cost of service.

CASE: UG 325
WITNESS: JUDY JOHNSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 402

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 402 is confidential and

Is subject to Protective Order No.16-460.

CASE: UG 325
WITNESS: JUDY JOHNSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 403

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	10/20/2016
CASE NO.:	UG ___	WITNESS:	Mark Thies/Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Bob Brandkamp
TYPE:	Data Request	DEPT:	Risk Management
REQUEST NO.:	Staff – 068	TELEPHONE:	(509) 495-4924
		EMAIL:	bob.brandkamp@avistacorp.com

REQUEST:

In the following table format, please provide the following information for insurance premiums/self-insurance costs.

Cost	Test Year	Base Year	Base Year– 1	Base Year– 2	Base Year – 3
Property Insurance Premiums					
Property – Uninsured Loss					
Liability Insurance Premiums					
Liability – Uninsured Losses					
Terrorism – Premiums					
Terrorism – Uninsured losses					
Workers‘ Compensation Premiums					
Workers' Compensation – Uninsured Losses					
Other Risk Management Expenses (FERC accounts 924 and 925)					

RESPONSE:

All numbers provided are on a system basis.

Insurance Type	Test Year 10/01/2017 to 09/30/2018	Base Year 7/1/15 to 6/30/16	Base Year – 1 7/1/14 to 6/30/15	Base Year – 2 7/1/13 to 6/30/14	Base Year – 3 7/1/12 to 6/30/13
Property Insurance Premiums	$1,409,276	$1,409,276	$1,477,202	$1,513,347	$1,441,988
Property - Uninsured Loss	Property Losses are included in Staff DR 72				
Liability Insurance Premiums	$2,501,681	$2,501,681	$2,413,193	$2,240,660	$2,093,553
Liability - Uninsured Loss	Liability Losses are included in Staff DR 73				
Terrorism Premiums	Premiums included with applicable lines of insurance				
Terrorism Uninsured Loss	$0	$0	$0	$0	$0
Workers' Compensation Premiums	$370,477	$370,477	$385,080	$413,915	$425,014
Workers' Compensation Uninsured Loss	$0	$0	$4,300	$0	$0
Other Risk Management Expenses (FERC accounts 924 and 925)	$2,059,804	$2,059,804	$2,367,342	$1,868,754	$1,784,190

CASE: UG 325
WITNESS: MING PENG

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 500

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Ming Peng. I am a Senior Economist employed in the Energy Rates, Finance, and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience is set forth in my Witness Qualification Statement, which is found in Exhibit Staff/501.

Q. What is the purpose of your testimony?

A. I reviewed the depreciation expense and accumulated depreciation, or depreciation reserve, portions of Avista Corporation's (Avista's or Company's) revenue requirement for this rate case as documented by the Company witness in the Company's Exhibit Avista/600, Machado.

Q. What exhibits are included as part of your testimony?

A. I have prepared the following exhibits: Exhibit Staff/501, Witness Qualification Statement and Exhibit Staff/502, Avista Response to Staff Data Request (DR) No. 122. My review and adjustment number is S-17.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1. ANALYSIS OF DEPRECIATION FROM A RATEMAKING PERSPECTIVE

Q. What is depreciation?

A. "Depreciation" is defined by the National Association of Regulatory Utility Commissioners (NARUC) in relevant part as follows:

> As applied to the depreciable plant of utilities, the term depreciation means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes that are known to be in current operation, against which the company is not protected by insurance, and the effect of which can be forecast with reasonable accuracy. Among the causes to be considered are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and the requirement of public authorities.[1]

The statement above defines "Depreciation" from a valuation perspective. From an accounting perspective, "Depreciation" is the allocation of the cost of fixed assets less net salvage to accounting periods, which is a capital recovery concept. From a ratemaking perspective, both the valuation (rate base) and accounting (capital recovery) concepts of deprecation are important.

Q. Do Oregon statutes address utility depreciation rates?

A. Yes. ORS 757.140(1), states in relevant part:

> Every public utility shall carry a proper and adequate depreciation account. The Public Utility Commission shall ascertain and determine the proper and adequate rates of depreciation of the several classes of property of each public utility. The rates shall be such as will provide the amounts required over and above the expenses of maintenance, to keep such property in a state of efficiency corresponding to

[1] NARUC, *Public Utility Depreciation Practices*, p.318 (1996).

> the progress of the industry. Each public utility shall conform its depreciation accounts to the rates so ascertained and determined by the commission. The commission may make changes in such rates of depreciation from time to time as the commission may find to be necessary.

Q. How are depreciation rates determined?

A. To develop depreciation rates, it is necessary to estimate (1) the combination of survivor curve-service life (Curve-Life) of utility property, and (2) net salvage ratio (Gross Salvage – Cost of Removal). Based on these two fundamental depreciation parameters (and other required elements, such as asset value, asset remaining life, and depreciation method) the depreciation rates are derived.

Q. What depreciation rates did Avista use in its Test Year revenue requirement?

A. The current depreciation rates for the Company were authorized by the Commission in Order No.13-168 and effective on January 1, 2013.[2] In Order No. 13-168, the Commission specified the Curve-Life and Net Salvage parameters for "each plant account" (FERC account), from which the depreciation rates are derived for each account.

Q. How did you analyze the Company's proposed depreciation expense, and what information did you review?

A. To confirm that the depreciation expense was properly calculated using the authorized depreciation parameters in Commission Order No. 13-168, Staff, as discussed above, sent the Company DR No.122 asking for calculations of

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[2] *In re Avista Corporation*, OPUC Docket No. UM 1626, Order No. 13-168 (May 13, 2013).

"Depreciation Expense" and "Total Accumulated Depreciation" in Excel format, along with other supporting work papers.[3]

Upon receiving the Company's data response, Staff verified the Company's calculations.

(1) Staff reviewed five calculation-Excel-files and checked the reference links, formulae, and calculations provided by Avista in these files.

(2) Staff reviewed how the Company calculated depreciation expense using the rates authorized in Order No. 13-168.

(3) Staff verified how the Company forecasted depreciation expenses.

(4) Staff reviewed how the Company calculated the depreciation expense and depreciation reserve adjustments.

Staff also conducted one phone conference with the Company's witness, David Machado, to gain a better understanding of Avista's depreciation adjustments.

Q. Did you identify any errors and make any adjustments in the Company's filing relating to depreciation?

A. No. Staff found no errors in Avista's Summary of Adjustments, submitted as Exhibit Avista/600, Machado/29-31 from depreciation expense calculations, and no errors from the Accumulated Depreciation calculations. Staff therefore, made no adjustment on Avista's depreciation expenses and depreciation reserves.

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[3] See Exhibit Staff/502.

ISSUE 2. DEPRECIATION EFFECT ON REVENUE REQUIREMENT

Q. Describe the depreciation effect on the revenue requirement of a utility.

A. In the traditional rate base rate-of-return environment, customer rates and utility costs are components of a utility's revenue requirement. NARUC, in its "Public Utility Depreciation Practices" manual on "Depreciation Expense and Its Effect on the Utility's Financial Performance – Revenue Requirement" states:

> Depreciation has a profound effect on the revenue requirement of a utility, and for many utilities, depreciation expense represents a large percentage of total operating expenses. In addition, deferred income taxes, rate base, and cost of capital are all affected by the depreciation practices of a utility.[4]

Q. What is the relationship between depreciation and revenue requirement?

A. Under cost-of-service regulation, revenue requirement refers to the revenues the utility must earn to recover the cost of providing service and to earn a reasonable return on its investment. To compute the revenue requirement (RR) (RR is measured by cost-of-service), a basic formula is followed[5]:

RR = O&M Expense + "Depreciation" + Taxes + Return% x Rate Base

Rate Base = Gross Plant – "Accumulated Depreciation" – Accumulated Deferred Income Taxes + Working Capital

In this formula, "Depreciation" is one of the largest line items in the cost of service; therefore, "Depreciation" is important as both an annual expense and as a reduction of rate base.

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[4] NARUC, *Public Utility Depreciation Practices*, p.195 (1996).
[5] Federal Energy Regulatory Commission, *Cost-of-Service Rates Manual*, pp. 6-7 (1999), available online at: www.ferc.gov/industries/gas/gen-info/cost-of-service-manual.doc.

Q. How are depreciation parameters used in determining the utility's revenue requirement?

A. In a general rate case filing, the depreciation expense is calculated by using the Commission's authorized depreciation parameters, from which depreciation rates are derived (in this case, those rates set forth in Order No. 13-168), and in traditional FERC classification of generation, transmission, distribution, and general plant assets.

Accumulated Depreciation is the cost of the investment in gross plant that is recovered through the cost-of-service as Depreciation Expense. Accordingly, the depreciation expense is accumulated and is subtracted from the gross plant to reduce the remaining investment to be recovered. The remaining balance is the Net Book Plant. The net book plant represents the portion of gross plant that is not depreciated.

Q. Does this conclude your testimony?

A. Yes.

CASE: UG 325
WITNESS: MING PENG

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 501

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME: Ming Peng (Ms.)

EMPLOYER: Public Utility Commission of Oregon

TITLE: Senior Economist
Energy Rates, Finance and Audit Division

ADDRESS: 201 High Street SE. Suite 100
Salem, OR. 97301

EDUCATION & TRAINING:

M.S. Applied Economics
University of Idaho, Moscow

B.S. Statistics
People's University of China, Beijing

C.R.R.A. Certified Rate of Return Analyst
Society of Utility and Regulatory Financial Analysts

Depreciation studies - the Society of
Depreciation Professionals

NARUC Annual Regulatory Studies Program
Michigan State University, East Lansing

300+ credit hours on 30+ topics trainings in public utility industry

EXPERIENCE: 1/11/1999-Present, Public Utility Commission of Oregon

I have been employed by the Public Utility Commission of Oregon (Commission) for 18 years since January 1999. My roles include:
<u>Expert Witness, Case Manager, Economist, Policy Analyst, Econometrician, and Principal Analyst</u>
I have testified in various formal state hearings and performed numerous analyses including economic, financial, statistical, mathematical, marketing, and policy analyses in public utility industry.

<u>Principal Analyst & Case Manager, Settlement Leader/Negotiator for Depreciation and Ratemaking:</u>
For the "Depreciation Rate Determination" (fixed cost allocation, capital recovery), I have served as a Principal Analyst and Case Manager for the determination of Energy Property Depreciation Rates (Oregon Revised Statute 757.140) for past 10 years.

In this position, I investigate, analyze and calculate “Energy Asset Retirement Cost & Impact” and “Power Plant Decommissioning Cost & Impact” on Customer Rates. I review, calculate, analyze fixed asset depreciation and propose depreciation parameters for each of FERC accounts on Generation, Transmission, Distribution, General, and Coal Mining Plants. The energy sources I have worked on are Steam/Coal, Hydraulic, Natural Gas, Wind, Solar and Geothermal.

My analyses of “Power-Plant-Shutdown” activities include the following cases:

1. PGE closes Boardman Coal-fired plant (UM 1679 & UE 215),
2. PacifiCorp closes Carbon Coal Plant in Utah (UE 246)
3. Multi-state PacifiCorp Klamath Hydro Dam Removal Cost recovery for (1) J. C. Boyle Dam, (2) Copco 1 Dam, (3) Copco 2 Dam, and (4) Iron Gate Dam removal under the ORS 757.734 - Recovery of investment in Klamath River dams in OPUC UE 219.
4. Idaho Power Valmy Coal-fired power plant Shutdown (UE 316)

I conduct case investigation and analysis on Utility’s filings, make rate adjustments, lead settlement negotiation, prepare testimony, and appear on behalf of the Commission. The energy companies I work with are: (1) PacifiCorp (serves 6 states), (2) PGE, (3) Northwest Natural Gas (NWN), (4) Idaho Power, (5) Avista Corp (Washington), and (6) Cascade Gas (CNG, Montana).

Lead Analyst and Case Manager on Financial Dockets:

Prior to my present position, I was a lead analyst and case manager for cost of capital, mainly debt capital analysis for nine years. My responsibilities included: review and analyze regulatory policy on Cost of Capital and Market Risks from utility’s financial applications for their Derivative Instruments & Hedging Activities and Capital Raising Activities.

I advised the Commission on over 60 Financial Dockets and obtained the Commission Orders.

I passed the certification test offered by “Society of Utility and Regulatory Financial Analysts”, become a “Certified Rate of Return Analyst” in 2002.

Public Utility & Policy Analyst:

Energy Merger & Acquisition: I have testified in formal state hearings involving Energy Merger & Acquisition, I conducted Acquisition Premiums & Credit Risk Analysis and testified for the Merger case of “PacifiCorp vs. MidAmerican Energy Company” (a subsidiary of Berkshire Hathaway Energy) in UM 1209. My reviews on Energy Merger & Acquisition also include “PacifiCorp vs. Scottish Power”, “PGE vs. Enron".

Clean Energy – Dollar Impact on Customer Rates: I performed analyses of "Rate Impact Calculation of Oregon Clean Energy Capital Investment, Comparative Advantage of Oregon Clean Energy – Dollar Impact in Rates".

General Rate Case Ratemaking (Revenue requirement) and Other Cases: I testified and conducted analyses on some subjects in the revenue requirement models for General Rate Cases. I testified on Fuel Price Forecasting regarding Property Sales; I reviewed Load Forecasting, Weather Normalization in "Integrated Resource Planning" (IRP) and Rate Case filing.

My work functions have also included the Statistical Sampling Design & Procedure Design, and I testified on Revenue Issues (UM 1288) by presenting the sampling results.

I conducted Energy Utility Auditing for cost of capital component on energy companies and also preformed utility operational auditing. I have conducted "Interest Rate and Late Payment Charge" Survey and Analysis annually for state of Oregon (UM 779).

I conducted Telecommunications "Market Competition and Economic Policy Survey Analysis" and write report for House Bill 2577, the report has been published on OPUC web annually for 15 years.

Mentor in the ICER - International Confederation of Energy Regulators

I was selected to act as a mentor in the ICER (International Confederation of Energy Regulators) Women in Energy (ICER WIE) pilot mentoring program. My "Mentoring Topics" were focus on Incentive Regulation; Rate and Economic Impacts of "Cost-of-Service" regulation in US and "Price-Cap" in Europe; Cost of Capital, Energy Demand and Price Forecasting Models; Least Cost Planning; and Regulatory Policy & Renewable Energy issues affecting Utility Rates.

CASE: UG 325
WITNESS: MING PENG

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 502

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	12/12/2016
CASE NO.:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 122R	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please provide the calculations in Excel format with the cell reference links and formulae intact for the exhibits in AVISTA/600/Machado, specifically Avista/602 and Avista/603. Please include in the data set all relevant calculations including, but not limited to, the following:

1) CAP SUMMARY- OR – linked
2) CAP16.4 – linked
3) Filed - 2016 OR Gas Revenue Requirement Model – linked
4) Transportation Depreciation Study Support
5) Oregon Docket UM 1626, Order No. 13-168, Appendix B, page 8, (Settlement Exhibit 102 Attachment A)-linked

RESPONSE:

Items 1 and 2 listed above were previously included in Avista's filing as workpapers to the filing. Item 3 listed above was previously included in Avista's filing as Exhibits 501 and 502 to Company witness Jennifer Smith's testimony. These three files have been included in this response for convenience, and have included links between the files (related to depreciation expense and accumulated depreciation/amortization), at Staff's request.

Staff_DR_122R Attachments A, B, C, D, and E correspond, respectively, to the five files requested above.

Exhibit 502 – Attachments A, B, C, D and E

are Excel spreadsheets

(Provided in electronic format)

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 600

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Max St. Brown. I am a Senior Utility Economist for the Public Utility Commission of Oregon (Commission or OPUC). My business address is 201 High St. SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my Witness Qualification Statement, which is found in Exhibit Staff/601.

Q. Did you include any other exhibits for this testimony?

A. Yes, those exhibits are listed and described below:

- Exhibit 602, pages 1-2: Staff's LRIC Study adjustments;
- Exhibit 603, page 1: a description of the Akaike Information Criterion;
- Exhibit 604, page 1: Page 658 of the textbook *Principles of Forecasting*;
- Exhibit 605, pages 1-3: Plots of Staff's load forecast outputs;
- Exhibit 606, pages 1-5: Staff's load forecasting model formulas;
- Exhibit 607, page 1: Workpaper for Staff's sales and transportation revenue adjustment corresponding to Staff's load forecasting adjustment;
- Exhibit 608, pages 1-2: Avista's responses to Staff DRs 165 and 336;
- Exhibit 609, pages 1-2: Staff's computation of data in Avista's response to Staff DRs 144 and 388.

Q. What is the purpose of your testimony?

A. I review Avista's Long Run Incremental Cost Study, Sales and Transportation Revenue (Load Forecast), Decoupling, and DSM Lost Revenues.

Q. Did this review result in any adjustments?

A. Yes, I forecast that present rates will provide test-year revenues of $344,625 in excess of the Company's forecast.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, LONG RUN INCREMENTAL COST (LRIC) STUDY

Q. Please describe the purpose of Avista's Long Run Incremental Cost (LRIC) Study.

A. The purpose of the LRIC study is to allocate the revenue requirement equitably; the LRIC study informs Avista's rate design.

Q. Please summarize the Company's LRIC study.

A. Avista has grouped its customers into seven rate schedules and charges them each different per customer and per therm rates. Accordingly, the Company studies the cost of serving an average customer in each of these seven schedules and the respective margin provided by each of those customers.

Q. Please summarize the Company's LRIC study results.

A. In Avista/800, Miller/12, the Company's witness provides the summary results of the LRIC study, replicated as Table 1 below:

Table 1: Margin-to-Cost in Avista's LRIC Study

Customer Class	Margin-to-Cost At Present Rates
Residential Service Schedule 410	1.03
General Service Schedule 420	0.90
Large General Service Schedule 424	1.32
Interruptible Service Schedule 440	1.22
Seasonal Service Schedule 444	1.40
Transportation Service Schedule 456	1.14
Total Oregon Natural Gas	1.00

Q. Please provide an overview of how the LRIC study was performed.

A. To arrive at these summary results in Table 1 above, the Company followed the standard approach, also carried out by Cascade Natural Gas in its most recent rate case, which is described in UG 287 Staff/900, Compton/2 as to "separate the accounting/embedded costs according to the functions named in the legislation [ORS 757.642], and then …[develop] shares of the long-run incremental costs (LRIC) … for the respective functions."

Specifically, Avista computes LRIC costs for main extensions, service lines, meters, meter reading, and billing on a per customer basis. The Company computes LRIC costs for system mains, underground storage, gas scheduling, and Gas Supply Department employees (non-scheduling) on a per therm basis either by total therms or by capacity versus commodity (system mains) or by capacity versus load balancing (underground storage). Finally, the LRIC plant investment elements are converted to annual revenue requirements based on the levelized plant cost factor reflecting depreciation and other carrying costs. The Company's approach strikes a balance by assigning costs to customers that receive a benefit from that particular function.

Q. Please summarize Staff's recommendation for Avista's LRIC study.

A. Staff recommends computing the cost of system mains per therm using test year loads rather than 2015 loads in order to avoid overstating the cost of system mains. This use of different loads is the only change Staff recommends with regards to the Avista LRIC study.

Q. Please summarize Staff's LRIC study results.

A. Staff used test year loads to compute the cost of system mains per therm. This cost adjustment flowed through to provide Staff's adjusted LRIC results by rate schedule. The adjusted summary results inclusive of Staff's recomputed LRIC study are presented in Table 2 below:

Table 2: Margin-to-Cost in Staff's Adjusted LRIC Study

Customer Class	**Company's Margin-to-Cost At Present Rates**	**Staff's Margin-to-Cost at Present Rates**
Residential Service Schedule 410	1.03	1.03
General Service Schedule 420	0.90	0.89
Large General Service Schedule 424	1.32	1.36
Interruptible Service Schedule 440	1.22	1.27
Seasonal Service Schedule 444	1.40	1.43
Transportation Service Schedule 456	1.14	1.22
Total Oregon Natural Gas	1.00	1.00

Q. In this LRIC study did Avista incorporate the recommendations made by Staff in its last general rate case, Docket UG 288?

A. Yes, in Avista/800, Miller/3, the Company's witness indicates that in order to reflect Staff's recommendation in Docket UG 288, the Company used seven or eight instead of two years of past data to estimate the cost of main extensions.

Q. Staff's recommendation is to compute the cost of system mains per therm using test year loads. How does Staff support this recommendation?

A. Staff adjusted the computation of system main costs to appropriately reflect the test year average and peak loads. The Company's workpapers show that the system main cost allocation uses a price per therm based on the 2015 actual average daily therm usages and then multiplies that price by the test year loads. This can overstate the actual cost of system mains because the load is forecasted to increase in the test year.

Q. How did Staff make adjustments based on Staff's recommendation?

A. Staff recomputed the cost of system mains per therm by adjusting the Company's load study provided in Miller's workpapers. This price is then plugged into the Company's Incremental Investment Costs workpaper, with the adjustment flowing through to arrive at Staff's adjusted summary results. The main effect is that a greater proportion of total core main costs are allocated on a capacity basis and less on an energy basis. Thus, schedules with higher load factors (average ÷ peak) are responsible for a smaller share of costs as compared to their margin revenues contributions than was indicated in the Company's filing. Compared to the Company's summary results, this adjustment causes commercial Schedule 420 to have a lower margin-to-cost ratio and the industrial schedules to have a higher margin-to-cost ratio at current rates (See Table 2 above). The lower margin-to-cost ratio of Schedule 420 is what led both the Company and Staff to recommend that that schedule receive the largest rate increase, percentage-wise (See the rate spread recommendations described by Staff witness Scott Gibbens in his Staff/1100 testimony).

Q. Please describe Staff's workpapers in support of this recommendation.

A. Staff/602, St. Brown/1-2 parallels Avista/801, Miller/1-2, with an adjustment to the capacity portion of the system mains cost. The highlighted portion of Line 13 of Staff/602, St. Brown/2, provides Staff's adjustment to the capacity proportion of the total core main cost per therm. The results flow through in blue text on that page and are used as inputs for the aggregate system mains cost computations on page 1, also in blue text. Staff's capacity proportion of the total core main cost per therm is provided as a digital workpaper.

ISSUE 2, S-18 AND S-19, SALES AND TRANSPORTATION REVENUE (LOAD FORECAST)

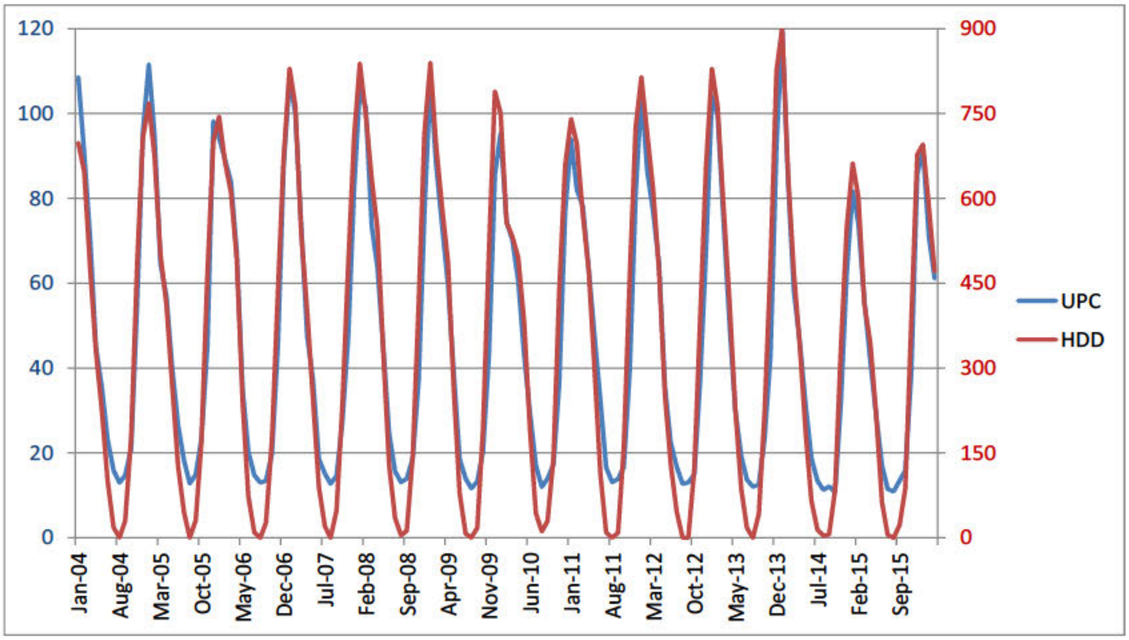
Q. Please summarize the Company's load forecasting methodology.

A. Avista/701, Forsyth/3-15, provides the autoregressive integrated moving average (ARIMA) models that the Company uses to forecast natural gas usage by rate schedule. Economic and weather variables are used as forecast drivers in the models. ARIMA models work well for forecasting natural gas usage because of their ability to model data with trends. In Avista/700, Forsyth/12, Avista's witness states that the Company uses weather data by region for Medford, Roseburg, Klamath Falls, and La Grande. The two components of load are forecasted separately: use-per-customer (UPC) and number of customers – where these components can be multiplied to obtain the load.

Q. Describe the Company's primary forecast driver for residential UPC?

A. Avista uses weather as the primary forecast driver for UPC. Weather describes a high proportion of the usages-per-customer. For example, Figure 1 below uses the Company's data to plot Medford, its largest service area, residential UPC versus heating degree days (HDD).

Figure 1: Medford Residential UPC versus HDD

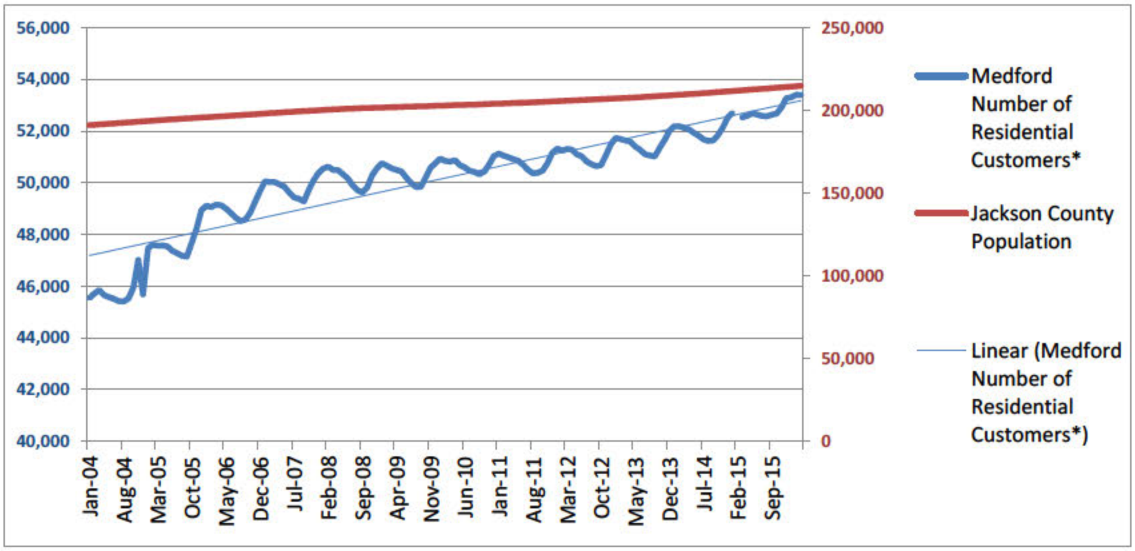


Avista makes some additional refinements to the UPC models by including HDD^2 in order to capture non-linear weather effects and by including quality HDD values, which are HDD for the winter months, in order to improve the model's ability to forecast shoulder months.

Q. Describe the Company's primary forecast driver for number of residential customers?

A. Population is the primary economic variable used as a forecast driver for the number of residential customers. Often the number-of-customers forecast models are not as accurate as the UPC models. For example, Figure 2 below uses the Company's data to plot Medford residential number of customers versus Jackson County population. The data series somewhat align in terms of general trend, but specific changes in the number of customers are not fully explained by the population.

Figure 2: Medford Residential Number of Customers versus Population



*Omits February 2015 due to billing system changes.

Q. Does the Company use other economic forecast drivers?

A. Yes. For example an index of industrial production is used as a forecast driver of industrial UPC. The price of natural gas for consumers is used as a forecast driver for some regions. Additionally, while the Company did not include them in its final forecast, it has experimented with using other forecast drivers, such as household income (See Avista/701, Forsyth/2).

Q. Did the Company make any changes to its forecast drivers since its prior rate case, UG 288?

A. Yes. Avista now uses data specific to the forestry industry as a forecast driver. Staff believes the Company's models are becoming more accurate with each filing because the Company experiments with new approaches and takes feedback from stakeholders. As an example, in response to Staff DR 165 the Company replied, "using [Western Housing Starts] did significantly improve the regression fit of certain special contract and transport customers in the wood products industry. In particular, it did a better job of modeling the long-run trend in usage over the business cycle faced by these firms” (See Staff/608, St. Brown/1).

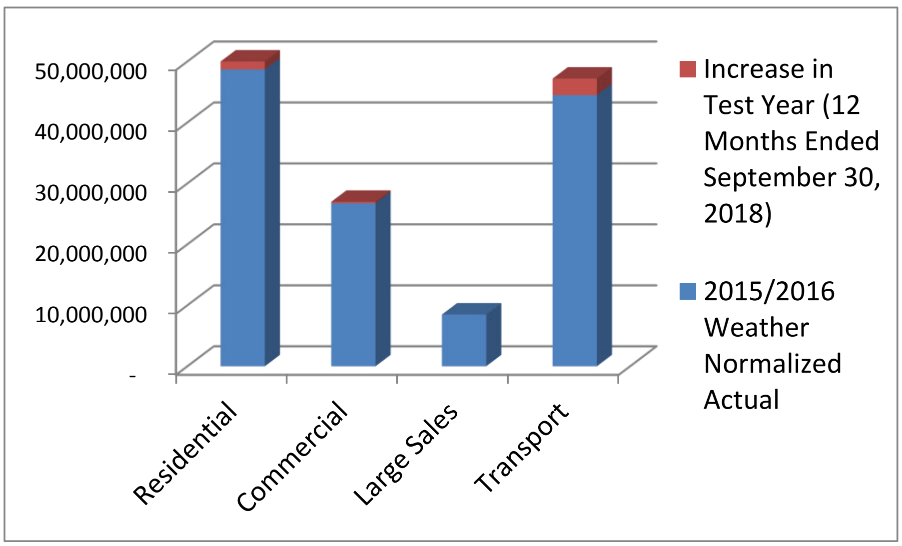
Q. Did the Company make any other forecasting changes based on feedback from stakeholders?

A. Yes, Avista now analyzes the accuracy of the forecasts using out-of-sample forecasts.

Q. Please summarize the Company’s load forecasting results.

A. Figure 3 below was produced using the Company’s workpapers and summarizes the Company’s forecast results:

Figure 3: Change in System Gas Usage by Rate Group



Data Source: Avista/903, Ehrbar/1

The biggest increase in gas sales is forecasted to come from industrial customers, while the biggest revenue increase would come from residential customers due to their higher margin per therm for the Company. Large sales loads are forecasted to decrease.

Q. Please summarize Staff's load forecasting recommendations.

A. For the purpose of improving the forecast models' accuracy, Staff makes three recommendations:

1. Only include intervention variables with sufficient theoretical justification;
2. Select ARIMA model structures to minimize the information loss; and
3. Include economic forecast drivers related to the number of large commercial customers.

Q. Staff's first recommendation is to only include intervention variables with sufficient theoretical justification. How does Staff support this recommendation?

A. Intervention variables are variables with 1 for every observation within the intervention and 0 otherwise. Intervention variables can be used as a control for a data error, such as the erroneous data entries for February 2015 related to when Avista switched billing systems. To control for the data error related to its billing system switch, Avista uses an intervention variable taking on a value of 1 during February 2015 and 0 for all other time periods. In linear regression, this approach results in the same point estimates as if the Company had just deleted the data for February 2015. Because there is a loss of information whenever data is deleted, Staff recommends using intervention variables only with sufficient theoretical justification. An example of sufficient theoretical justification is to control for nonsensical values, such as February 2007 when

Medford industrial Schedule 440 customers had a negative UPC. Additionally, in PGE's UE 283 rate case, Staff found that removing intervention variables generated a more accurate forecast for most forecast groups.[1]

Q. How did Staff make adjustments based on Staff's first recommendation?

A. Staff produced original forecasts for each of the Company's UPC data series that have a weather or economic driver. Staff's adjustment was to remove intervention variables that the Company did not describe as "significant" on Avista/701, Forsyth/3-13. Also, Staff did not remove the intervention variables related to the Company's billing system switch on February 2015. Finally, Staff added an intervention variable for July 2014 to control for a nonsensical data observation where a Schedule had negative UPC.

Q. Why did Staff choose not to adjust the Avista models that were without weather or economic drivers?

A. The forecasting models without weather or economic drivers have limited explanatory power and are generally simple smoothing (averaging) models. In the UG 288 rate case, Staff/900, St. Brown/11 lines 7-8, described "at this time, Staff recommends no change and supports the simple smoothing (averaging) models." Staff found those simple models reasonable due to the high degree of randomness in the underlying data series.

[1] See lines 17-19 of Exhibit Staff/300, Kaufman/10 in UE 283. Available at: http://edocs.puc.state.or.us/efdocs/HTB/ue283htb145645.pdf.

Q. Staff's second recommendation is to select ARIMA model structures to minimize the information loss. How does Staff support this recommendation?

A. Avista's ARIMA model specifications are selected by hand and vary among rate schedules. For example, one particular residential forecast uses 11 autoregressive terms and zero integrated terms, whereas a commercial forecast uses three autoregressive terms and one integrated term. Avista selects models so as to avoid losing any of the information in the data. For example, if last month's UPC is helpful in predicting this month's UPC, then a model that utilizes the prior month's UPC as a forecast driver should be selected, otherwise information (which is valuable to accurately forecasting next month's UPC) will be lost. The Company decides which model to select based on visually looking at graphs of autocorrelation functions and partial autocorrelation functions. Staff agrees that this is the best method to use when selecting models *by hand*. Nonetheless, Staff believes that it is still more accurate (i.e., less information loss) to use *computer assisted* automatic method-selection algorithms.

Q. Describe computer assisted automatic method-selection algorithms.

A. Automatic method-selection algorithms run through each possible set of parameters for a forecasting model and check how well those parameters fit the information loss criterion. The Akaike Information Criterion (AIC) is a common information loss criterion. Akaike (1981) summarizes that "a model with a lower value of AIC is considered to be a better model" (See Staff/603, St. Brown/1). Thus, after checking all possible models, the automatic method-selection algorithm uses the best model.

Q. Has the performance of computer assisted automatic method-selection algorithms been tested?

A. Yes, there is considerable research in this field. For example, Google Scholar indicates that as of February 2017, Akaike's seminal paper, "A new look at the statistical model identification," has been cited 34,749 times. Page 658 of *Principles of Forecasting* by J. Scott Armstrong described results from a large forecasting competition as indicating that, "automatic method-selection algorithms … were among the most accurate approaches to extrapolation of time series" (See Staff/604, St. Brown/1).

Q. How did Staff make adjustments based on Staff's second recommendation?

A. Staff produced independent forecasts using the computer assisted automatic method-selection algorithm software function "auto.arima" designed by Rob Hyndman, the editor-in-chief of the *International Journal of Forecasting*. The software function automatically selects the most accurate model parameters.

Q. Has Staff used this approach before?

A. Yes, Staff proposed residential load forecasts which used the "auto.arima" software function in Cascade's most recent UG 305 rate case.

Q. Please summarize the results of Staff's independent load forecasts.

A. Staff re-forecasted each of Avista's UPC equations that included weather variables using the model fit maximization software "auto.arima." The

Company's hand-selected autoregressive integrated moving average (ARIMA) models already had good model fit for Medford, Klamath Falls, and La Grande and the model fit software used by Staff recommended only slight revisions to the model parameters and thus to the forecasted load for those regions. However, the model fit maximization software recommended revisions to the model parameters for the Roseburg region. Staff adopted the recommended model parameters. Several regions and rate schedule's loads increased and several decreased. The largest increase was Roseburg residential Schedule 410 where Staff's forecast is five percent higher than that of the Company. The largest decrease was La Grande commercial Schedule 456 where Staff's forecast is 23 percent lower than the Company's forecast. Each of Staff's forecasts are graphed in Staff/605, St. Brown/1-3.

Q. Does Staff make any recommendations for the number of customers forecast?

A. Yes. Staff recommends the Company explore using Oregon residential new construction as a forecast driver for number of customers because in its most recent integrated resource plan (IRP) Northwest Natural found this to be a statistically significant forecast driver.[2] As described above related to Figure 2, number of customers is a more difficult data series to forecast accurately. For example, in its last rate case, Avista forecasted the number of residential customers for March 2016, the most recent actual data currently available, at

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[2] See *In the Matter of Northwest Natural Gas Company*, OPUC Docket LC 64, 2016 Integrated Resource Plan, Appendix 2 page 2A.3 (August 26, 2016).

87,622 or an increase of 867 customers versus the base year value.[3] However, the actual increase in number of customers from March 2015 versus March 2016 was 1,162 or a 34 percent increase when compared to the Company's UG 288 forecast.[4] Staff made a similar recommendation in Avista's most recent IRP.[5] Staff is currently exploring how additional forecast drivers might improve the accuracy of Avista's number of customers forecasts and whether Avista's number of existing and number of new customers can be forecasted separately.[6] Depending on the outcome, Staff may revise its recommendation in Staff's Rebuttal Testimony. The issue is complicated further because the Company uses number of bills instead of number of customers in its forecast, so care must be taken to ensure that there is not a double counting of the adjustment to miscellaneous operating revenues described by Staff witness Rose Anderson in her Staff/900 testimony.

Q. Can you provide an example of how the Roseburg residential UPC forecast better fits the historical data?

A. Yes. By definition of the software used, Staff's model parameters will provide a lower AIC. Anecdotally, Staff's model visual appears to fit the data better.

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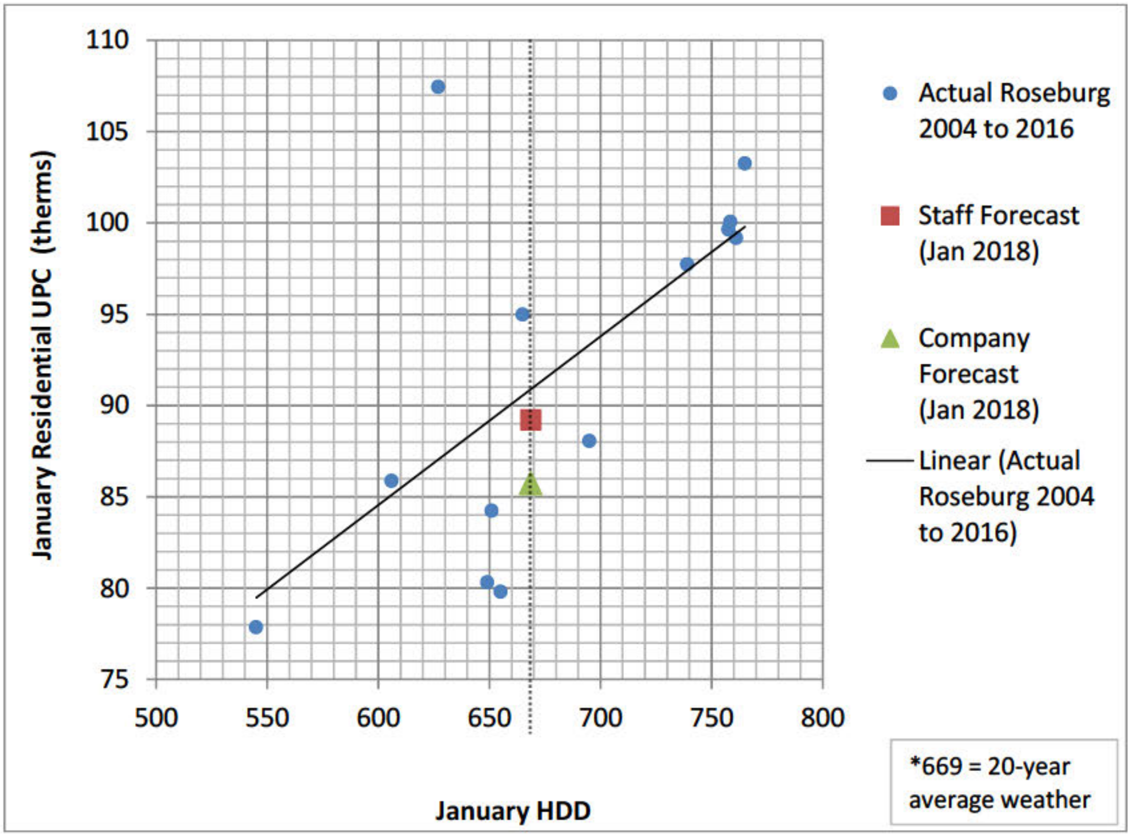
[3] Staff has issued data request 435 in this docket for the Company's response to a data request in UG 288, which first brought this data to Staff's attention.
[4] See Staff/608, St. Brown/2.
[5] *In the Matter of Avista Corporation*, OPUC Docket LC 65, Staff Final Comments at 4 (January 9, 2017).
[6] See Staff's Final Comments in LC 65 at 5. Available at: http://edocs.puc.state.or.us/efdocs/HAC/lc65hac113333.pdf

Figure 4 below graphs Staff's versus the Company's January 2018 forecast reflecting weather as a forecast driver.

Figure 4: Staff versus Company forecast compared to a linear best fit



The linear best fit line is different than the forecast because it uses a linear formula and does not include non-linear weather. But as an approximation, Staff's forecast is much closer to matching the historical pattern between HDDs and usage.

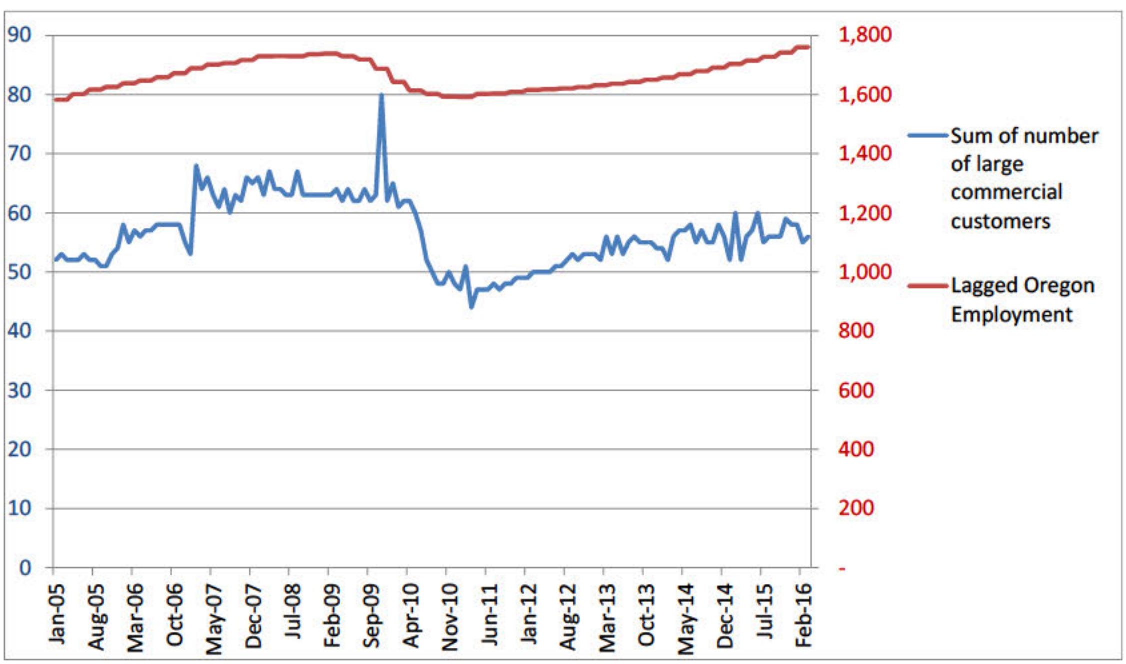
Q. Has Staff produced workpapers for this adjustment?

A. Yes, Exhibit Staff/606, St. Brown/1-7, provides Staff's forecasting model formulas. Additionally, Staff's *R* code has been provided as a digital workpaper. *R* is an open source statistical software package available for download at no cost and is widely used by scientific researchers. Staff's results can be replicated on any computer by selecting all and then clicking the "Run" button in *R*.

Q. Staff's third recommendation is to include economic forecast drivers related to the number of large commercial customers. How does Staff support this recommendation?

A. By assumption, the Company models that there will be no growth in the number of customers in each of its 11 large commercial regions and schedules that are modeled without economic forecast drivers. Instead, Staff used a model where lagged Oregon non-farm employment was used as a forecast driver of the number of customers. Figure 5 below graphs number of large commercial customers in those 11 regions and schedule combinations versus one year lagged non-farm Oregon employment in thousands.

Figure 5: Commercial customers and Oregon Employment

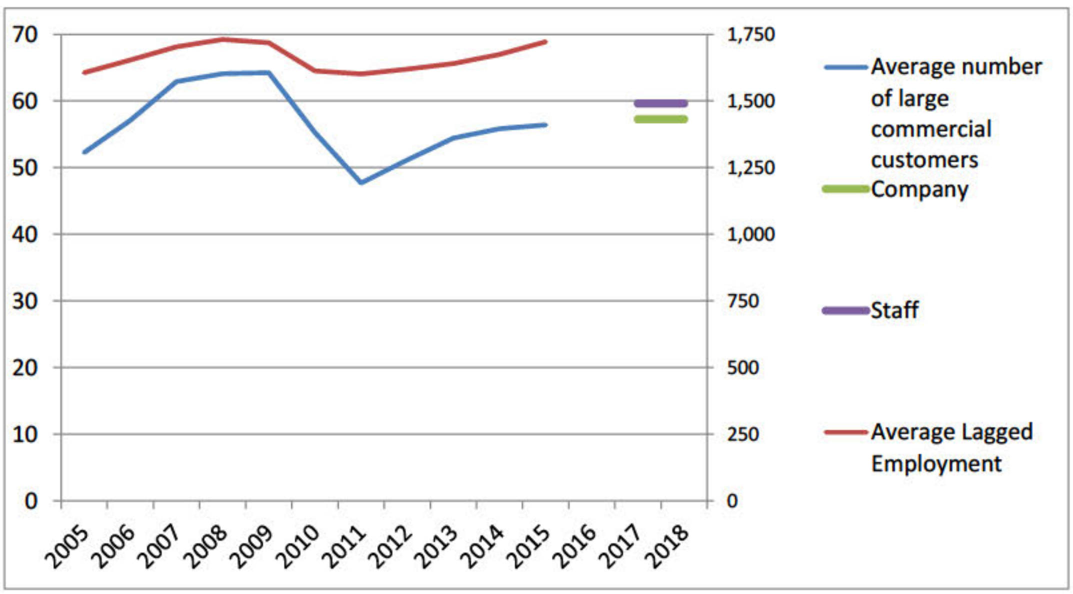


The historical annual correlation between those two data series is 86 percent, indicating growth in the number of large commercial customers is unlikely to be purely random.

Q. How did Staff make adjustments based on Staff's third recommendation?

A. Staff's model forecasted approximately three new large commercial customers in the test year. Figure 6 below shows Staff's versus the Company's forecast.

Figure 6: Forecast of 11 large commercial region and Schedule combinations



Q. Has Staff prepared an adjustment to the test year Sales and Transportation Revenue due to the load forecasting adjustments?

A. Yes. Staff prepared an adjustment to Sales revenue, S-18, and an adjustment to Transportation revenue, S-19. Staff's Sales and Transportation Revenue workpaper is provided in Staff/607, St. Brown/1. Additional therm sales for each Sales rate schedule and region with an economic driver were multiplied by the per unit additional margin for the Company at base rates as provided in Avista/903, Ehrbar/4, resulting in a $318,282 increase in test-year revenue. Additional sales from new large commercial customers are the product of new customers and the most recent PUC Statistics Book value for revenue per non-residential-customer, resulting in a $26,343 revenue increase. Summing, Staff's total S-18 Sales revenue adjustment is an increase of $369,305. Transportation Schedule 456 needed a weighted average margin, which Staff prepared using the ratios of actual transportation usage found in the "903.4 tab" of the Company workpaper "UG-325 Ehrbar Workpaper.xlsx." Staff's total S-19 Transportation revenue adjustment is a decrease of $24,679.

ISSUE 3, DECOUPLING

Q. Avista's decoupling mechanism was a significant issue in the UG 288 rate case. Please describe its resolution.

A. In UG 288, parties agreed to terms for Avista's decoupling mechanism. In Order No. 16-076, and further supported in Order No. 16-109, the Commission established Avista's decoupling mechanism for rates effective March 1, 2016. Parties further agreed that "by September 2019, there will be an opportunity to review the Decoupling Mechanism, which would allow the Company, Staff and other parties to recommend changes, if any" (See page 6 of Appendix A of Order No. 16-076).

Q. Please describe Avista's current decoupling deferral computation.

A. Rate Schedule 475 describes that the Company makes an annual rate adjustment to surcharge or rebate the deferred decoupling revenues. The deferred decoupling revenues per customer are calculated as the difference between the Actual Decoupled Revenue (billed revenue minus fixed charges per customer) and the Allowed Decoupled Revenue (test year revenue minus basic charges per customer).

Q. Did Order No. 16-076 specify the treatment of new versus existing customers within the decoupling deferral computation?

A. Yes. With emphasis added, the stipulation stated, "the number of customers decoupled each month cannot exceed the monthly forecasted number of customers, by rate group, included in the agreed-upon 2016 forecasted customers. To the extent the number of actual customers in a given month exceeds the forecasted level of customers, *the Company will use the new customer revenue hookup report to determine the average decoupled revenue per new customer*. The average decoupled revenue per customer would then be multiplied by the number of actual customers that exceed the monthly forecasted level of customers. That amount would then be deducted from the monthly actual decoupled revenue prior to calculating the decoupling deferral entry."[7]

Q. Does Avista's current decoupling deferral computation differentiate between new and existing customers?

A. No, Schedule 475 does not differentiate between new and existing customers.

Q. What is Staff's expectation regarding Schedule 475?

A. Staff expects that Avista will update its Schedule 475 tariff to include language stating that the Company will use the average decoupled revenue per new customer from its new customer revenue hookup report. Staff expects that this change will occur prior to Avista's next PGA when the decoupling deferral is subject to amortization.

Q. You've described Staff's expectation that Schedule 475 be revised to include language that the Company will use the average UPC of new customers. Does Staff anticipate that this change would impact the decoupling rebate or surcharge?

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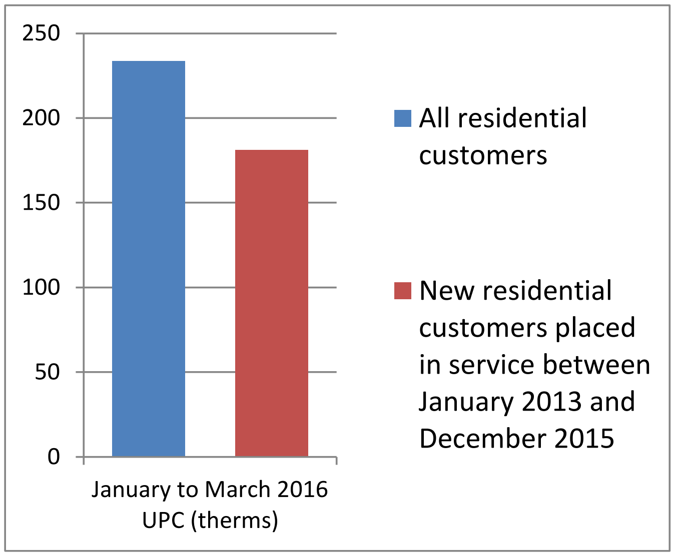
[7] *In the Matter of Avista Corporation*, OPUC Docket UG 288, Order No. 16-076 at Appendix A, page 7 (April, 2016).

A. Yes, because new homes often use less gas than existing homes, using actual UPC of new customers would impact the decoupling rebate or surcharge. In the data that Avista has tracked so far, new residential customers use less gas per customer than existing customers:[8]



Q. Do any other Oregon-regulated IOUs include language in their decoupling Schedule indicating that the UPC of new customers is tracked separately versus the UPC of existing customers?

A. Yes. For example, PGE's Schedule 123 indicates that new customers in excess of the forecasted number of customers are assumed to have 70 percent of the UPC of an average customer.[9]

[8] Data Source: Avista Responses to Staff DRs 144 and 388. See Staff/609, St. Brown/1-2.
[9] See PGE Schedule 123. Available at: https://www.portlandgeneral.com/-/media/public/documents/rate-schedules/sched_123.pdf.

ISSUE 4, S-20 DSM LOST REVENUE

Q. Please describe DSM Lost Revenue.

A. Prior to introducing a decoupling mechanism, Avista was allowed to collect revenues to offset the Company's revenue losses due to demand side management (DSM) efforts. The lost revenues were collected through a deferral mechanism in Rate Schedule 478.

Q. Please describe the changes in DSM Lost Revenue resulting from the UG 288 rate case.

A. In Order No. 16-076, the Commission approved a settlement establishing Rate Schedule 469 to, "fund present DSM expenditures starting March 1, 2016 (for Avista and ETO programs) and for 2017 and beyond (ETO programs)".[10] The transfer of DSM programs to the Energy Trust of Oregon was made on the premise that Avista would cease collecting funding for its own DSM programs.

Q. Did Staff confirm that Avista will cease collecting funds for its own DSM programs?

A. Yes. In response to Staff DR 336, Avista indicated that "the Company plans on discontinuing Schedule 478 effective November 1, 2017." Additionally, Schedule 478 is an adder schedule so the Company would not be projecting associated test year revenue requirement impacts (See lines 9-15 of Avista/500, Smith/10). Avista's DR 336 response is submitted as Staff/608, St. Brown/4.

[10] *In the Matter of Avista Corporation*, OPUC Docket UG 288, Order No. 16-076 at Appendix A, page 11 (April, 2016)

Q. Does this conclude your testimony?

A. Yes.

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 601

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Max St. Brown
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Utility Economist Energy Rates, Finance & Audit Division
ADDRESS:	201 High Street SE., Suite 100 Salem, OR. 97301
EDUCATION:	Ph.D., Economics (2013) Washington State University B.S., Economics (2009) Central Washington University
EXPERIENCE:	I have been employed by the Public Utility Commission since July 2015, with my current position being a Senior Utility Economist, in the Utility Program's Energy – Rates, Finance and Audit Division. My current responsibilities include analysis and technical support for rate, finance, and audit related proceedings, with an emphasis on forecasting and marginal cost studies. Prior to working for the OPUC I served as an Assistant Professor of Economics at Eckerd College in St. Petersburg, FL from 2013 to 2015. I have taught courses including Econometrics, Labor Economics, and Intermediate Microeconomics. As a graduate student at Washington State University I taught six course sections, including Econ of Renewable Energy. My published research in peer-reviewed academic journals includes a study of the U.S. renewable energy industry and includes international economic impact studies. I served as a summer fellow at the American Institute for Economic Research during summers 2011 and 2012.

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 602

Exhibits in Support Of Opening Testimony

March 1, 2017

Staff Adjustment to AVISTA UTILITIES
OREGON JURISDICTION
LONG-RUN INCREMENTAL COST OF SERVICE STUDY
TWELVE MONTHS ENDED SEPTEMBER 30, 2018

Staff-Adjusted RESULT SUMMARY *(Component Allocation)*

Line No.			OREGON TOTAL	Residential Service SCH 410	General Service SCH 420	Large General Service SCH 424	Interruptible Service SCH 440	Seasonal Service SCH 444	Special Contract Service SCH 447	Transportation Service SCH 456
	STATISTICS									
1	TEST YEAR ANNUAL THERM DELIVERIES		132,642,029	50,011,168	26,984,073	3,972,666	4,212,778	264,821	5,773,284	41,423,239
2	TEST YEAR CUSTOMERS		101,726	89,871	11,687	82	36	9	3	38
3	AVERAGE ANNUAL THERM DELIVERIES PER CUSTOMER			556	2,309	48,447	117,022	29,425	1,924,428	1,090,085
4	Gas Commodity Costs		$ -	-	-	-	-	-	-	-
5	Gas Supply Department (Scheduling)	1.03748	$ 60,036	27,817	15,009	2,210	2,343	147	1,530	10,980
6	Gas Supply Department (Non-Scheduling)		$ 175,527	100,823	54,400	8,009	8,493	534	400	2,868
7	Meter Reading		$ 99,508	87,912	11,432	80	35	9	3	37
8	Billing		$ 2,687,690	2,390,177	293,296	2,058	903	226	75	954
	Customer Installation Investment Cost									
9	Meters		$ 4,313,379	3,158,869	1,032,520	35,219	27,975	4,315	12,428	42,053
10	Services		$ 43,038,379	36,481,419	5,982,992	145,085	123,515	15,924	15,832	273,612
11	Main Extensions		$ 100,928,367	55,979,364	43,370,284	408,895	228,764	44,879	24,516	871,665
12	Total Customer Installation Investment Cost		$ 148,280,125	95,619,652	50,385,796	589,199	380,254	65,117	52,776	1,187,330
	System Core Main Cost									
13	Capacity		$ 12,815,345	6,051,160	2,945,162	223,983	222,923	-	181,327	3,190,790
14	Commodity		$ 16,089,726	6,063,182	3,274,321	482,045	511,183	32,134	700,535	5,026,326
15	Total Core Main Cost		$ 28,905,071	12,114,342	6,219,483	706,028	734,106	32,134	881,861	8,217,116
	Notes: Commodity portion of Total Core Main Cost is the Total Replacement Cost times the Load Factor times the Levelized Plant Cost Factor									
	The Capacity portion of Total Core Main Cost is the Total Replacement Cost times (One minus the Load Factor) times the Levelized Plant Cost Factor									
	The individual Schedules' shares of the Commodity Portion Total are merely their shares of the Test Year annual deliveries.									
	The individual Schedules' shares of the Capacity Portion Total are merely their shares of the Staff-adjusted Test Year Design Day Usage from the next tab, i.e., "Exh 801 - Inc Investment."									
16	Underground Storage Cost		$ 1,036,995	604,999	318,005	33,796	31,410	659	5,887	42,239
17	Long Run Incremental Distribution Cost		$ 181,244,952	110,945,723	57,297,421	1,341,380	1,157,545	98,826	942,532	9,461,525
18	**Distribution Margin Revenue at Present Rates**		**$ 58,724,000**	**38,744,000**	**15,340,000**	**601,000**	**491,000**	**45,000**	**213,000**	**3,290,000**
	Proposed Cost by Functional Classification Assigned to Schedule by LRIC components									
19	Cost of Gas Commodity		$ -	-	-	-	-	-	-	-
20	Gas Supply Department Costs		$ 696,000	380,082	205,077	30,192	32,017	2,013	5,703	40,917
21	Meter Reading, Billing, Etc. Costs		$ 4,055,000	3,605,288	443,338	3,111	1,366	341	114	1,442
22	Meters & Services Costs		$ 20,474,000	17,139,707	3,033,374	77,960	65,501	8,751	12,219	136,488
23	System Core Main Costs		$ 40,639,000	21,313,925	15,522,030	348,981	301,387	24,106	283,704	2,844,868
24	Underground Storage Costs		$ 1,399,000	816,198	429,017	45,594	42,375	889	7,942	56,985
26	Proposed Cost		$ 67,263,000	43,255,201	19,632,837	505,837	442,646	36,100	309,682	3,080,698
25	**LRIC Based Target Margin**		**$ 67,263,000**	**43,255,201**	**19,632,837**	**505,837**	**442,646**	**36,100**	**309,682**	**3,080,698**
26	Current Distribution Margin Revenue to Proposed Cost		**0.87**	**0.90**	**0.78**	**1.19**	**1.11**	**1.25**	**0.69**	**1.07**
27	**Relative Margin to Cost at Present Rates**		**1.00**	**1.03**	**0.89**	**1.36**	**1.27**	**1.43**	**0.79**	**1.22**
28	Component LRIC Target Change by Schedule		$ 8,539,000	$ 4,511,201	$ 4,292,837	$ (95,163)	$ (48,354)	$ (8,900)	$ 96,682	$ (209,302)
29	Target Increase as a Percent of Present Distribution Margin Revenue		14.54%	11.64%	27.98%	-15.83%	-9.85%	-19.78%	45.39%	-6.36%
30	Avg Cost Per Month for Meter Reading, Billing, Meters & Services			$ 19.24	$ 24.79	$ 82.39				$ 302.48

Staff Adjustment to AVISTA UTILITIES
OREGON JURISDICTION
LONG-RUN INCREMENTAL COST OF SERVICE STUDY
TWELVE MONTHS ENDED SEPTEMBER 30, 2018

INCREMENTAL INVESTMENT COSTS

Line No.			Residential Service SCH 410	General Service SCH 420	Large General Service SCH 424	Interruptible Service SCH 440	Seasonal Service SCH 444	Special Contract Service SCH 447	Transportation Service SCH 456
	SERVICE INSTALLATIONS	48 yr life							
1	TYPICAL SERVICE PIPE SIZE		3/4"	3/4"	1 1/4" - 2"	1/2" - 1.25"	1 1/4" - 2"	3/4" - 2"	1/2" - 2"
2	AVERAGE SERVICE COST		$ 2,400.54	$ 3,027.50	$ 10,463.20	$ 20,289.58	$ 10,463.20	$ 31,207.82	$ 42,580.28
3	LEVELIZED PLANT COST FACTOR		0.1691	0.1691	0.1691	0.1691	0.1691	0.1691	0.1691
4	ANNUAL REVENUE REQUIREMENT		$ 405.93	$ 511.95	$ 1,769.33	$ 3,430.97	$ 1,769.33	$ 5,277.24	$ 7,200.33
	METERS & REGULATORS	36 yr life							
5	METERS & REGULATORS		$ 199.71	$ 501.99	$ 2,440.37	$ 4,415.25	$ 2,723.84	$ 23,537.23	$ 6,287.88
6	LEVELIZED PLANT COST FACTOR		0.1760	0.1760	0.1760	0.1760	0.1760	0.1760	0.1760
7	ANNUAL REVENUE REQUIREMENT		$ 35.15	$ 88.35	$ 429.51	$ 777.08	$ 479.40	$ 4,142.55	$ 1,106.67
	MAIN INVESTMENT	58 yr life							
8	AVERAGE MAIN EXTENSION PER CUSTOMER		95	566	494	498	494	1,056	1,133
9	TYPICAL PIPE SIZE REQUIRED		2 "	2 "	sample	dedicated plt	same as 424	dedicated plt	dedicated plt
10	AVERAGE COST PER FOOT		$ 38.82	38.82	59.73	$ 75.55	59.73	$ 45.82	$ 119.87
11	MAIN EXTENSION INVESTMENT		$ 3,687.90	$ 21,972.12	$ 29,523.52	$ 37,623.24	$ 29,523.52	$ 48,384.51	$ 135,811.41
12	ESTIMATED DESIGN DAY LOAD FACTOR	100%	22.18%	24.61%	47.64%	50.76%	0.00%	85.52%	34.87%
13	INCR CAPACITY MAIN INVESTMENT PER THERM	0.158841	$ 0.716145	$ 0.645433	$ 0.333419	$ 0.312926	$ -	$ 0.185736	$ 0.455523
14	TEST YEAR AVERAGE THERMS PER CUSTOMER		556	2,309	48,447	117,022	29,425	1,924,428	1,090,085
15	CAPACITY MAIN INVESTMENT		$ 398.18	$ 1,490.30	$ 16,153.17	$ 36,619.17	$ -	$ 357,434.60	$ 496,559.20
16	INCR COMMODITY MAIN INVESTMENT PER THERM		0.717568	$ 0.717568	$ 0.717568	$ 0.717568	$ 0.717568	$ 0.717568	$ 0.717568
17	TEST YEAR AVERAGE THERMS PER CUSTOMER		556	2,309	48,447	117,022	29,425	1,924,428	1,090,085
18	COMMODITY MAIN INVESTMENT		$ 398.97	$ 1,656.86	$ 34,764.02	$ 83,971.24	$ 21,114.44	$ 1,380,907.95	$ 782,210.11
19	TOTAL MAIN INVESTMENT PER CUSTOMER		$ 4,485.04	$ 25,119.29	$ 80,440.71	$ 158,213.65	$ 50,637.96	$ 1,786,727.06	$1,414,580.72
20	LEVELIZED PLANT COST FACTOR	58 yr life	0.1689	0.1689	0.1689	0.1689	0.1689	0.1689	0.1689
21	ANNUAL REVENUE REQUIREMENT		$ 757.52	$ 4,242.65	$ 13,586.44	$ 26,722.29	$ 8,552.75	$ 301,778.20	$ 238,922.68
	UNDERGROUND STORAGE INVESTMENT								
22	BALANCING INVESTMENT PER TOTAL THROUGHPUT THERM		$ 0.006030	$ 0.006030	$ 0.006030	$ 0.006030	$ 0.006030	$ 0.006030	$ 0.006030
23	STORAGE INVESTMENT PER JANUARY SALES THERM		$ 0.387843	$ 0.387843	$ 0.387843	$ 0.387843	$ 0.387843		
24	TEST YEAR AVERAGE THERMS PER CUSTOMER		556	2,309	48,447	117,022	29,425	1,924,428	1,090,085
25	TEST YEAR AVERAGE JANUARY SALES THERMS PER CUSTOMI		94	379	5,531	11,484	659		
26	UNDERGROUND STORAGE INVESTMENT		$ 39.81	$ 160.92	$ 2,437.30	$ 5,159.65	$ 433.03	$ 11,604.59	$ 6,573.38
27	LEVELIZED PLANT COST FACTOR	48 yr life	0.1691	0.1691	0.1691	0.1691	0.1691	0.1691	0.1691
28	ANNUAL REVENUE REQUIREMENT		$ 6.73	$ 27.21	$ 412.15	$ 872.50	$ 73.22	$ 1,962.34	$ 1,111.56
29	TOTAL INCREMENTAL INVESTMENT COST PER CUSTOMER		$ 1,205.34	$ 4,870.16	$ 16,197.42	$ 31,802.83	$ 10,874.70	$ 313,160.33	$ 248,341.23

Staff Adjustment to Exhibit No. 801
Miller / Avista
Page 2 of 3

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 603

Exhibits in Support
Of Opening Testimony

March 1, 2017

CC/NUMBER 51
DECEMBER 21, 1981

This Week's Citation Classic

Akaike H. A new look at the statistical model identification. IEEE Trans. Automat. Contr. AC-19:716-23, 1974. [Institute of Statistical Mathematics, Minato-ku, Tokyo, Japan]

This paper describes how the problem of statistical model selection can systematically be handled by using an information criterion (AIC) introduced by the author in 1971. The basic idea underlying the introduction of the criterion is explained and its practical utility is demonstrated by numerical examples. [The Science Citation Index® (SCI®) and the Social Sciences Citation Index® (SSCI®) indicate that this paper has been cited over 180 times since 1974.]

Hirotugu Akaike
Institute of Statistical Mathematics
4-6-7 Minami-Azabu, Minato-ku
Tokyo 106
Japan

October 7, 1981

"In 1968, I was developing a statistical identification procedure for a cement rotary kiln under normal noisy operating conditions by using a multi-variate autoregressive time series model. It quickly became clear that the main problem was the decision on the order, the number of past observations used to predict the behavior of the kiln. A solution was obtained by the introduction of the concept of final prediction error (FPE), the expected mean squared error of prediction by a model with the parameters determined by a statistical method.[1] The order selection was realized so as to minimize an estimate of FPE.

"In 1970, I received an invitation to the Second International Symposium on Information Theory, which was to be held in Tsahkadsor, Armenia, USSR. At that time, I was interested in extending FPE to the determination of the number of factors in a factor analysis model, a statistical model originally developed in psychology. However, it was not at all clear what the prediction error of this model was. The pressure of the impending deadline for the submission of the conference paper was increasing and this caused several weeks of sleepless nights.

"On the morning of March 16, 1971, while taking a seat in a commuter train, I suddenly realized that the parameters of the factor analysis model were estimated by maximizing the likelihood and that the mean value of the logarithmus of the likelihood was connected with the Kullback-Leibler information number. This was the quantity that was to replace the mean squared error of prediction. A new measure of the badness of a statistical model with parameters determined by the method of maximum likelihood was then defined by the formula[2] AIC = $(-2) \log_e$ (maximum likelihood) + 2 (number of parameters). AIC is an acronym for "an information criterion" and was first introduced in 1971. A model with a lower value of AIC is considered to be a better model.

"It is the general applicability and simplicity of model selection by AIC that prompted its use in such diversified areas as hydrology, geophysics, engineering, econometrics, psychometrics, and medicine. The procedure has some proof of its optimality[3] Nevertheless, due to its nonconventional style, AIC is not yet fully accepted by professional statisticians. It is mainly the increasing number of successful applications that caused the frequent citation of the paper."

1. Akaike H. Fitting autoregressive models for prediction. Ann. Inst. Statist. Math. 21:243-7, 1969.
2. Information theory and an extension of the maximum likelihood principle. (Petrov B N & Csaki F, eds.) Second International Symposium on Information Theory. Budapest: Akademiai Kiado, 1973. p. 267-81.
3. A Bayesian analysis of the minimum AIC procedure. Ann. Inst. Statist. Math. 30A:9-14, 1978.

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 604

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff/604
St. Brown/1

horizontal axis lists the season (month or quarter), and values are plotted for each season's low, average, and high during the past several years. Levenbach and Cleary (1981, p. 308) provide a useful illustration.

In addition, a statistical test for seasonality—often based on autocorrelations at the seasonal lags—can be a valuable feature of method selection. In a monthly time series, for example, seasonality would be indicated by a high autocorrelation between values that are separated by multiples of 12 (and sometimes 13) periods. However, you normally need at least three years of monthly data for a statistical assessment of seasonality.

Although visually identifying trends and cycles may narrow the choice of plausible forecasting methods, you are often left with a number of candidates worthy of further screening. Comparing the forecasting track records of these finalists can be informative. The M3-Competition (Makridakis and Hibon, 2000) showed that automatic method-selection algorithms based on such comparisons were among the most accurate approaches to extrapolation of time series. In forecasting comparisons, it is important to discourage overfitting and unnecessary model complexity. Method selection based on a statistic that is adjusted for degrees of freedom is helpful because it penalizes complexity; however, the penalties are probably not strong enough. An information criterion, such as the Akaike Information Criterion AIC or the Bayesian Information Criterion BIC, provides a basis for method selection that imposes a stronger handicap on complex procedures.

When possible, analysts should base method selection (and evaluation) on out-of-sample tests rather than fit to the data. Out-of-sample accuracy is normally measured by holding out some portion of the historical time series from the data that is used to select and estimate the forecasting method. For example, the most recent 12 months may be withheld from a time series of 60 months to test the forecasting accuracy of a method fit to the first 48 months of data. The software program should permit users to readily designate fit and test (holdout) periods.

Detecting patterns from graphs is important in selecting a forecasting method, as is managerial judgment about pattern changes. If several forecasting methods differ in the emphasis they give to different features of the data, the forecaster may find it advantageous to diversify the forecasting portfolio by combining forecasts from several methods. The combined-forecast errors are almost always smaller than the average of the errors from the individual forecasts, and sometimes as low as the errors from the best of the individual forecasts (Armstrong 2001c).

For forecasting the large number of time series typically involved in a product hierarchy, automatic method selection is mandatory. Tashman and Leach (1991) identified five types of automatic method selection in the software of the 1980s. The 1990s have seen an explosion in the number and variety of these methodologies.

For causal methods, where you base forecasts on explanatory variables, the inclusion of lagged variables and lagged errors (*dynamic terms* in Table 2) can often improve model performance by accounting for effects that are distributed over more than one time period. In a regression model, you must specify the form of each causal variable as well as a time pattern for its effect on the variable to be forecast. Alternatively, you can incorporate causal variables into ARIMA models, which establish forms and time patterns on the basis of correlations in the data.

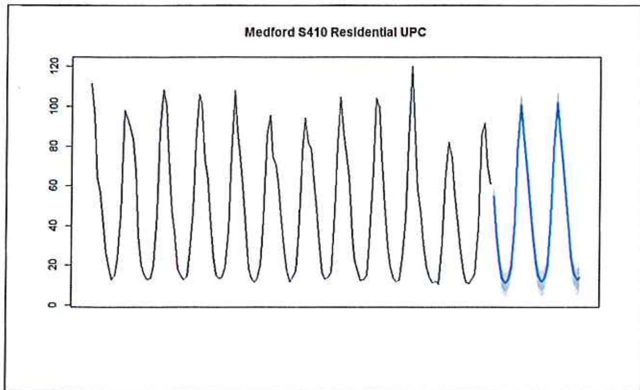
CASE: UG 325
WITNESS: MAX ST. BROWN

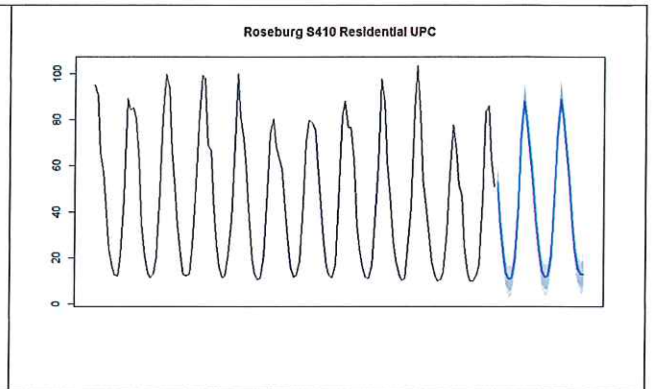
PUBLIC UTILITY COMMISSION
OF
OREGON

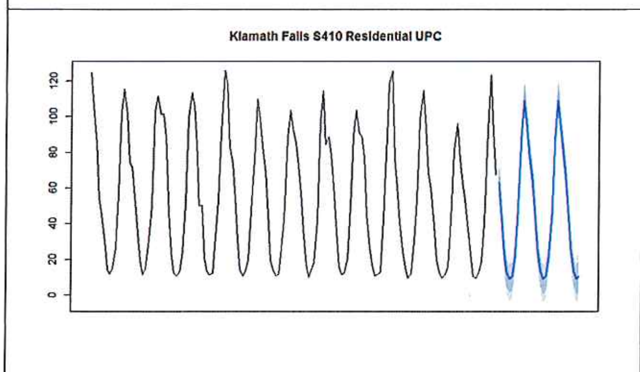
STAFF EXHIBIT 605

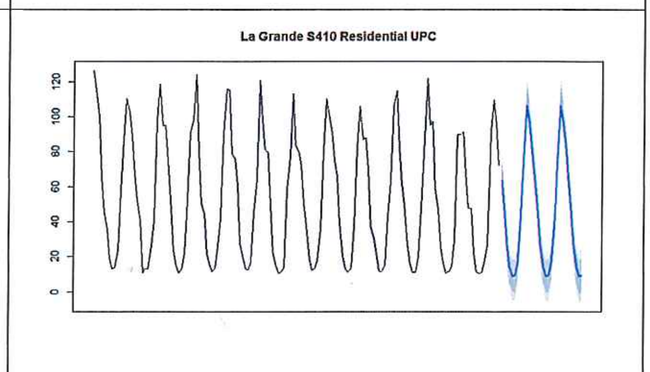
Exhibits in Support
Of Opening Testimony

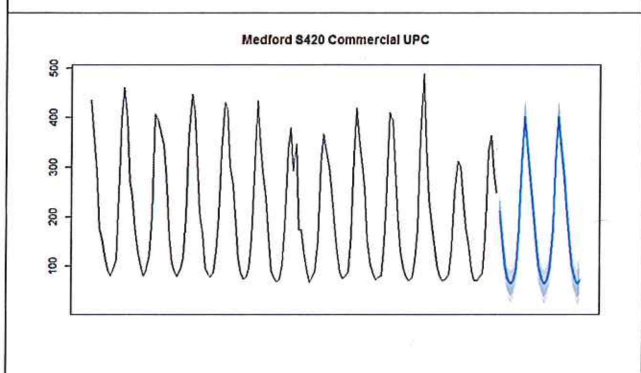
March 1, 2017

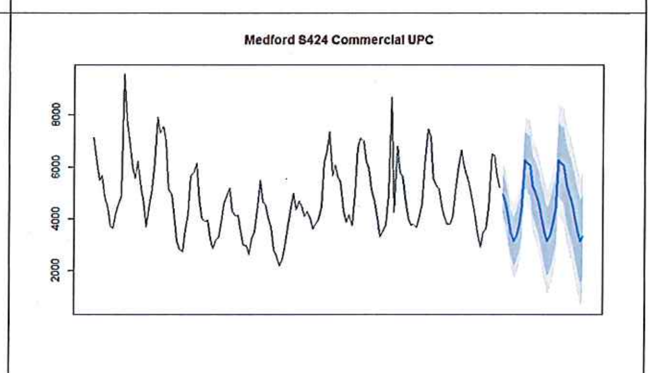

Medford S410 Residential UPC
0
20
40
60
80
100
120

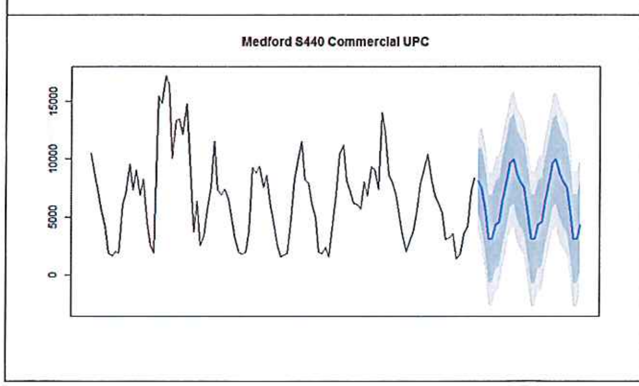

Roseburg S410 Residential UPC
0
20
40
60
80
100

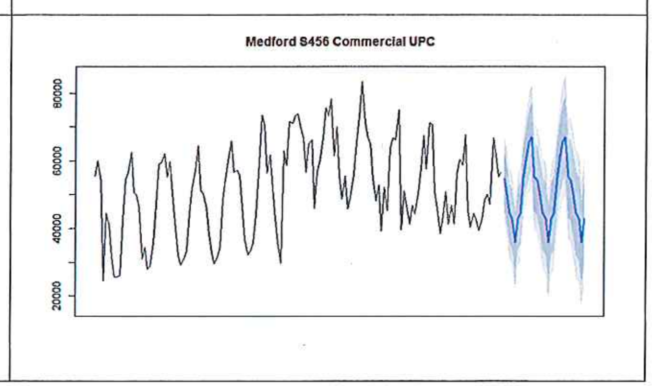

Klamath Falls S410 Residential UPC
0
20
40
60
80
100
120


La Grande S410 Residential UPC
0
20
40
60
80
100
120

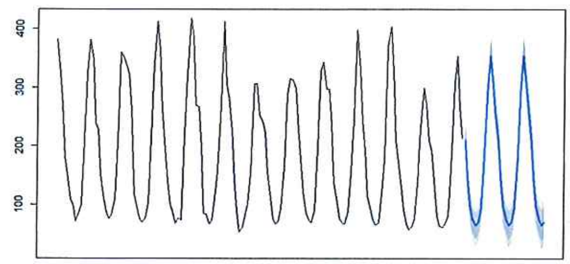

Medford S420 Commercial UPC
100
200
300
400
500


Medford S424 Commercial UPC
2000
4000
6000
8000

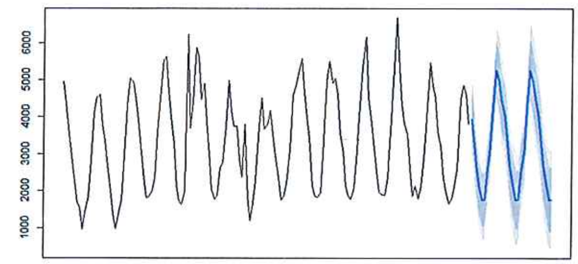

Medford S440 Commercial UPC
0
5000
10000
15000


Medford S456 Commercial UPC
20000
40000
60000
80000

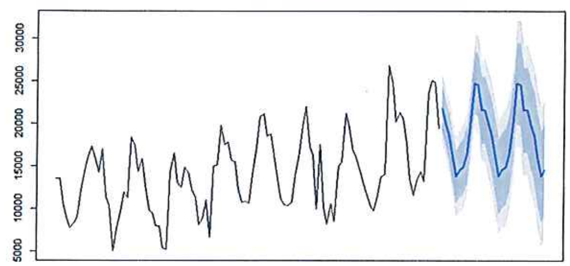
Roseburg S420 Commercial UPC



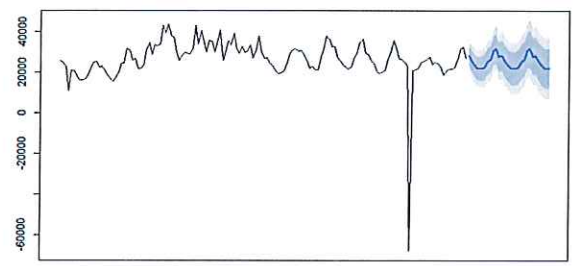
Roseburg S424 Commercial UPC



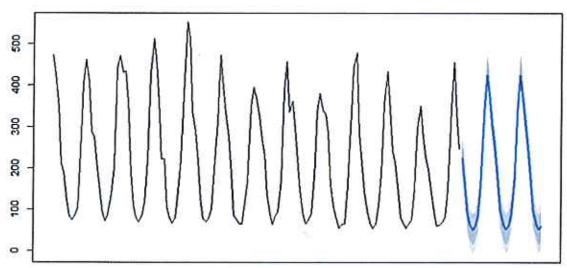
Roseburg S440 Commercial UPC



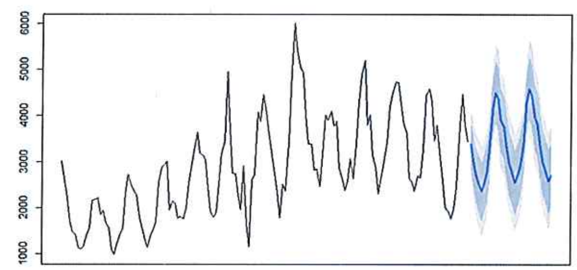
Roseburg S456 Commercial UPC



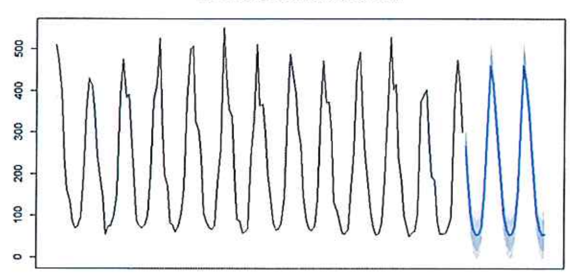
Klamath Falls S420 Commercial UPC



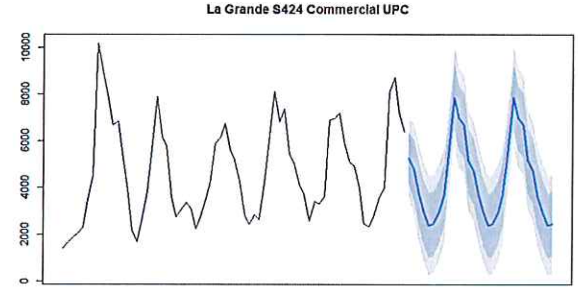
Klamath Falls S424 Commercial UPC



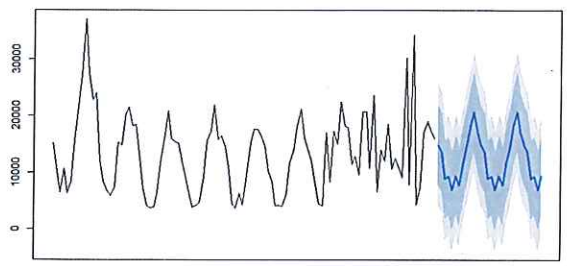
La Grande S420 Commercial UPC



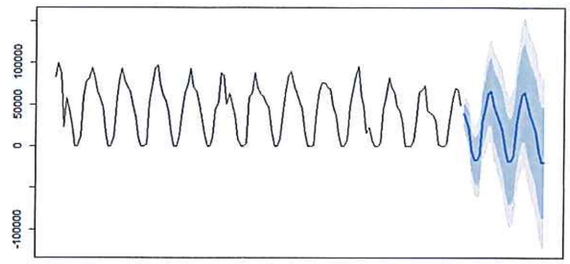
La Grande S424 Commercial UPC



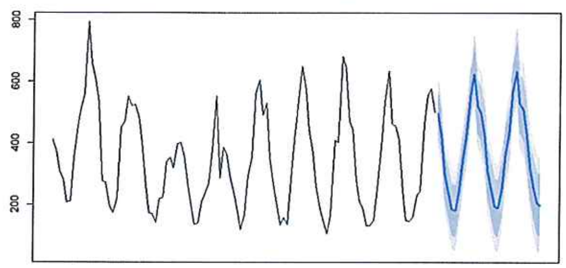
La Grande S440 Commercial UPC



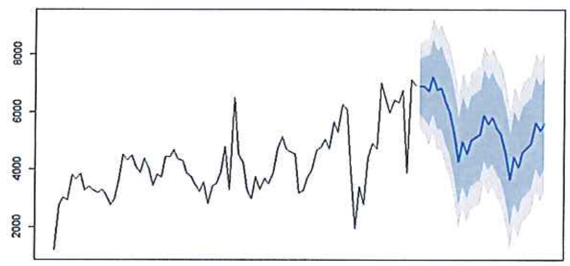
La Grande S456 Commercial UPC



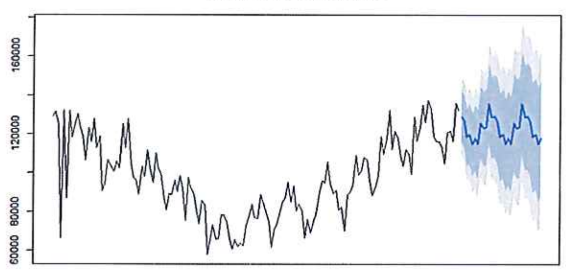
Medford S420 Industrial UPC



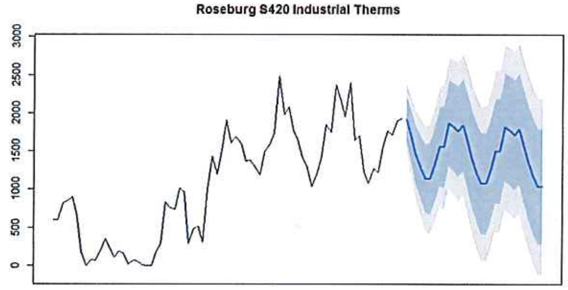
Medford S424 Industrial UPC



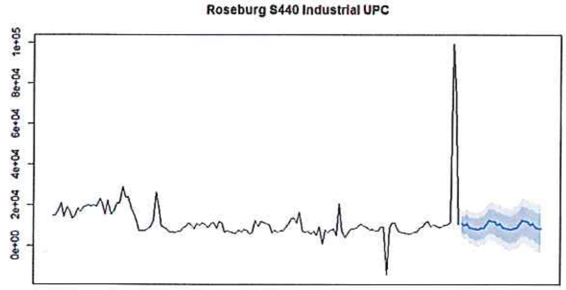
Medford S456 Industrial UPC



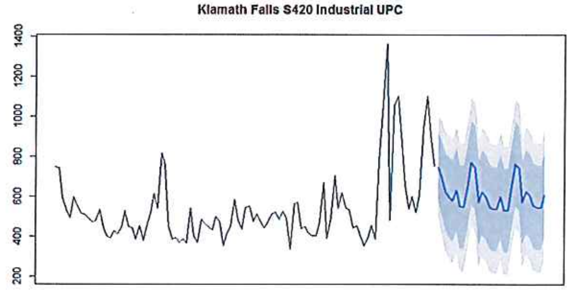
Roseburg S420 Industrial Therms



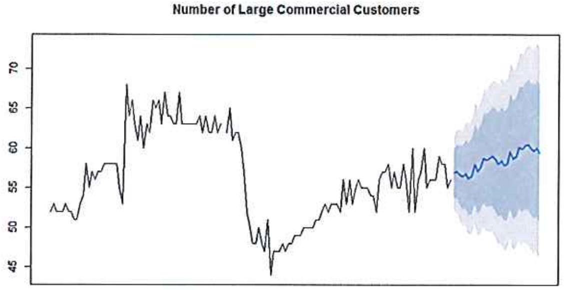
Roseburg S440 Industrial UPC



Klamath Falls S420 Industrial UPC



Number of Large Commercial Customers



CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 606

Exhibits in Support
Of Opening Testimony

March 1, 2017

1. Medford, OR Forecasting Models

The forecasting models for the Medford region (Jackson County) are given below for the residential, commercial, and industrial sectors:

Residential Sector, THM:

$THM/C_{t,y,MED410.r} = \alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + \alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \lambda RAP_{t,y-1,OR410} + \omega_{SD} D_{t,y} + ARIMA\epsilon_{t,y}\ (1,1,2)(0,0,0)_{12}\ for\ t, y\ January = 2005 \uparrow$

Model notes:

1. $\omega_{SD} D_{t,y}$ are 11 indicator variables for January through November to control for monthly variations in gas usage.
2. Model starts with January 2005 data.

Commercial Sector, THM:

$THM/C_{t,y,MED420.c} =$
$\alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + \alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} + ARIMA\epsilon_{t,y}\ (1,1,1)(0,0,0)_{12}$

$THM/C_{t,y,MED424.c} =$
$\alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + \alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \omega_{SD} \boldsymbol{D_{t,y}} + ARIMA\epsilon_{t,y}\ (0,1,1)(0,0,0)_{12}$

$THM/C_{t,y,MED440.c} =$
$\alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + \alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} +$
$ARIMA\epsilon_{t,y}\ (1,0,0)(0,0,0)_{12}\ for\ t, y = May\ 2007 \uparrow$

$THM/C_{t,y,MED456.c} =$
$\alpha_0 + \alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + +\alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} + ARIMA\epsilon_{t,y}\ (1,1,1)(0,0,0)_{12}$

Industrial Sector, THM:

$THM/C_{t,y,MED420.i} = \alpha_1 HDD_{t,y}^{AVA} + \alpha_2 (HDD_{t,y}^{AVA})^2 + \alpha_3 QHDD_{t,y}^{AVA} + \alpha_4 (QHDD_{t,y}^{AVA})^2 + \delta_1 IP_{t,y} + \boldsymbol{\omega_{SD} D_{t,y}} + ARIMA\epsilon_{t,y}\ (1,1,1)(0,0,0)_{12}\ for\ y = April\ 2007 \uparrow$

$THM/C_{t,y,MED424.i} = \delta_1 IP_{t,y} + \omega_{SD} D_{t,y} + ARIMA\epsilon_{t,y}\ (2,0,0)(0,0,0)_{12}\ for\ y = Mar\ 2009 \uparrow$

$THM/C_{t,y,MED456.i} =$
$\delta_1 WHS_{t,y} + \omega_{SD} D_{t,y} + \omega_{OL} D_{Jan\ 2008=1} + \omega_{OL} D_{Sept\ 2008=1} + ARIMA\epsilon_{t,y}\ (1,1,2)(0,0,0)_{12}$

2. Roseburg, OR Forecasting Models

The forecasting models for the Roseburg region (Douglas County) are given below for the residential, commercial, and industrial sectors:

Residential Sector, THM:

$$THM/C_{t,y,ROS410.r} = \varphi_1 HDD_{t,y}^{AVA} + \varphi_2 (HDD_{t,y}^{AVA})^2 + \varphi_3 QHDD_{t,y}^{AVA} + \varphi_4 (QHDD_{t,y}^{AVA})^2 + \gamma_1 lnT + \lambda RAP_{t,y-1,OR410} + \omega_{SD} \boldsymbol{D}_{t,y} + ARIMA\epsilon_{t,y}\,(2,1,1)(0,0,0)_{12} \quad for\ t,y\ January = 2005 \uparrow$$

Commercial Sector, THM:

$$THM/C_{t,y,ROS420.c} = \varphi_1 HDD_{t,y}^{AVA} + \varphi_2 (HDD_{t,y}^{AVA})^2 + \varphi_3 QHDD_{t,y}^{AVA} + \varphi_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega}_{SD} \boldsymbol{D}_{t,y} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12}$$

$$THM/C_{t,y,ROS424.c} = \varphi_1 HDD_{t,y}^{AVA} + \varphi_2 (HDD_{t,y}^{AVA})^2 + \varphi_3 QHDD_{t,y}^{AVA} + \varphi_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega}_{SD} \boldsymbol{D}_{t,y} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12}$$

$$THM/C_{t,y,ROS440.c} = \varphi_1 HDD_{t,y}^{AVA} + \varphi_2 (HDD_{t,y}^{AVA})^2 + \varphi_3 QHDD_{t,y}^{AVA} + \varphi_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega}_{SD} \boldsymbol{D}_{t,y} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12} \quad for\ t,y = April\ 2007 \uparrow$$

$$THM/C_{t,y,ROS456.c} = \varphi_1 HDD_{t,y}^{AVA} + \varphi_2 (HDD_{t,y}^{AVA})^2 + \varphi_3 QHDD_{t,y}^{AVA} + \varphi_4 (QHDD_{t,y}^{AVA})^2 + \omega_{OL} D_{July\ 2014=1} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12}$$

Model notes:

1. $\omega_{OL} D_{July\ 2014=1}$ is an indicator variable for July 2014 to control for the negative UPC value.

Industrial Sector, THM:

$$THM_{t,y,ROS420.i} = \delta_1 IP_{t,y} + \varphi_2 HDD_{t,y}^{AVA} + \varphi_3 (HDD_{t,y}^{AVA})^2 + \varphi_4 QHDD_{t,y}^{AVA} + \varphi_5 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega}_{SD} \boldsymbol{D}_{t,y} + ARIMA\epsilon_{t,y}\,(1,0,1)(0,0,0)_{12} \quad for\ y = 2010 \uparrow$$

Model notes:

1. In order to capture potential seasonality the model forecasts total therms rather than UPC.

$$THM/C_{t,y,ROS440.i} = \delta_1 IP_{t,y} + \boldsymbol{\omega}_{SD} \boldsymbol{D}_{t,y} + \omega_{OL} D_{Jan\ 2014=1} + \omega_{OL} D_{Jan\ 2016=1} + \omega_{OL} D_{Feb\ 2016=1} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12}$$

3. Klamath Falls, OR Forecasting Models

The forecasting models for the Klamath Falls region (Klamath County) are given below for the residential, commercial, and industrial sectors:

Residential Sector, THM:

$$THM/C_{t,y,KLM410.r} = \beta_1 HDD_{t,y}^{AVA} + \beta_2 (HDD_{t,y}^{AVA})^2 + \beta_3 QHDD_{t,y}^{AVA} + \beta_4 (QHDD_{t,y}^{AVA})^2 + \lambda RAP_{t,y-1,OR410} + \\ + \omega_{SD} \boldsymbol{D_{t,y}} + ARIMA\epsilon_{t,y}\,(1,1,1)(0,0,0)_{12}$$

Commercial Sector, THM:

$$THM/C_{t,y,KLM420.c} = \beta_0 + \beta_1 HDD_{t,y}^{AVA} + \beta_2 (HDD_{t,y}^{AVA})^2 + \beta_3 QHDD_{t,y}^{AVA} + \beta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} \\ + \omega_{SC} D_{Jan\ 2010\uparrow=1} + ARIMA\epsilon_{t,y}\,(1,0,0)(0,0,0)_{12}$$

[7.99] Model notes:

1. $\omega_{SC} D_{Jan\ 2010\uparrow=1}$ is an indicator variable with 1 for all dates after January 2010 and 0 otherwise.

$$THM/C_{t,y,KLM424.c} = \beta_0 + \beta_1 HDD_{t,y}^{AVA} + \beta_2 (HDD_{t,y}^{AVA})^2 + \beta_3 QHDD_{t,y}^{AVA} + \beta_4 (QHDD_{t,y}^{AVA})^2 + \omega_{SC} D_{Jan\ 2009\uparrow=1} \\ + \omega_{SC} D_{Jan\ 2011\uparrow=1} + ARIMA\epsilon_{t,y}\,(2,0,0)(0,0,0)_{12}$$

Industrial Sector, THM:

$$THM/C_{t,y,KLM420.i} = \delta_1 IP_{t,y} + \beta_2 HDD_{t,y}^{AVA} + \beta_3 (HDD_{t,y}^{AVA})^2 + \beta_4 QHDD_{t,y}^{AVA} + \beta_5 (QHDD_{t,y}^{AVA})^2 \\ + \boldsymbol{\omega_{SD} D_{t,y}} + ARIMA\epsilon_{t,y}\,(1,0,1)(0,0,0)_{12}\ for\ t,y = August\ 2007\uparrow$$

4. La Grande, OR Forecasting Models

The forecasting models for the La Grande region (Union County) are given below for the residential, commercial, and industrial sectors:

Residential Sector, THM:

$$THM/C_{t,y,LaG410.r} = \theta_1 HDD_{t,y}^{AVA} + \theta_2 (HDD_{t,y}^{AVA})^2 + \theta_3 QHDD_{t,y}^{AVA} + \theta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} + ARIMA\epsilon_{t,y}\,(0,1,1)(0,0,0)_{12}$$

Commercial Sector, THM:

$$\begin{aligned} THM/C_{t,y,LaG420.c} = {} & \theta_1 HDD_{t,y}^{AVA} + \theta_2 (HDD_{t,y}^{AVA})^2 \\ & + \theta_3 QHDD_{t,y}^{AVA} + \theta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} + \omega_{OL} D_{Jan\ 2005\uparrow=1} + \omega_{OL} D_{Jan\ 2012\uparrow=1} \\ & + ARIMA\epsilon_{t,y}\,(1,0,0)(0,0,0)_{12} \end{aligned}$$

$$\begin{aligned} THM/C_{t,y,LaG424.c} = {} & \theta_1 HDD_{t,y}^{AVA} + \theta_2 (HDD_{t,y}^{AVA})^2 + \theta_3 QHDD_{t,y}^{AVA} + \theta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} \\ & + ARIMA\epsilon_{t,y}\,(1,0,0)(0,0,0)_{12}\ for\ t,y = June\ 2010\uparrow \end{aligned}$$

$$\begin{aligned} THM/C_{t,y,LaG440.c} = {} & \theta_1 HDD_{t,y}^{AVA} + \theta_2 (HDD_{t,y}^{AVA})^2 + \theta_3 QHDD_{t,y}^{AVA} + \theta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} \\ & + ARIMA\epsilon_{t,y}\,(0,0,0)(0,0,0)_{12}\ for\ t,y = May\ 2007\uparrow \end{aligned}$$

$$\begin{aligned} THM/C_{t,y,LaG456.c} = {} & \theta_1 HDD_{t,y}^{AVA} + \theta_2 (HDD_{t,y}^{AVA})^2 + \theta_3 QHDD_{t,y}^{AVA} + \theta_4 (QHDD_{t,y}^{AVA})^2 + \boldsymbol{\omega_{SD} D_{t,y}} \\ & + ARIMA\epsilon_{t,y}\,(0,1,0)(0,0,0)_{12} \end{aligned}$$

Model notes:

1. Base load forecast months are often negative; these are set to zero in the forecast spreadsheet.

5. Large Commercial Customers Forecasting Model

Below is the forecasting model described on Staff/600, St. Brown/20-22.

$\Sigma \quad (C_{t,y,MED444.c}\,, C_{t,y,MED456.c}\,, C_{t,y,ROS424.c}\,, C_{t,y,ROS440.c}\,,\ C_{t,y,ROS456.c}\,,\ C_{t,y,KLM424.c}\,, C_{t,y,KLM440.c}) = \theta_1 E_{t,y-1} \ + \omega_{SD} D_{t,y} +$
$ARIMA\epsilon_{t,y}\,(0{,}1{,}1)(0{,}0{,}0)_{12} \quad for\ t,y = January$ 2005 ↑, excluding November 2009

Model notes:

1. Excludes customer count data from November 2009; including November 2009 would increase the forecasted number of customers.
2. $E_{t,y-1}$ is one year lagged value of Oregon total non-farm employment quarterly forecasts by the Oregon Office of Economic Analysis. Available at: https://www.oregon.gov/das/OEA/Pages/forecastecorev.aspx

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 607

Exhibits in Support
Of Opening Testimony

March 1, 2017

UG 325 Load Forecasting Adjustment				
	change Staff minus Company	Price per unit	Adjustment	
residential S410 therms	632,795	0.5806	$ 367,414	
commercial S420 therms	(41,392)	0.4802	$ (19,874)	
commercial S424 therms	111,446	0.1389	$ 15,477	
commercial S440 therms	75,079	0.1165	$ 8,748	
commercial S456 therms	(566,416)	0.0571	$ (32,334)	
industrial S420 therms	11,925	0.4802	$ 5,726	
industrial S424 therms	(2,564)	0.1389	$ (356)	
industrial S440 therms	(15,779)	0.1165	$ (1,839)	
industrial S456 therms	(432,324)	0.0571	$ (24,679)	$318,282
other large commercial	3	9507.2752	$ 26,343	
Increase in Revenue			$ 344,625	

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 608

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	12/30/2016
CASE NO:	UG 325	WITNESS:	Grant D. Forsyth
REQUESTER:	PUC Staff - Anderson	RESPONDER:	Grant D. Forsyth
TYPE:	Data Request	DEPT:	Financial Planning & Analysis
REQUEST NO.:	Staff – 165	TELEPHONE:	(509) 495-2765
		EMAIL:	grant.forsyth@avistacorp.com

REQUEST:

See Avista/700, Forsyth/16 lines 17-19. Please describe the impact on the load forecast due to the Company's inclusion of Western Housing Starts as a forecast driver for Schedules dominated by timber products firms.

RESPONSE:

The inclusion of Western Housing Starts (WHS) was at the request of the Oregon PUC in our 2015 rate case. Using WHS did significantly improve the regression fit of certain special contract and transport customers in the wood products industry. In particular, it did a better job of modeling the long-run trend in usage over the business cycle faced by these firms. Previously, the Federal Reserve Industrial Production (IP) was used as the driver for most industrial schedules.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/24/2017
CASE NO.:	UG 325	WITNESS:	Patrick Ehrbar
REQUESTER:	PUC Staff – St. Brown	RESPONDER:	Patrick Ehrbar
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 336	TELEPHONE:	(509) 495-8620
		EMAIL:	pat.ehrbar@avistacorp.com

REQUEST:

See lines 14-15 of Avista/500, Smith/10 and see lines 8-10 on page 11 of Order No. 16-076, Appendix A. Does the Company intend to discontinue Schedule 478? If "yes," please indicate the scheduled discontinuance date.

RESPONSE:

The Company plans on discontinuing Schedule 478 effective November 1, 2017. Presently, Avista is recovering from customers the costs associated with providing demand side management services for the November 1, 2015 through April 30, 2016 time period (as approved in Order No. 16-393).

Prior to May 1, 2016, the Company collected the costs associated with its demand side management programs through a deferral mechanism. Effective May 1, 2016, as required by Order No. 16-076 in Docket No. UG-288, the Company established Schedule 469 to collect demand side management funding through current rates.

In July 2017, if the residual balance for Schedule 478 is projected to be equal to or less than 0.05 percent of Avista's retail operating revenues by October 31, 2017, Avista will file to cancel Schedule 478 effective November 1, 2017.[1] Any residual balance would be transferred to Schedule 477, "Residual Deferral Amortization-Oregon" for rebate/recovery. If the 0.05 percent standard is not met (i.e., the balance is larger than 0.05%), then the Company would keep Schedule 478 open for one additional year to amortize any remaining balance.

CASE: UG 325
WITNESS: MAX ST. BROWN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 609

Exhibits in Support
Of Opening Testimony

March 1, 2017

Copied and Pasted Data from Avista's Response to Staff DR 144			Staff Computations	
	Customer Forecasts for Revenue Model	Load Forecasts for Revenue Model	Staff Computation: UPC = Therms ÷ Customers	Staff Computation: Jan to Mar UPC = Jan + Feb + Mar
Forecast Sheet Variable	ORTOTALSCH410CUS.r	ORTOTALSCH410THM.r		
Revenue Model Variable	ORRes410	ORRes410		
Jan-2016	87,849	8,541,748	97	
Feb-2016	87,839	6,589,452	75	
Mar-2016	87,917	5,402,752	61	
				234

Copied and Pasted Data Headers from Avista's Response to Staff DR 338									Staff Computations	
ACCT ID	INSTALL DT	OPEN DTE	CLOSE DTE	REV CLS	RATE SCH	JAN USAGE	FEB USAGE	MAR USAGE	Staff Computation: Jan to Mar UPC per customer = Jan + Feb + Mar	Staff Computation: Average = Average across all new customers of Jan to Mar UPC
										181

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 700

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Lance Kaufman. I am a Senior Economist employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE., Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my witness qualification statement, which is found in Exhibit Staff/701.

Q. What is the purpose of your testimony?

A. In my testimony I present Staff's conclusions regarding affiliated interests, cost allocations, general plant additions, and IT plant additions.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

Staff/701 – Witness Qualification Statement;
Staff/702 – Responses to Data Requests;
Staff/703 – Confidential Responses to Data Requests;
Staff/704 – Affiliated Interest Adjustments;
Staff/705 – Cost Allocation Adjustments; and
Staff/706 – IT and General Plant Adjustments.

Q. How is your testimony organized?

A. My testimony is organized as follows:

	Company Filing		Staff		Adjustment	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
Allocation Plant Adjustment	$ 464,090	$ 40,450	$ 434,089	$ 36,937	$ (30,001)	$ (3,513)
Total Plant Adj					$ (30,001)	$ (3,513)
Common Service Allocated All Expense	$ 7,105	$ 2,157	$ 7,051	$ 2,141	$ (54)	$ (16)
Gas Service Allocated All Expense	$ 126,602	$ 12,191	$ 125,142	$ 11,850	$ (1,460)	$ (341)
Depreciation	$ 17,998	$ 1,569	$ 15,466	$ 1,316	$ (2,531)	$ (253)
Total Expence Adjustment					$ (4,045)	$ (610)

	Company Filing		Staff		Adjustment	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
ER 5005 Information Technology Refresh Program	$ 23,663	$ 2,049	$ 17,232	$ 1,492	$ (6,431)	$ (557)
ER 5006 Information Technology Expansion Program	$ 18,862	$ 1,641	$ 6,193	$ 544	$ (12,669)	$ (1,097)
ER 5010 Enterprise Business Continuity	$ 403	$ 35	$ 15	$ 1	$ (388)	$ (34)
ER 5106 Next Generation Radio System	$ 8,976	$ 783	$ 6,112	$ 529	$ (2,864)	$ (254)
ER 5121 Microwave Replacement with Fiber	$ 1,399	$ 122	$ 1,399	$ -	$ -	$ (122)
ER 5144 Mobility in the Field	$ 615	$ 54	$ (77)	$ (6)	$ (692)	$ (60)
ER 2586 Meter Data Management	$ 39,380	$ 2,470	$ 39,380	$ -	$ -	$ (2,470)
ER 7127 Compressed Natural Gas Fleet Conversion	$ 54	$ 5	$ -	$ -	$ (54)	$ (5)
ER 7001 and 7003 Structures, improvements, and furniture	$ 493	$ 43	$ 99	$ 9	$ (394)	$ (34)
ER 7005 and 7006 Capital Tools and Stores Equipment	$ 3,250	$ 278	$ 1,705	$ 144	$ (1,545)	$ (134)
ER 7126 and 7131 Long term Campus Re-Structuring Plan	$ 10,011	$ 871	$ 10,011	$ -	$ -	$ (871)
Total Plant Adj					$ (25,038)	$ (5,637)
ER 5147 Avista Facility Management COTS Migration					$ (2,330)	$ (202)
ER 7144 Ergonomic Equipment					$ (195)	$ (17)
Total Expence Adjustment					$ (2,525)	$ (219)

ISSUE 1, AFFILIATED INTERESTS

Q. What Rules has the Commission adopted regarding the treatment of affiliated interest transactions?

A. Affiliated interest transactions are subject to a number of Oregon Administrative Rules (OAR). Relevant administrative rules to this proceeding are:

- OAR 860-027-0040 – addresses applications for approval of transactions between affiliated interests;
- OAR 860-027-0041 – addresses information required for utility goods or services provided to affiliated interests;
- OAR 860-027-0042 and OAR 860-027-0043 address timeliness of applications and waivers for rule provisions;
- OAR 860-027-0048 - addresses transfer pricing between utilities and affiliates; and
- OAR 860-027-0100 - provides reporting requirements for affiliate transactions.

Q. Please summarize your review of Avista's transactions with affiliates.

A. Staff reviewed the following components:

1. Affiliate contract filing requirements;
2. Transfer pricing requirements;
3. Fair and reasonable allocation of joint costs; and
4. Reporting requirements.

Q. Please summarize your conclusions regarding Avista's transactions with affiliates.

A. Avista has complied with affiliated interests contract filing requirements pursuant to OAR 860-027-0040. Avista may not be complying with all transfer pricing requirements pursuant to OAR 860-027-0048. Avista is not fairly allocating costs to affiliated interests. Avista has complied with affiliated interest reporting requirements pursuant to OAR 860-027-0100.

Q. What information did you review to arrive at these conclusions?

A. Staff reviewed Avista's recent affiliated interest reports and Avista's response to 29 data requests related to affiliated interest transactions and cost allocations. Staff also performed a two-day on site audit of Avista's Spokane facilities that provided insight in to these transactions.

Q. Please summarize your recommendations regarding Avista's affiliated interests transactions.

A. I make three recommendations:

- Investments by Avista Capital to Avista should be priced at the Federal Reserve Economic Data (FRED) Jumbo 1 month certificates of deposit rate;
- Avista charges to affiliated interests should account for general overhead; and
- GridGlo costs and plant should be assigned to non-utility.

Transfer Prices

Q. What transfer pricing requirements is Avista subject to?

A. Transfer prices for services not made under a Commission-approved contract or at an approved rate are specified in OAR 860-027-0048(4)(d) and (e):

> (d) When services or supplies are sold by an energy utility to an affiliate, sales shall be recorded in the energy utility's revenue accounts at the approved rate if an applicable rate is on file with the Commission or with FERC. If services or supplies are not sold pursuant to an approved rate, sales shall be recorded in the energy utility's accounts at the energy utility's cost or the market rate, whichever is higher. Approved rates shall be established as appropriate.
>
> (e) When services or supplies (except for generation) are sold to an energy utility by an affiliate, sales shall be recorded in the energy utility's accounts at the approved rate if an applicable rate is on file with the Commission or with FERC. If services or supplies (except for generation) are not sold pursuant to an approved rate, sales shall be recorded in the energy utility's accounts at the affiliate's cost or the market rate, whichever is lower.

Q. Which transactions appear to be made in violation of these transfer pricing requirements?

A. The following transactions appear to violate the transfer pricing requirements:

1. Cash investments between Avista and Avista Capital;
2. General support and administrative services provided by Avista to affiliates; and,
3. Services provided by the affiliate GridGlo to Avista.

Q. Please summarize Avista’s recent investment transactions with Avista Capital

A. Avista Capital invests excess cash with Avista Corp and receives interest at Avista Corp’s avoided cost. In 2016, Avista Capital has an average balance of

$10.7 million invested in Avista Corp at an average interest rate of 1.2578 percent. In 2016 Avista paid Avista Captial $131,957 in interest.[1]

Q. What concern does Staff have with loans between Avista and Avsita Capital?

A. Staff is concerned that Avista Capital treats the loan arrangement as a short term investment instrument. The interest rates paid by Avista to Avista Capital are substantially higher than the applicable market-based short term interest rates.

Q. How does OAR 860-027-0048(4) apply to these transactions?

A. OAR 860-027-0048(4) requires asymmetric treatment of services sold to and purchased from affiliates. Part (d) addresses services sold to affiliates and part (e) addresses services purchased from affiliates. When Avista lends funds to Avista Capital, Avista should charge the higher of the avoided cost to Avista and the market loan rate available to Avista Capital. When Avista Capital invests cash in Avista, Avista should pay the lower of the cost to Avista Capital or the market rate available to Avista.

Q. What is the appropriate market rate to evaluate Avista's compliance with OAR 860-027-0048(4) in these transactions?

A. Avista transfers funds in and out over relatively short time frames, from a few days to several months. This indicates that Avista functions as a highly liquid short term cash holding facility for Avista Capital. Jumbo 1 month certificates

[1] See Staff/704, Kaufman/6.

of deposit appropriately represent the market rate for the type of liquid short term investments that Avista Capital makes in Avista.

Q. Applying this rate, what conclusion do you reach regarding the transactions?

A. Recent transactions are primarily investments by Avista Capital in Avista Corp.[2] The investments appear liquid, with some cash additions and withdrawals occurring only two days apart.[3] This indicates that the investment should be treated as a highly liquid instrument. Staff finds that jumbo 1 month certificates of deposit provide an appropriate market rate for these types of transactions. The market price -- jumbo 1 month certificates of deposit – is likely higher than Avista's opportunity cost.[4] The market rate is the rate to be used in recording these transactions for Avista, which has not been the case.

Q. What adjustment do you propose with regard to short term loans between Avista and its affiliates?

A. At this time, based on the available information, Staff proposes repricing Avista's 2016 interest payments to Avista Capital at the Federal Reserve Economic Data National Rate on Jumbo Deposits, 1 month CD decreases Avista interest expense by $125,000 on a system basis.[5]

Q. How does Avista price general and administrative support services?

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[2] See Staff/704.
[3] See Staff/704, Kaufman/2 transactions on April 5 and April 7.
[4] Avista's opportunity cost is appropriately considered the rate for its short term credit facility. Staff has reviewed the supporting documents for this facility but is continuing to evaluate what the effective rate is.
[5] See Staff/704.

A. Avista claims to price general and administrative support services at cost. Avista's cost allocation manual states that:

> On a regular basis, general office employees, of Avista Corporation spend time on corporate service support, such as accounting, federal income tax filing, planning, graphic services, etc. for affiliates. Their time is charged directly to suspense accounts (Deferred Debit 186), loaded for benefits and then established as a receivable (Account 146) when billed to the affiliate. If other resources are expended during the course of this work such as travel or consulting services, these costs are also charged to suspense accounts and billed to the affiliate.
>
> All corporate support provided, and costs incurred, are billed to affiliates at cost. No additional margin or profit is included and no assets are allocated. Suspense and capture of Avista Corporation employee costs, which are then billed back to the affiliates at cost, serve to reduce the expenses that must be borne by the utility … all corporate support provided, and costs incurred, are direct billed to affiliates at cost. No allocations occur.[6]

Avista calculates affiliate charges by tracking employee time, and charging affiliates for employee's hourly payroll costs. Payroll costs are loaded for taxes and benefits. Avista does not account for other employee overhead expenses such as office space. Therefore the price for these services is lower than the cost. This violates the requirement that services be provided to affiliates at the higher of cost or market.

Q. How does Avista price services provided by the affiliate GridGlo?

A. Avista paid a fixed $300,000 price for GridGlo set-up costs.[7] Avista included $26,000 in capital and $5,200 in expenses in this case (both Oregon allocated).[8] However, Avista does not appear to receive the third party data

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[6] See RG 43 (4) Avista 2016 Affiliated Interest Report page 87.
[7] See RG 43 (4) Avista 2016 Affiliated Interest Report page 11.
[8] Exhibit Staff/702, Kaufman/100 Response to Staff DR 409.

that these expenses pay for.[9] Avista intends to expand the services purchased from GridGlo and will charge the expanded services to non-utility.[10] Avista claims to be developing a data analytics group.[11] GridGlo does not appear to have an established market share, and Avista's decision to purchase services from GridGlo should be interpreted as business development for the affiliate, not as services rendered for utility customers. Staff recommends disallowing GridGlo costs from rates until such time as the products have a demonstrable benefit to gas customers.

Allocation of Affiliate Costs

Q. What evidence is there that Avista is not fairly allocating costs to affiliates?

A. Avista does not fairly allocate the shared overhead costs associated with the services provided to affiliates. Such costs include office space, computing systems, and other general and administrative support costs.

To illustrate, consider the value of the services provided by Avista's executives to Avista's affiliates. Avista tracks the time that executives spend on non-utility projects. In 2016, executives spent approximately nine percent of time on non-utility projects, all of which are organized under affiliates. Avista's affiliates were charged for the Executives' salaries, benefits, payroll taxes, and a portion of direct expenses such as airfare. However, Avista incurs numerous

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[9] See Exhibit Staff/702, Kaufman/100 Response to Staff DR 409.
[10] See Exhibit Staff/702, Kaufman/101 Response to Staff DR 410.
[11] See Exhibit Staff/702, Kaufman/96 Response to Staff DR 404.

other costs in support of Avista's executives including, but not limited to the following:

- Office space and supporting building systems;
- Office utilities;
- Executive assistants;
- Executive personal computing devices;
- Executive mobile devices and network contracts;
- Physical security systems;
- Payroll, time tracking, security, and other general IT systems;
- Parking facilities; and
- Insurance;

It is not fair to utility ratepayers to provide administrative services to Avista's affiliates without also allocating the shared overhead costs supporting these services.

Q. Is it true that no costs are allocated to affiliates?

A. No. Avista allocates three percent of Board of Directors' meeting expenses to affiliates.[12] This appears to be the only cost that is allocated to affiliates.

Q. What are the operating expenses for Avista's affiliates?

A. The operating expenses for Avista's affiliates are provided on confidential page 36 of Avista's 2016 Affiliated Interest Report.[13] These operating expenses are relatively low given the size and scope of the affiliate operations. It is unlikely that a company can obtain the services of a CEO, CFO, treasurer, corporate secretary, assistant corporate secretary, and assistant treasurer and maintain a physical address for expenses recorded in the affiliated interest report. Most

[12] See Exhibit Staff/702, Kaufman/99, Response to Staff DR 408.
[13] See Confidential Exhibit Staff/703.

affiliate officers are also Avista officers.[14] Most affiliates identify Avista's central office facility as a primary address.[15]

Q. What recommendation do you have regarding Avista's allocation of costs to affiliates?

A. I recommend that Avista allocate a portion of common costs to affiliates, and that Avista directly charge to affiliates all costs that only benefit affiliates. Staff includes affiliate assets and affiliate operating expenses in the allocation factors used to calculate Oregon rates. Under Staff's method, approximately 2.2 percent of common costs are allocated to affiliates. The dollar adjustment for this allocation of affiliate costs is included in Staff's allocation adjustment in the following section.

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[14] See RG 43 (4) Avista 2016 Affiliated Interest Report pages 17 to 33.
[15] See RG 43 (4) Avista 2016 Affiliated Interest Report pages 17 to 33.

ISSUE 2, COST ALLOCATIONS

Q. Please summarize your conclusions regarding Avista's cost allocations.

A. Avista allocates both assets and expenses to Oregon that should be directly assigned to other jurisdictions. As noted above Avista also fails to allocate many common costs to affiliates. Both of these factors cause Oregon's cost allocation to be unfairly high.

Q. Please explain why assets allocated to Oregon should be directly charged to other jurisdictions.

A. Certain assets assigned to Oregon are providing no benefit to Oregon ratepayers, and should therefore be directly charged to other jurisdictions. For example, Avista's main campus provides many services that only benefit Washington and Idaho. All assets sited at the main campus appear to be assigned Avista common service, allocated all classification code. However, the Spokane service center operates out of the main campus. Oregon customers receive no benefit from Spokane service center operations. The building that houses the service center is identified as a common asset and a portion of this asset is allocated to Oregon customers.[16] Oregon customers are also directly assigned the assets supporting the Oregon service centers. Thus, Oregon customers pay for all of Oregon's service center, and a portion of Spokane's service center.

Q. What assets should be directly assigned to non-Oregon jurisdictions?

[16] Based on Staff's on site review.

A. The following assets appear to be assigned to Oregon, but should not be:[17]

- Main Campus Service Building – the main campus service building does not support Oregon operations and duplicates facilities that are directly assigned to Oregon.
- Main Campus Warehouse – the main campus warehouse does not house gas supplies.
- Main Campus Construction – the main campus construction office does not support construction in Oregon. Oregon construction is primarily contracted out, and Oregon is directly assigned several regional construction yards.
- Hazardous Waste Recovery – this primarily supports Electric Operations.
- Materials Recovery – the only gas materials that appear to be recovered are meters. Due to current prices, the materials recovery group does not process meters.
- Main Campus Fleet Maintenance – The main campus fleet is directly assigned to non-Oregon jurisdictions; however the main campus fleet maintenance structure is allocated to Oregon. Oregon maintains regional fleets and the cost of maintaining these fleets are directly assigned to Oregon.
- Downtown Spokane Service Center – A substantial portion of the downtown service center investments support the downtown network. The assets related to downtown Spokane service should be directly assigned to non-Oregon Jurisdictions.

[17] See Staff/705, Kaufman/2 through Kaufman/8.

- Lewiston Service Center – This center, located in Lewiston, Idaho, does not provide benefit to Oregon. Costs associated with the Lewiston Service Center should be directly assigned to non-Oregon Jurisdictions.
- Pullman Office – This office, located in Pullman, Washington, does not provide benefit to Oregon. Costs associated with the Pullman office should be directly assigned to non-Oregon Jurisdictions.
- Kettle Falls – This facility, located in Kettle Falls, Washington, is an electric generation facility. The assets associated with Kettle Falls should not be directly assigned to Oregon.
- Noxon Living Facility – Noxon is an electric generation facility in Montana. The assets associated with Noxon should be directly assigned to non-Oregon Jurisdictions.
- Clark Fork Living Facility – Clark Fork is an electric generation facility in Montana. The assets associated with Clark Fork should be directly assigned to non-Oregon Jurisdictions.
- Other Miscellaneous Assets – Staff has identified a number of other assets that do not support Oregon operations.

A summary of the assets that Staff proposes to reassign to non-Oregon jurisdictions is provided in Exhibit Staff/705, Kaufman/1. A detailed list of specific assets is provided in Exhibit Staff/705, Kaufman/2 through Kaufman/8.

Q. What is your recommendation regarding the assets you have identified?

A. Staff recommends that these assets be reclassified for allocation purposes, and that Oregon allocation factors, rate base, depreciation, and allocated expenses be updated appropriately. I have identified $30 million in assets that should be reclassified. However, this reallocation only addresses certain recent plant additions. I recommend that parties review historic transactions and reassign them consistent with the appropriate jurisdiction allocation.

The reassignment of assets reduces Oregon allocated rate base by $3.5 million.[18] Common depreciation expense will be reduced consisted with reductions to rate base.[19]

Q. What direct expenses have you found allocated to Oregon jurisdictions?

A. I have found expenses allocated to Oregon that are more appropriately directly assigned to electric service, affiliates, or non-Oregon regions. These expenses include those related to:

- Colstrip
- Electric Shop
- Electric Meter Shop
- Kettle Falls
- Coleville
- Othello
- Electric Engineering
- Salix
- Washington Ballot Measures
- Lewiston
- Grangeville
- Bonneville Power Administration
- Davenport
- Non-Oregon litigation

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[18] See Staff/705, Kaufman/9.
[19] See Staff/705, Kaufman/9.

- Pullman
- Edison Electric Institute
- Non-Oregon warehousing
- Generation
- Transmission
- Dollar Road Facility
- Kellogg
- Construction Center
- Mechanical shop
- Alaska Electric Light and Power
- Washington Economic Development
- Clarkston
- Clark Fork
- Washington and Idaho Operations

Staff analyzed these expenses separately for air travel and other non-labor expenses. Avista has confirmed that a portion of air travel should be removed from UG 325.[20] Staff proposes to remove several other classifications of air travel from rates in addition to the expenses confirmed as appropriate for removal by Avista.

- Avista states that holding Board of Director meetings outside of Spokane provides opportunity to strategize free from distraction.[21] Staff removes travel for Board of Director meetings in Napa Valley. Napa Valley is a well-known recreation destination and is unlikely to be free from distractions.
- Avista indicates that Center Point Energy is in support of Avista's development of a data science program.[22] Avista is charging GridGlo data science costs below the line until there is an established benefit for

[20] See Exhibit Staff/702, Kaufman/95, Response to Staff DR 404.
[21] See Exhibit Staff/702, Kaufman/96, Response to Staff DR 404.
[22] See Exhibit Staff/702, Kaufman/96, Response to Staff DR 404.

ratepayers.[23] Staff recommends charging the Center Point Energy travel below the line as well.

- Avista claims the Critical Infrastructure Protection User Group supports gas operations.[24] However, the travel in question relates to the Critical Consumer Issues Forum Meeting.[25] The topics that were presented at this meeting are electric topics.[26]
- Avista states that the Montana Energy Conference supports Oregon operations.[27] However the forum at this meeting, sponsored by Avista, related to Electric operations.[28]
- Avista states that Western Electric Industry Leaders meeting supports Oregon operations. However, this group does not have any gas only members, and the group appears to serve electric customer interests.[29]

Staff removes the costs associated with these trips from system expenses allocated to Oregon. Avista identified a large number of trips as "Not Included in the Base Year."[30] However, it is clear that these trips are at some point considered common allocation transactions rather than direct assignment transactions. In an abundance of caution, Staff adjusts the allocation factors to account for flights "Not Included in the Base Year."

[23] See Exhibit Staff/702, Kaufman/101, Response to Staff DR 410.
[24] See Exhibit Staff/702, Kaufman/96, Response to Staff DR 404.
[25] See Exhibit Staff/702, Kaufman/96, Response to Staff DR 404.
[26] See http://www.criticalconsumerissuesforum.com/ last accessed February 23, 2017.
[27] See Exhibit Staff/702, Kaufman/97, Response to Staff DR 404.
[28] See http://www.montanaenergy.net/press last accessed February 23, 2017.
[29] See http://www.weilgroup.org/members.html last accessed February 23, 2017.
[30] See Exhibit Staff/702, Kaufman/95, Response to Staff DR 404.

A large number of air travel transactions are poorly documented, with descriptions consisting of only the employee name, or ambiguous information such as "Airfare, Alaska blahblah, Phoenix" and "AIR."[31] Staff applies the same ratio of reassignment determined by the unambiguous descriptions to travel having ambiguous descriptions. This results in a total reassignment of common system air travel expense of $126,000.

Q. What other non-labor operation and maintenance expenses do you propose to exclude from Oregon allocations?

A. Staff found an additional $738,000 of non-labor system expenses that should be reassigned to non-Oregon jurisdictions.[32] These expenses were selected by identifying operating groups or transaction descriptions that provide service specifically to non-Oregon jurisdictions.

Q. Is there a basis to adjust labor expense allocations?

A. Avista employees self-report time spent on specific jurisdictions. Because this information is self-reported, Staff cannot perform the same type of transaction-specific adjustments performed on non-labor expenses. However, Staff does recommend adjusting labor O&M proportionately to non-labor O&M. This results in an additional reassignment of $647,000 in labor O&M to non-Oregon jurisdictions.[33]

Q. What is your recommendation regarding the expenses you have identified?

[31] See Staff/705, Kaufman/15.
[32] See Staff/705, Kaufman/16.
[33] See Staff/705, Kaufman/16.

A. Staff recommends that these expenses be reclassified for allocation purposes, and that Oregon allocation factors and allocated expenses be updated appropriately. Staff has identified a total of $1.4 million in system expenses that should be reclassified to non-Oregon jurisdictions.

Q. What is the total Oregon allocated expense impact of your proposed allocation reassignments?

A. Staff's recommendations reduce Oregon allocated expenses by $610,000.[34]

[34] See Staff/705, Kaufman/21.

ISSUE 3, GENERAL AND IT PLANT ADDITIONS

Q. Please summarize Staff's conclusions regarding ER 5005 Information Technology Refresh Program.

A. This project updates and replaces aging hardware and software.[35] In 2016, Avista approved $17.9 million for its ER 5005, related to its Information Technology Refresh Program, and approved $17.7 million in 2017.[36] The 2016 budget for this ER was 22 percent higher than the 2015 budget.[37] Avista evaluated two funding levels for this ER in 2017: "full funding" and "no funding".[38] According to Avista, the "no funding" alternative results in the following costs:

1. Reduction of 62 staff members with key institutional knowledge;
2. Decrease in business process efficiency;
3. Increase in O&M labor to support the technology; and
4. Increase technology outages impacting the operations of the business.[39]

Avista estimates that the monetized value of "no funding" alternative is $1.9 million per year.[40] Staff requested supporting documentation of the $1.9 million annual cost; however Avista was unable to provide this information in time for Staff's review. It is expected to be provided in a supplemental response by

[35] See Avista/602, Machado/67.
[36] See Avista/602, Machado/68.
[37] See Avista/602, Machado/68.
[38] See Avista/602, Machado/68.
[39] See Avista/602, Machado/68.
[40] See Avista/602, Machado/68.

April 1, 2017.[41] Staff calculated the net present value (NPV) for the approved funding level relative to a base case of no funding.[42] Assuming that Avista's numbers are accurate, and that the investment has a seven year life, the NPV is negative $4.8 million.[43] This means that the cost of the project is greater than the benefit and Avista's decision to invest is not prudent. At this time, Staff recommends a $6.4 million ($557,000 Oregon allocated) permanent rate base disallowance for 2017 investment. At this level of disallowance, the NPV of the project is zero and customers would be held harmless for the investment.

Q. Please summarize Staff's conclusions regarding ER 5006 Information Technology Expansion Program.

A. This project facilitates technology growth.[44] Avista approved $14.6 million for ER 5006 in 2016 and $14 million in 2017.[45] The funding level approved for 2016 was 93 percent higher than the amount approved for 2016.[46] The business case does not provide a rationale for the 93 percent increase in funding. Avista provided 20 project charters for the 2016 and 2017 business case.[47] Of these charters, 12 do not appear to support Oregon operations.[48] Avista evaluated two funding levels for this ER in 2017, full funding and no

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[41] See Exhibit Staff/702, Kaufman/26, Response to Staff DR 182.
[42] Staff uses a modified form of Avista's NPV model used to evaluate the Bonanza expansion. This model was intended for analysis of tangible plant and may not accurately calculate revenue requirement for intangible plant.
[43] See Staff/706, Kaufman/5.
[44] See Avista/602, Machado/70.
[45] See Avista/602, Machado/71.
[46] See Avista/602, Machado/71.
[47] See Staff/702, Kaufman/31, Response to Staff DR 191.
[48] See Staff/702, Kaufman/31, Response to Staff DR 191.

funding. According to Avista, the no funding alternative results in no additional operating costs and the full funding alternative results in no cost savings.[49] Avista indicates that the no funding level results in higher business risk.[50] However, the business risk analysis is focused on the risk of oil spills, PCB release, and emissions exceedance.[51] All three of these risks are primarily electric risks. Given that there are no operational savings, and that all the risk reduction benefits non-Oregon jurisdictions, the entire amount of this investment above the business case requested amount should be disallowed. This is a reduction to plant of $12.7 million (system) and $1.1 (Oregon allocated).[52]

Q. Please summarize Staff's conclusions regarding ER 5010 Enterprise Business Continuity.

A. This ER appears to facilitate business continuity during emergencies. In 2015 and 2016, Avista reduced the funding for this project by $250,000, or 28 percent.[53] Avista approved $350,000 for 2016 and $450,000 for 2017.[54] Staff requested a description for the projects expected to be funded in 2017; however, Avista was unable to provide this information. While Avista has a clear, ongoing need for capital investment related to emergency business continuity in general, Avista appears to have complete back-up facilities and

[49] See Avista/602, Machado/71.
[50] See Avista/602, Machado/71.
[51] See Staff/707, Kaufman/2.
[52] Calculated from Avista/602, Machado/71
[53] See Avista/602, Machado/74.
[54] See Avista/602, Machado/74.

emergency plans in place at this time.[55] Staff recommends that all 2017 plant be excluded from this case at this time because there does not appear to be a basis for the approved capital spending in 2017. This results in a reduction of $388,000 of plant on a system-basis and $34,000 allocated to Oregon.[56]

Q. Please summarize Staff's conclusions regarding ER 5014 Security Systems.

A. This project funds physical and technological security systems.[57] Avista approved $3.2 million per year for this ER in both 2016 and 2017.[58] This is a 70 percent increase over the amount requested in 2016 and 2017.[59] Staff reviewed the proposed projects for this ER. The proposed projects appear reasonable. During this review, Staff observed a historic expense of $225,710 security fencing for Jackson Stewart training facility.[60] This fence also secures Avista's generation and substation contiguous with the Jackson Stewart training facility. Given that the security concerns of generation and substation equipment dominate those of training equipment, and given Staff's concerns regarding Spokane Community College's use of Jackson Stewart training facilities, Staff recommends that the cost of this fence be directly assigned to the electric jurisdictions. This adjustment is included in the allocation adjustment of this testimony.

[55] Based on observations during Staff's on-site audit.
[56] Calculated from Avista/600, Machado/13.
[57] See Avista/602, Machado/76.
[58] See Avista/602, Machado/77.
[59] See Avista/602, Machado/77.
[60] Based on review of Avista's response to Staff DR 247 file "Staff_DR_247 Attachment A". See Staff/702, Kaufman/59.

Q. Please summarize Staff's conclusions regarding ER 5106 Next Generation Radio System.

A. This ER is supported by an FCC mandate for privately operated mobile ratio systems to move to different bandwidth by 2013.[61] Avista purchased spectrum from the FCC for Washington, Idaho, and Oregon; however Avista did not operate a mobile radio system in Oregon prior to the FCC mandate.[62] The majority of the 2016 plant additions associated with this ER are due to the deployment of mobile radio in Oregon. Staff requested all documentation supporting this ER, and the Oregon deployment specifically.[63] There does not appear to be any documented failure of the cellular or land line based communication systems in Oregon prior to the deployment of the mobile radio system.

Prior to the deployment in Oregon, Avista transferred $23 million to plant and allocated the costs for this plant to Oregon.[64] However, at the time this system did not support Oregon operations. The timing of the deployment in Oregon appears to be driven by the expiration of the FCC spectrum lease, not an actual need for mobile radio in Oregon.

The initial projected cost for the Oregon deployment was $2.3 million.[65] After a series of scope changes, the cost for this project escalated to $5.15

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[61] See Avista/602, Machado/79.
[62] See Exhibit Staff/702, Kaufman/14, Response to Staff DR 181, Staff_DR_181 Supplemental - Attachment C.pdf.
[63] See Exhibit Staff/702, Kaufman/14, Response to Staff DR 181, Staff_DR_181 Supplemental - Attachment C.pdf.
[64] Based on review of Avista's response to Staff DR 247 file "Staff_DR_247 Attachment A".
[65] See Exhibit Staff/702, Kaufman/13, Response to Staff DR 181, Staff_DR_181 Supplemental - Attachment C.pdf.

million.[66] Given that there was no clear need for mobile radio communications in Oregon, Avista should have reviewed the prudence of continuing the investment in the face of such a large cost increase. However, Avista has provided no evidence that the validity of the project was re-evaluated after the cost was revised to be $2.9 million higher than expected.[67] Staff recommends a disallowance of $2.9 million ($254,000 Oregon allocated), which represents the difference between the initial cost estimate and the final cost.[68]

Q. Please summarize Staff's conclusions regarding ER 5121 Microwave Replacement with Fiber.

A. In response to Staff DR 195, Avista states that the costs associated with this project should not be allocated to Oregon. This results in a reduction of $122,000 in Oregon plant.[69]

Q. Please summarize Staff's conclusions regarding ER 5143 AU.com & AVANet Redevelopment.

A. This project initially started as a redevelopment of Avista's website in 2012.[70] Avista initially expected the project to be completed by February, 2014.[71] The project was originally expected to cost $1,000,000.[72] Avista anticipated

[66] See Exhibit Staff/702, Kaufman/15, Response to Staff DR 181, Staff_DR_181 Supplemental - Attachment C.pdf).
[67] Avista has provided the project updates requesting additional funds, but there is no indication management reviewed the continued value of the project under the higher cost estimates.
[68] Calculated from Exhibit Staff/702, Kaufman/13 and Kaufman/15.
[69] Calculated from Avista/600, Machado/13.
[70] See Avista/602, Machado/88.
[71] See Avista/602, Machado/92.
[72] The detailed analysis in the business case has not been updated from the original projected capital cost of $1,000,000. See Avista/602, Machado/86.

$100,000 per year in ongoing O&M expenses associated with this project.[73] Avista anticipated saving $100,000 per year in avoided customer service costs.[74] However, after the initial project approval, the cost for this project increased to $12.6 million.[75] Despite five years of investment comprising millions of dollars, customers continue to find Avista's site poorly designed.[76] Avista's current budget for redeveloping its website seems to be abnormally large; however, Staff has not received sufficient information on the scope of the current project to quantify a disallowance at the time of writing this testimony.

Q. Please summarize Staff's conclusions regarding ER 5144 Mobility in the Field.

A. This project funds the development of mobile applications. Avista forecasted that the investment would reduce some field costs, but that it would add O&M expenses associated with maintaining the applications and hardware.[77] The additional O&M expenses largely offset the savings associated with this project, and as a result, the project has a negative net present value of $521,000. The business case for this ER is based primarily on operational efficiencies and there does not appear to be a substantial risk component.[78] The risk analysis that Avista includes in the ER relates to regulatory restrictions and has a financial consequence of less than $40,000 per year.[79] The

[73] See Avista/602, Machado/86.
[74] See Avista/602, Machado/86.
[75] See Avista/602, Machado/86.
[76] See Staff/702, Kaufman/73, Response to Staff DR 343 "Staff_DR_343 Attachment B - ER 5143 - Project Phoenix Overview.pdf" page 13.
[77] See Avista/602, Machado/94.
[78] See Staff/707, Kaufman/7.
[79] See Staff/707, Kaufman/7, calculated as $200,000 divided by 5 years.

magnitude of the risk reduction is small compared to the associated capital expense. Staff recommends a permanent prudence disallowance of $692,000 ($60,000 Oregon Allocated) rate base for this investment. This is the level of disallowance required to make the net present value of the project positive.

Q. Please summarize Staff's conclusions regarding ER 5147 Avista Facility Management COTS Migration.

A. This ER funds the replacement of a number of internally developed software programs. The software supports mobile dispatch, design tools, field applications, data modeling and distribution management.[80] Avista plans to spend $23.8 million in capital to complete this replacement.[81] The capital additions planned for 2016 and 2017 support mobile dispatch and design tools.[82] The investment for both of these tools is supported by improving operating efficiencies; however, Avista has not quantified these efficiencies.[83] The business case supporting this ER states that the ER will reduce the risk of PCB spills and air emission exceedances.[84] These risks are primarily related to electric operations. Avista's plan to transition to off-the-shelf technology should result in substantial reduction in operating expenses. However, Avista does not appear to have made a pro-forma adjustment to account for the deployment of these new technologies in 2017 and 2018. Without accounting for the reduction in operating expenses, this ER would have a net present

[80] See Staff/702, Kaufman/90 Response to Staff DR 343, "Staff_DR_343 Attachment C - ER 5147 - Project Atlas Overview.pdf".
[81] See Avista/602, Machado/97.
[82] See Staff/702, Kaufman/90 Response to Staff DR 343, "Staff_DR_343 Attachment C - ER 5147 - Project Atlas Overview.pdf".
[83] See Avista/602, Machado/97.
[84] See Staff/707, Kaufman/8.

value of negative $18.4 million. Staff proposes a reduction to general operating expense of $2.33 million ($202,000 Oregon allocated). This is the level of operating expense reduction that would make this ER's test year rate base prudent.

Q. Please summarize Staff's conclusions regarding ER 5151 Customer Facing Technology.

A. Avista plans to transfer $87,000 to plant in 2017 related to this ER.[85] This project funds technologies related to customer interactions.[86] Avista has not transferred any capital to plant to date. Due to the small size of the investment, Staff has not analyzed the proposal. However, Staff did observe that many of the customer technologies proposed serve marketing purposes or electric only purposes.

Q. Please summarize Staff's conclusions regarding ER 2586 Meter Data Management.

A. This project develops a system for storing meter data. [87] Staff requested supporting documentation and workpapers related to this ER. However, Avista did not provide these workpapers at the time of this opening testimony.[88] The need for a sophisticated meter data management system appears to be driven by Avista's electric jurisdiction transition to AMI. Avista proposes transferring $40 million to plant in 2017.[89] Staff proposes disallowing the entire amount of

[85] See Avista/602, Machado/99.
[86] See Avista/602, Machado/99.
[87] See Avista/602, Machado/102.
[88] See Staff/702, Kaufman/27 Response to Staff DR 182.
[89] See Avista/600, Machado/13.

capital spending associated with this ER, as there is no evidence on the record that this investment is prudent for Oregon ratepayers. This is a reduction to Oregon allocated plant of $2.74 million.[90]

Q. Please summarize Staff's conclusions regarding ER 7000 Transportation Equipment.

A. The business case for ER 7000 approved an expense of $5.6 million (system) in 2016 and $8.4 million in 2017.[91] This business case appears to be out of date. The annual cost summary for the recommended and alternative spending cases contain values for 2015. Staff requested the source for the values underlying the annual cost summary, but the Company was unable to provide these numbers.[92] It is not clear how Avista calculated the additional O&M costs associated with reduced capital spending on new fleet vehicles. The business risk evaluation for this ER is based on the probability of PCB spills.[93] PCB spills are unrelated to fleet vehicle purchases. PCB spill prevention costs should be allocated to electric operations. This ER also has no metric tracking.[94]

Avista purchases fleet management services from Utilimarc.[95] However, Avista does not replace vehicles in a manner consistent with the Utilimarc

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[90] See Avista/600, Machado/13.
[91] See Avista/602, Machado/104.
[92] See Staff/702, Kaufman/26 Response to Staff DR 182. Supplemental responses are being reviewed.
[93] See Staff/707, Kaufman/10.
[94] See Avista/602, Machado/104.
[95] See Staff/702, Kaufman/34 Response to DR 200.

report.[96] The Utilimarc model uses a cost of capital of three percent.[97] A more accurate interest rate would be Avista's cost of capital. Staff recommends that the cost of the Utilimarc report be excluded from rates because it uses unrealistic assumptions and it is not used by Avista in actual fleet management. Staff is continuing to investigate the amount of Utilimarc expense included in Avista's propose revenue requirement, and will have a proposed dollar adjustment in subsequent testimony.

Q. Please summarize Staff's conclusions regarding ER 7127 Compressed Natural Gas Fleet Conversion.

A. Staff believes the Company may have overlooked providing information about this ER and will follow up with the Company.[98] Avista does not appear to have converted any Oregon-allocated vehicles to CNG under this ER.[99] Staff recommends excluding all of this adjustment. The adjustment for this ER is incorporated into Staff's allocation adjustment.

Q. Please summarize Staff's conclusions regarding ER 7001 and 7003 Structures, improvements, and furniture.

A. This business case approves spending $3.4 million on 2016 and $3 million in 2017.[100] The descriptions for alternative options appear to be out of date and are not relevant to the projects approved for 2016 and 2017. The business

[96] See Staff/702, Kaufman/38, Response to DR 200, "Staff_DR_200 Attachment A - Avista Replacement Report.pdf" page 38.
[97] See Staff/702, Kaufman/39, Response to DR 200, "Staff_DR_200 Attachment A - Avista Replacement Report.pdf" page 39.
[98] See Staff/702, Kaufman/27, Response to Staff DR 182.
[99] See Staff/702, Kaufman/27, Response to Staff DR 182.
[100] See Avista/702, Machado/108.

risks for this ER refer to transformer spills, hazardous waste and PCBs.[101] These are all related to electric service and any projects associated with reducing these risks should not be allocated to Oregon. There is no metric tracking or key performance indicator for this ER.

Staff reviewed the recent Oregon building survey supporting this project and the photo documentation supporting the 2016 projects.[102] The Kellogg and Boulder furniture and carpet do not appear to be in disrepair in the supporting photos.[103] The COF Room 50 and Room 60 furniture does not appear to be in disrepair in the supporting photographs.[104] During Staff's February 6, 2017 on-site audit, Staff viewed COF Rooms 50 and 60 and observed that the office furniture was in need of cleaning, but did not appear in disrepair. Staff did observe some office chairs in need of replacement. Staff recommends that the plant associated with four of the five project number 09905895 examples provided in Response to Staff DR 201 be disallowed. The blanket nature of cost tracking for these investments precludes calculating a specific dollar value for these investments. Staff recommends an 80 percent disallowance for ER 7001 based on the observation that four of five examples (80 percent) were not necessary. This is a $394,000 reduction to plant ($34,000 Oregon Allocated).

Q. Please summarize Staff's conclusions regarding ER 7005 and 7006 Capital Tools and Stores Equipment.

[101] See Staff/707, Kaufman/11.
[102] See Staff/702, Kaufman/40 Response to Staff DR 201.
[103] See Staff/702, Kaufman/50 Response to Staff DR 201.
[104] See Staff/702, Kaufman/53 Response to Staff DR 201.

A. The business case for these ERs provides two alternative investment options.[105] The business risk analysis is blank, and there are no KPI or metric tracking. One option, "Add loaners in lieu of repairs," appears less expensive than the proposed investment. Given the lack of risk analysis, and the fact that this option is substantially less expensive, the Company was imprudent in funding the full amount. Staff recommends a disallowance of $1.55 million in plant ($134,000 Oregon allocated). This adjustment makes the customer value of Avista's high investment decision equal to the customer value of the alternative investment amount including the additional O&M costs.

Q. Please summarize Staff's conclusions regarding ER 7126 and ER 7131 Long term Campus Re-Structuring Plan.

A. Phase 1 (ER 7126) includes substantial investment in the main Spokane facility primarily related to electric operations.[106] Phase 2 (ER 7131) includes expansion of the main campus to allow the construction of a new fleet and service shop and a vehicle wash bay.[107] These facilities are primarily related to Washington operations. Staff fully explains the allocation issues associated with these ER in the allocation section of this testimony. In addition to the allocation issues, Staff is concerned that Avista has transferred the bare land associated with this project to plant in service. Most of this plant is still under construction[108] and it is therefore pre-mature to consider the building sites as plant in service. Staff recommends directly assigning 100 percent of the post

[105] See Avista/602, Machado/111.
[106] Based on Staff's on-site audit.
[107] See Staff/702, Kaufman/20 "Staff_DR_181 Supplemental - Attachment D.pdf".
[108] Based on Staff's on-site audit.

July 1, 2016 investment for these ERs to non-Oregon jurisdictions. This is a reduction of $871,000 plant on an Oregon allocated basis. Staff also recommends re-allocating some of the historic investment for these ERs to non-Oregon jurisdictions. Reallocation of historic plant is addressed in the allocation section.

Q. Please summarize Staff's conclusions regarding ER 7139 Downtown Campus.

A. Staff has requested supporting documentation for this project; however, Avista did not provide the business case support for the Downtown Campus ER.[109] This property is contiguous with Avista's downtown substation and is located primarily to provide downtown network support.[110] Avista acknowledges this and assigns none of the 2017 investment to Oregon.[111] Staff found that the prior plant investment was allocated to Oregon. This plant houses special projects, some of which support Oregon operations.[112] The cost per square foot for the office space allocated to Oregon is approximately fifty percent more than the cost per square foot for the Steam Plant lease vacated by Avista.[113] Staff reviewed comparable market downtown properties that were not contiguous with the substation and found that other properties have lower costs per square foot.[114] The existing plant in service for this ER has three

[109] See Staff/702, Kaufman/27, Response to Staff DR 182.
[110] See Avista/602, Machado/119.
[111] See Avista/602, Machado/119.
[112] Based on Staff's on-site audit.
[113] Order 11-043 Staff report shows 4398 square feet costs $53,394 on an annual basis, or $12 per square foot. The downtown project developed 22000 square feet of office space at a 30 year cost of $11.5 million, approximately $385,000 per year or $18 per square foot.
[114] See Kaufman/708, Kaufman/1 to Kaufman/3 Additional Plant Support.

components: the original property cost, the office space renovation cost, and technology infrastructure supporting the downtown network and AMI.[115] Staff recommends directly assigning the original property cost and the technology infrastructure in support of AMI to the electric jurisdiction. This adjustment is included in the Allocations section of this testimony. This brings the cost of the office space in line with market costs for office space. This is a reduction to plant of $2.78 million on a system basis ($204,575 Oregon allocated).

Q. Please summarize Staff's conclusions regarding ER 7144 Ergonomic Equipment.

A. This ER purchases ergonomic equipment to reduce work injuries and related expenses. Avista forecasts reduced medical expenses of approximately $195,000.[116] Avista does not appear to have accounted for this reduced expense in the test year. Staff proposes a reduction of $195,000 to system ($17,000 Oregon allocated) A&G operating expenses.

Q. Does Staff have any other concerns with Avista's capital additions?

A. Yes, Staff has three additional concerns regarding historic capital additions:

- Blanket projects may be capitalizing small incremental software improvements which are more appropriately expensed.
- Avista over-spent on rugged laptop upgrades in 2015 and 2016.
- Avista may be upgrading software in an inefficient manner.

Staff has not yet calculated any adjustments in this testimony related to these issues.

[115] See Avista/602, Machado/119.
[116] See Avista/602, Machado/123.

Q. Please briefly explain Staff's concern with the capitalization of small incremental software expenses.

A. Avista performed 72 small software modifications under project number 09905665 App Enhancement Blanket in 2015.[117] These improvements cost $357,406 or $4964 per modification.[118] Staff is continuing to investigate if it is appropriate to bundle these expenses into a single project for the purpose of capitalizing the expenses.

Q. Please briefly explain Staff's concern with rugged laptop upgrades.

A. Avista budgeted $3,026,000 to purchase 350 rugged laptops - $8,645 per laptop.[119] The final cost for this project was $ 2,298,474 or $6,567 per laptop.[120] Rugged laptops with appropriate connectivity and vehicle mounts appear to be available for less than $1,000.[121] Staff is continuing to review the scope of the project to identify why costs were so high.

Q. Please briefly explain Staff's concern with Avista's software upgrade process.

A. Staff observed that Avista's install cost for simple software upgrades such as Java and Internet Explorer are high. Avista spent $329,496 to upgrade Internet Explorer and $398,232 to upgrade Java.[122] Staff understands that these types of upgrades can be pushed remotely to computers for a relatively low cost.

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[117] See Exhibit Staff/702, Kaufman/8, the file produced in response to Staff DR 181 "Staff_DR_181 Supplemental - Attachment B.PDF."
[118] See Exhibit Staff/702, Kaufman/11, the file produced in response to Staff DR 181 "Staff_DR_181 Supplemental - Attachment B.PDF."
[119] See Exhibit Staff/702, Kaufman/23 and Kaufman/24 Staff_DR_181 Supplemental - Attachment F.
[120] See Exhibit Staff/702, Kaufman/25, Staff_DR_181 Supplemental - Attachment F.
[121] See Exhibit Staff/708 Kaufman/4 to Kaufman/6.
[122] See Exhibit Staff/702, Kaufman/2, Response to Staff DR 181.

Microsoft estimates that the cost for a complex multinational entity with 125,000 employees can upgrade from IE 8 to IE 11 for $712,800.[123] Avista only has 1,640 FTE.[124] Assuming a linear scale of cost to staff size this would imply an upgrade cost to Avista of $9,350. Staff is continuing to review why Avista's software upgrade process is so costly.

Q. Does this conclude your opening testimony?

A. Yes.

[123] See The Total Economic Impact Of Microsoft Internet Explorer 11 https://www.microsoft.com/en-us/download/confirmation.aspx?id=45907 last accessed February 23, 2017.
[124] Exhibit Staff/702, Kaufman/103, Staff_DR_092 Attachment A.xlsx.

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 701

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Lance Kaufman
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Economist Energy Rates, Finance and Audit Division
ADDRESS:	201 High Street SE. Suite 100 Salem, OR. 9730
EDUCATION:	In 2013 I received a Doctorate degree in economics from the University of Oregon. In 2008 I received a Master of Science degree in Economics from the University of Oregon. In 2004 I received a Bachelor of Business Administration in Economics from the University of Alaska Anchorage.
EXPERIENCE:	From March of 2013 to September of 2014 and from September of 2015 to the present I have been employed by the Oregon Public Utility Commission (OPUC). My current responsibilities include analysis of power costs, cost allocations, decoupling mechanisms, and sales forecasts. I have worked on power costs in the following OPUC dockets: IPC UE 301, IPC UE 305, PAC UE 307, and PGE UE 308. From September 2014 to September 2015 I was employed by Regulatory Affairs Public Advocacy group of the Alaska Department of Law. From 2008 to 2012 I was employed by the University of Oregon as an instructor. I taught undergraduate level courses in Microeconomics, Urban Economics, and Public Economics.

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 702

Exhibits in Support
Of Opening Testimony

March 1, 2017

Data Response Table of Contents

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/13/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 181	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please provide the following data for each capital project transferred to plant in 2015 and 2016:

a. The 2014 and 2015 business case sheet.
b. Additional funding requests.
c. The amount actually spent.
d. Each change order and the reason for each change order.
e. Percent of investment, related depreciation expense, and related rate base allocated, assigned, or charged to Oregon.
f. Name of Avista employee who approved the investment and all supporting information used by the employee to evaluate the investment.
g. Description of each component of the investment transferred to plant, including a description of how the investment supports Oregon gas customers.
h. The cost savings resulting from the investment. Please include a description of how the savings were calculated or estimated.
i. Adjustments, if any, included by Avista in the revenue requirement for this rate case to account for the cost savings provided in response to part g above.
j. Expected vendors or outside service providers;
k. Alternative technologies, systems, vendors, or service providers considered by Avista for the investment;
l. Reason for not selecting each alternative identified in the response to part j above;
m. Total amount of Avista labor costs included in the amount transferred to plant.

RESPONSE:

As discussed with Staff, given that over 500 individual projects transferred to plant in 2015 and 2016 combined, Avista is providing Staff_DR_181 Attachment D, which includes summary descriptions of each project (item "g"). Individual projects can be selected from this listing for which the available information requested related to parts "f" and "h" through "l" would be provided. Regarding item "e," projects placed in service (see Staff_DR_181 Attachment D) in the Oregon jurisdiction are 100% assigned to Oregon; projects placed in service into Gas Service ("GD" service) and common to all jurisdictions ("AA" jurisdiction) are allocated to Oregon on the basis of the natural gas four-factor allocator (which is currently 30.366%); and projects placed in service and common to all services and all jurisdictions ("CD" service, "AA" jurisdiction) are allocated to Oregon on the basis of the common four-factor allocator (which is currently 8.716%).

Regarding item "m", the amount of Avista labor included in the transfer to plant amounts is available on a project by project basis, and can be provided for the sample projects selected (as discussed in the previous paragraph). A query that can provide the Avista labor balance included in transfer to plant amounts for each project in a single report is being developed, and will be provided as a supplemental response to this request upon its completion.

a. Staff_DR_181 Attachment A includes copies of the 2014 and 2015 business case sheets for capital projects transferred to plant in 2015 and 2016.

Items "b"-"d" and are provided for 2015 and 2016 below:

Staff_DR_181 Attachment B includes summary information provided to the Capital Planning Group ("CPG"), which summarizes capital investment activity throughout 2015, including additional funding requests (which are analogous to change orders at the business case level) made to the CPG, and the actual capital expenditures at both the Business Case and ER (expenditure request) level.

Staff_DR_181 Attachment C includes the same information as provided in Staff_DR_181 Attachment B, for capital investment activity in 2016. (Please note that this information is provided through November 30th, 2016, as the final summary reporting for 2016, containing information through December 31, 2016, is expected to be completed by the end of January; this final summary will be provided as a supplemental response to this request once it is available.)

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/10/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 181	TELEPHONE:	(509) 495-4554
	Supplemental No. 1	EMAIL:	david.machado@avistacorp.com

REQUEST:

Please provide the following data for each capital project transferred to plant in 2015 and 2016:

a. The 2014 and 2015 business case sheet.
b. Additional funding requests.
c. The amount actually spent.
d. Each change order and the reason for each change order.
e. Percent of investment, related depreciation expense, and related rate base allocated, assigned, or charged to Oregon.
f. Name of Avista employee who approved the investment and all supporting information used by the employee to evaluate the investment.
g. Description of each component of the investment transferred to plant, including a description of how the investment supports Oregon gas customers.
h. The cost savings resulting from the investment. Please include a description of how the savings were calculated or estimated.
i. Adjustments, if any, included by Avista in the revenue requirement for this rate case to account for the cost savings provided in response to part g above.
j. Expected vendors or outside service providers;
k. Alternative technologies, systems, vendors, or service providers considered by Avista for the investment;
l. Reason for not selecting each alternative identified in the response to part j above;
m. Total amount of Avista labor costs included in the amount transferred to plant.

SUPPLEMENTAL NO. 1 RESPONSE:

On February 6 and 7, 2017, Avista hosted Commission Staff at the Company's main office in Spokane for purposes of reviewing selected capital projects. (CUB and NWIGU were also invited to the meetings but chose not to attend). Materials in support of the following projects were reviewed and given to Commission Staff:

Attachments Provided at Feb. 6 & 7 Meetings	Project
Staff_DR_181 Supplemental - Attachment A	La Grande High Pressure Reinforcement
Staff_DR_181 Supplemental - Attachment B	App Enhancement Blanket
Staff_DR_181 Supplemental - Attachment C	Next Gen Radio
Staff_DR_181 Supplemental - Attachment D	Ross Court Purchase
Staff_DR_181 Supplemental - Attachment E	Furniture Replacement
Staff_DR_181 Supplemental - Attachment F	Rugged Laptop Refresh
Staff_DR_181 Supplemental - Attachment G	Furniture 70's Addition

Staff_DR_181 Supplemental - Attachment H	Cushion Gas Expansion
Staff_DR_181 Supplemental - Attachment I	Bonanza Gate Station Relocation
Staff_DR_181 Supplemental - Attachment J	Bonanza Gate Station Add Telemetry
Staff_DR_181 Supplemental - Attachment K	Gas Mains New - Medford
Staff_DR_181 Supplemental - Attachment L	Gas New Services - Medford
Staff_DR_181 Supplemental - Attachment M	Overbuild Gas Medford OR
Staff_DR_181 Supplemental - Attachment N	Blackwell Road Extension
Staff_DR_181 Supplemental - Attachment O	Aldyl A Mains Medford East 2015
Staff_DR_181 Supplemental - Attachment P	Grants Pass Reinforcement
Staff_DR_181 Supplemental - Attachment Q	Myrtle Creek Reinforcement
Staff_DR_181 Supplemental - Attachment R	Bonanza Growth Project

ORIGINAL RESPONSE:

As discussed with Staff, given that over 500 individual projects transferred to plant in 2015 and 2016 combined, Avista is providing Staff_DR_181 Attachment D, which includes summary descriptions of each project (item "g"). Individual projects can be selected from this listing for which the available information requested related to parts "f" and "h" through "l" would be provided. Regarding item "e," projects placed in service (see Staff_DR_181 Attachment D) in the Oregon jurisdiction are 100% assigned to Oregon; projects placed in service into Gas Service ("GD" service) and common to all jurisdictions ("AA" jurisdiction) are allocated to Oregon on the basis of the natural gas four-factor allocator (which is currently 30.366%); and projects placed in service and common to all services and all jurisdictions ("CD" service, "AA" jurisdiction) are allocated to Oregon on the basis of the common four-factor allocator (which is currently 8.716%).

Regarding item "m", the amount of Avista labor included in the transfer to plant amounts is available on a project by project basis, and can be provided for the sample projects selected (as discussed in the previous paragraph). A query that can provide the Avista labor balance included in transfer to plant amounts for each project in a single report is being developed, and will be provided as a supplemental response to this request upon its completion.

a. Staff_DR_181 Attachment A includes copies of the 2014 and 2015 business case sheets for capital projects transferred to plant in 2015 and 2016.

Items "b"-"d" and are provided for 2015 and 2016 below:

Staff_DR_181 Attachment B includes summary information provided to the Capital Planning Group ("CPG"), which summarizes capital investment activity throughout 2015, including additional funding requests (which are analogous to change orders at the business case level) made to the CPG, and the actual capital expenditures at both the Business Case and ER (expenditure request) level.

Staff_DR_181 Attachment C includes the same information as provided in Staff_DR_181 Attachment B, for capital investment activity in 2016. (Please note that this information is provided through November 30th, 2016, as the final summary reporting for 2016, containing information through December 31, 2016, is expected to be completed by the end of January; this final summary will be provided as a supplemental response to this request once it is available.)

ER No.: 5006 **Project No.:** 09905665

ER Name: Information Technology Expansion Program **Project Name:** App Enhancement Blanket

ER Description:

This program facilitates technology growth throughout the Company and is driven by customer and business needs. This includes the expansion of equipment or systems to accommodate staff growth for the entire workforce, automation of business process, or the enhancement of customer experience. Some of the subprograms included are described further below:

Other Minor Applications and Projects
This category addresses enhancements to the functionality of other business applications not included above, such as the customer email management system, compliance management system, enterprise voice portal system, and engineering design and analysis systems. This category also includes small projects for new software or hardware that are not covered under other programs.

Project-Specific Description:

This project addresses the implementation of enhancements to purchased applications to enable new functionality.

Attachment Index:

In Service 2/24/12

AVISTA Corp.

CAPITAL PROJECT REQUEST FORM (CPR)

ER	Budget Category	Use Tab Key / Service Code	Project Title (30 Characters)	Request Type	Project(s)
5006	9 Non Construct.	ED-Electric Direct	App Enhancement Blanket	New / Project Title Count 23	09905665

Long Project Name (100 Characters): Purchased Application Enhancement Blanket

'Parent' Code:

Approved Budget	Will This Project Include Retirement of Materials or Equipment?	Long Project Name Count	ER Sponsor	BI Number	WMS Job #	Rate Jurisdiction
x	Select	41	N09	06W95		AA-Allocated All
Billing		Revenue Type: Select	Billing Contact		Location: 099-Common-WA/ID/OR	Project Start Date: 02-01-2012

Project Description (Include Purpose and Necessity - 240 Characters)
Enhancments to purchased applications that meet the capitalization threshold tests. The enhancements would be small to medium in size and typically occur every year or two.
To be set up as a blanket

Long Name Count: 204

CONSTRUCTION

Office Use only Task	FERC 3XXXXX	Estimated Amount By FERC Number	As Built Amount By FERC Number
107633	303100	$100,000	
GROSS ADDITIONS		$100,000	

Budget Authorized: $100,000

Office Use Only	Date
Project Set Up By	
Approved By	2/24/12

Cost of Removal By FERC (3XXXXX)

	Total Removal		

Salvage By FERC (3XXXXX)

	Total Salvage		
Total Removal Less Salvage			

Non Standard Work Breakdown Structure Needed (Optional)

Peer Task

Sub Task

Date Prepared: 02-21-12

TOTAL COST OF PROJECT: $100,000

APPROVALS

SIGNATURE	DATE
Signature / Print Name: Bill Abrahamse	2/21/12
Signature / Print Name: Pat Dever	2/21/12
Signature / Print Name: Jim Kensok	2/22/12
Signature / Print Name	
Signature / Print Name	

Project Contact & Extension: Bill Abrahamse x4500

APPROVAL SIGNATURE(S) REQUIRED
To $99,999 - Director
$100,000-$499,999 - VP or GM Utility
$500,000-$2,999,999 - Sr Vice President/CFO
$3,000,000-$9,999,999 - President/CEO/COO
Over $10,000,000 - Board Chair
Out-of-Budget - Capital Budget Committee

THE PROJECT SPONSOR IS RESPONSIBLE FOR CLOSING THIS JOB. IMMEDIATELY UPON COMPLETION OF WORK, SIGN THIS FORM, COMPLETE 'AS BUILT' INFO AND FORWARD TO UTILITY ACCOUNTING.

Date Work Completed
Foreman/
Supervisor

Questions: contact Project and Fixed Asset Accounting
(Sue ext-4472 or Howard ext-2936)

Revised February 2012

Application Enhancement Blanket- 09905665

Title	Status	Project	Portfolio Item	Date Completed
CATSWeb NERC - Import NERC Standards (DEV)(R)	Accepted	COTS Delivery team(s)	Import NERC standards into CATSWeb NERC system	1/15/2015
CATSWeb GMOC form re-structure requiring Engineering DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/15/2015
BancTec Extract File to CC&B - Prod (R)	Accepted	Compass Related Project	BancTec Extract File to CC&B	1/15/2015
Community Action of Idaho - MO	Accepted	Compass Related Project	Community Action of Idaho	1/15/2015
Community Action of Idaho - Prod (R)	Accepted	Compass Related Project	Community Action of Idaho	1/15/2015
CATSWeb GMOC - Want to sort on any column in Dashboard Placeholder	Accepted	COTS Delivery team(s)	CATSWeb - GMOC (Gas Control Management of Change)	1/27/2015
CATSWeb GMOC - Engineering approval modification (DEV)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC - Engineering approval modification (Prod)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC - Originator gets email when task is Closed.	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC -Approval request to Approval list (R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC -Automatically show who 'Approves' the task	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC form re-structure NOT requiring Engineering DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/27/2015
CATSWeb GMOC Workflow - Add or Remove Points to/from SCADA DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Alarm Rationalization DEV (T) (R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Alarm Response Sheet (ARS) DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Changes to Transmission Pipe DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Control Room Abnormal and Emergency Procedures DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Control Room Management (CRM) Plan Revisions DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Controller Training DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Hydraulic Performance DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - New Alarm SetPoint DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - New Field Telemetry Equipment DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - New Stations without Telemetry DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - New/Removal of Regulator/Gate Station DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Procedures DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Purchase/Sale of Assets DEV (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Removal of Field Telemetry Equipment DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Rename SCADA Station DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015

Application Enhancement Blanket- 09905665

Title	Status	Project	Portfolio Item	Date Completed
CATSWeb GMOC Workflow - SCADA Display Changes DEV (T)(R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb GMOC Workflow - Workflow Enhancements (T)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/29/2015
CATSWeb NERC - Import NERC Standards (MO)	Accepted	COTS Delivery team(s)	Import NERC standards into CATSWeb NERC system	2/1/2015
Build CATSWeb Sandbox environment - ETER Readiness (R)	Accepted	COTS Delivery team(s)	CATSWeb - Build Sandbox environment for SME's (R)	2/12/2015
CATSWeb GMOC - Autopopulate 'Performed by' for Subtask (DEV)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	2/12/2015
CATSWeb GMOC - Upsize Restructured Workflow solutions to MO	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	2/12/2015
CATSWeb GMOC - Upsize Workflow tool to CATSWeb MO	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	2/12/2015
CATSWeb Workflow Tool upsized to Prod	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	2/26/2015
Nintex QA/QC POC Create Online Form (R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	2/26/2015
Nintex QA/QC POC Report Creation (R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	3/12/2015
CATSWeb solution for Gas Controllers- Action Form (R)	Accepted	COTS Delivery team(s)	CATSWeb - Gas Controllers	3/26/2015
CATSWeb GMOC Workflow Restructure solution to Prod (R)	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	3/26/2015
Nintex QA/QC - PIC Report - Drivers of Unsatisfactory Timebox	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	3/26/2015
Nintex QA/QC - PIC Report - Number of Inspections Avista/Contractors(R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	3/26/2015
Nintex QA/QC POC Create offline solution (R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	3/26/2015
Nintex QA/QC POC Create workflow (R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	3/26/2015
BancTec Extract File to CC&B - Re-write to Advanced Workflow (R)	Accepted	Compass Related Project	BancTec Extract File to CC&B	5/4/2015
POC QA/QC identify if InfoPath solution would require XML	Accepted	COTS Delivery team(s)	CATSWeb - Pilot for QA/QC process	6/1/2015
POC QA/QC application using CATSWeb	Accepted	COTS Delivery team(s)	CATSWeb - Pilot for QA/QC process	6/12/2015
CATSWeb GMOC Workflow-notify on Task reassignment (R)	Accepted	Release Team	CATSWeb GMOC form re-structure (R)	6/16/2015
POC QA/QC application using CATSWeb	Accepted	COTS Delivery team(s)	CATSWeb - Pilot for QA/QC process	7/9/2015
CATSWeb solution for Gas Controllers- Scheduler (R)	Accepted	COTS Delivery team(s)	CATSWeb - Gas Controllers	7/28/2015
CATSWeb Enterprise Risk Management Module-DEV/MOD	Accepted	COTS Delivery team(s)	CATSWeb Enterprise Risk Management Module	8/12/2015
CATSWeb GMOC - Disable 'Create Subtask' button	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	9/1/2015
CATSWeb NERC - Import NERC Standards - Add new fields	Accepted	COTS Delivery team(s)	CATSWeb NERC - Import NERC Standards - Add new fields	9/15/2015
CATSWeb GMOC - Disable 'Route to Affiliate'	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	9/23/2015
CATSWeb GMOC -Don't want to see Due date on Dashboard Placeholder	Accepted	COTS Delivery team(s)	CATSWeb - GMOC (Gas Control Management of Change)	10/6/2015
CATSWeb Enter Gas QA/QC Audit Results	Accepted	COTS Delivery team(s)	CATSWeb - Pilot for QA/QC process	10/16/2015
CATSWeb NERC - Import NERC Standards - Complete Import tool	Accepted	COTS Delivery team(s)	Import NERC standards into CATSWeb NERC system	10/22/2015
CATSWeb -Nerc Task Scheduler - 'x' days from last completion	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	10/29/2015
CATSWeb -Nerc Task Scheduler - 'x' months from last completion	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	10/29/2015

Application Enhancement Blanket- 09905665

Title	Status	Project	Portfolio Item	Date Completed
CATSWeb FERC - Task Scheduler	Accepted	COTS Delivery team(s)	CATSWeb FERC Schedulers	11/4/2015
POC - SQL Server functionality for existing Access Database (R)	Accepted	COTS Delivery team(s)	NINTEX Proof of Concept	11/5/2015
Build CATSWeb Sandbox environment - Stand up server install	Accepted	COTS Delivery team(s)	CATSWeb - Build Sandbox environment for SME's (R)	11/6/2015
CATSWeb NERC - Standards and Requirements Dashboard	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	11/19/2015
CATSWeb GMOC - Disable 'Create Subtask' button - Warranty ends on 11/29/2015	Accepted	Release Team	CATSWeb GMOC form re-structure (R)	12/2/2015
CATSWeb GMOC - Disable 'Route to Affiliate' - warranty ends on 11/29/2015	Accepted	Release Team	CATSWeb GMOC form re-structure (R)	12/2/2015
NINTEX Proof of Concept	Accepted	COTS Delivery team(s)	CATSWeb - Pilot for QA/QC process	12/7/2015
CATSWeb NERC - Associate Standard / Requirements / Measures to a SME	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	12/17/2015
CATSWeb NERC - Personnel Matrix	Accepted	COTS Delivery team(s)	CATSWeb NERC - Personnel Matrix	12/17/2015
CATSWeb NERC - Associate Standard / Requirements / Measures to a SME	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	12/31/2015
CATSWeb NERC Dashboard Enhancements - SME	Accepted	COTS Delivery team(s)	CATSWeb NERC - Personnel Matrix	12/31/2015
CATSWeb NERC- Allow tasks not linked to Standards	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	12/31/2015
CATSWeb NERC - Import NERC Standards - Add new fields	Accepted	COTS Delivery team(s)	CATSWeb NERC - Import NERC Standards - Add new fields	12/31/2015
CATSWeb NERC - Replace SME	Accepted	COTS Delivery team(s)	CATSWeb NERC - 2016 Enhancements	1/14/2016
CATSWeb GMOC - Link Action Forms	Accepted	COTS Delivery team(s)	CATSWeb GMOC form re-structure (R)	1/14/2016
FME Application - ETER Readiness	Accepted	COTS Delivery team(s)	FME Application	1/14/2016
CATSWeb FERC - Task Scheduler - Warranty Ends 18Feb2016	Accepted	Release Team	CATSWeb FERC Schedulers	2/24/2016
CATSWeb - GMOC (Gas Control Management of Change)	Accepted	Releases and Features	COTS Application Enhancement - 09905665	3/7/2016
CATSWeb GMOC form re-structure (R)	Accepted	Releases and Features	CATSWeb - GMOC (Gas Control Management of Change)	3/7/2016
CATSWeb FERC Schedulers	Accepted	Releases and Features	COTS Application Enhancement - 09905665	3/7/2016
BancTec Extract File to CC&B	Accepted	Releases and Features	GlobalScape - 2016 New Rules	3/7/2016
CATSWeb Gas Compliance - Can't Gain Entry/Leak Survey - Design	Accepted	Release Team	CATSWeb - Can't Gain Entry - New PRD Solution	3/16/2016
CATSWeb solution for Gas Controllers- Scheduler - meeting scheduled 7/8	Accepted	Release Team	CATSWeb - Gas Controllers	3/16/2016
CATSWeb Enterprise Risk Management Module-DEV/MOD	Accepted	Release Team	CATSWeb Enterprise Risk Management Module	3/16/2016
CATSWeb Enter Gas QA/QC Audit Results	Accepted	Release Team	CATSWeb - Pilot for QA/QC process	3/21/2016
CATSWeb QA/QC - Report Development PLACEHOLDER	Accepted	Releases and Features	CATSWeb - Pilot for QA/QC process	3/21/2016
CATSWeb - Pilot for QA/QC process	Accepted	Releases and Features	COTS Application Enhancement - 09905665	3/22/2016
CATSWeb - CGE - LSMA Database	Accepted	Releases and Features	CATSWeb - Can't Gain Entry - New PRD Solution	3/24/2016
CATSWeb NERC - Effective Date for Requirements	Accepted	Releases and Features	CATSWeb NERC- Standards & Requirements Actions & Tasks	3/24/2016
CATSWeb NERC - Status Parameter	Accepted	Releases and Features	CATSWeb NERC- Standards & Requirements Actions & Tasks	3/24/2016
CATSWeb - ERM Mangement Reports.	Accepted	Releases and Features	CATSWeb Enterprise Risk Management Module	3/24/2016
CATSWeb ERM - Go-Live to PRD 3/17/2016	Accepted	Releases and Features	CATSWeb Enterprise Risk Management Module	3/24/2016

Docket No UG 325

Project Transactions Accounting Period : <All> , Report Category : CAP , Task Number : <All> , Source Id : <All> , Ferc Acct : <All> * *Transation Data is available beginning January 2005

Accounting Perio Report Cat Task Numb Source Id:<All> Ferc Acct:<All>

					Transaction Amt SUM	
				Accounting Year	2015	2016
Project Number	Summary E	Expenditur	Expenditure Type	Vendor Name	-	-
09905665	Labor	Labor	310 Non Benefit Labor - NU		323.58	-
			340 Regular Payroll - NU		19,432.27	68,018.08
		Sum			19,755.85	68,018.08
	Non-Labor	Centralizec	618 Software	IVOXY CONSULTING LLC	-	4,768.93
				OSI SOFT	-	5,912.99
		Contractor	020 Professional Services	ASSURX INC	-	1,087.00
				0	-	-
			035 Workforce - Contract	FUJITSU AMERICA INC	28,452.50	15,865.00
				HP ENTERPRISE SERVICES	340.86	-
				INTELLITECT	37,563.75	30,291.03
				NUVODIA LLC	90,310.51	150,076.00
				TEK SYSTEMS INC	12,052.00	4,989.00
				VOLT MANAGEMENT CORP	106,435.52	352,119.20
				0	42,211.28	(15,502.00)
		Overhead			16,319.61	63,043.69
		Voucher	838 Fees - General	NUVODIA LLC	3,368.61	2,745.56
				VOLT MANAGEMENT CORP	595.31	2,224.91
					-	-
		Sum			337,649.95	617,621.31
	Total for 09905665				357,405.80	685,639.39
Total					357,405.80	685,639.39

UG 325 Discovery Workshop #2, February 6-7, 2017

ER No.: 5106 **Project No.:** 09905752

ER Name: Next Generation Radio System **Project Name:** NGR Oregon South

ER Description:

This project refreshes Avista's 20-year-old Land Mobile Radio system. The Company maintains this private system because no public provider is capable of supporting communications throughout our rural service territory. Additionally, because our systems comprise a portion of our nation's critical infrastructure, Avista is required to have a communication system that will operate in the event of a disaster. This project fulfills a mandate from the Federal Communications Commission that all licensees in the Industrial/Business Radio Pool migrate to spectrum efficient narrowband technology.

Attachment Index:

09905752

Asset=NEXGEN & 00

AVISTA Corp.

CAPITAL PROJECT REQUEST FORM (CPR)

ER	Budget Category	Service Code	Project Title (30 Characters)	Request Type	Project(s)
5106	8-Mandated	CD-Common Direct	NGR South	New	
				Project Title Count: 9	

Long Project Name (100 Characters): Next Generation Radio Southern AO Project

'Parent' Code:

Approved Budget	Will This Project Include Retirement of Materials or Equipment?	Long Project Name Count	ER Sponsor	BI Number	WMS Job #	Rate Jurisdiction
x	No	41	N09	YY826		AA-Allocated All
Billing		Revenue Type: NA- Not Applicable	Billing Contact		Location: 099-Common-WA/ID/OR	Project Start Date: 01-01-2013

Project Description (Include Purpose and Necessity - 240 Characters)
Design and install a Two-Way Radio System to provide coverage to Avista's gas infrastructure in five Oregon and two Central Washington locations

Long Name Count: 144

CONSTRUCTION

Office Use only Task	FERC 3XXXXX	Estimated Amount By FERC Number	As Built Amount By FERC Number
300100			
397028	397000	$2,216,581 ~~$2,285,135~~	
1070110	391100	$68,554	
GROSS ADDITIONS		$2,285,135	

Budget Authorized: $2,285,135

Office Use Only		Date
Project Set Up By	[illegible] USA	2/27/13
Approved By		
		2/27/13
		9-2-15

Cost of Removal By FERC (3XXXXX)

	Total Removal		

Salvage By FERC (3XXXXX)

	Total Salvage		
Total Removal Less Salvage			

APPROVALS

SIGNATURE	DATE
Signature / Print Name: Jim Corder	21FEB2013
Signature Jim Kensok / Print Name: Jim Kensok	2-21-13
Signature / Print Name: Dennis Vermillion	2/25/13
Signature / Print Name:	
Signature / Print Name	

Non Standard Work Breakdown Structure Needed (Optional)

Peer Task			
Sub Task			

Project Contact & Extension: Bill Kelley x4454

APPROVAL SIGNATURE(S) REQUIRED
To $99,999 - Director
$100,000-$499,999 - VP or GM Utility
$500,000-$2,999,999 - Sr Vice President/CFO
$3,000,000-$9,999,999 - President/CEO/COO
Over $10,000,000 - Board Chair
Out-of-Budget - Capital Budget Committee

Date Prepared: 01-23-13

TOTAL COST OF PROJECT: $2,285,135

THE PROJECT SPONSOR IS RESPONSIBLE FOR CLOSING THIS JOB. IMMEDIATELY UPON COMPLETION OF WORK, SIGN THIS FORM, COMPLETE 'AS BUILT' INFO AND FORWARD TO UTILITY ACCOUNTING.

Questions: contact Project and Fixed Asset Accounting
(Sue ext-4472 or Howard ext-2936)

Date Work Completed
Foreman/
Supervisor

unitized 9-2-15
PP 9-1-15

Revised October 2011

Project Initiation Charter

Planning Phase Approval
Project Name: Next Generation Radio Oregon
Clarity Project ID: 09905752

1 Key Roles

- Project Sponsor: Jim Kensok
- Steering Committee: Jim Corder, Al Fisher, David Howell, Heather Rosentrator
- Other Stakeholders: Brian Taylor (Medford), Jeff Daniels (Klamath), Harold Sheeran (Roseburg), Donald Kellogg (La Grande)
- Program Manager: Matt Reding
- Project Manager (if known): Helen Monn

2 Project Profile

2.1 Business Need

There is not currently, an Avista 2-Way radio system to provide coverage for Avista's gas infrastructure in Avista's four Oregon locations. Avista's resources in these areas use cell phones for dispatching and emergency services. Due to the demonstrated extreme difficulty including up to the inability to communicate using cell phones during an emergency, it was determined that a local use 2-Way radio system would be an appropriate solution for local dispatch and coordination with emergency services.

2.2 Who Benefits?

Avista gas construction in the four Oregon locations will benefit by having a robust and reliable 2-Way radio communications system for providing local dispatch capabilities during emergencies which will be independent from less reliable cell phones. Indirectly, their customers will benefit through better response time during emergencies.

2.3 High Level Project Deliverables

- Build out in OR will be minimal to meet the FFC guideline requirement of 50% of the coverage area population in order to maintain frequencies.
- Install trunked radio system – one each in the Roseburg, Klamath Falls, and La Grande, and the Medford-Grants Pass OR corridor.
- Install radio communication equipment into each Oregon office: LaGrande, Roseburg, Klamath Falls, and Medford.
- Install mobile radios in the Avista Fleet vehicles that service the Oregon territory
- Order out the system preliminary design, the preparation and filing of the FCC mandated Interference Mitigation Plan, the RFI and RFP preparation for the installation of the NGR South radio system to Avista's engineering consulting firm Gillespie, Prudhon & Associates of Clackamas, OR.
- Avista will secure lease agreements with sites capable of providing reliable communications hosting and environmental services.
- Bid out all of the equipment, services, and maintenance of a Tait 2-Way radio system in Oregon..
- Devlop and deliver a maintenance and support contract (with defined SLA's) for all equipment in Oregon territory.
- Develop a sparing model for all radio equipment types within Oregon territories

Project Number	Summary Exp Category	Expenditure Category	Expenditure Type	Vendor Name	-
		Voucher	815 Computer Equip Hardware	COMPUNET INC	39,722.02
				0	-
			837 Equipment-Stores and Lab	ALCATEL LUCENT USA INC	(993.76)
			838 Fees - General	CERIUM NETWORKS	342.99
				NUVODIA LLC	153.00
				VOLT MANAGEMENT CORP	2,756.27
				0	-
			840 Freight Costs	TAIT NORTH AMERICA INC	455.93
			855 Land and Land Rights	EMERGENCY COMMUNICATIONS OF SOUTHERN OREGON	12,880.00
				KLAMATH FOREST PROTECTIVE ASSOCIATION	3,390.00
				MOUNT BALDY COMMUNICATION SITE LEASING LLC	20,489.50
				UNION COUNTY	5,307.00
				0	-
			880 Materials & Equipment	ALCATEL LUCENT USA INC	122,068.02
				AMERIGAS	14,131.18
				ANIXTER INC	1,856.64
				COMPUNET INC	2,717.50
				CONNECTION	866.43
				CORP CREDIT CARD	205.87
				DPS TELECOM	31,472.39
				FEDEX	11.52
				FEENEY WIRELESS	2,163.75
				GLOBAL FIBERVISION INC	1,851.17
				GRAYBAR	35,433.72
				Huss, Jacob Craig	13.86
				INTERSTATE BATTERIES OF EASTERN WA	27,684.26
				MOREDIRECT INC	4,160.27
				PACIFIC POWER PRODUCTS	76,663.44
				PLATT ELECTRIC	1,385.83
				TAIT NORTH AMERICA INC	(44,889.51)
				TESSCO INCORPORATED	47,756.02
				VALMONT STRUCTURES	31,487.00
				WORLDWIDE SUPPLY LLC	4,600.68
				0	-
			881 Material & Equip Non Burdn	INLAND EMPIRE DISTRIBUTION SYSTEMS INC	2,009.17
				REIFF MANUFACTURING	99,015.53
				TAIT NORTH AMERICA INC	622.01
				0	-
			882 Materials - Large Purchase	ALCATEL LUCENT USA INC	254,482.33
				TAIT NORTH AMERICA INC	711,119.25
				0	-
			885 Miscellaneous	AMERIGAS	428.16
				CODESOURCE	915.39
				INLAND EMPIRE DISTRIBUTION SYSTEMS INC	67.71
				0	-
			915 Printing	RICOH USA INC	23.91
		Sum			4,979,382.63
	Total for 09905752				5,149,358.38
Total					5,149,358.38

ER No.: 7001 **Project No.:** 09905847

ER Name: Structures & Improvement **Project Name:** Purchase Ross Court Property

ER Description:

These programs are for the Capital Maintenance, Improvements, and Furniture budgets at over 50 Avista offices and service centers (over 700,000 square feet in total). Many of the service centers were built in the 1950s and 1960s and are starting to show signs of severe aging. The structures and improvements program includes capital projects in all construction disciplines (roofing, asphalt, electrical, plumbing, HVAC, energy efficiency projects, etc.).

Project-Specific Description:

This project addressed the purchase of a property at 1623 E. Ross Court, just north of the existing Mission Campus and within the long-term plan to restructure Avista's Mission Campus.

Attachment Index:

Asset= ROSSCT & NCR

AVISTA Corp.

CAPITAL PROJECT REQUEST FORM (CPR)

Request Type	Project(s)
Revised	09905847
Project Title Count: 22	

ER	Budget Category	Use Tab Key / Service Code	Project Title (30 Characters)
7001	9-Programs	CD-Common Direct	Purchase Ross Ct Prop.

Long Project Name (100 Characters): Property purchases on Ross Court

'Parent' Code:

Approved Budget	Will This Project Include Retirement of Materials or Equipment?	Long Project Name Count	ER Sponsor	BI Number	WMS Job #	Rate Jurisdiction
YES	No	32	H07	71H07		AA-Allocated All

Revenue Type	Estimated Project Completion Date	Location
NA- Not Applicable	12-31-2014	099-Common-WA/ID/OR

Billing	Billing Contact	Project Start Date
	Vance Ruppert	06-04-2014

Project Description (Include Purpose and Necessity - 240 Characters)
The project would be for the purchase of several properties on Ross Court, which falls into the long range Mission Campus expansion plan of Ross Court. Cost would include a PH 1 ESA. (1610/1626 E. North Crescent, and 1613/1623 E. Ross Ct.)

Long Name Count: 240

CONSTRUCTION

Office Use only Task	FERC 3XXXXX	Estimated Amount By FERC Number	As Built Amount By FERC Number
107623	389200	$248,000	ROSSCT
		1613 Ross Ct	
	389200	$89,000	NCR
		1610 Crescent	
	389200	$148,000	ROSSCT
		1623 Ross Ct	
	389200	$240,000	NCR
		1626 Crescent	
GROSS ADDITIONS		$725,000	
Cost of Removal By FERC (3XXXXX)			
	Total Removal		
Salvage By FERC (3XXXXX)			
	Total Salvage		
Total Removal Less Salvage			

Budget Authorized: $725,000

Office Use Only		Date
Project Set Up By	[signature]	12-5-14 pm
Approved By	[signature]	12/18/14 am

APPROVALS

SIGNATURE	DATE
Signature: [signature] Print Name: Eric Bowles	11/25/14
Signature: [signature] Print Name: Mike Broemeling	12/2/14
Signature: [signature] Print Name: Dennis Vermillion	12/3/14
Signature: Print Name:	
Signature: Print Name:	

Non Standard Work Breakdown Structure Needed (Optional)

Peer Task

Sub Task

Project Contact & Extension Vance Ruppert x2235

APPROVAL SIGNATURE(S) REQUIRED

To $99,999 - Director
$100,000-$499,999 - VP or GM Utility
$500,000-$2,999,999 - Sr Vice President/CFO
$3,000,000-$9,999,999 - President/CEO/COO
Over $10,000,000 - Board Chair
Out-of-Budget - Capital Budget Committee

Date Prepared:

THE PROJECT SPONSOR IS RESPONSIBLE FOR CLOSING THIS JOB. IMMEDIATELY UPON COMPLETION OF WORK, SIGN THIS FORM. COMPLETE 'AS BUILT' INFO AND FORWARD TO UTILITY ACCOUNTING.

TOTAL COST OF PROJECT $725,000

Questions: contact Project and Fixed Asset Accounting (Bill Ext 4500 or Howard ext-2936)

Date Work Completed
Foreman/ Supervisor

Revised December 2012

No AFUDC-land NU

107000.ZZ.ZZ - is not yet available in Oracle Projects - project is set up as CD AA in the meantime. SS 12-18-14

PP 12-5-14 pm
Emailed 12-18-14

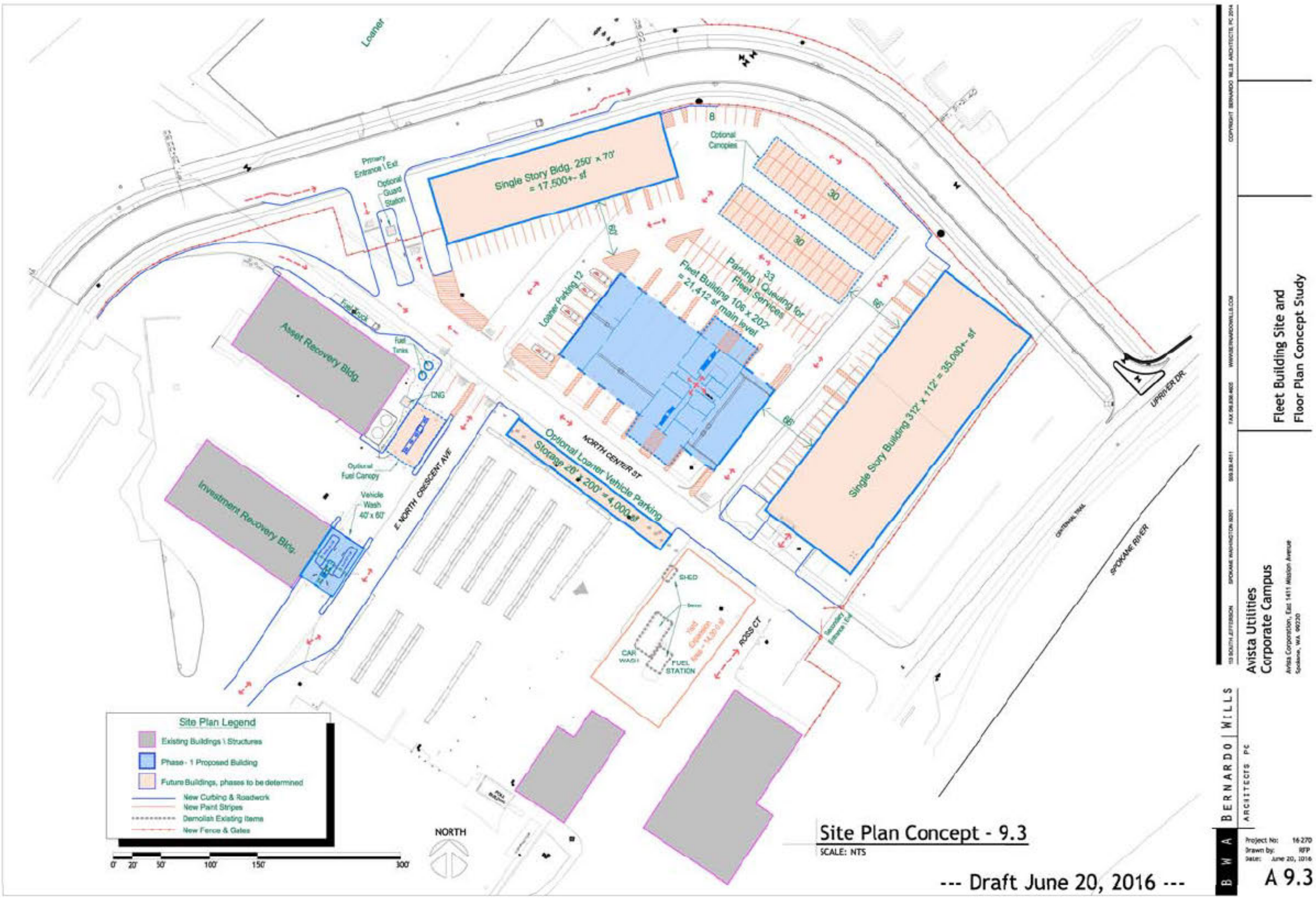
Campus Repurposing Project

Phase 2

Main Drivers for the Phase 2 Project

- Parking Need
  - Constant growth has created a reactive approach to meeting parking needs.
  - Open parking is never the highest and best use of campus Real Estate (high expense ratio vs vertical)
- Employee Space
  - Current approach to providing space is purely reactionary giving us little negotiating leverage when obtaining space.
  - Centralize fragmented Spokane satellite offices back to the Corporate Campus.
- Campus Materials Storage
  - Take a proactive vs reactive approach towards business material storage needs.
  - Campus at capacity no emergency flexibility
- Safety
  - Employee and Operations traffic mixing. Close calls already experienced
  - A large portion of employee lost time accidents through the years have been slips and trips in the main lots
- Fleet Building
  - 56 years old, small building with no future expansion possibilities.
  - Not compliant for CNG Vehicle repairs

Ross Court Development (GPSS, Shops)



AVISTA

Campus Phase 2

ER No.: 5005 **Project No.:** 09906018

ER Name: Information Technology Refresh Program **Project Name:** Rugged Laptop Refresh PH2

ER Description:

The Technology Refresh to Sustain Business Processes program is in place to provide for technology refresh of existing technology in alignment with the roadmaps for application and technology lifecycles. Aging technology is the driving factor behind this project. As technology ages, it presents a risk to Avista in the form of increased failure rate, inefficient work practice, and/or employee/public safety incident due to system failures.

The continuation of technology refresh programs provides benefits by providing a stable and reliable application and computing platform to allow for the safe and reliable operation of our natural gas infrastructures. This program is a collection of sub-programs, which are described individually below:

Distributed Systems

This program addresses the replacement of distributed technology beyond the planned life cycle, such as desktop computers, mobile computers, printers, faxes, scanners, and multi-purpose devices. It also includes upgrades to operating systems, email systems, and standard personal productivity applications. It includes such devices as desktop computers for Customer Service Representatives, rugged mobile computers used by field personnel who respond to service calls, and software such as MS Office and other productivity software applications. During this period, the program is replacing its Endpoint Configuration Management System, which has reached end of life. The System Center Configuration Manager (SCCM) is a tool that provides remote control, patch management, software distribution, operating system deployment, network access protection and hardware and software inventory. SCCM requires complex technology architecture and advanced configuration to manage thousands of computers. Additionally, existing rugged mobile computers have also reached end of life and available parts, maintenance and support, thus requiring a full replacement of all rugged mobile computers and their truck mounts, docking stations and cabling in all existing fleet vehicles.

Project-Specific Description:

This project addressed the replacement of rugged laptops for use in the field, which had reached the end of their useful lives and the end of the manufacturer support period.

Attachment Index:

AVISTA

CAPITAL PROJECT REQUEST FORM (CPR)

Required Field
Optional Field
Accounting Use Only

Request Type	Project Start Date	Project Name (30 Characters) Character Count: 26	Estimated In-Service Date	Project Number(s)
New	*12/01/15*	*Rugged Laptop Refresh ph 2*	*08/31/16*	

ER	ER Sponsor Org	Budget Category	BI	BI Sponsor Org	Retirements?	Maximo Site
5005	*N09*	*8-Mandated*	*05P91*	*P09*	*No*	*N/A*

ER-BI Link

Service Code	Rate Jurisdiction	Location	Design Completion Date	Revenue Type (ED & GD)	Parent Project
CD-Common Direct	*AA-Allocated All*	*099-Common-WA/ID/OR*	*12/01/15*	*NA- Not Applicable*	
	Select	*Select*			
	Select	*Select*			

Project Description (Include Purpose and Necessity - 240 Characters) Character Count: 42

Replacement of end of life rugged laptops.

Accounting Use Only				Construction Cost by FERC (3xxxxx)		
Asset Key	Service Code	Jurisdiction	Physical State	Task & Descrip	FERC	Dollar Estimate
00	CD-Common Direc	AA-Allocated A	WA	107616	391100	$3,025,859
			GROSS ADDITIONS			$3,025,859
				Removal Cost By FERC (3xxxxx)		
			TOTAL REMOVAL			
				Salvage By FERC (3xxxxx)		
			TOTAL SALVAGE			
			TOTAL PROJECT COST	**$3,025,859**		

CPR APPROVAL, CONTACT and NOTIFICATIONS	
BI SPONSOR ORG MANAGER APPROVAL	DATE
Jim Corder	*1/20/16*
Project Contact & Extension (list below)	DATE
Jeff Holter	*1/20/16*
Additional Project Notification (if required-list below)	
Jim Corder	
Additional Project Notification (if required-list below)	
Jim Kensok	
Additional Project Notification (if required-list below)	
Bill Abrahamse	
Additional Project Notification (if required-list below)	
Dennis Vermillion	
Billable Project? Add Avista Contact Name if 'YES'	
	Select

Accounting Use Only		
	Initials	Date
Asset Accounting Set Up	KQ	*01/19/16*
Asset Accounting Approved		
Project Set Up	TA	*01/20/06*
Estimate in PowerPlant		
Project Set Up Approved	JS	*01/20/16*
NO AFUDC APPLIES:	*Blanket Project*	

Comments: Blanket Project

Questions: Contact Project and Fixed Asset Accounting
(Tiffany x2343, Janessa x2538, or Howard x2936)

Revised November 2015

300100 Allocation				
Percentage	FERC ACCT	Original Balances	Amount Allocated	Allocated Balance
	300100	-		
#DIV/0!	355000	-	#DIV/0!	#DIV/0!
#DIV/0!	356000	-	#DIV/0!	#DIV/0!
#DIV/0!	366000	-	#DIV/0!	#DIV/0!
#DIV/0!	367000	-	#DIV/0!	#DIV/0!

Project Initiation Charter

Project Name: Rugged Laptop Refresh – Phase II
Clarity Project ID: PR00011547

1 Key Roles

- Project Sponsor: Jim Corder
- Steering Committee: Jim Corder, David Howell, Greg Gfeller, Eric Rosentrater, Walter Roys
- Key Stakeholders: Carie Mourin, Mike Littrel, Eric Rosentrater, Tim Mair, Matt Mullineaux, Mike Diedesch, Jeff Webb
- Program Manager: Jeff Holter
- Project Manager: Michael Fassler

2 Project Profile

2.1 Business Need

Rugged laptops are used by Avista team members in various activities where these devices are exposed to weather, potential drops or other situations where a traditional office use laptop would likely be compromised. Typically these rugged devices are placed in trucks and service vehicles and are used in field operations.

The current rugged laptop PC's reached end-of-life in December 2012. General Dynamics discontinued production of rugged laptop PC's in March 2013 and they will reach end-of-support by a third party vendor in March 2016. Due to this, users are adversely affected when their device experiences a mechanical failure and will eventually be without a replacement/repaired device.

Avista Utilities will accomplish a technology refresh of up to 350 rugged laptop PC's, desktop docking stations and related vehicle mounting equipment due to current product end-of-life and vendor support. We will engage a new, reliable equipment vendor or vendors to achieve this refresh. The replacement of obsolete computer systems will ensure that the business is able to continue operating automated business functions.

2.2 Who Benefits?

All Avista employees and contract personnel who use rugged laptop PC's. Automated business processes that require personal computers will continue to function in a reliable and secure fashion, supporting the safe and reliable delivery of electric and gas energy. Customers will benefit by having Avista computer resources in the field and at their door to resolve design, billing and/or connection issues immediately with a single person.

2.3 High Level Project Deliverables

- Use case development to determine the appropriate rugged device for the user groups
- Identify specific needs, based on use cases, as input to selecting the rugged device
- Device with touch screen display to support future OS and technology
- Product/vehicle specific vehicle mounts.
- Laptop dock compatible with vehicle mount
- Windows Operating System gold image for device chosen
- Wireless wide area network connectivity to Avista enterprise network and mobile connectivity use case(s)
- Multi-user accessibility
- Adherence to Avista security standards
- Desktop docking capability to eliminate the need for multiple devices
- Develop and deliver end user training on new device(s) (one-on-one/Quick Reference Cards)

Project Transactions Accounting Period : <All> , Report Category : CAP , Task Number : <All> , Ferc Acct : <All> * *Transation Data is available beginning January 2005

Accounting Report Category:CAP Task Number:<All> Ferc Acct:<All>

						Accounting Year	Transaction Amt SUM 2016
Project Nur	Summary Exp Category	Expenditure Category	Expenditure Type	Vendor Name	Source Id		-
09906018	Labor	Labor	340 Regular Payroll - NU	0	PA		12,453.48
		Sum					12,453.48
	Non-Labor	Centralized Assets	617 Hardware	CDW DIRECT LLC	AP		1,494,193.46
				INLAND EMPIRE DISTRIBUTION SYSTEMS INC	AP		326.65
				TESSCO INCORPORATED	AP		1,774.69
			626 Hardware Purchases	A T & T MOBILITY	AP		1,041.40
				CDW DIRECT LLC	AP		75,285.57
				CORP CREDIT CARD	AP		60.34
				INDUSTRIAL COMMUNICATIONS	AP		23,962.92
				INLAND EMPIRE DISTRIBUTION SYSTEMS INC	AP		2,337.57
				TESSCO INCORPORATED	AP		100,195.31
				0	PA		-
					PO		-
			629 Wireless WAN	A T & T MOBILITY	AP		4,005.12
				VERIZON WIRELESS	AP		10,099.87
				0	PA		-
		Contractor	010 General Services	FEDEX	AP		102.69
				0	PA		-
			012 Combo Goods & Services	INDUSTRIAL COMMUNICATIONS	AP		708.18
				0	PA		-
			020 Professional Services	DAY WIRELESS SYSTEMS	AP		390.00
				INDUSTRIAL COMMUNICATIONS	AP		79,265.88
				0	PA		-
			035 Workforce - Contract	VOLT MANAGEMENT CORP	AP		436,163.73
				0	PA		18,636.00
		Employee Expenses					7,097.72
		Overhead					28,185.37
		Voucher	838 Fees - General	VOLT MANAGEMENT CORP	AP		3,196.15
				0	PA		-
			880 Materials & Equipment	0	PA		(1,106.00)
			915 Printing	RICOH USA INC	AP		98.31
		Sum					2,286,020.93
	Total for 09906018						2,298,474.41
Total							2,298,474.41

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/16/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 182	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please refer to Avista/602. Please provide the following information for 2017 investment:

a. All workpapers underlying the Capital Program Business Case, including the calculations of capital, O&M, other, and approved costs for all years in the Business Case, the Business Risk Score, the Assessment Score, the “Financial” percentage value, and any values appearing in the Recommended Program Description, Alternative Description, and Additional Justification.
b. All work papers supporting the monthly transfer to plant amounts.
c. Percent of investment, related depreciation expense, and related rate base allocated, assigned, or charged to Oregon.
d. Name of Avista employee who approved the investment and all supporting information used by the employee to evaluate the investment.
e. Description of each component of the investment including a description of how the investment supports Oregon gas customers.
f. The cost savings resulting from the investment. Please include a description of how the savings were calculated or estimated.
g. Expected vendors or outside service providers for the item;
h. Alternative technologies, systems, vendors, or service providers considered by Avista for the item;
i. Reason for not selecting each alternative;
j. Total amount of Avista labor costs included in the approved business case spend amount.

RESPONSE:

a. Please see Staff_DR_182 Attachments A through AF, which have been provided electronically in a zip file, for the electronic format business cases for all business cases with 2017 transfers to plant in Avista/600, Machado/12-13.

The following index reflects which attachment is associated with each business case:

Attachment:		Business Case:
Staff_DR_182 Attachment A		New Revenue Growth Program Business Case and Review
Staff_DR_182 Attachment B		Gas Reinforcement
Staff_DR_182 Attachment C		Gas Deteriorated Steel Pipe Replacement Program
Staff_DR_182 Attachment D		Gas Regulator Station Reliability
Staff_DR_182 Attachment E		Gas Replacement Street and Highway Program
Staff_DR_182 Attachment F		Gas Cathodic Protection Program
Staff_DR_182 Attachment G		Gas Non-Revenue Program
Staff_DR_182 Attachment H		Gas Overbuilt Pipe Replacement Program
Staff_DR_182 Attachment I		Gas Isolated Steel Replacement Program
Staff_DR_182 Attachment J		Gas Facilities Replacement Program
Staff_DR_182 Attachment K		Gas ERT Replacement Program
Staff_DR_182 Attachment L		Gas PMC Program
Staff_DR_182 Attachment M		Gas HP Pipeline Remediation Program
Staff_DR_182 Attachment N		Gas Telemetry Program
Staff_DR_182 Attachment O		Gas Pierce Rd La Grande HP
Staff_DR_182 Attachment P		Jackson Prairie Storage
Staff_DR_182 Attachment Q		Tech Refresh to Sustain Bus Proc Program
Staff_DR_182 Attachment R		Tech Expansion to Enable Bus Proc Program
Staff_DR_182 Attachment S		Enterprise Business Continuity
Staff_DR_182 Attachment T		Enterprise Security
Staff_DR_182 Attachment U		Next Generation Radio
Staff_DR_182 Attachment V		AU Redesign
Staff_DR_182 Attachment W		Mobility in the Field Business Case Revised
Staff_DR_182 Attachment X		Project Atlas Business Case and Review Template
Staff_DR_182 Attachment Y		Customer Facing Technol
Staff_DR_182 Attachment Z		Fleet Budget
Staff_DR_182 Attachment AA		Structures and Improvem
Staff_DR_182 Attachment AB		Capital Tools and Store
Staff_DR_182 Attachment AC		COF Long-Term Restructuring
Staff_DR_182 Attachment AD		COF LngTrm Restruct Ph2
Staff_DR_182 Attachment AE		Ergonomic Equipment
Staff_DR_182 Attachment AF		Apprentice Training

As the provision of all work papers underlying each value in each business would be unduly burdensome, we invite Staff to select specific business cases for which further information can be provided. Additionally, as discussed in Staff_DR_183, the business cases are utilized by the Capital Planning Group as discussion documents to inform its qualitative consideration of capital investment prioritization.

b.- c. Please see Staff_DR_182 Attachment AI, which is the work paper underlying the monthly transfer to plant amounts.

d.-i. As discussed with Staff, given the large number of individual projects included under these business cases, Avista is providing a list of projects, from which Staff may select projects for which further information will be provided. The following list of projects included in 2017 investment will use Table Nos. 1 and 3 from Avista/600, Machado/12-13 as a guide. (Unless otherwise noted, each Expenditure Request ("ER") is the only ER within its business case).

Expenditure Requests (ER) 1001, 1050, 1051, and 1053: Each of these ERs is included within the New Revenue Growth Business Case. Generally, these ERs address growth across Avista's Oregon territory, with the majority of investment occurring in new mains and services in each of Avista's four Oregon service regions.

ERs 3000-3007 and 3054-3117: Each of these ERs falls within its own business case. These business cases address the programmatic investment in Avista's natural gas system. Please see Staff_DR_182 Attachment AG, which includes the planned work for Oregon in 2017 under these business cases, as of January 2017. Additionally, please see Staff_DR_182 Attachment AJ, which includes memos documenting the capital investment considerations driving the need for these business cases.

ER 3008—Natural Gas Facilities Replacement Program: This ER addresses the replacement and remediation of Aldyl-A pipe. During 2017, main pipe projects in Oregon include S/E Klamath Falls, N/E Klamath Falls, and Medford East, while service tee transition rebuild projects are planned in Roseburg and adjacent areas.

ER 3209—Pierce Road La Grande HP Reinforcement: This ER is a standalone project which addresses the reinforcement of the natural gas distribution system in the greater La Grande region.

ER 7201—Jackson Prairie Storage: This ER includes capital investment associated with Avista's 1/3 ownership in the Jackson Prairie natural gas storage facility.

ER 5005—Information Technology Refresh Program: Please see Avista's response to Staff_DR_190, which includes the projects which have begun under this business case and which are expected to be placed in service through September 30, 2017. Please note that additional projects may begin, with expected completion in 2017, under this business case over the course of 2017.

ER 5006—Information Technology Expansion Program: Please see Avista's response to Staff_DR_191, which includes the projects which have begun under this business case and which are expected to be placed in service through September 30, 2017. Please note that additional projects may begin, with expected completion in 2017, under this business case over the course of 2017.

ER 5010—Enterprise Business Continuity:

ER 5014—Security Systems: Please see Avista's confidential response Staff_DR_193C, which includes discussion of the projects planned for completion in 2017.

ER 510—Next Generation Radio Refresh: Capital investment associated with this ER consists of trailing charges for the Radio System investment which was placed in service at the end of 2016.

ER 5121—Microwave Replacement with Fiber: As discussed in Avista's response to Staff_DR_195, this business case was inadvertently included in this case.

ER 5143—AU.com Redevelopment: This ER includes two projects in 2017:

- iFactor Phase 1.1 (Mobile Application Outage)—which consists of trailing charges for final payments related to the last deliverable of the project. The majority of the work in this project was completed during 2016.
- Project Phoenix—the redesign of the customer facing web portal (www.AvistaUtilities.com). The planned release is in the second quarter of 2017.

ER 5144—Mobility in the Field: This business case includes for Geographic Information System (GIS) applications to solve business problems, primarily in Operations area, including a Gas QA/QC audit inspection tool.

ER 5147—Avista Facility Management COTS Migration: As discussed in Avista's response to Staff_DR_197, this ER includes projects for both an Electric and Gas design tool.

ER 5151—Customer Facing Technology: As discussed in Avista's response to Staff_DR_198, Avista's investments in customer facing technology include focuses on facilitating interactions with customers.

ER 2586—Meter Data Management: As discussed in Avista's response to Staff_DR_199, this is a single project to implement a meter data management system at Avista.

ER 7000—Transportation Equipment: As discussed in Avista's response to Staff_DR_200, this business case includes projects for the programmatic replacement of fleet vehicles.

ERs 7001 and 7003—These ERs comprise the Structures & Improvements and Office Furniture business case. Avista's response to Staff_DR_201 includes discussion of the significant projects planned for 2017.

ERs 7005 and 7006—These ERs comprise the Capital Tools and Stores business case. Avista's response to Staff_DR_202 includes the current requests for tools purchases in 2017.

ER 7126—Central Office Facilities (COF) Long-Term Restructuring Plan: For 2017 this business case includes a remodel of the HVAC facilities and office space in the service building at Avista's COF.

ER 7131—COF Long-Term Restructuring Plan Phase 2: For 2017 this business case includes the reroute of a street which bisects Avista's COF, in order to unify the COF.

ER 7144—Ergonomic Equipment: Avista's response to Staff_DR_203 provides additional information about this business case.

ER 7200—Craft Training: given the small investment for this business case related to Oregon, more information is available upon request.

j. Please see Staff_DR_182 Attachment AH, which includes the budgeted capital investment spend for 2017 by business case, separated into components (e.g., Labor, Non-Labor, etc.). Note that the "Other" category includes contributions in aid of construction, retirement, and salvage.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/13/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado/A. Leija
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 191	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please refer to Avista/602 Machado/70-72. Please provide all documentation related to this capital project, including but not limited to the following information:

a. Please provide the increase in annual average Avista staff levels for 2013 through 2016 by department.
b. Please provide all general planning documents regarding the Technology Refresh to Sustain Business Processes program and the Distributed Systems, Communication Systems, Network Systems, Central Systems, Environmental Systems, and Business Applications sub programs.
c. Please refer to Avista/602 Machado/71. Is the avoided labor cost associated with the 20+ FTE reduction incorporated into the cost analysis of the "Unfunded Program" analysis? If no, why not?
d. Please explain the reason for the $7 million difference between the 2016 "Approved" value of $14,559,599 and the "Capital Cost" value of $7,559,940.

RESPONSE:

a. The annual average Avista staff levels for the Technology Department (including both Avista employees and contract employees) are the following:

   - 2013: 272
   - 2014: 274
   - 2015: 306
   - 2016: 353

   Annual average Avista staffing levels fluctuate based on project and skillset demand. There was an increase in labor from 2014 to 2015 due to a new skillset needed in our Customer Care and Billing (CC&B) and Maximo (Work Management) teams, as two of our largest systems were upgraded during that same period. The increase from 2015 to 2016 is a skillset augmentation related to various projects' demands, including a web replacement project with a new payment processing system requiring heavy integration resources to the CC&B and Maximo systems.

b. Staff_DR_191 Attachments A – T represent project artifacts associated with all (known to-date) projects under this business case with 2017 in-service dates.

The following index identifies the project associated with each given attachment:

Attachment:		Project:
Staff_DR_191 Attachment A		Charter-PMP Combo - CCB Enhancments - 2016 Packages 1_2_3 (2)
Staff_DR_191 Attachment B		Charter-PMP Combo - Maximo Enhacements - 2016 Packages 1_2_3 (2)
Staff_DR_191 Attachment C		Charter-PMP Combo - Network Improvement For Bob Chipps in Colville
Staff_DR_191 Attachment D		Charter-PMP Combo_WebAppExpansion
Staff_DR_191 Attachment E		CS EXP Data Center Hot Air Control Phase 2
Staff_DR_191 Attachment F		CS EXP Server Networking Monitoring 09905985
Staff_DR_191 Attachment G		Enhanced 911 System Expansion Phase 1 09906074
Staff_DR_191 Attachment H		Enhanced 911 System Expansion Phase 3 09906100
Staff_DR_191 Attachment I		Enterprise Mobility Management (EMM) 09905650
Staff_DR_191 Attachment J		Fiber Expansion Millwood Substation - Irvin Substation PMP- Combo v1
Staff_DR_191 Attachment K		GDN-SUN OPGW Charter-PMP Combo
Staff_DR_191 Attachment L		GIS Enhancements 2016 packages 1-3
Staff_DR_191 Attachment M		ITFAC Clark Fork Living Facility Communications Equipment Charter
Staff_DR_191 Attachment N		ITFAC Clark Fork Living Facility Computer Hardware Charter
Staff_DR_191 Attachment O		LMR Coverage Enhancements Phase 2 09906082
Staff_DR_191 Attachment P		OFS PP Enhancements - Phase 1-3_Charter-PMP
Staff_DR_191 Attachment Q		PMP Combo - NW Implement Fiber Route Diversity Final
Staff_DR_191 Attachment R		Project Initiation Charter E911 - Phase 2
Staff_DR_191 Attachment S		Secure Command and Control 09906048
Staff_DR_191 Attachment T		SUN-9CE Fiber Expansion PMP Combo

c. The “Unfunded Program” analysis reflects the absence of capital investment (i.e., if the business case were not funded, no associated investment would occur). As discussed in Staff_DR_190, the Technology Expansion Business Case facilitates the adoption of new technology to support efficient business processes at Avista. As shown on the Technology Expansion Business Case referenced in this request (Avista/602, Machado/70-72), the unfunded business case carries a higher business risk score relative to the funded program. That is to say, not funding the Technology Expansion Business Case would prevent Avista from adopting technology that supports business process automation (e.g., work task scalability, timely customer responsiveness, industry standards or requirements, data sharing, etc.) which enable the reduction of business risk.

d. As discussed in Staff_DR_183, business summaries are updated in the event of material changes to the scope, schedule, or budget. In addition, business cases for Programs (bodies of work that are long-lived over an extended period) are periodically refreshed. Additionally, updated requests for capital investment funding during the Capital Planning Group’s (“CPG”) five-year planning process each year are submitted separately from the business case summary. As a result, certain business cases may have “Capital Cost” balances that are less than the amount requested and/or less than the balance ultimately approved by the CPG.

As shown in Staff_DR_185 Confidential Attachment A, the initial amount requested for 2016 capital investment funding under this business case was approximately $11.3 million, and an additional request of approximately $1.5 million was added during the CPG’s discussions and determination of the five-year capital plan. The CPG approved

$12.7 million of investment during 2016. Throughout the course of 2016, additional funding requests and releases of funds (as planning circumstances change) for this business case were submitted (a net incremental increase of $1.8 million through October of 2016, after which the business case summary included in this business case was printed). These additional approvals were reflected in the business case form over the course of the year, for a total approved amount of $14.6 million.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/13/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado/G. Loew
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 200	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please refer to Avista/602 Machado/103-105. Please provide all documentation related to this capital project, including but not limited to the following information:

a. Please provide a description of the Vehicle Replacement Model, including any operation or maintenance documentation.
b. For each vehicle in this investment, identify the type of vehicle, the function of the vehicle, and the primary garage, parking, or storage location.
c. Please identify the age of each vehicle retired or replaced as part of this investment.

RESPONSE:

The Vehicle Replacement Model is a third-party service provided by Utilimarc. Staff_DR_200 Attachment A is the most current report provided to Avista by Utilimarc, and provides recommended action to achieve the lowest total cost over the lives of Avista's fleet assets.

Staff_DR_200 Attachment B includes information about the fleet units placed in service in Oregon in 2016 and those that have been determined, to date (given that fleet investment occurs throughout the year), to be expected to be placed in service in 2017.

2016 Replacement Report

Avista

Presented by Utilimarc

Table of Contents

Summary

- Utilimarc’s Vehicle Replacement Module (VRM) mathematically determines when to replace your assets. The module uses historical analysis to predict future ownership and operating expenses and determines which lifecycle will achieve the lowest total cost over the life of the asset.

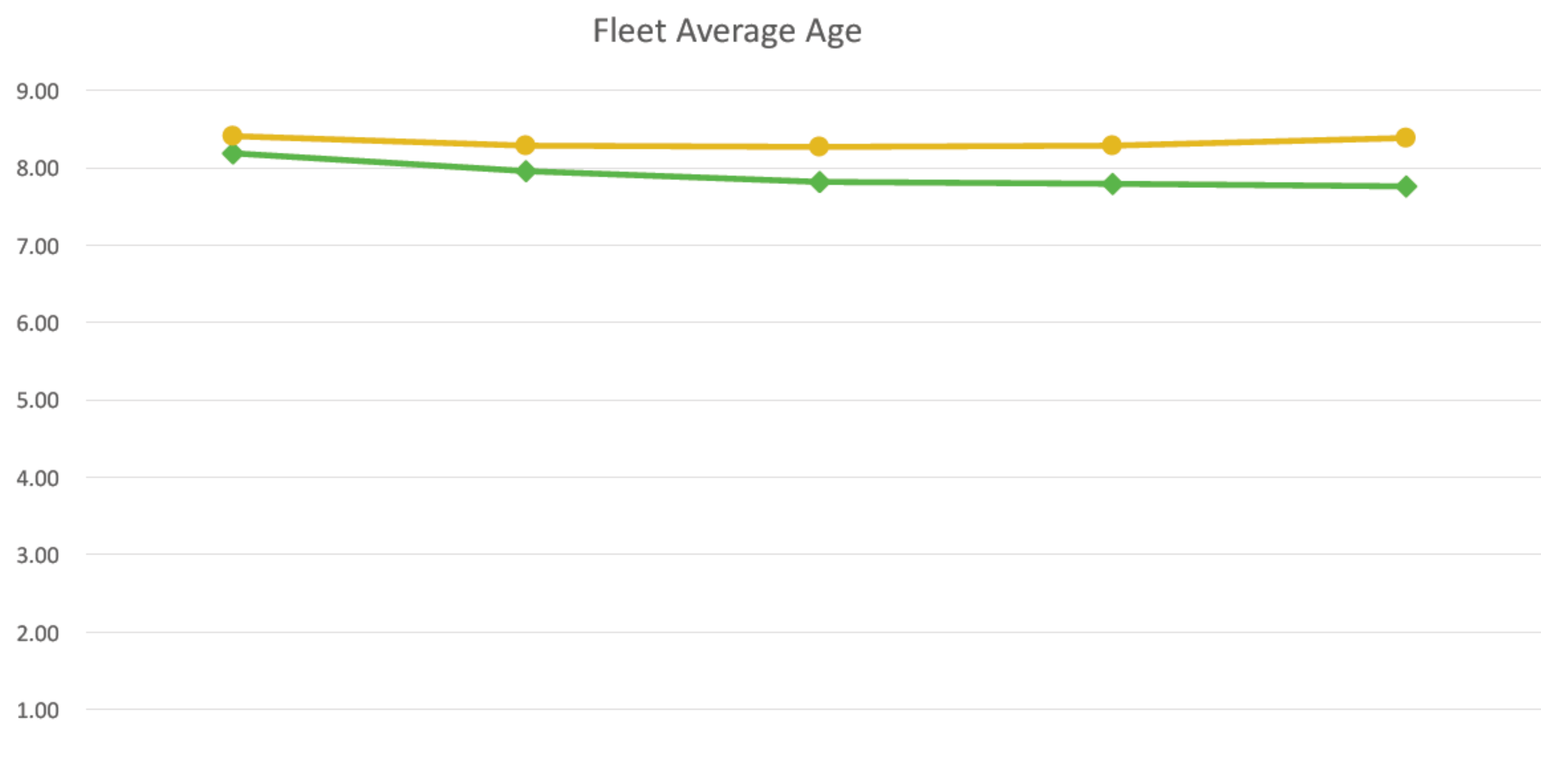
- The VRM uses Avista’s historic ownership and operational data to develop a replacement strategy that is unique to the behavior and characteristics of the Avista fleet.

- The VRM uses Avista historic operating cost, purchasing patterns, usage patterns, and mechanic practices to develop a class-specific set of lifecycles and demonstrates the effect of replacement on a variety of fleet metrics.

- Utilimarc recommends replacing 126 units (vehicles and off road equipment) in 2016, with an annual capital cost of $9,478,564. Avista has chosen to replace 130 units in 2016, with an annual capital cost of $9,715,138.

Unit Average Age

This graph shows average unit age of fleet over the next five years. Avista can expect a slight decrease in average age under the Avista scenario, while average age remains relatively constant under the Utilimarc scenario.



	2016	2017	2018	2019	2020
Avista	8.18	7.96	7.82	7.79	7.76
Utilimarc	8.41	8.29	8.27	8.28	8.38

Methodology

List of Assumptions

The following is a short list of important assumptions made by the model, provided for your reference and information:

- Inflation is included on all future costs, set to 2%.
- An Interest rate of 3% is applied to capital investments, representing an opportunity cost of money.
- Annual mileage is assumed to be consistent among all vehicles of a given class. No adjustments in annual mileage are made based on the vintage of the unit.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/10/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Kaufman	RESPONDER:	David Machado/E. Bowles
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 201	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please refer to Avista/602 Machado/107-109. Please provide all documentation related to this capital project, including but not limited to the following information:

a. Please provide each building survey including all supporting documentation.
b. Please identify the location of each photo in Avista/602 Machado/109 and identify the specific 2016 or 2017 project that the photo is associated with.
c. Please provide a photo of each structure or furniture that will be improved by this investment in 2016 or 2017.

RESPONSE:

a. The original facilities survey was created in 2012 to rate Avista's service center conditions in order to inform whether building replacement or continued maintenance would be the preferred alternative. Oregon site replacement was not being contemplated at the time, so Oregon sites were not evaluated in these surveys. Staff_DR_201 Attachment A and Staff_DR_201 Attachment B contain the aforementioned facilities survey.

   Project work within this business case also includes other facilities improvement and maintenance projects not tied to the original facilities survey. For example, Avista's Facilities group visits facilities locations periodically to evaluate the condition of Avista's facilities. Staff_DR_201 Attachment C is a recap of the Facilities site visit to Avista's sites in western Oregon in September of 2016. This document illustrates considerations that inform Facilities projects in Oregon under this business case.

b. The photos referenced are photos illustrative of facilities maintenance issues that need to be addressed under this business case. However, these specific photos are not associated with 2016/2017 projects.

c. The following pages include discussion of significant projects completed under this business case in 2016 and those expected to be completed in 2017, along with pictures.

2016 Projects

11005256- 24 Hour Dispatch Expansion

The 24 hr Operations Expansion Project is primarily an employee and infrastructure expansion project. The main driver of the project is centralizing various 24 hour teams and their supporting employees. The scope of this project includes relocating the following teams into the 24 hour Operations space:

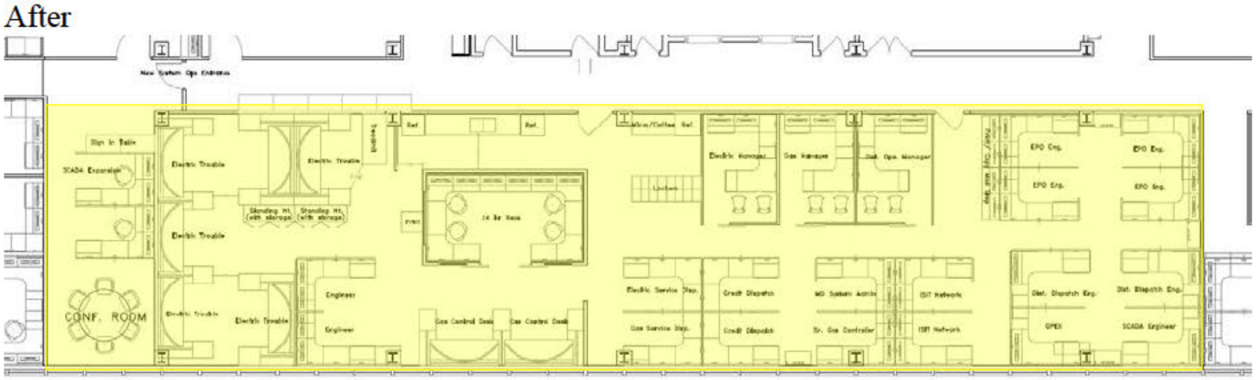
- Distribution Operations Management
- Credit & Service Dispatch, and
- 24 hour IT Support

An expansion of the 24 hr Operations area is required to make room for the additional 18 employees being accommodated. The relocation of employees to 24 hr Operations is designed to improve work flow and collaboration across Avista's business units. Additionally the System Operators need to expand east to accommodate for 4 more employees related to new compliance requirements. Another key component is the introduction of sit/stand consoles for all shift employees improving the work environment and ergonomics for employees tightly coupled to their consoles. The duration of the project is approximately 3 months for expansion of System Operations and 3 months for expansion of 24 hr Operations, dependent upon scope management. Space management within both groups will be visited in the design phase to implement corporate standards within the groups.

Before

1 CENTRAL OFFICE FACILITY- Existing

After



1 CENTRAL OFFICE FACILITY- New Plan

Before

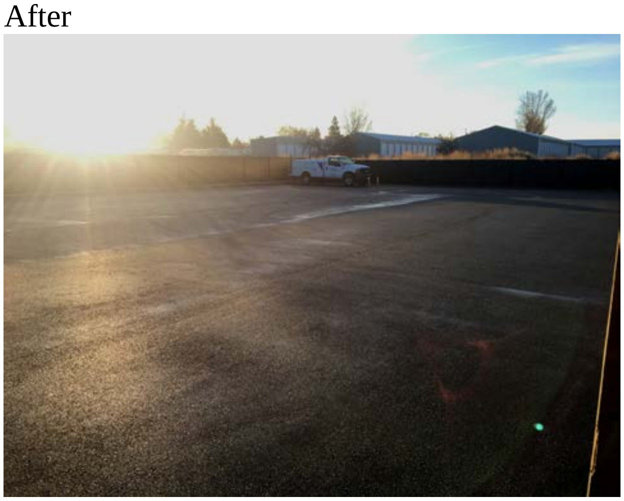
After

17205004- Klamath Falls Asphalt

Extend asphalt yard in include back gravel area to make better use of the property and provide additional storage space. This has provided the service center with usable space during the winter months. Paved 9,880 sq.ft. with 3.5" asphalt. (This project was placed in service in December 2016 and the project closure and transfer to plant is expected to occur in early 2017.)

Before

After



17605005- Grants Pass Forklift Canopy

New exterior forklift canopy to protect the equipment and additional exterior lighting to help prevent future break-ins as they have been an issue. (This project was placed in service in December 2016 and the project closure and transfer to plant is expected to occur in early 2017.)

Before

After

11005266- Service Building Restroom Remodel

- The restrooms were originally constructed in 1956
- The restrooms were constructed without floor drains
- The restrooms were built directly over the main electrical switchgear vault that serves the entire Service Building causing considerable safety concerns if flooding were to occur
- The exhaust fans no longer worked in the restrooms, requiring removal of the hard cementious ceilings to install new fans
- Asbestos was discovered in the cementious ceiling material and in the plumbing chase on all existing water pipes
- The decision was made by Facilities Management to remove all asbestos containing material
- The decision was made by Facilities Management to install floor drains to protect the electrical switchgear from potential flooding
- The decision was made by Facilities to install new exhaust fans and ductwork
- The decision was made to update the plumbing fixtures to low flow automatic flushers to conserve water

Before

Original 1956 construction: Asbestos wrapped water piping in the wall, asbestos floor tiles, and asbestos in ceiling material as well as the cove base adhesive.

After

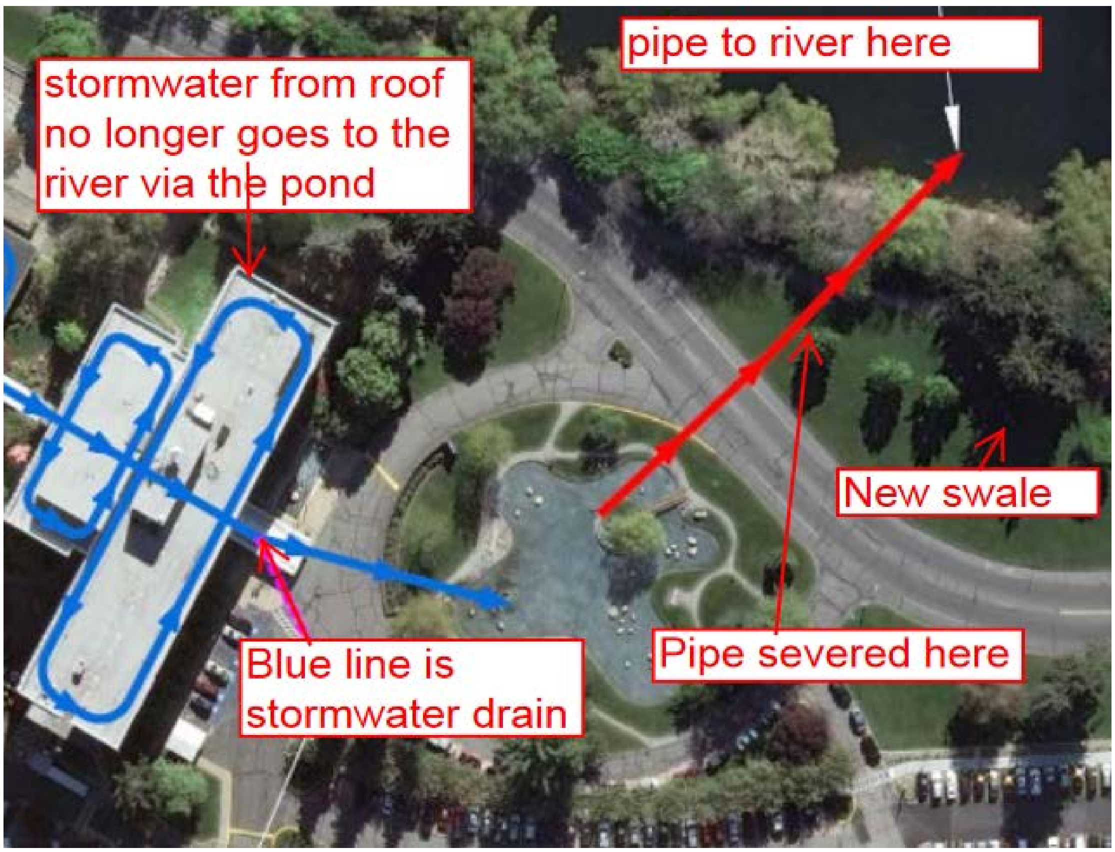
New ceiling fans as shown in the left picture. New plumbing chase built to replace asbestos piping found in original plumbing chase and to create a floor drain to protect switchgear in the basement.

This photo shows new floor drain in top left corner just above the main switchgear. The drain protects switchgear from flooding in bathrooms directly above.

New restroom under construction. Touch less low flow fixtures were installed to conserve water.

11005243- Swale Upriver Drive

- The Mission Swale Project is an environmentally driven project designed to disconnect the Mission Campus storm water runoff from reaching the Spokane River
- Since 1956 the water from our Office Building roof drained directly into the Spokane River
- Since 1956 the water from our cooling pond drained directly into the Spokane River
- A project was created to sever the pipe to the river and treat the water locally in a swale
- A swale was engineered to receive the water from the pond and the roof storm water drains
- The water is sent directly to the new swale and the pipe to the river has been capped
- The swale was designed to promote wildlife habitat and does not require mowing



09905895- FURNITURE BLANKET- Project Examples

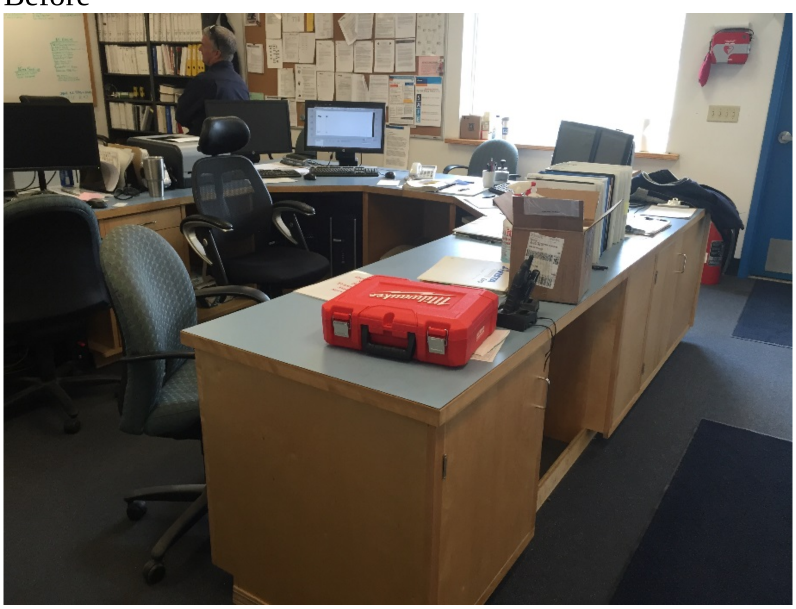
For reference, furniture purchased under this blanket is treated as a common fleet of modular furniture, given that the furniture can be, and is, moved from location to location as needs change or furniture is replaced. For example, some furniture in the Medford office was moved from the Corporate office in Spokane, while new conference tables were just ordered for and delivered to Medford.

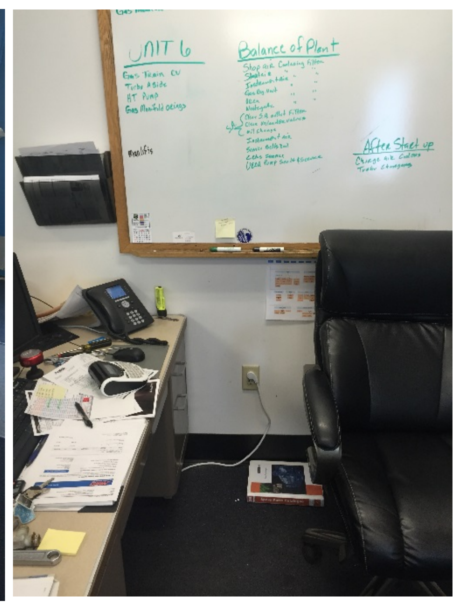
2016 Kellogg Furniture Update
Before

After

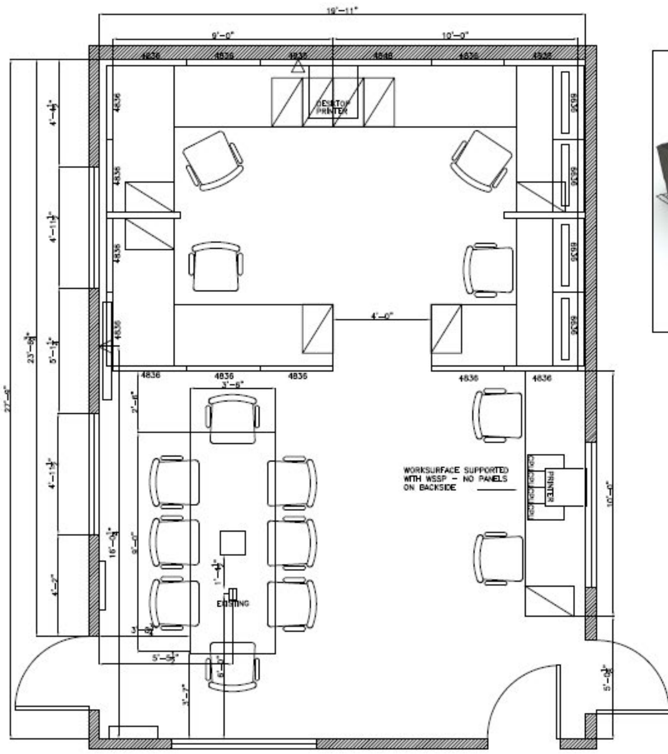
2016 Boulder Park Furniture Update

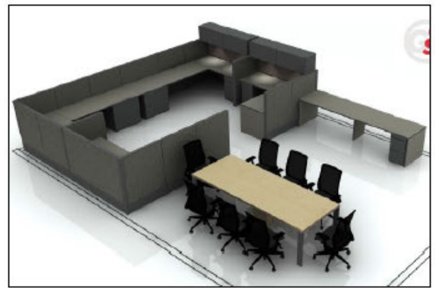
Before





After





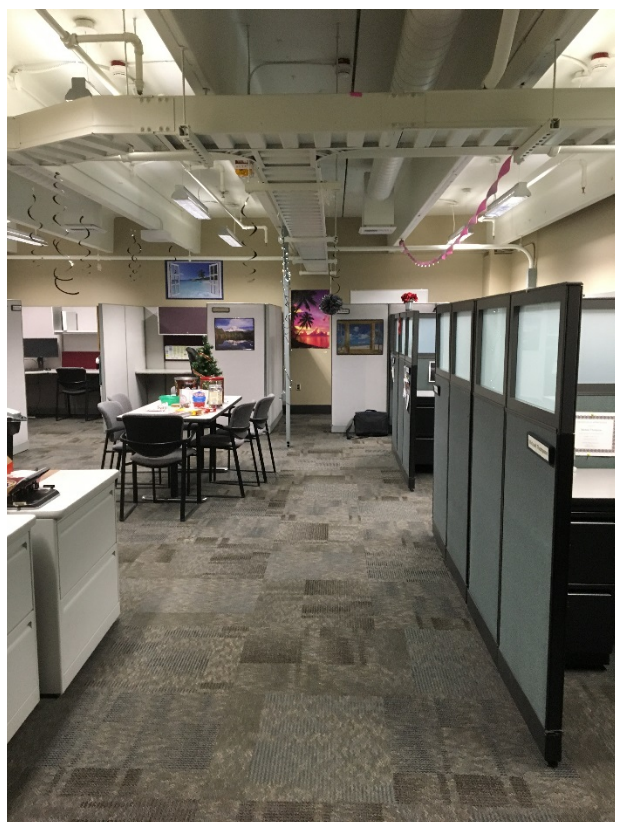

REVISIONS
PROJECT NAME AND ADDRESS:
BOULDER PARK
TITLE
BOULDER PARK - FLOOR PLAN
AVISTA Corp.
A-E STAMP:

2017 Projects

FURNITURE BLANKET- 2017 Project Examples

Chairs for Replacement

COF Room 50 Furniture for Replacement



COF Room 60 Furniture for Replacement

Spokane COF ADA Ramp outside line dock with canopy and ADA button

This project is to provide handicapped and wheelchair access to the north side of our service building. The only other wheelchair access is at the opposite end of the large building. In addition, the ramp will provide wheeled cart access for miscellaneous materials and tools that our field/maintenance crews use. With the warehouse right across the street from this new ramp location, materials will be able to be efficiently moved to the operations line dock and truck parking.

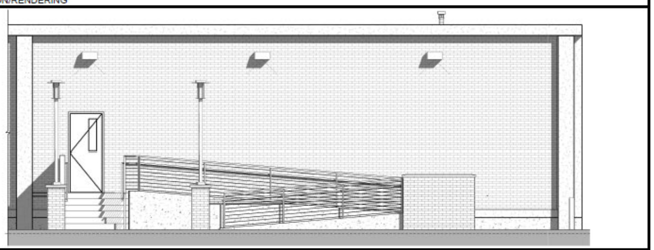
AVISTA SERVICE BUILDING
RAMP AND STAIR ADDITION

1411 EAST MISSION, SPOKANE WASHINGTON

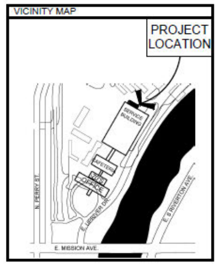
GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH APPLICABLE STATE & LOCAL CODES
2. DIMENSIONS ARE FACE OF STUD, OR GRID LINE AT NEW CONSTRUCTION AND FACE OF EXISTING FINISH AT EXISTING CONSTRUCTION, U.O.N.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO INSPECT THE JOB SITE TO FAMILIARIZE HER/HIMSELF WITH ALL THE EXISTING CONDITIONS THAT COULD AFFECT THE INSTALLATION OF ANY WORK SET FORTH IN THESE PLANS.
4. THE JOB SITE AT THE COMPLETION OF CONSTRUCTION SHALL BE CLEAR OF ANY DEBRIS OR SPOIL, RESULTING FROM THE CONSTRUCTION. AT NO TIME SHALL THIS MATERIAL OBSTRUCT THE NORMAL OPERATION OF THE OWNER.
5. ALL TERMINATIONS OF ONE FLOOR MATERIAL TO ANOTHER SHALL HAVE TRANSITION OR REDUCER STRIPS MADE FOR FLOORING TYPE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND LOCATION OF ANY UNDERGROUND OR CONCEALED UTILITY LINES THAT MAY BE REQUIRED OR AVOIDED DURING CONSTRUCTION.
7. REFER TO CODE ANALYSIS AND CODE COMPLIANCE PLANS FOR FIRE RATED ASSEMBLIES, EXITING & EGRESS.
8. ALL ROUGH OPENINGS ARE LOCATED 4" NEAREST ADJACENT WALL, U.O.N.
9. ALL PENETRATIONS THROUGH FIRE RESISTIVE FLOORS OR WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLED TO CONFORM TO THE U.L. LISTING.
10. U.O.N., ALL BLOCKING OR BACKING MATERIAL SHALL BE PLWD OR 2X FOR ALL WALL MOUNTED ITEMS.
11. REFER TO INTERIOR SHEETS FOR ALL CASEWORK, COUNTERTOP, TRIM, FLOORING AND WALL TREATMENT DETAILS.
12. THE CONTRACTOR IS ADVISED THAT DAMAGE TO ANY PORTION OF THIS PROJECT'S BUILDING AS A RESULT OF THIS PROJECT, IS TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
13. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS SHALL PREVAIL.
14. CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED PRIOR TO ANY PHASE OF CONSTRUCTION. FEES AND ANY RELATED COSTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
15. ALL DOOR OPENINGS SHALL HAVE 12" CLEAR ON THE PUSH SIDE & 18" CLEAR

ELEVATION/RENDERING



VICINITY MAP



INDEX OF DRAWINGS

T1.0 COVER SHEET

CIVIL

TBD

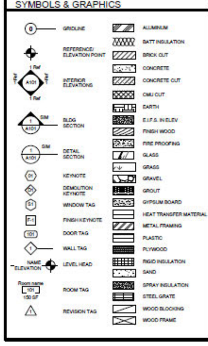
ARCHITECTURAL

A1.0	DEMO PLAN
A1.1	STAIR & RAMP FLOOR PLAN/ EXTERIOR ELEVATIONS
A2.0	STAIR & RAMP SECTIONS
A2.1	STAIR & RAMP SECTIONS
A2.2	STAIR & RAMP DETAILS
A3.0	ROOF PLAN AND DETAILS

HYDRONIC SNOW MELT SYSTEM

BIDDER DESIGN BUILD PER GOVERNING CODE.
VERIFY DESIGN WITH OWNER.

SYMBOLS & GRAPHICS



ABBREVIATIONS

PROJECT TEAM

OWNER:	AVISTA UTILITIES CORPORATION 1411 EAST MISSION SPOKANE, WA. 99201 PH: (509) 495-2235 CONTACT: VANCE RUPPERT
ARCHITECT:	WOLFE ARCHITECTURAL GROUP 1015 N. CALISPEL, STE B SPOKANE, WA 99201 PH: (509) 455-6999 FAX: (509) 455-3933 CONTACT: ALFONSO RAMIREZ
CIVIL ENGINEER:	TBD
LANDSCAPE ARCHITECT:	TBD
STRUCTURAL:	ASCEND STRUCTURAL DESIGN P.O. BOX 10722 SPOKANE, WA 99228 PH: (509) 465-3037 CONTACT: RYAN BARRETT
GENERAL CONTRACTOR:	ASSOCIATED CONSTRUCTION, INC. 2904 N MADELIA ST SPOKANE, WA 99207 PH: (509) 489-0593 CONTACT: PETE SMITH

PROJECT INFORMATION

PROJECT DESCRIPTION:

DESIGN AN ADA ACCESSIBLE RAMP ON THE NORTH ENTRANCE OF THE AVISTA SERVICE BUILDING

WORK INCLUDES DEMO OF EXISTING STAIRS AND SIDEWALK, CONSTRUCTION OF NEW STAIRS AND AN ADA COMPLIANT RAMP. THE RAMP, STAIRS AND LANDING WILL INCLUDE A HYDRONIC SNOW MELTING SYSTEM.

BUILDING INFORMATION:

BUILDING AREA:
NO. OF STORIES: 2
BUILDING OCCUPANCY:
CONSTRUCTION TYPE:
ALLOWABLE AREA:
ALLOWABLE AREA INCREASE:
OCCUPANCY LOAD:
NO. OF EXITS:
FULLY SPRINKLED:
FIRE ALARM:

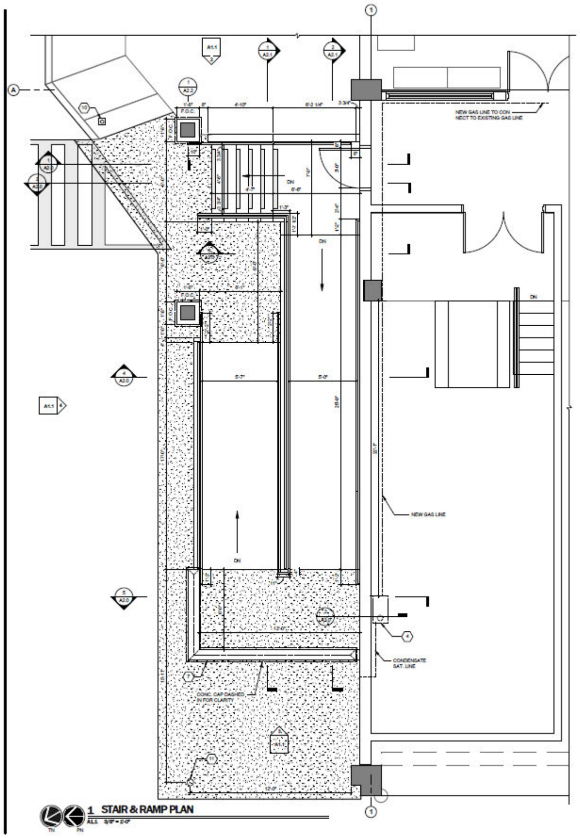
CHECKSET
12.20.2016

COVER SHEET

AVISTA SERVICE BUILDING
RAMP AND STAIR ADDITION
1411 EAST MISSION, SPOKANE WASHINGTON

ASSOCIATED CONSTRUCTION
WAG
Wolfe Architectural Group

T1.0



1 STAIR & RAMP PLAN
A1.1 3/8" = 1'-0"

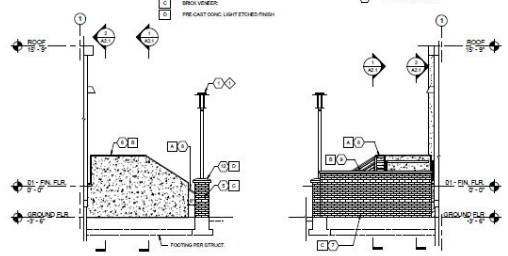
SYM.	MFGR.	CATALOG NO.	LAMPS	MOUNT	REMARKS
1	STERNBERG LIGHTING	CHATEAU PT-1740LED-1RND45T3RMDL05-CA-DBT (DARK BRONZE FINISH)	LED	POLE	LIGHT MOUNTED ON A POLE. POLE #: 450P4-10-100-DB4/DBT (DIRECT BURIAL POLE) (DARK BRONZE FINISH)
2	LITHONIA LIGHTING	WST LED P2 40K VW MVOLT-DDBXD (DARK BRONZE FINISH)	LED	WALL	MOUNTED ON MASONRY WALL, 14-FT ABOVE GRADE
3	LITHONIA LIGHTING	WST LED P2 40K VW MVOLT-DDBXD-E7WH (BATTERY-BACK UP) (DARK BRONZE FINISH)	LED	WALL	MOUNTED ON MASONRY WALL, 10'-6" FT A.F.F.

FINISH NOTES

- A P-1: SHERWIN WILLIAMS "IRON ORE" SW 7069
- B CAST-IN-PLACE CONC. "NATURAL GREY"
- C BRICK VENEER
- D PRE-CAST CONC. LIGHT ETCHED FINISH

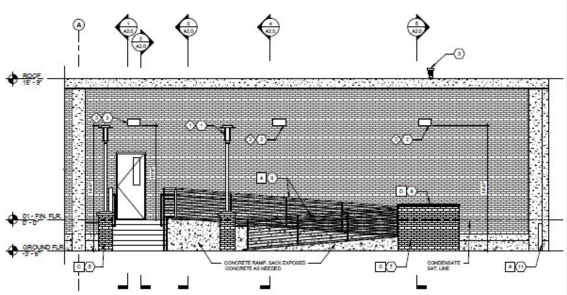
KEY NOTES

1. COLUMN MOUNTED LIGHT
2. AREA LIGHT- WALL MOUNTED
3. CONCENTRIC VENT THROUGH ROOF
4. PROPOSED BOILER LOCATION- MOUNTED TO (E) WALL. PLACE 10'-0" A.F.F.
5. MASONRY COLUMN
6. CAST-IN-PLACE CONCRETE WALL
7. MASONRY WALL
8. 1-1/2" OD PIPE GUARDRAIL AND HANDRAIL
9. PRE-CAST CONCRETE CAP
10. EXISTING TRAFFIC LIGHT POST
11. 6" DIA. STEEL BOLLARD FILLED AND DOMED WITH CONCRETE.
12. 2 PIECE CONCRETE CAP



2 EAST ELEVATION
A1.1 1/4" = 1'-0"

3 WEST ELEVATION
A1.1 1/4" = 1'-0"



4 NORTH ELEVATION
A1.1 1/4" = 1'-0"

STAIR & RAMP FLOOR PLAN/ EXTERIOR ELEVATIONS

AVISTA SERVICE BUILDING
RAMP AND STAIR ADDITION
1411 EAST MISSION, SPOKANE WASHINGTON

ASSOCIATED CONSTRUCTION
WAG
Wolfe Architectural Group

A1.1

Central Office Facilities - Service Building/Cafeteria Mass Notification System

- The Mass Notification System is an audible and visual alert life safety system
- The system includes the installation of speakers, strobes, horns and fire alert and panic buttons
- The installation of this system began in 2008 and is being systematically installed in all of our campus buildings
- The basement of the Service Building and the Cafeteria are the remaining areas to protect

The Mass Notification System is used for Fire Alarms, Shooter Alerts, Safety Alerts, Shelter in Place alerts and many other life safety scenarios.

Carpenter Shop/ Break room Windows

Expansion of the GPSS HVAC renovation project. The intention of this project is to extend the added windows installed across the top floor of the Service Building along the East side of the building. This will provide daylight to the Break Room and the Carpenters shop. Providing employees with daylight and views. This work is also being done in preporation for the the space to become future office space.

Lewiston Call Center Roof

The Lewiston Call Center roof needs replacement due to age and moisture content. The roof was inspected by a roofing consultant and was deamed beyond repair and in need of replacement. This roof has active leakes and drain problems.




AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Moore	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 247	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

See Exhibit Avista/600, Machado/13. For each Capital project included in Table No. 3, please provide, as of the date of the filing:

a. Actual or anticipated in-service date for each project. If the project is programmatic (ongoing) please explain the operational timing and identify key dates;
b. Actual annual capital expenditures for each project from 2011-2016 inclusive;
c. Budgeted annual expenditures for each project from 2011-2016 inclusive;
d. A tabular comparison of the budgeted to the actual capital expenditures identified in the Company's response to subparts "b" and "c" of this data request, with an explaination of any differences between actual and budgeted expenditures.

RESPONSE:

a. The actual in-service months associated with 2016 transfers are included in Staff_DR_247 Attachment A, which provides actual capital expenditures, by month, for the investments included in Table No. 3.

   Company witness David Machado's work papers include expected transfers to plant for 2017 by month. The workpaper file entitled "9) CAP17.1.xlsx" has been included as Staff_DR_245 Attachment A.

b. Staff_DR_247 Attachment A includes the requested information.

c. Staff_DR_247 Attachment B includes the requested information.

d. Staff_DR_247 Attachment C includes the requested information. Explanation of variances for 2011-2014 was carried forward from Avista's response to Staff_DR_189 so as to not recreate analysis that had already been performed.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/08/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Moore	RESPONDER:	David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 343	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please provide all handouts prepared by Avista related to capital projects and distributed at the discovery workshop in this docket that was hosted by Commission Staff on January 23, 2017.

RESPONSE:

Staff_DR_343 Attachment A is the agenda distributed at the workshop, based upon PUC Staff's request for a workshop. In addition to the individuals listed on the agenda as expected attendees, representatives of CUB (Jaime McGovern, in-person; and Michael Goetz, via telephone) and NWIGU (Chad Stokes, in-person) were also present, as was Abdoulaye Barry of PUC Staff.

Staff_DR_343 Attachment B is the handout supporting the discussion of Avista's redevelopment of its www.avistautilities.com website ("Project Phoenix"), which was presented by Jim Kensok, Vice President, Chief Information and Security Officer.

Staff_DR_343 Attachment C is the handout supporting discussion of Avista's "Avista Facility Maintenance Commercial Off-The-Shelf" migration (also known as "AFM COTS" or "Project Atlas").

Staff_DR_343 Attachment D is a handout illustrating Avista's Oregon-share (direct-situs and allocated) gross plant additions over time, as well as the expected gross plant additions for 2017, 2018, and 2019. Additionally, this handout includes the break-out of certain investments that have resulted in "lumpiness" of gross capital additions in 2015, 2016, and 2017.

Oregon Commission Workshop

Avistautilities.com

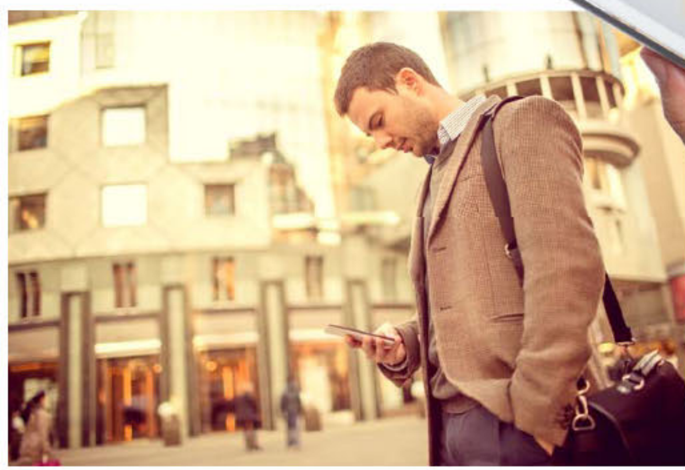
January 23, 2017

Jim Kensok
Avista - Vice President & CIO/CSO

For Discussion Purposes Only

Agenda

- Trends in Customer Interaction
- Trends in WEB Computing
- Phoenix Program
- Avisautilities.com
- Q&A



Trends in Customer Interaction

- By 2018, 50% of customer interaction in the utilities sector will be conducted through digital channels.
- In addition to cost reduction of traditional bill-related customer interactions (call center and bill payment), digital channels will be heavily used for new types of customer engagement such as energy efficiency and demand management.
- By 2020, 30% of web browsing sessions will be done without a screen. (i.e., Amazon Echo)

Gartner: Utility Predicts 2015: Utility Transformation to Digital Business Gets Underway Published: 19 November 2014

Gartner: Top Strategic Predictions for 2017 and Beyond: Surviving the Storm Winds of Digital Disruption - **Published:** 14 October 2016

Always connected

90% of US adults own a mobile phone, 59% of which are smartphones[1].

73% of males and 63% of females don't go an hour without checking their smartphones[2].

1 Pew Research, January 2014
2 Harris Interactive, June 2012

Want info on their channel of choice

77% of consumers agree that they should have the power to decide how they are contacted by companies[1].

76% say receiving notifications about paying bills via mobile would make them view their biller in a "more positive light" [2].

1 Forrester Research
2 Fiserv 6th Annual Billing Household Survey, February 2013

Demand transparency

82% want to be contacted proactively about power outages[1].

57% want to know the cause of their outage[1].

1 JD Power Research & Associates 2013 Utility Website Evaluation Study, April 2013

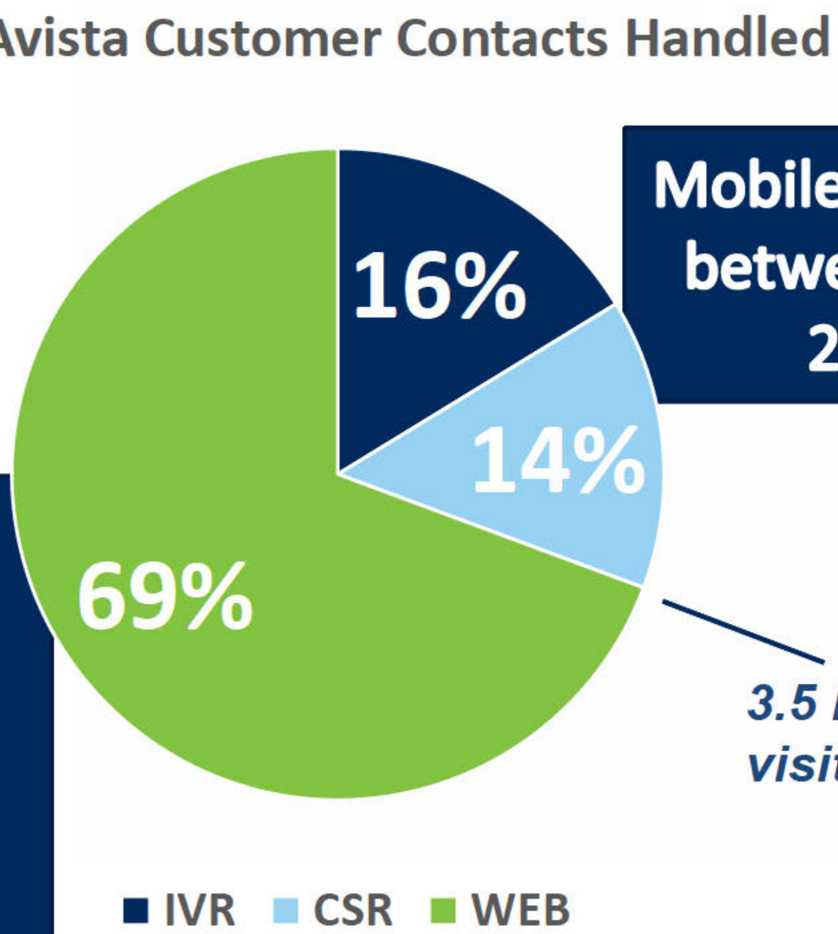
Value convenience

70% of consumers list convenience as a primary reason to pay bills via mobile device [1].

65% of smartphone owners use their phone to pay at least one of their bills [2].

1 Fiserv 6th Annual Billing Household Survey, February 2013
2 Western Union Bill Payments Money Mindset, August 2013

The web in numbers



Mobile grew 66% between 2014-2015*

3.5 Million web visits in 2015*

Process $350,000 per day $127.7M annually

*Traffic and growth influenced by November 2015 storms.

On-Line and Mobile Stats

Current Online Stats	2016	2015	Change From Prior Year
Total Visits to AU.com	2,838,599	3,474,739	-18%
Mobile Site Visits	917,037	1,215,240	-25%
Mobile Visit Percentage	32%	35%	-8%
Web Customer Engagement (mins.)	9,686,719	13,326,448	-27%
Total Online Payments	1,090,963	1,007,028	8%
Online Revenue Collected	$138,611,822	$128,996,093	7%

Current Online Stats	2016	2015	Change From Prior Year
Total Visits to AU.com *	2,838,599	2,974,739	-5%
Mobile Site Visits *	917,037	862,674	6%
Mobile Visit Percentage *	32%	29%	11%
Web Customer Engagement (mins.) *	9,686,719	11,452,745	-15%
Total Online Payments	1,090,963	1,007,028	8%
Online Revenue Collected	$138,611,822	$128,996,093	7%

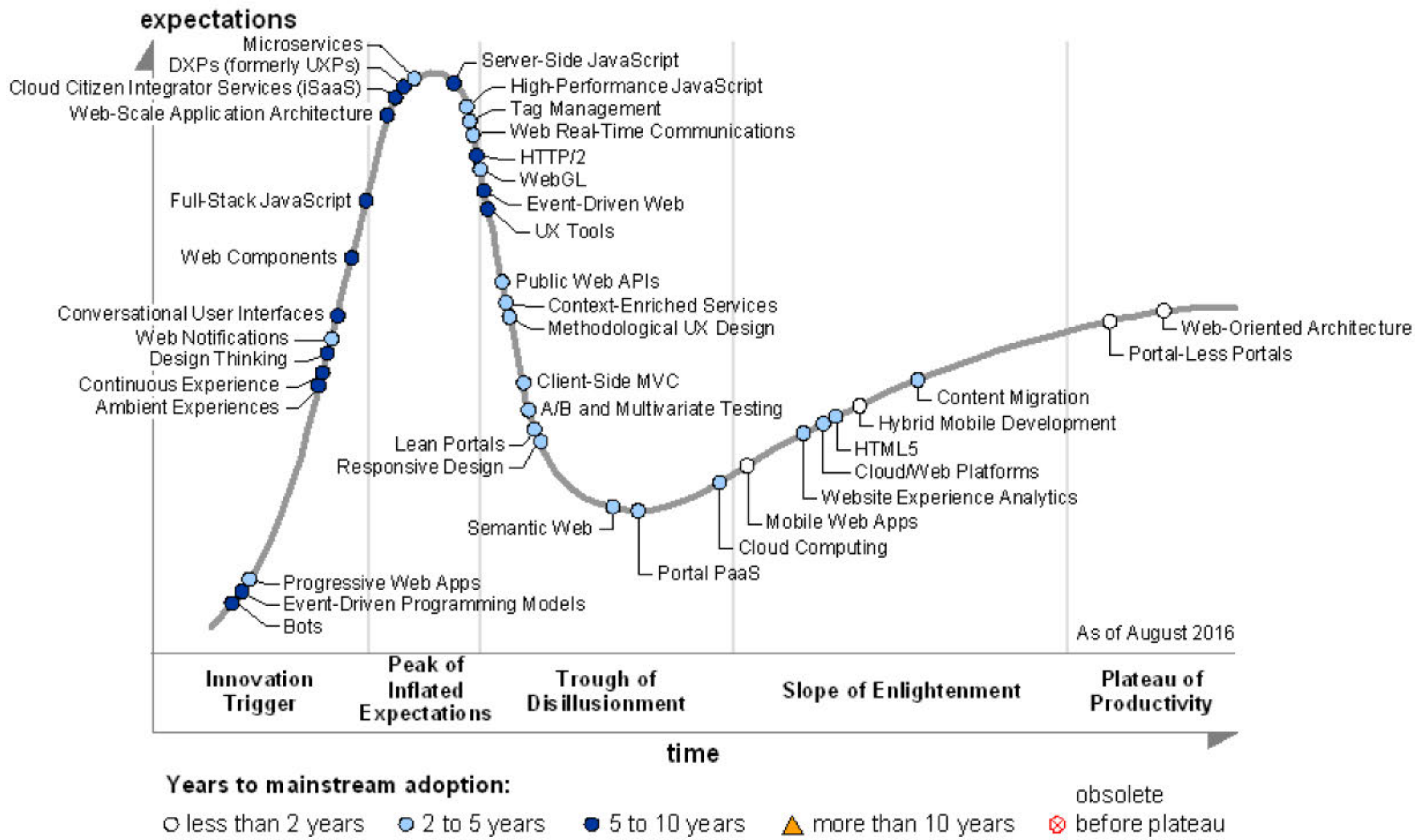
* Normalized to account for 2015 storms

Four key areas of focus

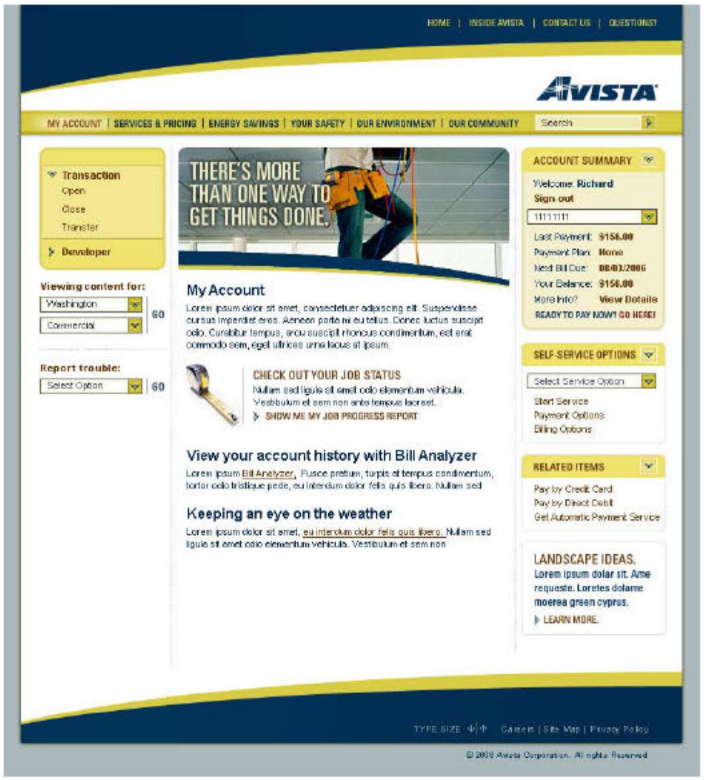
Customer empowerment across their channel of choice

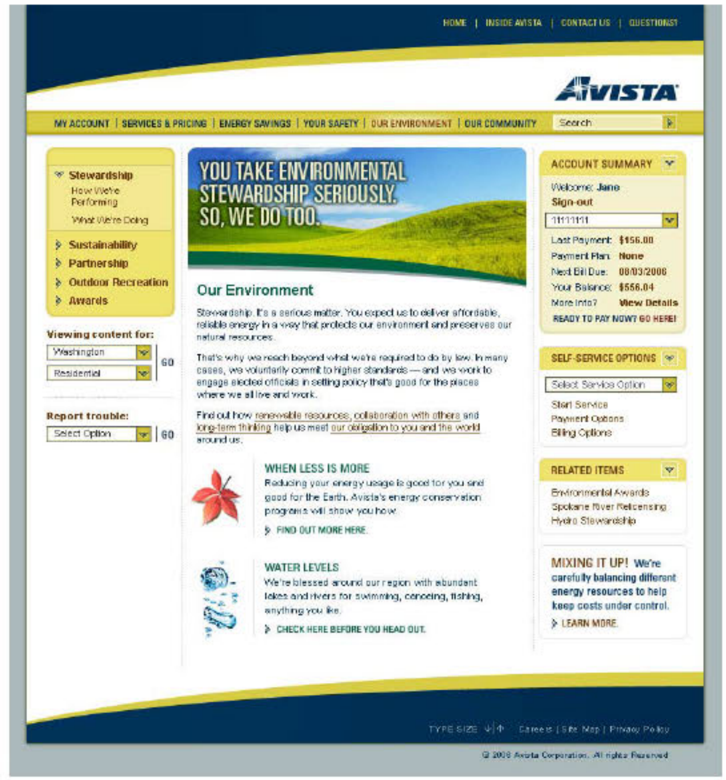
Easy	Convenient	Personalized	Proactive

Trends in Web Computing



Avista Utilities.com (AU.com) History - 2006





Avista Utilities.com (AU.com)

Oregon Customer Comment

From: Tom Bradley [mailto:tom@bradleyprop.com]
Sent: Wednesday, January 18, 2017 4:54 PM
To: Bautista, Victor <Victor.Bautista@avistacorp.com>
Subject: [External] **Avista's poorly designed web site**

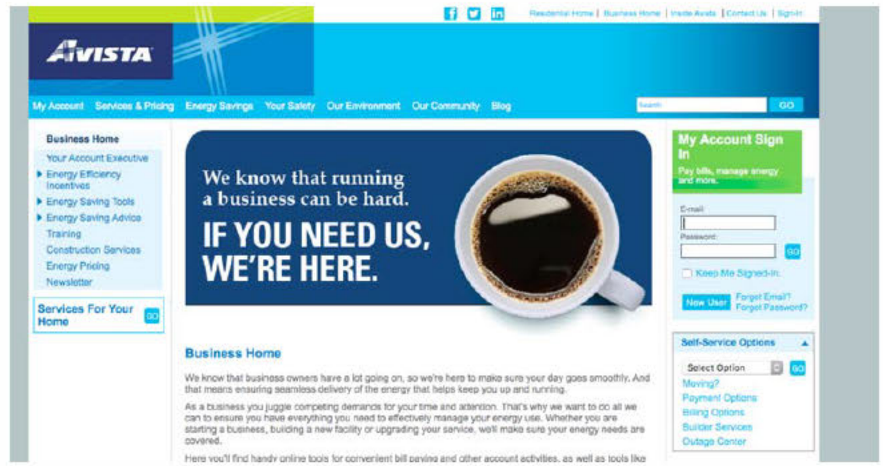
I'm trying to provide my commercial tenants with a clean and direct link to Avista's web site so they can move the gas service into their name without having to deal with an obnoxious dial-a-computer or a series of convoluted web pages.

Avista's web designers make this a lot harder than it needs to be.

When I open Avista's "Business Home" tab, why does Avista offer "Services for Your Home" on the left side of the page, and more curiously, why do the "Self Service Options" on the right side of the page only link to residential services?

It seems like it's about time for Avista to join the 21st Century. It's not that hard!

Would you please encourage your colleagues to make this easier?



Phoenix Program Overview

iFactor - Mobile Application:

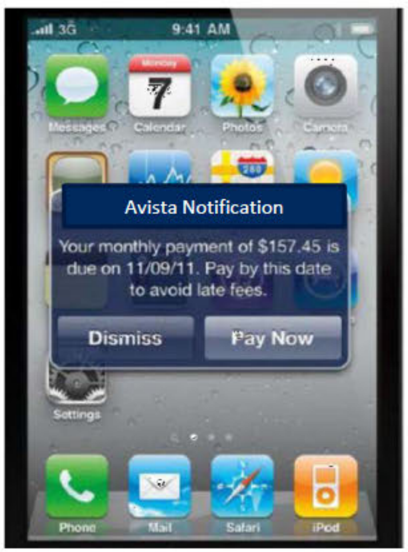
Payment Processor - Fiserv:

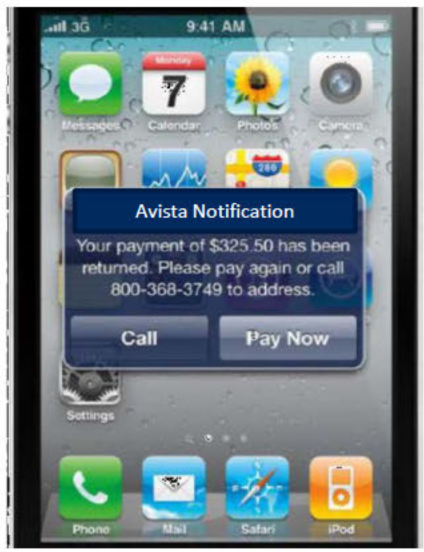
Avistautilities.com (AU.com):

Avista Utilities.com (AU.com) Scope History

Beginning Scope

- Homepage look and feel
- Navigation
- Improve usability
- Search and self-service enhancement





Final Scope

- Improved usability and implementation of best practices in web design throughout site
- Updated taxonomy and navigation
- Improved search and self-service
- New payment processor
- Sitecore platform
- Responsive design
- Improved user identity management
- E-commerce engine
- Advanced analytics
- Integration into new customer care and billing system
- Development and implementation of content strategy
- Integration into new Aclara platform (ACE) for improved energy management and billing insights
- Multi account management
- Content hub

AVISTA

Avista Utilities.com (AU.com)

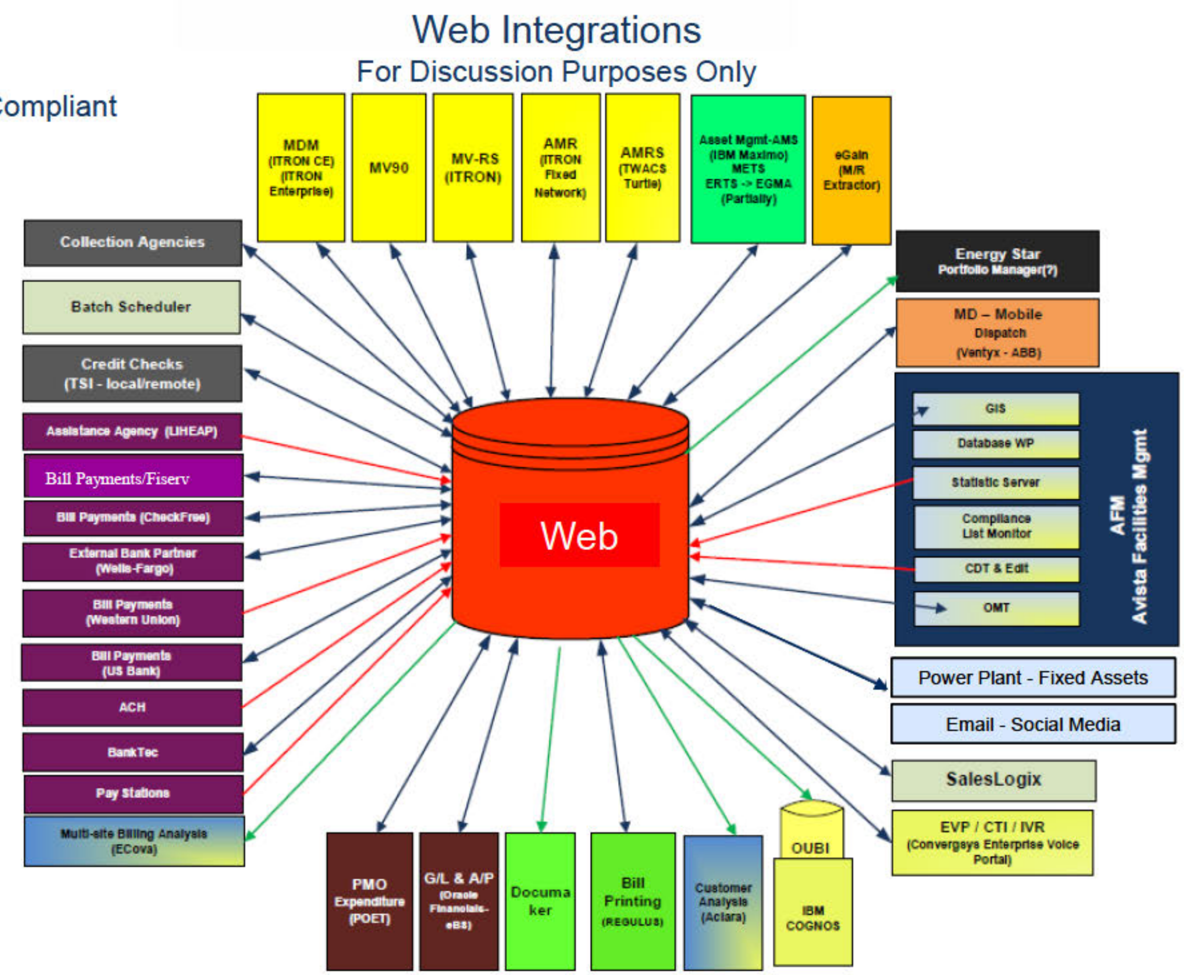
Release Priorities

February 2017	Q2 Release Candidate	Next Release	Next Release	Next Release
• Payment Processor • Sitecore web pages *Critical defect resolution* *Vulnerability/security items from WhiteHat*	• Login & Create Account • Account Summary • Outages • Contact Us • Move in/Move out • Energy Asst. Workbench • Multiple Account Management • Search • Analytics (Tea Leaf) • Content for MyAvista • Ops Hand-Off • Content Hub • Level 1 personalization	• Estimated Monthly Average • Paperless Billing • HVAC	• Residential Rebates • CLB	• Payment Arrangements

AVISTA

Avista Utilities.com (AU.com)

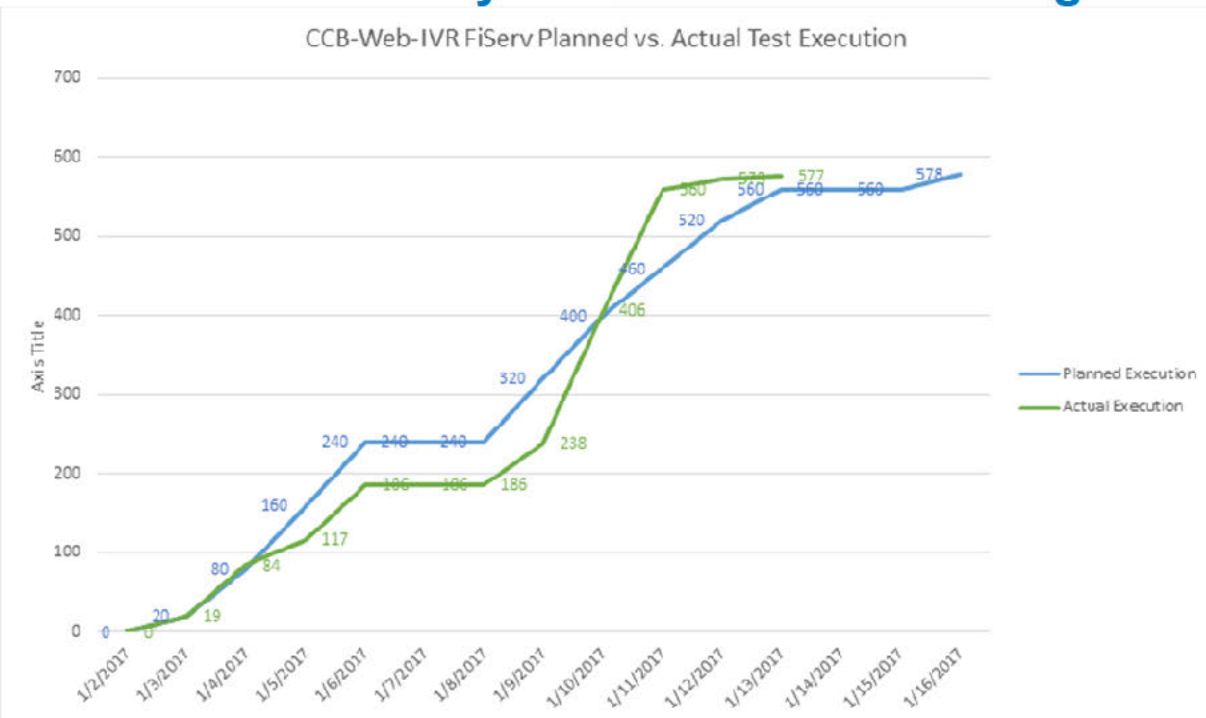
- Payment Card Industry (PCI) Compliant
- ADA Compliant
- Multi-Language Capable
- Mobile
- Responsive Design
- Cyber Security

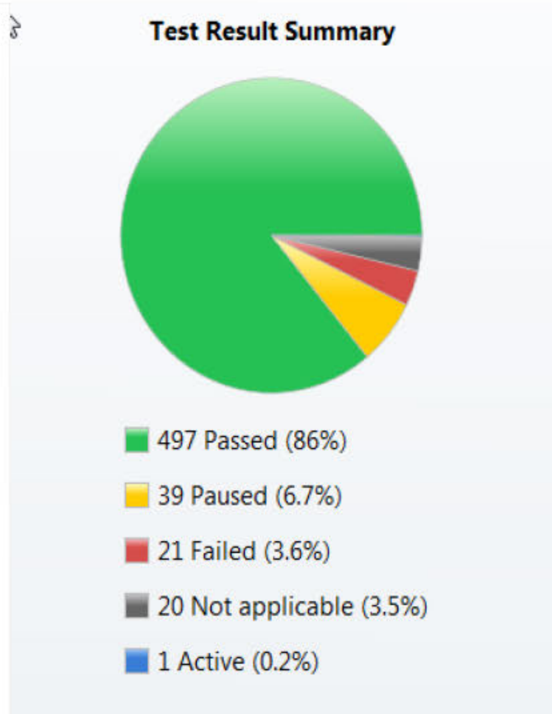


AVISTA

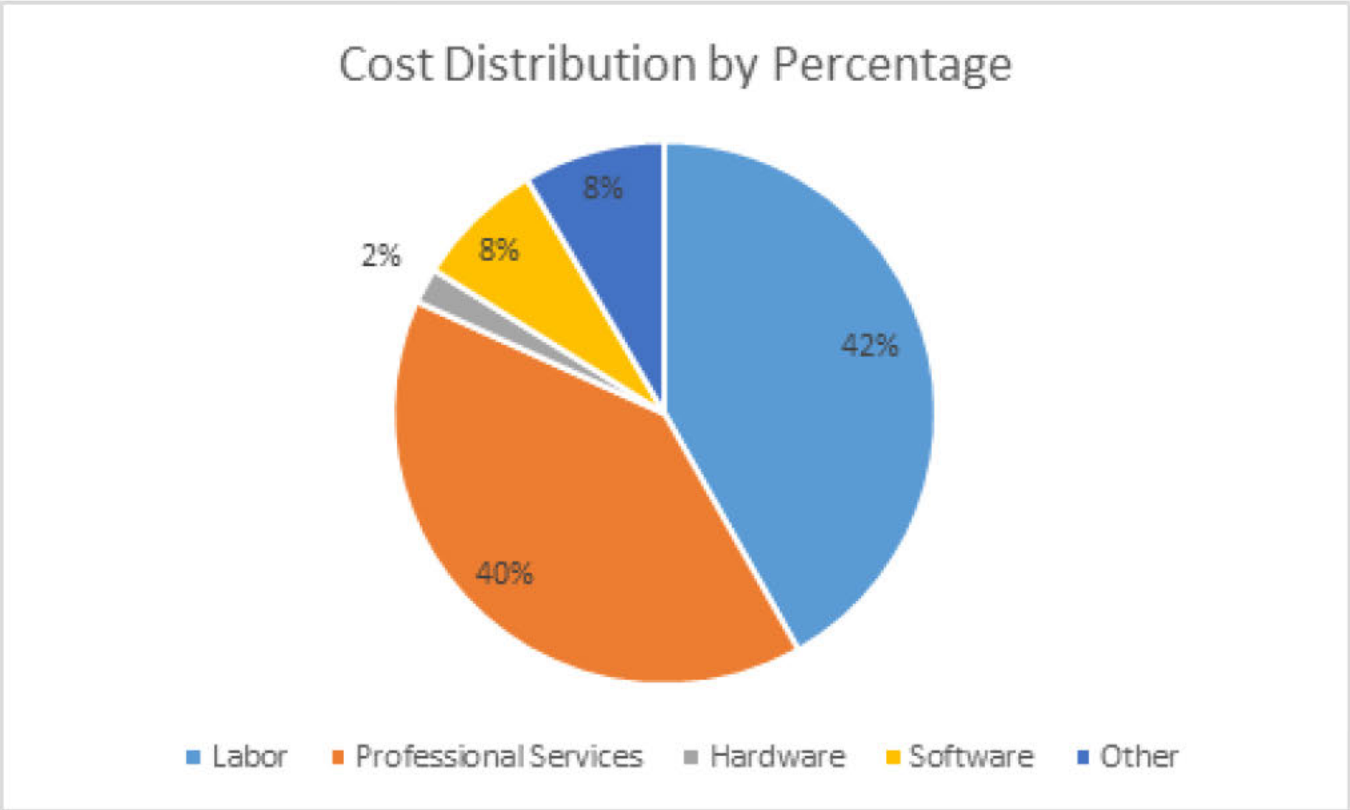
Payment Processor - Fiserv

Payment Processor Testing Status

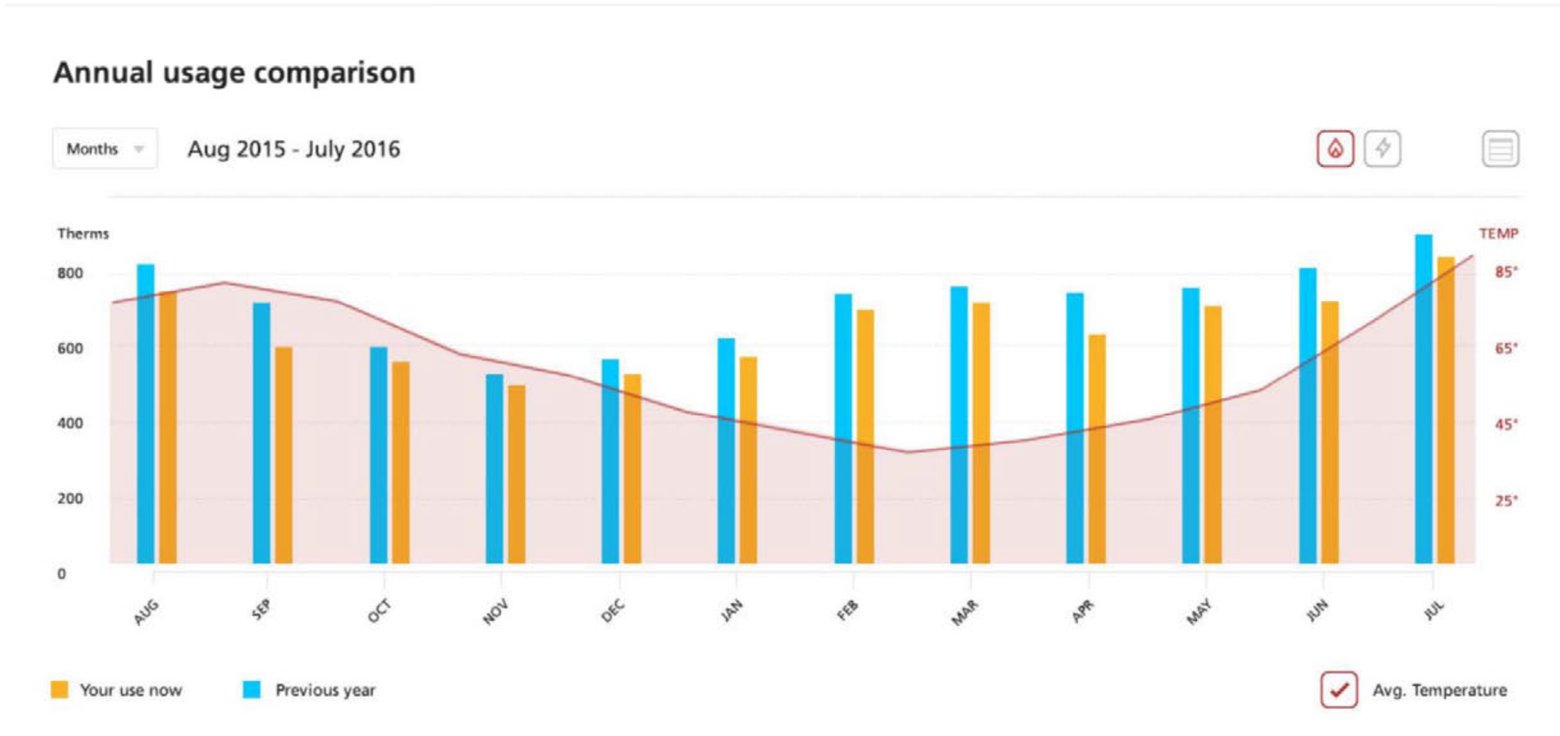




Avista Utilities.com (AU.com)



Avista Utilities.com (AU.com)



Annual Usage Comparison: customer year-to-year comparison and how it compares to weather fluctuations during those times.

Mock up only

Avista Utilities.com (AU.com)

Bill Comparison: ability to compare usage between two bills, and drill into what could be driving these differences, such as weather, usage per day, or rate changes.

Mock up only

Avista Utilities.com (AU.com)

Bill and usage insights

Your bill was higher last month than it was last February due to weather; it was 8 degrees colder than the same time last year. Save up to $200 a year by upgrading to a high-efficiency natural gas heating system.

Learn How

Are the pipes that distribute hot water through your home hot to the touch? If so, you're losing heat. Insulating your hot water pipes can save you up to $200 a year.

Learn More

Last week, 17% of your home's energy use went towards your hot tub equipment. We get that it's cold outside, but come on. That's a bit much. See how a high-efficiency heater can help.

Learn More

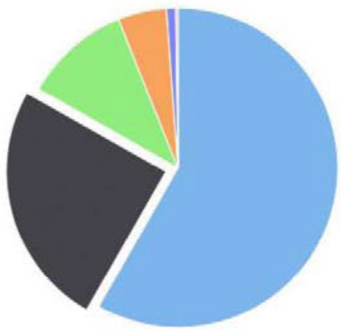
Bill and Usage Insights: insights driven by customer specific usage, dynamic parameters, or static messages designed to help customers learn about ways to reduce usage, take advantage of energy efficiency rebate programs, or understand what could be driving costs on their bill.

Mock up only

Avista Utilities.com (AU.com)

How you use energy

July 2015 - July 2016



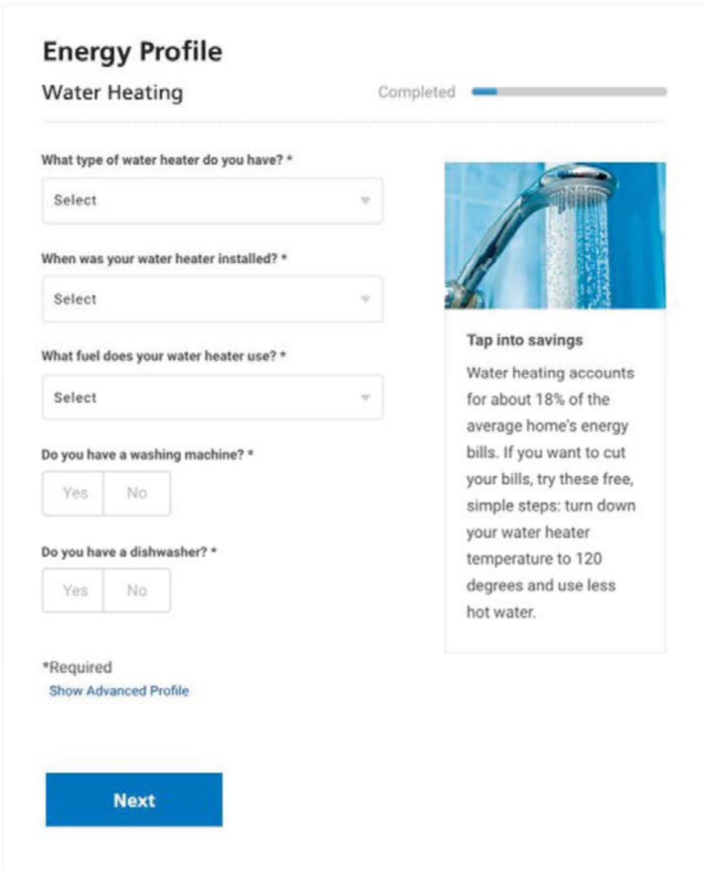
	Percent	Usage	Cost
Electric always on, Lights & Appliances	60%	120 Therms	$28
Electric Air Conditioning	20%	20 Therms	$12
Electric Space Heating	10%	20 Therms	$8
Gas Space Heating	8%	16 Therms	$4
Gas Water Heating, Cooking & Other Appliances	2%	4 Therms	$1

Complete your Home Energy Profile for even more accurate data

Mock up only

How You Use Energy: the estimated disaggregation of the their energy usage which can be fine-tuned by participating in an easy-to-use energy profile questionnaire.

Avista Utilities.com (AU.com)



Energy Profile: a survey about personalized habits and home features that can help inform the customer not only how they are using energy but about ways to save energy.

Mock up only


Q.
A.

Oregon GRC Workshop
Project Atlas Overview

Mike Littrel, Atlas Program Manager
January 23, 2017

Agenda

- What is Atlas?
  - scope
  - timeline
- Mobile Dispatch Overview
- Designer Overview
- Project
- Questions

What is “Atlas”?

- Replacement of:
  - Existing, custom Geographic Information System (GIS) based applications with Commercial Off-The-Shelf (COTS) applications.
  - Remaining paper based work processes with electronic processes.

Project Atlas Guiding Principals

1. Solutions must address business need. → End users and stakeholders are final approvers.
2. Buy needed solutions rather than build. → Commercial products that take advantage of industry trends.
3. Overall system interoperability will take priority. → Strive for common user interface and seamless data transfer.
4. Field mobility to automate manual tasks → Ability to view and capture data at the source.
5. Change Management is key to successful implementation → Active communication, stakeholder involvement

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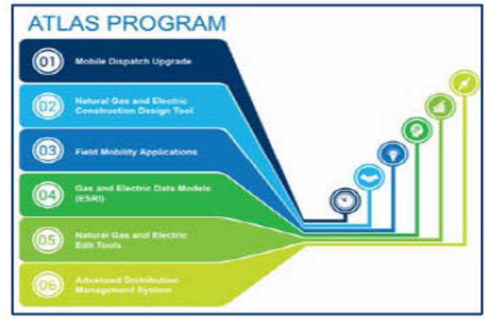
Project Atlas Scope



- **Mobile Dispatch (ABB/Ventyx) Upgrade - Complete**
- **Natural Gas and Electric Design Tools - In Progress**
  - Desktop and Mobile
- Mobile Applications for Inspection/Asset Capture – 2017/2018
- New ESRI Gas and Electric Data Models
- Natural Gas and Electric Edit Tools
  - Desktop and Mobile
- Advanced Distribution Management System

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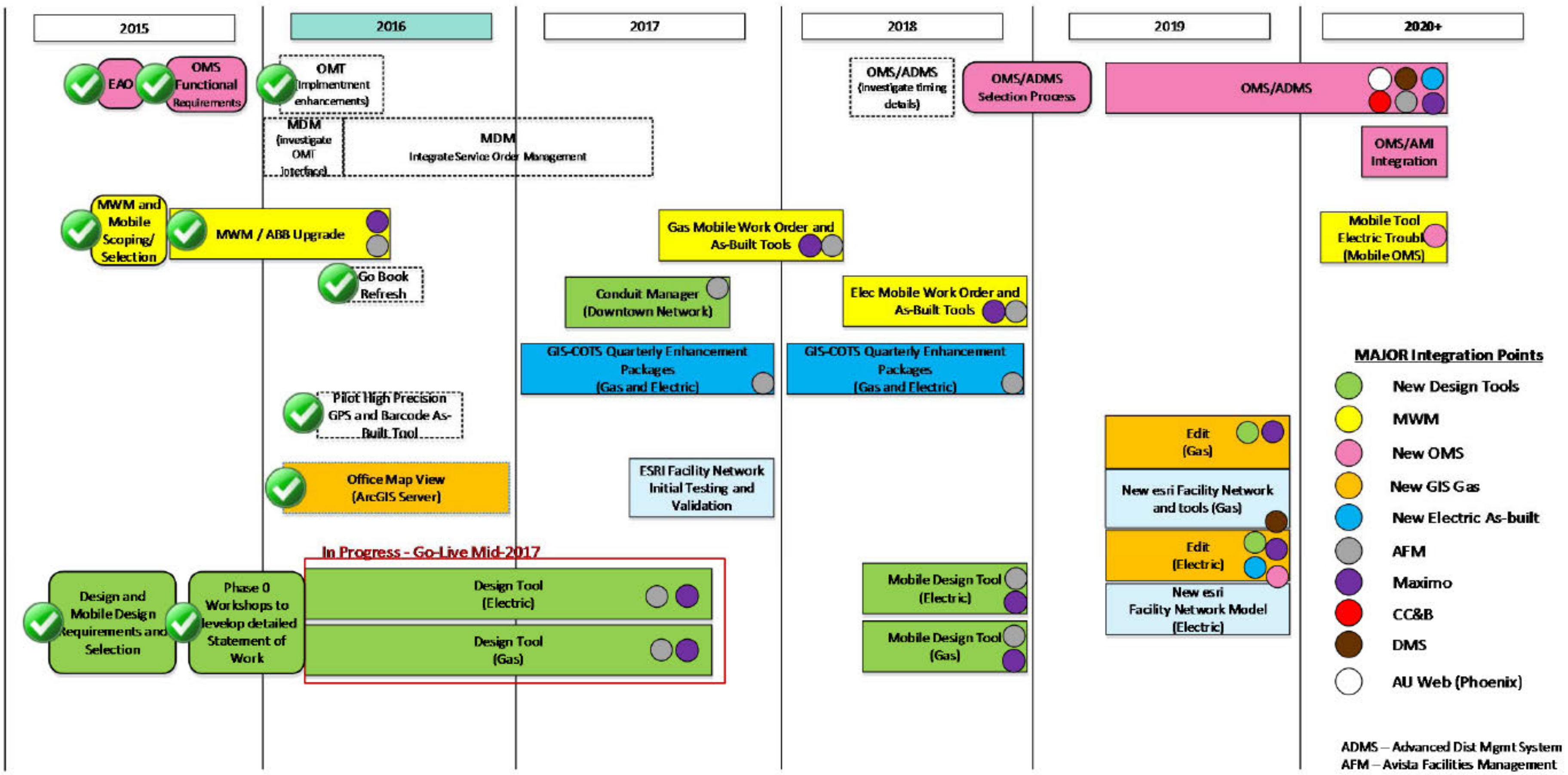
DRAFT – December 20, 2016

Project Atlas – DRAFT Roadmap



ADMS – Advanced Dist Mgmt System
AFM – Avista Facilities Management
DMS – Distribution Mgmt System (ACS)
EAO – Enterprise Architecture Office
MDM – Meter Data Mgmt
MWM – Mobile Workforce Mgmt
OMS – Outage Mgmt System

Mobile Dispatch Overview

- System made up of two application working together
  - ABB (Ventyx) Service Suite
  - TC Technologies Mobile Map
- Fully integrated with IBM Maximo and Oracle CC&B
- Benefits
  - Improve & add functionality for existing user
  - Improved system reliability
  - Capacity to extend to other work groups
  - Enhanced scheduling and optimized routing capability

Designer Overview

- Schneider Electric's Designer is a robust design, workflow, and asset management tool created specifically to meet the needs of medium to large utilities.
- First and foundational step in replacing custom AFM applications
- Replacing both the gas construction design tool (CDT) and electric design tool (EDT) with a single Designer application
- Benefits
  - Automated drawing templates reducing design time
  - Enhanced gas tracing for improved emergency response
  - Streamlined design to as-built process to reduce backlog
  - Mobile design capability to enable designing at customer site

AVISTA


Q.
A.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/15/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 404	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please refer to Attachment A to this Data Request. For each transaction identified in the attachment please explain how the transaction supports Oregon gas operations.

RESPONSE:

240 of the 326 transactions, for the total amount of $8,270, identified and provided by staff at "Staff UG 325 404 Attachment A", were expense items that were not included in the Company's base year as filed in UG 325, and therefore not included in the Company's requested revenue requirement, see Staff_DR_404, Attachment A for a listing of these expenses.

18 of the 326 transactions identified and provided by staff at "Staff UG 325 404 Attachment A", were expense items net to zero, which were posted and then reversed, see Staff_DR_404, Attachment A for a listing of these expenses.

48 of the 326 transactions, for the total amount of $1,607, identified and provided by staff at "Staff UG 325 404 Attachment A", are expense items that the Company agrees to remove from the filed revenue requirement. The effect of removing these expenses from the base year would reduce the Company's filed revenue requirement by approximately $1,667, see Staff_DR_404, Attachment A for a listing of these expenses.

The remaining 20 transactions for the total amount of $893 are for airfare expenses associated with the attendance of various meetings or conferences all of which are considered to be part of the employee's job responsibilities. Employees' attendance to such events provide education and resources for our employees so that they may continue to provide low cost, reliable service to our customers. Below is a description of each of the organizations where the Company has incurred airfare costs as identified in the transactions identified and provided by staff at "Staff UG 325 404 Attachment A",

AGA/EEI Accounting for Energy Derivatives Workshop – This airfare expenditure is for one of our resource accountants travel to attend a workshop on Derivatives accounting. This seminar is intended to provide an advanced overview and update of the accounting rules for energy contracts and the related derivatives electric and gas companies use to manage their business. Accounting for energy contracts is complex and sometimes an arduous task. The goal of the seminar is to provide a better appreciation of the types of energy contracts used to manage the business, differences and similarities between the electric and gas markets, and how to account for these contracts using derivative and hedge accounting.

Board of Directors Meeting – This airfare expenditure is for one of our executive's travel to attend the August board meeting. When meetings are held outside of Spokane, it is either for the purpose of better familiarizing board members with portions of our service territory (i.e. Juneau, Alaska) or to otherwise provide an opportunity for a retreat to discuss broader strategic issues, free of distractions. This is not unlike most organizations (private or governmental) who also schedule off-site retreats to review strategies and objectives.

Center Point Energy Visit - Avista has made a decision to establish a data science program. In preparation for this new program, we conducted research with our partners IBM, Microsoft, Google, Amazon, Gartner and other utilities. Center Point Energy is known as a leader in analytics, as part of our research and in preparation for establishing a data science program, it was important to spend time with a utility that has well documented success with data science. The intent of data science is to provide information which allows our Company to make decisions to create operational efficiencies which will better enable us to respond to customer needs more effectively, as well as providing our customers with information that gives them more options to better manage their energy costs.

Critical Infrastructure Protection User Group (CIPUG) – This group provides information for on critical consumer issues as they pertain to consumer solutions. As consumer expectations, technological innovations, and public policy goals evolve, the new business opportunities created for utilities spur challenging regulatory and public policy questions. The CIPUG works to discuss and educate its participants to better meet consumer needs at all levels, including state commissioners, consumer advocates, natural gas and electric utility representatives, by developing roadmaps that identify key objectives of consumers, related action items, key regulatory considerations and challenges, and a number of approaches and vehicles for synchronizing evolving consumer expectations with regulatory objectives. With this information, CIPUG participants hope to advance the dialogue on these issues to identify timely and appropriate solutions for all consumers, consistent with the roles and responsibilities of state regulators and utilities.

Energy Insurance Mutual (EIM) – The EIM conference, is hosted by one of our mutual insurance companies on an annual basis. Attendance to this conference provides the Company the opportunity to hear update on the financial condition of the insurance company and improvements they are looking to make going forward. Understanding their financial condition, position on insurance rates going forward, and other enhancements allows us to determine if they continue to be a good fit for our program and provide coverage and premiums most beneficial to our customers. This is important to Avista and the rate payers as EIM insurance policies are held in a number of our insurance programs (e.g. excess liability, D & O, and Property coverage). This conference also allows the Company to network with other brokers and insurance managers in the industry, sharing ideas and strategies around risk costs and controls that may be able to be incorporated into our own program to the benefit of our customers. The conference also provides sessions on current topics within the insurance industry (i.e. cyber breaches, loss control, etc) that are important learnings as we strive to stay abreast of current information that may impact the insurance costs of our programs. It should be noted here that there is no charge for the conference itself, as we are one of EIM's clients and they reimburse us for the cost of attendance including the airfare, which is why you will see a credit balance for this vendor at Staff_DR_404, Attachment A.

Federal Energy Regulatory Commission (FERC) – FERC is an independent agency that regulates the transmission and wholesale of electricity and natural gas in interstate commerce, and regulates the transportation of oil by pipeline in interstate commerce. FERC also reviews proposals to build interstate natural gas pipelines, natural gas storage projects and liquefied natural gas terminals.

IBM Application Management Services (AMS) Visit - IBM AMS (Application Managed Services) provides managed software support services to Avista for our enterprise Oracle Customer Care and Billing (CC&B) and Maximo Work and Asset Management applications. We rely on IBM AMS to provide ongoing day-to-day technical support to ensure these applications continue to perform correctly. This trip was the first visit to IBM AMS to meet the support team and management team in these remote locations. During the visit the Company discussed information about Avista and our customers, as well as spending time with the management team to build a strong relationship to ensure continued service at the level the technology management team expects. Building and maintaining a strong relationship with our IBM partner is key to our success in using off shore resources and getting reduced costs.

Montana Energy Conference - The Montana Energy Conference, like other industry specific conferences, provides opportunities to gain industry knowledge, identify current issues and challenges facing utilities, and attend educational sessions with other professionals across the country. These events provide value to employees that are responsible for strategic initiatives and leading the Company.

Pacific Northwest Utilities Conference Committee (PNUCC) - is the, an organization focused on the Pacific Northwest as opposed to the entire western US. This organization, like WEIL, focuses on both electric and natural gas issues. In fact, one of the committees operating within PNUCC is a gas-electric coordination group that interfaces with the natural gas LDCs in the region. For the same reasons described above, it is prudent to allocate those costs across both gas and electric in all three states.

Utilities Telecom Council (UTC) - The Utilities Telecom Council (UTC) is a global trade association dedicated to creating a favorable business, regulatory, and technological environment for companies that own, manage, or provide critical telecommunications systems in support of their core business. The UTC directly represents electric, gas, and water utilities; natural gas pipelines; critical infrastructure companies; and other industry stakeholders. The UTC provides information, products and services that help members: a) Manage their telecommunications and information technology more effectively and efficiently; b) Voice their concerns to legislators and regulators; c) Identify and capitalize on opportunities linked to deregulation worldwide; and d) Network with other telecom and IT professionals. Employees' attendance at conferences sponsored by the UTC provides education and resources to better provide low cost, reliable service to our customers. As a member of the UTC, Avista and its customers benefit through direct access to learning for engineering and operating efficient protection and relay networks, as well as providing an opportunity for Avista to have a voice in developing network standards that benefit the customer by reducing the number of incongruent solutions, thereby optimizing network costs.

Western Electric Industry Leaders (WEIL) – WEIL is a group of energy executives across the western United States that meets two to three times per year to work through regional issues that can have an impact on energy costs, including natural gas prices. Despite the name of the organization, the issues often span across both electric and natural gas, and issues on the electric side can impact the commodity costs to serve Oregon customers due to the abundance of natural gas-fired generation in the region.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/16/2017
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 408	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please refer to the file produced in response to Staff DR 136 “Staff_DR_136C Confidential Attachment C.pdf” at page 9. Director, retired directors, and officers’ spouses appear to have participated in the reception and dinner. Please explain how Avista accounts for costs related to spouses at board of director meetings.

RESPONSE:

Directors’ spouses are invited to attend the May and August board meetings. If spouses choose to attend, Avista pays for dinner and in some cases excursions, all are recorded to non-utility. All other expenses are paid for by the individual.

Please see Staff_DR_316, Attachment A, beginning on page 19, for the Company’s policies as they relate to Board of Director expenses. The Company applies a 97% assignment to utility and a 3% assignment to non-utility to all meeting expenses, including facility costs, travel, ground transportation, meals, and lodging, with not-to-exceed amounts set for meals and lodging. All entertainment and excursion type events are recorded to non-utility.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/14/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 409	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please refer to the file produced in response to Staff DR 128 “Staff_DR_128C Confidential Attachment A.pdf”.

a. Page 14 identifies the deliverables for the statement of work. Please provide the time spent by each GridGlo employee to prepare these deliverables. Please provide the salary paid by GridGlo for these employees. If these employees are not full time employees, identify the number of hours worked per week.
b. Page 15 identifies maintenance and support fees. Please provide the amount of time GridGlo employees have spent on maintenance and support in 2015 and 2016. Please provide the salary paid by GridGlo for these employees. If these employees are not full time employees, identify the number of hours worked per week.
c. Page 15 identifies third party data access fees. Please identify the third party data provided by GridGlo and provide the contracts used by GridGlo to acquire rights to these data.

RESPONSE:

All of the requested records above are held by GridGlo, and as a minority owner, Avista does not have ready access to this information.

Oregon’s share of the capital costs for the licensed software described in the contract provided in Staff_DR_128, Attachment A, is approximately $26,000. The level of expense included in this filing, associated with the licensed software is approximately $5,200.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/14/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 410	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please refer to the response to Staff DR 129 part d. Please explain why the predictive analytics module will be charged below the line.

RESPONSE:

As discussed in the Company's response to Staff_DR_129, part d, we generally expect to utilize Trove in gathering data segmentation and analysis to provide information which allows our Company to make decisions to create operational efficiencies which will better enable us to respond to customer needs more effectively, as well as providing our customers with information that gives them more options to better manage their energy costs. We have not yet fully determined specific analysis and data sets we will analyze in order to provide these operational efficiencies or benefits to our customers, so until it the application is being fully utilized to provide these benefits, we will be charging costs associated with the 'Predictive Analytics' module of TROVE's Sunstone platform to non-utility.

Docket No UG 325

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	10/28/2016
CASE NO.:	UG ___	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 092	TELEPHONE:	(509) 495-4324
		EMAIL:	Annette.brandon@avistacorp.com

REQUEST:

For the test year and the preceding 4 calendar years, please provide (on a total company basis), a summary table (using the categories and format shown below) that includes the number of FTE's (exclude FTE's created by overtime hours) and the actual paid cash compensation broken down between base wages or salaries, overtime, and incentives or bonuses. For any calendar year included in this request for which actual data is not available for the entire calendar year, please create a calendar year using the available actual data combined with the forecast applicable to the rest of the year. Please note which months and figures are associated with both the actual and forecast data.

RESPONSE:

Please see Staff_DR_092 Attachment A for the test year (twelve-months ending 09.30.2018), the base year (twelve-months ending 06.30.2016), and the preceding 4 calendar years (2012-2015).

Please refer to Company adjustment no. 3.02 Restate Salaries and Wages for additional information.

Test Year 12 ME 09.2018				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	FTE Excluding OT ❶FTE	Total Company Overtime FTE	Total Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[2/3]	Total
Officers	13	0	13	$ 3,876,623	$ -	$ 2,488,234	$ 6,364,857
Exempt	596	0	596	$ 67,631,353	$ -	$ 8,115,762	$ 75,747,115
Nonexempt	341	13	354	$ 21,196,304	$ 1,624,209	$ 2,543,556	$ 25,364,070
Union	690	98	788	$ 58,784,323	$ 17,875,272	$ 881,765	$ 77,541,359
Total	**1640**	**111**	**1751**	**$ 151,488,603**	**$ 19,499,481**	**$ 14,029,318**	**$ 185,017,401**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations. P**lease note these totals do not represent what was included in the Company's case.** The Company included an O & M adjustment based on increases per union contract and assumptions for non-union increases. Capital labor increases are embedded within the Company's Capital Adjustment. Please see Company workpapers in adjustment 2.02 test period labor and benefits for the pro-forma adjustment.

Base Year: 12 ME 06.2016				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	FTE Excluding OT ❶FTE	Total Company Overtime FTE	Total Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[1]	Total
Officers	12	0	12	$ 3,876,623	$ -	$ 3,494,016	$ 7,370,639
Exempt	619	0	619	$ 62,344,082		$ 8,758,028	$ 71,102,110
Nonexempt	345	12	357	$ 19,539,224	$ 1,497,232	$ 1,668,196	$ 22,704,652
Union	679	98	777	$ 54,205,074	$ 16,482,803	$ 891,467	$ 71,579,344
Total	**1655**	**110**	**1765**	**$ 139,965,003**	**$ 17,980,035**	**$ 14,811,707**	**$ 172,756,745**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations

Year: YE 12.2015				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	FTE Excluding OT ❶FTE	Total Company Overtime FTE	Total Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[1]	Total
Officers	13	0	13	$ 4,084,042	$ -	$ 3,494,016	$ 7,578,058
Exempt	596	0	596	$ 58,346,733	$ 32,661	$ 8,758,028	$ 67,137,422
Nonexempt	341	13	354	$ 19,218,716	$ 1,518,912	$ 1,668,196	$ 22,405,824
Union	690	98	788	$ 55,581,426	$ 16,254,205	$ 891,467	$ 72,727,098
Total	**1640**	**111**	**1751**	**$ 137,230,917**	**$ 17,805,778**	**$ 14,811,707**	**$ 169,848,402**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations

Year: YE 12.2014				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	FTE Excluding OT ❶FTE	Total Company Overtime FTE	Total Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[1]	Total
Officers	10	0	10	$ 3,246,066	$ -	$ 2,652,365	$ 5,898,431
Exempt	545	0	545	$ 53,552,943	$ 14,446	$ 7,186,317	$ 60,753,706
Nonexempt	327	11	338	$ 17,765,828	$ 1,215,581	$ 1,352,701	$ 20,334,110
Union	666	73	739	$ 49,912,231	$ 11,390,121	$ 689,158	$ 61,991,510
Total	**1548**	**84**	**1632**	**$ 124,477,068**	**$ 12,620,148**	**$ 11,880,541**	**$ 148,977,757**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations

Year: YE 12.2013				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	Excluding ❶FTE	Company Overtime FTE	Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[1]	Total
Officers	10	0	10	$ 3,021,497	$ -	$ 853,424	$ 3,874,921
Exempt	527	0	527	$ 49,666,664	$ 10,786	$ 5,660,908	$ 55,338,358
Nonexempt	312	7	319	$ 16,463,841	$ 900,268	$ 1,047,942	$ 18,412,051
Union	671	60	731	$ 49,548,833	$ 9,353,659	$ 535,522	$ 59,438,014
Total	**1520**	**67**	**1587**	**$ 118,700,835**	**$ 10,264,713**	**$ 8,097,796**	**$ 137,063,344**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations. In addition, the Company excluded from both FTEs and Salaries the VSIP employees (For 2012, and 2013). 55 employees took the voluntary severance program at 12/31/2012. 2012 and 2013 were restated to exclude the VSIP employees.

Year: YE 12. 2012				Actual (Unadjusted) Paid Cash Compensation - Total Company including O & M and Capital			
Category	Excluding ❶FTE	Company Overtime FTE	Company FTE	Base Wages or Salaries	Overtime	Incentive or Bonus[1]	Total
Officers	10	0	10	$ 3,039,095	$ -	$ 496,942	$ 3,536,037
Exempt	510	0	510	$ 47,731,640	$ 9,411	$ 3,329,577	$ 51,070,628
Nonexempt	313	6	319	$ 16,245,185	$ 765,885	$ 384,328	$ 17,395,398
Union	685	54	739	$ 49,585,489	$ 8,238,723	$ 214,491	$ 58,038,703
Total	**1518**	**60**	1578	**$ 116,601,409**	**$ 9,014,019**	**$ 4,425,338**	**$ 130,040,766**

❶ Calculated in accordance with OR Commission Basis Report formula. The FTE's exclude Full-Time Equivalent (FTE) due to overtime and non-utility operations. In addition, the Company excluded from both FTEs and Salaries the VSIP employees (For 2012 and 2013). 55 employees took the voluntary severance program at 12/31/2012. 2012 and 2013 were restated to exclude the VSIP employees.

[1] Incentives included in this column are based on actual incentives paid (capital and O & M) in the respective year on a cash basis excluding payroll taxes.

[2] Incentives for non-executive for test period are based on incentive loader rates (which include payroll taxes). Please see incentive adjustment 2.12.

[3] Incentives for executive for rate period are based on potential payout if all metrics achieved. This amount includes the total charged to non-utility with expenses borne by shareholders. This amount should be reduced by approx. 58% to represent O&M only. Please see adjustment 2.03 Executive Officer Labor for calculation.

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 703

Exhibits in Support
Of Opening Testimony

March 1, 2017

Exhibit 703 is confidential and

Is subject to Protective Order No.16-460.

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 704

Exhibits in Support Of Opening Testimony

March 1, 2017

Avista Capital
Note Receivable from / (Payable) to Avista Corp

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
		$ 22,177,679.54					
1/1/2016		22,177,679.54	1.0260%	$ 623.41	0.06%	36.46	$ (586.95)
1/2/2016		22,177,679.54	1.0260%	623.41	0.06%	36.46	(586.95)
1/3/2016		22,177,679.54	1.0260%	623.41	0.06%	36.46	(586.95)
1/4/2016	(310,000.00)	21,867,679.54	1.0260%	614.69	0.06%	35.95	(578.74)
1/5/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/6/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/7/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/8/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/9/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/10/2016		21,867,679.54	1.1970%	717.14	0.06%	35.95	(681.19)
1/11/2016		21,867,679.54	1.1970%	717.14	0.07%	41.94	(675.20)
1/12/2016		21,867,679.54	1.1970%	717.14	0.07%	41.94	(675.20)
1/13/2016		21,867,679.54	1.1970%	717.14	0.07%	41.94	(675.20)
1/14/2016		21,867,679.54	1.1970%	717.14	0.07%	41.94	(675.20)
1/15/2016	1,000,000.00	22,867,679.54	1.1970%	749.93	0.07%	43.86	(706.08)
1/16/2016		22,867,679.54	1.1970%	749.93	0.07%	43.86	(706.08)
1/17/2016		22,867,679.54	1.1970%	749.93	0.07%	43.86	(706.08)
1/18/2016		22,867,679.54	1.1970%	749.93	0.07%	43.86	(706.08)
1/19/2016		22,867,679.54	1.1970%	749.93	0.07%	43.86	(706.08)
1/20/2016	(1,075,000.00)	21,792,679.54	1.1970%	714.68	0.07%	41.79	(672.89)
1/21/2016		21,792,679.54	1.1970%	714.68	0.07%	41.79	(672.89)
1/22/2016		21,792,679.54	1.1970%	714.68	0.07%	41.79	(672.89)
1/23/2016		21,792,679.54	1.1970%	714.68	0.07%	41.79	(672.89)
1/24/2016		21,792,679.54	1.1970%	714.68	0.07%	41.79	(672.89)
1/25/2016		21,792,679.54	1.1970%	714.68	0.06%	35.82	(678.86)
1/26/2016		21,792,679.54	1.1970%	714.68	0.06%	35.82	(678.86)
1/27/2016		21,792,679.54	1.1970%	714.68	0.06%	35.82	(678.86)
1/28/2016		21,792,679.54	1.1970%	714.68	0.06%	35.82	(678.86)
1/29/2016	(480,000.00)	21,312,679.54	1.1970%	698.94	0.06%	35.03	(663.90)
1/30/2016		21,312,679.54	1.1970%	698.94	0.06%	35.03	(663.90)
1/31/2016		21,312,679.54	1.1970%	698.94	0.06%	35.03	(663.90)
2/1/2016		21,334,614.46	1.1970%	699.66	0.07%	40.92	(658.74)
2/2/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/3/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/4/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/5/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/6/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/7/2016		21,334,614.46	1.2035%	703.46	0.07%	40.92	(662.54)
2/8/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/9/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/10/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/11/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/12/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/13/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/14/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/15/2016		21,334,614.46	1.2035%	703.46	0.06%	35.07	(668.39)
2/16/2016	(500,000.00)	20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/17/2016		20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/18/2016		20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/19/2016		20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/20/2016		20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/21/2016		20,834,614.46	1.2035%	686.97	0.06%	34.25	(652.72)
2/22/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/23/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/24/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/25/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/26/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/27/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/28/2016		20,834,614.46	1.2035%	686.97	0.07%	39.96	(647.01)
2/29/2016	(155,000.00)	20,679,614.46	1.2035%	681.86	0.07%	39.66	(642.20)

Avista data source is Staff_DR_398 Attachment B - GL 233500 Interest Schedule with Corporate.xlsx
Staff interest rate source is Federal Reserve Economic Data National Rate on Jumbo Deposits 1 Month CD

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
3/1/2016		20,823,593.02	1.2035%	686.61	0.07%	39.94	(646.67)
3/2/2016	(500,000.00)	20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/3/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/4/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/5/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/6/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/7/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/8/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/9/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/10/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/11/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/12/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/13/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/14/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/15/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/16/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/17/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/18/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/19/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/20/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/21/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/22/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/23/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/24/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/25/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/26/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/27/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/28/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/29/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/30/2016		20,323,593.02	1.2126%	675.19	0.07%	38.98	(636.21)
3/31/2016	(260,000.00)	20,063,593.02	1.2126%	666.55	0.07%	38.48	(628.07)
4/1/2016	(250,000.00)	19,834,526.65	1.2126%	658.94	0.07%	38.04	(620.90)
4/2/2016		19,834,526.65	1.2126%	658.94	0.07%	38.04	(620.90)
4/3/2016		19,834,526.65	1.2126%	658.94	0.07%	38.04	(620.90)
4/4/2016		19,834,526.65	1.2152%	660.35	0.07%	38.04	(622.32)
4/5/2016	500,000.00	20,334,526.65	1.2152%	677.00	0.07%	39.00	(638.00)
4/6/2016		20,334,526.65	1.2152%	677.00	0.07%	39.00	(638.00)
4/7/2016	(365,000.00)	19,969,526.65	1.2152%	664.85	0.07%	38.30	(626.55)
4/8/2016		19,969,526.65	1.2152%	664.85	0.07%	38.30	(626.55)
4/9/2016		19,969,526.65	1.2152%	664.85	0.07%	38.30	(626.55)
4/10/2016		19,969,526.65	1.2152%	664.85	0.07%	38.30	(626.55)
4/11/2016		19,969,526.65	1.2152%	664.85	0.06%	32.83	(632.02)
4/12/2016		19,969,526.65	1.2152%	664.85	0.06%	32.83	(632.02)
4/13/2016		19,969,526.65	1.2152%	664.85	0.06%	32.83	(632.02)
4/14/2016	(100,000.00)	19,869,526.65	1.2152%	661.52	0.06%	32.66	(628.86)
4/15/2016		19,869,526.65	1.2152%	661.52	0.06%	32.66	(628.86)
4/16/2016		19,869,526.65	1.2152%	661.52	0.06%	32.66	(628.86)
4/17/2016		19,869,526.65	1.2152%	661.52	0.06%	32.66	(628.86)
4/18/2016		19,869,526.65	1.2152%	661.52	0.07%	38.11	(623.41)
4/19/2016		19,869,526.65	1.2152%	661.52	0.07%	38.11	(623.41)
4/20/2016		19,869,526.65	1.2152%	661.52	0.07%	38.11	(623.41)
4/21/2016	(10,000,000.00)	9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/22/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/23/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/24/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/25/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/26/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/27/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/28/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/29/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
4/30/2016		9,869,526.65	1.2152%	328.59	0.07%	18.93	(309.66)
5/1/2016		9,886,088.27	1.2152%	329.14	0.07%	18.96	(310.18)
5/2/2016		9,886,088.27	1.2152%	329.14	0.07%	18.96	(310.18)
5/3/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)

Docket No UG 325

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
5/4/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/5/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/6/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/7/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/8/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/9/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/10/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/11/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/12/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/13/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/14/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/15/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/16/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/17/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/18/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/19/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/20/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/21/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/22/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/23/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/24/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/25/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/26/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/27/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/28/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/29/2016		9,886,088.27	1.2109%	327.97	0.06%	16.25	(311.72)
5/30/2016		9,886,088.27	1.2109%	327.97	0.07%	18.96	(309.01)
5/31/2016	(75,000.00)	9,811,088.27	1.2109%	325.49	0.07%	18.82	(306.67)
6/1/2016		9,821,255.32	1.2109%	325.82	0.07%	18.84	(306.99)
6/2/2016		9,821,255.32	1.2381%	333.13	0.07%	18.84	(314.29)
6/3/2016	(45,000.00)	9,776,255.32	1.2381%	331.60	0.07%	18.75	(312.85)
6/4/2016		9,776,255.32	1.2381%	331.60	0.07%	18.75	(312.85)
6/5/2016		9,776,255.32	1.2381%	331.60	0.07%	18.75	(312.85)
6/6/2016		9,776,255.32	1.2381%	331.60	0.06%	16.07	(315.53)
6/7/2016		9,776,255.32	1.2381%	331.60	0.06%	16.07	(315.53)
6/8/2016		9,776,255.32	1.2381%	331.60	0.06%	16.07	(315.53)
6/9/2016		9,776,255.32	1.2381%	331.60	0.06%	16.07	(315.53)
6/10/2016	(3,125,000.00)	6,651,255.32	1.2381%	225.61	0.06%	10.93	(214.67)
6/11/2016		6,651,255.32	1.2381%	225.61	0.06%	10.93	(214.67)
6/12/2016		6,651,255.32	1.2381%	225.61	0.06%	10.93	(214.67)
6/13/2016		6,651,255.32	1.2381%	225.61	0.07%	12.76	(212.85)
6/14/2016		6,651,255.32	1.2381%	225.61	0.07%	12.76	(212.85)
6/15/2016	(100,000.00)	6,551,255.32	1.2381%	222.21	0.07%	12.56	(209.65)
6/16/2016		6,551,255.32	1.2381%	222.21	0.07%	12.56	(209.65)
6/17/2016		6,551,255.32	1.2381%	222.21	0.07%	12.56	(209.65)
6/18/2016		6,551,255.32	1.2381%	222.21	0.07%	12.56	(209.65)
6/19/2016		6,551,255.32	1.2381%	222.21	0.07%	12.56	(209.65)
6/20/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/21/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/22/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/23/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/24/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/25/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/26/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/27/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/28/2016		6,551,255.32	1.2381%	222.21	0.06%	10.77	(211.44)
6/29/2016	(440,000.00)	6,111,255.32	1.2381%	207.29	0.06%	10.05	(197.24)
6/30/2016		6,111,255.32	1.2381%	207.29	0.06%	10.05	(197.24)
7/1/2016		6,118,889.08	1.2109%	203.00	0.06%	10.06	(192.94)
7/2/2016		6,118,889.08	1.2109%	203.00	0.06%	10.06	(192.94)
7/3/2016		6,118,889.08	1.2109%	203.00	0.06%	10.06	(192.94)
7/4/2016		6,118,889.08	1.2109%	203.00	0.07%	11.73	(191.26)
7/5/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/6/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
7/7/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/8/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/9/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/10/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/11/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/12/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/13/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/14/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/15/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/16/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/17/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/18/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/19/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/20/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/21/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/22/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/23/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/24/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/25/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/26/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/27/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/28/2016		6,118,889.08	1.2453%	208.76	0.07%	11.73	(197.03)
7/29/2016	(240,000.00)	5,878,889.08	1.2453%	200.57	0.07%	11.27	(189.30)
7/30/2016		5,878,889.08	1.2453%	200.57	0.07%	11.27	(189.30)
7/31/2016		5,878,889.08	1.2453%	200.57	0.07%	11.27	(189.30)
8/1/2016		5,885,313.10	1.2453%	200.79	0.07%	11.29	(189.51)
8/2/2016		5,885,313.10	1.2677%	204.40	0.07%	11.29	(193.11)
8/3/2016	475,000.00	6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/4/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/5/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/6/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/7/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/8/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/9/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/10/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/11/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/12/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/13/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/14/2016		6,360,313.10	1.2677%	220.89	0.06%	10.46	(210.44)
8/15/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/16/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/17/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/18/2016		6,360,313.10	1.2677%	220.89	0.07%	12.20	(208.70)
8/19/2016	(250,000.00)	6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/20/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/21/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/22/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/23/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/24/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/25/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/26/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/27/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/28/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/29/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/30/2016		6,110,313.10	1.2677%	212.21	0.07%	11.72	(200.49)
8/31/2016	(200,000.00)	5,910,313.10	1.2677%	205.27	0.07%	11.33	(193.93)
9/1/2016		5,917,004.42	1.2677%	205.51	0.07%	11.35	(194.16)
9/2/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/3/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/4/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/5/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/6/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/7/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/8/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
9/9/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/10/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/11/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/12/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/13/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/14/2016		5,917,004.42	1.3007%	210.86	0.07%	11.35	(199.51)
9/15/2016	(95,000.00)	5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/16/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/17/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/18/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/19/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/20/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/21/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/22/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/23/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/24/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/25/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/26/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/27/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/28/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/29/2016		5,822,004.42	1.3007%	207.47	0.07%	11.17	(196.31)
9/30/2016	(740,000.00)	5,082,004.42	1.3007%	181.10	0.07%	9.75	(171.36)
10/1/2016		5,088,244.31	1.3007%	181.33	0.07%	9.76	(171.57)
10/2/2016		5,088,244.31	1.3007%	181.33	0.07%	9.76	(171.57)
10/3/2016	(250,000.00)	4,838,244.31	1.3007%	172.42	0.07%	9.28	(163.14)
10/4/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/5/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/6/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/7/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/8/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/9/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/10/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/11/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/12/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/13/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/14/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/15/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/16/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/17/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/18/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/19/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/20/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/21/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/22/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/23/2016		4,838,244.31	1.3022%	172.62	0.06%	7.95	(164.66)
10/24/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/25/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/26/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/27/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/28/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/29/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/30/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
10/31/2016		4,838,244.31	1.3022%	172.62	0.07%	9.28	(163.34)
11/1/2016		4,843,612.60	1.3007%	172.61	0.07%	9.29	(163.32)
11/2/2016		4,843,612.60	1.3007%	172.61	0.07%	9.29	(163.32)
11/3/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/4/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/5/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/6/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/7/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/8/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/9/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/10/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/11/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)

Date	Balance Adjustment	Balance	Avista Rate	Avista Daily Interest	Staff Rate	Staff Daily Interest	Adjustment
11/12/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/13/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/14/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/15/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/16/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/17/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/18/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/19/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/20/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/21/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/22/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/23/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/24/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/25/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/26/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/27/2016		4,843,612.60	1.3098%	173.81	0.06%	7.96	(165.85)
11/28/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/29/2016		4,843,612.60	1.3098%	173.81	0.07%	9.29	(164.52)
11/30/2016	(1,000,000.00)	3,843,612.60	1.3098%	137.93	0.07%	7.37	(130.55)
12/1/2016		3,848,788.62	1.3007%	137.16	0.07%	7.38	(129.77)
12/2/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/3/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/4/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/5/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/6/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/7/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/8/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/9/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/10/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/11/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/12/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/13/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/14/2016		3,848,788.62	1.4220%	149.94	0.07%	7.38	(142.56)
12/15/2016	(225,000.00)	3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/16/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/17/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/18/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/19/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/20/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/21/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/22/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/23/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/24/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/25/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/26/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/27/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/28/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/29/2016		3,623,788.62	1.4220%	141.18	0.07%	6.95	(134.23)
12/30/2016	2,300,000.00	5,923,788.62	1.4220%	230.78	0.07%	11.36	(219.42)
12/31/2016	(293,770.48)	5,923,788.62	1.4220%	230.78	0.07%	11.36	(219.42)
2016 Total/Average		**10,722,452**	**1.2578%**	**131,957**		**7,215**	**(124,742)**

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 705

Exhibits in Support
Of Opening Testimony

March 1, 2017

Docket No UG 325

Row Labels	Sum of Current Activity Cost SUM
Asset Recovery	3214843.2
Cabinet	24823.05
Clark Fork	175585.26
Clarkston	74675.48
Davenport	1332.61
Deer Park	22933.85
Dollar	3945.8
Downtown Service	2778968.08
Elect service	495013.18
Elk City	15314.82
Fleet	1318043.94
Generation	123296.91
GPSS	794413.24
Grangeville	23764.65
Hot Stick	28076.31
Investmt Recovery	1510902.81
JC Fence	225710.42
kamiah	15381.36
Kellogg	27747.91
Kettle Falls	113410.32
Lewiston	1186020.34
Long Lake	16632.22
Mission Property Expansion	3679709.61
Nine Mile	413.78
Noxon	224347.38
Othello	44182.64
Post St	504723.72
Pullman	3247.59
Sandpoint	184212.35
Service Building	1783081.64
Spokane Construc	4442332.94
Steamplant	16118.18
Transm	36948.56
Warehouse	6777992.61
(blank)	
Grand Total	**29888146.76**

Jackson Stewart Fence Adj	$112,855

Category	Projectname	Projectnun	Gl Postyy	Service	Jurisdiction	Utility Account	Current Activity Cost	Er
Fleet	Fleet Serv Brk Rm Foreman off	11005115	201101	CD	AA	390100	110.18	7001
Nine Mile	Nine Mile Cntrl Rm Wireless	09905487	201102	CD	AA	391100	413.78	5006
Fleet	Fleet Serv Brk Rm Foreman off	11005115	201102	CD	AA	390100	61.7	7001
Warehouse	Tool Crib Warehouse remodel	11005132	201102	CD	AA	390100	18621	7001
Warehouse	Tool Crib Warehouse remodel	11005132	201103	CD	AA	390100	3505.22	7001
Elect service	MD Elect service infrastruct	09905385	201105	CD	AA	303100	1197.09	5005
Elect service	MD Elect service infrastruct	09905385	201105	CD	AA	391100	304106.04	5005
Elect service	MD Elect service infrastruct	09905385	201106	CD	AA	303100	0.56	5005
Elect service	MD Elect service infrastruct	09905385	201106	CD	AA	391100	5765.72	5005
Elect service	MD Elect service infrastruct	09905385	201107	CD	AA	391100	7281.3	5005
Elect service	MD Elect service infrastruct	09905385	201108	CD	AA	391100	12829.59	5005
Grangeville	Grangeville Network Refresh	09905558	201109	CD	AA	391100	23764.65	5005
Lewiston	Lewiston Network Refresh	09905562	201109	CD	AA	391100	73457.83	5005
Elect service	MD Elect service infrastruct	09905385	201109	CD	AA	391100	35020.04	5005
Service Building	Service Building reroof 2011	11005150	201109	CD	AA	390100	863787.91	7001
Deer Park	Deer Park Network Refresh	09905568	201110	CD	AA	391100	20413.56	5005
Lewiston	Lewiston Network Refresh	09905562	201110	CD	AA	391100	628.9	5005
Elect service	MD Elect service infrastruct	09905385	201110	CD	AA	391100	41890.18	5005
Generation	Gen Prod Windows serv Spok	11005145	201110	CD	AA	390100	120433.66	7001
Service Building	Service Bldg Lower Windows	11005146	201110	CD	AA	390100	126799.4	7001
Service Building	Service Building reroof 2011	11005150	201110	CD	AA	390100	38317.28	7001
Steamplant	Steamplant Suite 221 Buildout	11800004	201110	CD	AA	390200	7569.59	7001
Deer Park	Deer Park Network Refresh	09905568	201111	CD	AA	391100	2520.29	5005
Elect service	MD Elect service infrastruct	09905385	201111	CD	AA	391100	21959.35	5005
Generation	Gen Prod Windows serv Spok	11005145	201111	CD	AA	390100	2679.04	7001
Service Building	Service Building reroof 2011	11005150	201111	CD	AA	390100	111818.47	7001
Kellogg	Kellogg Id Network Refresh	09905594	201112	CD	AA	391100	26017.34	5005
Elect service	MD Elect service infrastruct	09905385	201112	CD	AA	303100	22843.63	5005
Othello	Othello Network Refresh	09905598	201112	CD	AA	391100	18085.54	5005
kamiah	kamiah Office network Refresh	09905616	201112	CD	AA	391100	13399.49	5005
Davenport	Davenport Network Refresh	09905593	201201	CD	AA	391100	927.18	5005
Kellogg	Kellogg Id Network Refresh	09905594	201201	CD	AA	391100	1214.43	5005
Elect service	MD Elect service infrastruct	09905385	201201	CD	AA	303100	-7521.38	5005
Elect service	MD Elect service infrastruct	09905385	201201	CD	AA	391100	13985.78	5005
Othello	Othello Network Refresh	09905598	201201	CD	AA	391100	4796.22	5005
kamiah	kamiah Office network Refresh	09905616	201201	CD	AA	391100	1589.99	5005
Fleet	F12 Fleet Carpet Install	11005167	201201	CD	AA	390100	19057.69	7001
Generation	Gen Prod Windows serv Spok	11005145	201201	CD	AA	390100	184.21	7001
Service Building	Service Building reroof 2011	11005150	201201	CD	AA	390100	-16825.2	7001
Davenport	Davenport Network Refresh	09905593	201202	CD	AA	391100	415.27	5005
Kellogg	Kellogg Id Network Refresh	09905594	201202	CD	AA	391100	484.43	5005
Elect service	MD Elect service infrastruct	09905385	201202	CD	AA	391100	12261.89	5005
Othello	Othello Network Refresh	09905598	201202	CD	AA	391100	695.1	5005
kamiah	kamiah Office network Refresh	09905616	201202	CD	AA	391100	350.3	5005
Fleet	F12 Fleet Carpet Install	11005167	201202	CD	AA	390100	13.95	7001
Service Building	Service Building reroof 2011	11005150	201202	CD	AA	390100	20422.71	7001
Elect service	MD Elect service infrastruct	09905385	201203	CD	AA	303100	187.82	5005
Elect service	MD Elect service infrastruct	09905385	201203	CD	AA	391100	7891.69	5005
Davenport	Davenport Network Refresh	09905593	201204	CD	AA	391100	-9.84	5005
Elect service	MD Elect service infrastruct	09905385	201204	CD	AA	391100	3094.55	5005
Elect service	MD Elect service infrastruct	09905385	201205	CD	AA	391100	525.35	5005
kamiah	kamiah Office network Refresh	09905616	201205	CD	AA	391100	41.58	5005
Steamplant	Hotel Cubes Steamplant	09905683	201205	CD	AA	397000	2381.43	5006
Post St	AFCB12 Post St Workout Rm	11705004	201205	CD	AA	390100	7546.75	7001
Elect service	MD Elect service infrastruct	09905385	201206	CD	AA	391100	2022.24	5005
Service Building	AFCB12 repl carpet serv bldg	11005182	201206	CD	AA	390100	4960.37	7001
Steamplant	Hotel Cubes Steamplant	09905683	201207	CD	AA	397000	1055.23	5006
Kellogg	Kellogg Id Network Refresh	09905594	201208	CD	AA	391100	31.71	5005
Elect service	MD Elect service infrastruct	09905385	201208	CD	AA	303100	3916.3	5005
Steamplant	Hotel Cubes Steamplant	09905683	201208	CD	AA	397000	48.07	5006
Fleet	COF Fleet Water Pipe Repl	11005188	201208	CD	AA	390100	7756.43	7001
Service Building	Service Building reroof 2011	11005150	201208	CD	AA	390100	-8856.78	7001
Elect service	MD Elect service infrastruct	09905385	201209	CD	AA	303100	1916.35	5005
Fleet	COF Fleet Water Pipe Repl	11005188	201209	CD	AA	390100	7756.43	7001
Fleet	COF Fleet Water Pipe Repl	11005188	201209	CD	AA	390100	-7756.43	7001

Category	Projectname	Projectnun	Gl Postyy	Service	Jurisdiction	Utility Account	Current Activity Cost	Er
Post St	Post St Roof Access	11705005	201209	CD	AA	390100	13622.02	7001
Elect service	MD Elect service infrastruct	09905385	201211	CD	AA	303100	601.98	5005
Elect service	MD Elect service infrastruct	09905385	201212	CD	AA	303100	1178.8	5005
Fleet	CNG Fleet Conversion Spokane	11005175	201212	CD	AA	394000	1175160.05	7127
Fleet	CNG Fleet Conversion Spokane	11005175	201301	CD	AA	394000	35105.78	7127
Elect service	MD Elect service infrastruct	09905385	201302	CD	AA	303100	2058.31	5005
Steamplant	Steam Plant add 5 cubes	11800006	201302	CD	AA	397000	5063.86	5006
Fleet	CNG Fleet Conversion Spokane	11005175	201302	CD	AA	394000	3902.71	7127
Warehouse	Construct New Warehouse 2012	11005159	201303	CD	AA	390100	4397931.42	7126
Fleet	CNG Fleet Conversion Spokane	11005175	201303	CD	AA	394000	903.05	7127
Warehouse	Construct New Warehouse 2012	11005159	201304	CD	AA	390100	144241.47	7126
Fleet	CNG Fleet Conversion Spokane	11005175	201304	CD	AA	394000	44.4	7127
Warehouse	Construct New Warehouse 2012	11005159	201305	CD	AA	390100	369526.63	7126
Warehouse	Construct New Warehouse 2012	11005159	201306	CD	AA	390100	397762.6	7126
Warehouse	New Warehouse Techn Infrast	09905662	201306	CD	AA	391100	256266.1	7126
Warehouse	New Warehouse Techn Infrast	09905662	201306	CD	AA	397000	85031.62	7126
JC Fence	Security Fence for J Stewart	11205013	201307	CD	AA	390100	130877.85	5014
Warehouse	Construct New Warehouse 2012	11005159	201307	CD	AA	390100	7325.91	7126
Warehouse	New Warehouse Techn Infrast	09905662	201307	CD	AA	391100	376.7	7126
Warehouse	New Warehouse Techn Infrast	09905662	201307	CD	AA	397000	125	7126
Warehouse	Construct New Warehouse 2012	11005159	201308	CD	AA	390100	2826.49	7126
Warehouse	New Warehouse Techn Infrast	09905662	201308	CD	AA	391100	919.8	7126
Warehouse	New Warehouse Techn Infrast	09905662	201308	CD	AA	397000	305.2	7126
Clarkston	Clarkston Network Refresh	09905604	201309	CD	AA	391100	49782.22	5005
Warehouse	Construct New Warehouse 2012	11005159	201309	CD	AA	390100	23820.83	7126
Warehouse	New Warehouse Techn Infrast	09905662	201309	CD	AA	391100	7746.67	7126
Warehouse	New Warehouse Techn Infrast	09905662	201309	CD	AA	397000	2570.42	7126
Clarkston	Clarkston Network Refresh	09905604	201310	CD	AA	391100	5720.05	5005
Warehouse	Construct New Warehouse 2012	11005159	201310	CD	AA	390100	763.75	7126
Clarkston	Clarkston Network Refresh	09905604	201311	CD	AA	391100	3502.7	5005
Lewiston	Lewiston Remdl & Low Walls	09905785	201311	CD	AA	391000	105379.98	7001
Fleet	FleetFocus Upgrade	09905717	201312	CD	AA	303100	75928	5005
Lewiston	IT Portion of Lewiston Remodel	09905782	201312	CD	AA	397000	31563.72	5006
Lewiston	Lewiston Remdl & Low Walls	09905785	201312	CD	AA	391000	3716.39	7001
Lewiston	Lewiston Remdl & Low Walls	09905785	201401	CD	AA	391000	469.06	7001
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201403	CD	AA	391100	34596.33	5005
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201403	CD	AA	389200	47778.66	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201403	CD	AA	390100	156301.03	7001
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201404	CD	AA	391100	13222.81	5005
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201405	CD	AA	391100	32339.36	5005
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201406	CD	AA	391100	2249.1	5005
Lewiston	Lewiston Call Ctr Cat6 Upgrade	09905787	201406	CD	AA	397000	146254.75	5006
Lewiston	Lewiston Kitchen Cabinet Remdl	16005011	201406	CD	AA	390100	10178.73	7001
Lewiston	Lewiston Call Ctr Cat6 Upgrade	09905787	201407	CD	AA	397000	314.88	5006
Steamplant	Steam Plant add 5 cubes	11800006	201407	CD	AA	397000	5063.86	5006
Steamplant	Steam Plant add 5 cubes	11800006	201407	CD	AA	397000	-5063.86	5006
Post St	Post St Roof Access	11705005	201407	CD	AA	390100	13622.02	7001
Post St	Post St Roof Access	11705005	201407	CD	AA	390100	-13622.02	7001
Elk City	Elk City Office SOHO Deploymnt	09905821	201409	CD	AA	391101	15292.55	5006
Service Building	IT for Service Building	11005192	201409	CD	AA	391100	19868.94	7126
Service Building	IT for Service Building	11005192	201409	CD	AA	397000	606341.81	7126
Transm	Footings for Transmsn Towers	11205020	201409	CD	AA	390100	36948.56	7200
Clarkston	Clarkston Network Refresh	09905604	201410	CD	AA	391100	59004.97	5005
Clarkston	Clarkston Network Refresh	09905604	201410	CD	AA	391100	-59004.97	5005
Fleet	FleetFocus Upgrade	09905717	201410	CD	AA	303100	75928	5005
Fleet	FleetFocus Upgrade	09905717	201410	CD	AA	303100	-75928	5005
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201410	CD	AA	391100	82407.6	5005
Lewiston	Lewiston Ntwrk Swtch Routr Ref	09905801	201410	CD	AA	391100	-82407.6	5005
Elk City	Elk City Office SOHO Deploymnt	09905821	201410	CD	AA	391101	22.27	5006
Dollar	Install Ice Machine_DollarRd	11105030	201410	CD	AA	391000	3945.8	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201410	CD	AA	389200	-47778.66	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201410	CD	AA	389200	204079.69	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201410	CD	AA	389200	-204079.69	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201410	CD	AA	390100	0	7001
Mission Property E›	Purch 1623 E. Nrth Crescent	11005216	201410	CD	AA	390100	-156301.03	7001

Category	Projectname	Projectnun	Gl Postyy	Service	Jurisdiction	Utility Account	Current Activity Cost	Er
Fleet	CNG Fleet Conversion Spokane	11005175	201410	CD	AA	394000	1215115.99	7127
Fleet	CNG Fleet Conversion Spokane	11005175	201410	CD	AA	394000	-1215115.99	7127
Lewiston	Generator Lewiston	16005010	201411	CD	AA	390100	39036.34	7001
Noxon	Noxon Living Facility Network	09905870	201501	CD	AA	391101	45899.99	5006
Noxon	Noxon Living Facility Network	09905870	201501	CD	AA	397000	175132.6	5006
Warehouse	Construct New Warehouse 2012	11005159	201501	CD	AA	390100	5337811.76	7126
Warehouse	Construct New Warehouse 2012	11005159	201501	CD	AA	390100	-5344199.1	7126
Warehouse	Construct New Warehouse 2012	11005159	201501	CD	AA	391000	6387.34	7126
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201502	CD	AA	391101	73950.23	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201502	CD	AA	397000	98831.2	5006
Noxon	Noxon Living Facility Network	09905870	201502	CD	AA	391101	324.22	5006
Noxon	Noxon Living Facility Network	09905870	201502	CD	AA	397000	1237.07	5006
Service Building	HVAC Heating Fan-ServBldg2014	11005234	201502	CD	AA	390100	17607.89	7001
Mission Property E›	Purchase Ross Court Property	09905847	201502	CD	AA	389200	317375.88	7001
Mission Property E›	Purchase Ross Court Property	09905847	201502	CD	AA	389200	382008.66	7001
Sandpoint	Sandpoint Network Refresh	09905601	201503	CD	AA	391101	148748.15	5005
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201503	CD	AA	391101	798.97	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201503	CD	AA	397000	1067.79	5006
Noxon	Noxon Living Facility Network	09905870	201503	CD	AA	391101	267.03	5006
Noxon	Noxon Living Facility Network	09905870	201503	CD	AA	397000	1018.87	5006
Mission Property E›	Purchase Ross Court Property	09905847	201503	CD	AA	389200	3112.45	7001
Mission Property E›	Purchase Ross Court Property	09905847	201503	CD	AA	389200	3746.26	7001
Sandpoint	Sandpoint Network Refresh	09905601	201504	CD	AA	391101	7607.15	5005
Elk City	Elk City Office SOHO Deploymnt	09905821	201504	CD	AA	391101	15314.82	5006
Elk City	Elk City Office SOHO Deploymnt	09905821	201504	CD	AA	391101	-15314.82	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201504	CD	AA	391101	350.93	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201504	CD	AA	397000	469.01	5006
Noxon	Noxon Living Facility Network	09905870	201504	CD	AA	391101	97.1	5006
Noxon	Noxon Living Facility Network	09905870	201504	CD	AA	397000	370.5	5006
Post St	Post St Roof Access	11705005	201504	CD	AA	390100	483554.95	7001
Post St	Post St Roof Access	11705005	201504	CD	AA	390100	-483554.95	7001
Post St	Post St Roof Access	11705005	201504	CD	AA	390100	483554.95	7001
Mission Property E›	Purchase Ross Court Property	09905847	201504	CD	AA	389200	-5328.66	7001
Mission Property E›	Purchase Ross Court Property	09905847	201504	CD	AA	389200	-6413.82	7001
Warehouse	Construct New Warehouse 2012	11005159	201504	CD	AA	391000	6387.34	7126
Warehouse	Construct New Warehouse 2012	11005159	201504	CD	AA	391000	-6387.34	7126
Sandpoint	Sandpoint Network Refresh	09905601	201505	CD	AA	391101	7955.64	5005
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201505	CD	AA	391101	50.13	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201505	CD	AA	397000	67	5006
JC Fence	Jack Stewart Fence	11205021	201505	CD	AA	390100	89971.45	5014
Lewiston	Lewiston Network Improvment	09905675	201505	CD	AA	391101	250855.21	5121
Lewiston	Lewiston Network Improvment	09905675	201505	CD	AA	397000	379418.5	5121
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201505	CD	AA	389200	1121475.35	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201505	CD	AA	389200	1035208.01	7131
Sandpoint	Sandpoint Network Refresh	09905601	201506	CD	AA	391101	5175.43	5005
Elk City	Elk City Office SOHO Deploymnt	09905821	201506	CD	AA	391100	15314.82	5006
Elk City	Elk City Office SOHO Deploymnt	09905821	201506	CD	AA	391101	-15314.82	5006
JC Fence	Jack Stewart Fence	11205021	201506	CD	AA	390100	1666.31	5014
Lewiston	Lewiston Network Improvment	09905675	201506	CD	AA	391101	9915.43	5121
Lewiston	Lewiston Network Improvment	09905675	201506	CD	AA	397000	14997.07	5121
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201506	CD	AA	389200	3467.39	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201506	CD	AA	389200	3200.67	7131
Kellogg	Kellogg Id Network Refresh	09905594	201507	CD	AA	391100	31.71	5005
Kellogg	Kellogg Id Network Refresh	09905594	201507	CD	AA	391100	-31.71	5005
Sandpoint	Sandpoint Network Refresh	09905601	201507	CD	AA	391101	4094.24	5005
Noxon	Noxon Living Facility Network	09905870	201507	CD	AA	391100	224347.38	5006
Noxon	Noxon Living Facility Network	09905870	201507	CD	AA	391101	-46588.34	5006
Noxon	Noxon Living Facility Network	09905870	201507	CD	AA	397000	-177759.04	5006
JC Fence	Jack Stewart Fence	11205021	201507	CD	AA	390100	3194.81	5014
Lewiston	Lewiston Network Improvment	09905675	201507	CD	AA	391101	53.93	5121
Lewiston	Lewiston Network Improvment	09905675	201507	CD	AA	397000	81.56	5121
Lewiston	Lewiston ice & water dispenser	16005012	201507	CD	AA	391000	4147.48	7001
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201507	CD	AA	390100	2814488.61	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201507	CD	AA	389200	5333.47	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201507	CD	AA	389200	4923.22	7131

Category	Projectname	Projectnun	Gl Postyy	Service	Jurisdiction	Utility Account	Current Activity Cost	Er
Sandpoint	Sandpoint Network Refresh	09905601	201508	CD	AA	391101	3092.12	5005
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	315159.66	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	-315159.67	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	-315159.66	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	379341.11	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	-379341.1	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	CD	AA	389200	-379341.11	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	ZZ	AA	389200	315159.66	7001
Mission Property E›	Purchase Ross Court Property	09905847	201508	ZZ	AA	389200	379341.11	7001
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201508	CD	AA	390100	33686.21	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201508	CD	AA	389200	1300.62	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201508	CD	AA	389200	1200.59	7131
Othello	CS Refresh Othello Srvr MR101	09905951	201509	CD	AA	391100	16106.42	5005
Long Lake	CS Refrsh Long Lake Srvr MR070	09905948	201509	CD	AA	391100	16247.76	5005
Sandpoint	Sandpoint Network Refresh	09905601	201509	CD	AA	391101	3200.47	5005
Pullman	IT for Pullman - Data Drops	09905972	201509	CD	AA	391100	3002.13	5006
Noxon	Noxon Living Facility Network	09905870	201509	CD	AA	391100	-177759.02	5006
Noxon	Noxon Living Facility Network	09905870	201509	CD	AA	397000	177759.02	5006
Lewiston	Lewiston Network Improvment	09905675	201509	CD	AA	391101	1728.55	5121
Lewiston	Lewiston Network Improvment	09905675	201509	CD	AA	397000	2614.43	5121
Asset Recovery	IT for Asset Recovery Bldg	11005232	201509	CD	AA	391100	37705.39	7126
Asset Recovery	IT for Asset Recovery Bldg	11005232	201509	CD	AA	397000	87596.3	7126
Warehouse	New Warehouse Techn Infrast	09905662	201509	CD	AA	391000	46029.06	7126
Warehouse	New Warehouse Techn Infrast	09905662	201509	CD	AA	391100	267775.85	7126
Warehouse	New Warehouse Techn Infrast	09905662	201509	CD	AA	391100	-265309.27	7126
Warehouse	New Warehouse Techn Infrast	09905662	201509	CD	AA	397000	39536.6	7126
Warehouse	New Warehouse Techn Infrast	09905662	201509	CD	AA	397000	-88032.24	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201509	CD	AA	390100	6536.28	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201509	CD	AA	389200	4814.29	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201509	CD	AA	389200	4443.96	7131
Othello	CS Refresh Othello Srvr MR101	09905951	201510	CD	AA	391100	355.65	5005
Long Lake	CS Refrsh Long Lake Srvr MR070	09905948	201510	CD	AA	391100	384.46	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201510	CD	AA	391100	88091.91	5005
Sandpoint	Sandpoint Network Refresh	09905601	201510	CD	AA	391101	3784.91	5005
Pullman	IT for Pullman - Data Drops	09905972	201510	CD	AA	391100	245.46	5006
Kettle Falls	Kettle Falls Wireless Exp	09905971	201510	CD	AA	391100	14147.85	5006
Asset Recovery	IT for Asset Recovery Bldg	11005232	201510	CD	AA	391100	586.33	7126
Asset Recovery	IT for Asset Recovery Bldg	11005232	201510	CD	AA	397000	1362.17	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201510	CD	AA	390100	135520.97	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201510	CD	AA	389200	1675.1	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201510	CD	AA	389200	1546.23	7131
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201510	CD	AA	389200	1523625.82	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201510	CD	AA	390100	536838.36	7139
Lewiston	CS Refresh Lewiston Srvr MR261	09905947	201511	CD	AA	391100	14158.44	5005
Othello	CS Refresh Othello Srvr MR101	09905951	201511	CD	AA	391100	209.89	5005
Clarkston	CS Refrsh Clarkston Srvr MR211	09905952	201511	CD	AA	391100	15255.99	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201511	CD	AA	391100	2501.88	5005
Sandpoint	Sandpoint Network Refresh	09905601	201511	CD	AA	391101	554.24	5005
Kettle Falls	Kettle Falls Wireless Exp	09905971	201511	CD	AA	391100	2751.47	5006
Hot Stick	Create Hot Stick Cleaning Room	11005255	201511	CD	AA	390100	17011.65	7001
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201511	CD	AA	390100	8781.89	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201511	CD	AA	389200	201924.08	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201511	CD	AA	389200	186391.48	7131
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201511	CD	AA	389200	2225.54	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201511	CD	AA	390100	784.15	7139
Lewiston	CS Refresh Lewiston Srvr MR261	09905947	201512	CD	AA	391100	850.74	5005
Othello	CS Refresh Othello Srvr MR101	09905951	201512	CD	AA	391100	55.97	5005
Clarkston	CS Refrsh Clarkston Srvr MR211	09905952	201512	CD	AA	391100	416.84	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201512	CD	AA	391100	2772.03	5005
Kettle Falls	Kettle Falls Wireless Exp	09905971	201512	CD	AA	391100	110.92	5006
Hot Stick	Create Hot Stick Cleaning Room	11005255	201512	CD	AA	390100	9876.52	7001
Mission Property E›	Purchase Ross Court Property	09905847	201512	CD	AA	389200	959755.6	7001
Mission Property E›	Purchase Ross Court Property	09905847	201512	CD	AA	389200	379341.11	7001
Mission Property E›	Purchase Ross Court Property	09905847	201512	ZZ	AA	389200	-959755.6	7001
Mission Property E›	Purchase Ross Court Property	09905847	201512	ZZ	AA	389200	-379341.11	7001

Category	Projectname	Projectnun	Gl Postyy	Service	Jurisdiction	Utility Account	Current Activity Cost	Er
Warehouse	Warehouse Yard Expansion 2015	11005242	201512	CD	AA	390100	785560.09	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201512	CD	AA	390100	11101.77	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201512	CD	AA	389200	628.07	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201512	CD	AA	389200	579.74	7131
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201512	CD	AA	389200	952.02	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201512	CD	AA	390100	335.43	7139
Lewiston	CS Refresh Lewiston Srvr MR261	09905947	201601	CD	AA	391100	87.37	5005
Clarkston	CS Refrsh Clarkston Srvr MR211	09905952	201601	CD	AA	391100	(2.32)	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201601	CD	AA	391100	606.84	5005
Sandpoint	Sandpoint Network Refresh	09905601	201601	CD	AA	391100	184,212.35	5005
Sandpoint	Sandpoint Network Refresh	09905601	201601	CD	AA	391101	(184,212.35)	5005
Lewiston	ITFAC - Lewiston Expansion	09906012	201601	CD	AA	391100	1492.09	5006
Lewiston	ITFAC - Lewiston Expansion	09906012	201601	CD	AA	397000	1065.77	5006
Hot Stick	Create Hot Stick Cleaning Room	11005255	201601	CD	AA	390100	1188.14	7001
Warehouse	Warehouse Yard Expansion 2015	11005242	201601	CD	AA	390100	183324.11	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201601	CD	AA	390100	9431.88	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201601	CD	AA	389200	411.51	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201601	CD	AA	389200	379.85	7131
Kettle Falls	Kettle Falls Network Refresh	09905606	201602	CD	AA	391100	181.91	5005
Lewiston	ITFAC - Lewiston Expansion	09906012	201602	CD	AA	391100	115.04	5006
Lewiston	ITFAC - Lewiston Expansion	09906012	201602	CD	AA	397000	82.17	5006
Lewiston	Lewiston Patio Concrete	16005013	201602	CD	AA	390100	10948.38	7001
Warehouse	Warehouse Yard Expansion 2015	11005242	201602	CD	AA	390100	17796.46	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201602	CD	AA	390100	6160.65	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201602	CD	AA	389200	1038.01	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201602	CD	AA	389200	958.16	7131
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201602	CD	AA	389200	1526803.37	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201602	CD	AA	389200	-1526803.38	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201602	CD	AA	390100	537957.95	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201602	CD	AA	390100	-537957.94	7139
Kettle Falls	Kettle Falls Network Refresh	09905606	201603	CD	AA	391100	241.88	5005
Warehouse	Warehouse Yard Expansion 2015	11005242	201603	CD	AA	390100	4.62	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201603	CD	AA	390100	40092.52	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201603	CD	AA	389200	3293.86	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201603	CD	AA	389200	3040.47	7131
Kettle Falls	Kettle Falls Network Refresh	09905606	201604	CD	AA	391100	1,073.57	5005
Service Building	HVAC Heating Fan-ServBldg2014	11005234	201604	CD	AA	390100	-1161.16	7001
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201604	CD	AA	390100	10511.51	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201604	CD	AA	389200	1261.91	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201604	CD	AA	389200	1164.84	7131
Kettle Falls	Kettle Falls Network Refresh	09905606	201605	CD	AA	391100	930.06	5005
Kettle Falls	Kettle Falls Wireless Exp	09905971	201605	CD	AA	391100	17010.24	5006
Kettle Falls	Kettle Falls Wireless Exp	09905971	201605	CD	AA	391100	-17010.24	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201605	CD	AA	391100	75150.27	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201605	CD	AA	391101	-75150.26	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201605	CD	AA	397000	100434.99	5006
Clark Fork	Netwrk at Clark Fork Liv Fac	09905520	201605	CD	AA	397000	-100435	5006
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201605	CD	AA	391100	41653.17	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201605	CD	AA	397000	38448.98	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201605	CD	AA	390100	967899.83	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201605	CD	AA	390100	3760943.06	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201605	CD	AA	391000	395845.16	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201605	CD	AA	390100	3557.31	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201605	CD	AA	389200	-20008.31	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201605	CD	AA	389200	-18469.21	7131
Downtown Service	IT for Downtown Srvc Center	18400004	201605	CD	AA	303100	13694.22	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201605	CD	AA	391100	266230.71	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201605	CD	AA	397000	127843.7	7139
Lewiston	CS Refresh Lewiston Srvr MR261	09905947	201606	CD	AA	391100	15,096.55	5005
Lewiston	CS Refresh Lewiston Srvr MR261	09905947	201606	CD	AA	391100	(15,096.55)	5005
Othello	CS Refresh Othello Srvr MR101	09905951	201606	CD	AA	391100	16,727.93	5005
Othello	CS Refresh Othello Srvr MR101	09905951	201606	CD	AA	391100	(16,727.93)	5005
Clarkston	CS Refrsh Clarkston Srvr MR211	09905952	201606	CD	AA	391100	15,670.51	5005
Clarkston	CS Refrsh Clarkston Srvr MR211	09905952	201606	CD	AA	391100	(15,670.51)	5005
Long Lake	CS Refrsh Long Lake Srvr MR070	09905948	201606	CD	AA	391100	16,632.22	5005

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Long Lake	CS Refrsh Long Lake Srvr MR070	09905948	201606	CD	AA	391100	(16,632.22)	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201606	CD	AA	391100	96,400.08	5005
Kettle Falls	Kettle Falls Network Refresh	09905606	201606	CD	AA	391100	(96,400.08)	5005
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201606	CD	AA	391100	3546.3	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201606	CD	AA	397000	3273.5	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201606	CD	AA	390100	266411.42	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201606	CD	AA	390100	74294.55	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201606	CD	AA	391000	7819.62	7126
Asset Recovery	Waste & Asset Recovery Bldg	11005217	201606	CD	AA	390100	7723.41	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201606	CD	AA	389200	326.88	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201606	CD	AA	389200	301.74	7131
Downtown Service	IT for Downtown Srvc Center	18400004	201606	CD	AA	303100	9555.47	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201606	CD	AA	391100	185769.05	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201606	CD	AA	397000	89206.1	7139
Cabinet	Cabinet Gorge Network Refresh	09905592	201607	CD	AA	391100	24,823.05	5005
Dollar	Install Ice Machine_DollarRd	11105030	201607	CD	AA	391000	3945.8	7001
Dollar	Install Ice Machine_DollarRd	11105030	201607	CD	AA	391000	-3945.8	7001
Lewiston	Lewiston ice & water dispenser	16005012	201607	CD	AA	391000	4147.48	7001
Lewiston	Lewiston ice & water dispenser	16005012	201607	CD	AA	391000	-4147.48	7001
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201607	CD	AA	391100	809.69	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201607	CD	AA	397000	747.4	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201607	CD	AA	390100	7416.69	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201607	CD	AA	390100	27332.8	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201607	CD	AA	391000	2876.83	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201607	CD	AA	389200	587.34	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201607	CD	AA	389200	542.16	7131
Downtown Service	IT for Downtown Srvc Center	18400004	201607	CD	AA	303100	492.74	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201607	CD	AA	391100	9579.18	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201607	CD	AA	397000	4599.91	7139
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201608	CD	AA	391100	857.04	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201608	CD	AA	397000	791.12	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201608	CD	AA	390100	149183.74	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201608	CD	AA	390100	24551.59	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201608	CD	AA	391000	2584.09	7126
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201608	CD	AA	389200	1327529.56	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201608	CD	AA	389200	-1327529.57	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201608	CD	AA	389200	1225411.92	7131
Mission Property E›	Camp Repurp Ph2 Prop Purch	09905880	201608	CD	AA	389200	-1225411.91	7131
Downtown Service	IT for Downtown Srvc Center	18400004	201608	CD	AA	303100	232.71	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201608	CD	AA	391100	4524.28	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201608	CD	AA	397000	2172.56	7139
Hot Stick	Create Hot Stick Cleaning Room	11005255	201609	CD	AA	390100	28076.31	7001
Hot Stick	Create Hot Stick Cleaning Room	11005255	201609	CD	AA	390100	-28076.31	7001
GPSS	GPSS- Restroom Remodel	11005266	201609	CD	AA	390100	104682.28	7001
Service Building	HVAC Heating Fan-ServBldg2014	11005234	201609	CD	AA	390100	16446.73	7001
Service Building	HVAC Heating Fan-ServBldg2014	11005234	201609	CD	AA	390100	-16446.73	7001
Lewiston	Lewiston Patio Concrete	16005013	201609	CD	AA	390100	10948.38	7001
Lewiston	Lewiston Patio Concrete	16005013	201609	CD	AA	390100	-10948.38	7001
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201609	CD	AA	391100	3387.84	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201609	CD	AA	397000	3127.22	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201609	CD	AA	390100	11315.45	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201609	CD	AA	390100	116282.44	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201609	CD	AA	391000	12238.91	7126
Downtown Service	IT for Downtown Srvc Center	18400004	201609	CD	AA	303100	10.28	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201609	CD	AA	391100	199.87	7139
Downtown Service	IT for Downtown Srvc Center	18400004	201609	CD	AA	397000	95.98	7139
Cabinet	Cabinet Gorge Network Refresh	09905592	201610	CD	AA	391100	24,823.05	5005
Cabinet	Cabinet Gorge Network Refresh	09905592	201610	CD	AA	391100	(24,823.05)	5005
Fleet	FleetFocus Upgrade	09905717	201610	CD	AA	303100	(75,928.00)	5005
Fleet	FleetFocus Upgrade	09905717	201610	CD	AA	303100	75,928.00	5005
Elect service	MD Elect service infrastruct	09905385	201610	CD	AA	303100	(16,244.78)	5005
Elect service	MD Elect service infrastruct	09905385	201610	CD	AA	303100	16,244.78	5005
Warehouse	Purch trailer 86003 Warehouse	09905388	201610	CD	AA	392000	-9423.93	7000
Warehouse	Purch trailer 86003 Warehouse	09905388	201610	CD	AA	392000	9423.93	7000
Warehouse	Purch trailer 87004 Warehouse	09905386	201610	CD	AA	392000	-5031.64	7000

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Warehouse	Purch trailer 87004 Warehouse	09905386	201610	CD	AA	392000	5031.64	7000
GPSS	GPSS- Restroom Remodel	11005266	201610	CD	AA	390100	56.93	7001
Lewiston	Chairs for Lewiston call cen	09905026	201610	CD	AA	391000	-16765.85	7003
Lewiston	Chairs for Lewiston call cen	09905026	201610	CD	AA	391000	16765.85	7003
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201610	CD	AA	391100	154.95	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201610	CD	AA	397000	143.03	7126
Service Building	IT for Service Building	11005192	201610	CD	AA	391100	-19868.94	7126
Service Building	IT for Service Building	11005192	201610	CD	AA	391100	19868.94	7126
Investmt Recovery	New Investment Recovery Bldg	11005241	201610	CD	AA	390100	462.06	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201610	CD	AA	390100	8084.01	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201610	CD	AA	391000	850.86	7126
Fleet	CNG Fleet Conversion Spokane	11005175	201610	CD	AA	394000	-1215115.99	7127
Fleet	CNG Fleet Conversion Spokane	11005175	201610	CD	AA	394000	1215115.99	7127
Mission Property Ex	Purch 1623 E. Nrth Crescent	11005216	201611	CD	AA	389200	-204079.69	7001
Mission Property Ex	Purch hse 1622 E North Cresc	11005131	201611	CD	AA	389200	-43586.42	7001
Mission Property Ex	Purchase 1611 E N Crescent	11005207	201611	CD	AA	389200	-376794.01	7001
Mission Property Ex	Purchase Ross Court Property	09905847	201611	CD	AA	389200	694500.77	7001
Mission Property Ex	Purchase Ross Court Property	09905847	201611	CD	AA	389200	-315159.66	7001
Mission Property Ex	Purchase Ross Court Property	09905847	201611	CD	AA	389200	-379341.11	7001
Othello	Othello Lobby Furniture	13305017	201611	CD	AA	391000	3877.85	7003
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201611	CD	AA	391100	426.31	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201611	CD	AA	397000	393.49	7126
GPSS	ITFAC-SpoConst & GPSS Remodel	09905935	201611	CD	AA	391100	239045.47	7126
GPSS	ITFAC-SpoConst & GPSS Remodel	09905935	201611	CD	AA	397000	9470.2	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201611	CD	AA	390100	3866.81	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201611	CD	AA	391000	406.98	7126
Mission Property Ex	Camp Repurp Ph2 Prop Purch	09905880	201611	CD	AA	389200	2552941.48	7131
Mission Property Ex	Camp Repurp Ph2 Prop Purch	09905880	201611	CD	AA	389200	206065.77	7131
Mission Property Ex	Camp Repurp Ph2 Prop Purch	09905880	201611	CD	AA	389200	-1327529.56	7131
Mission Property Ex	Camp Repurp Ph2 Prop Purch	09905880	201611	CD	AA	389200	206065.77	7131
Mission Property Ex	Camp Repurp Ph2 Prop Purch	09905880	201611	CD	AA	389200	-1225411.92	7131
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201611	CD	AA	389200	-404539.37	7139
Downtown Service	Land &Bldg for DT SrvcFacility	18400001	201611	CD	AA	390100	404539.37	7139
JC Fence	Jack Stewart Fence	11205021	201612	CD	AA	390100	94832.57	5014
JC Fence	Jack Stewart Fence	11205021	201612	CD	AA	390100	-94832.57	5014
JC Fence	Security Fence for J Stewart	11205013	201612	CD	AA	390100	130877.85	5014
JC Fence	Security Fence for J Stewart	11205013	201612	CD	AA	390100	-130877.85	5014
GPSS	GPSS- Restroom Remodel	11005266	201612	CD	AA	390100	440964.45	7001
Lewiston	Lewiston Kitchen Cabinet Remdl	16005011	201612	CD	AA	390100	10178.73	7001
Lewiston	Lewiston Kitchen Cabinet Remdl	16005011	201612	CD	AA	390100	-10178.73	7001
Lewiston	Lewiston Remdl & Low Walls	09905785	201612	CD	AA	391000	109565.43	7001
Lewiston	Lewiston Remdl & Low Walls	09905785	201612	CD	AA	391000	-109565.43	7001
Othello	Othello Lobby Furniture	13305017	201612	CD	AA	391000	3877.85	7003
Othello	Othello Lobby Furniture	13305017	201612	CD	AA	391000	-3877.85	7003
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201612	CD	AA	391100	5435.86	7126
Investmt Recovery	IT for Investmt Recovery Bldg	09905977	201612	CD	AA	397000	5017.72	7126
Warehouse	ITFAC Warehouse Yard	09906083	201612	CD	AA	391100	36257.13	7126
Warehouse	ITFAC Warehouse Yard	09906083	201612	CD	AA	397000	35383.37	7126
GPSS	ITFAC-SpoConst & GPSS Remodel	09905935	201612	CD	AA	391100	186.52	7126
GPSS	ITFAC-SpoConst & GPSS Remodel	09905935	201612	CD	AA	397000	7.39	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201612	CD	AA	390100	3940.48	7126
Spokane Construc	Spokane Construc HVAC Renov	11005244	201612	CD	AA	391000	414.75	7126

Total Allocation Plant Adjustment

Line			303000	303100	General	Additions	Total
1	Plant Reallocated to non-Oregon			$ 126,293	$ 29,874,709		$ 30,001,002
2	Oregon Allocated Total	Avista CAP16.2	$ 779,139	$ 14,130,153	$ 19,556,967	$ 5,983,866	$ 40,450,125
3	Total Allocated Plant	Line 2 / Avista CDAA allocator	$ 8,939,181	$ 162,117,405	$ 224,380,071	$ 68,653,806	$ 464,090,463
4	System Common Plant After Reallocation	Line 3 - Line 1	$ 8,939,181	$ 161,991,112	$ 194,505,362	$ 68,653,806	$ 434,089,461
5	Oregon Share at new Allocation Factor	Linr 4 * Staff CDAA Allocator	$ 760,635	$ 13,783,824	$ 16,550,461	$ 5,841,752	$ 36,936,672
6	Allocation Adjustment	Line 5 - Line 2	$ (18,504)	$ (346,329)	$ (3,006,506)	$ (142,113)	$ (3,513,453)
7	Pct Excluded from Common Allocation	Line 1 / Line 2		0.08%	13.31%		
8	Oregon Allocated Depreciation	Avista CAP16.1		$ 1,763,735	$ 1,652,936		$ 3,416,671
9	System Allocated Depreciation	Line 8 / Avista CDAA Allocator		$ 20,235,601	$ 18,964,387		$ 39,199,989
10	Depreciation Allocation Expense Adustment	Line 9 * Staff CDAA Allocator		$ (15,764)	$ (2,524,982)		$ (2,540,746)

This table calculates the Plant allocation adjustment and associated depreciation expense adjustment

Docket No UG 325

Sum of Oregon's Allocation	
Classification	Total
1. Not Included in Base Year	8,270.71
2. Net to Zero	0.00
3. Remove from UG 325	1,606.92
AGA/EEI Accounting for Energy Derivatives Introduction Workshop & Seminar	35.78
Board of Director Meetings	45.58
Center Point Energy	130.73
Critical Infrastructure Protection User Group (CIPUG)	23.90
Energy Insurance Mutual (EIM)	-267.07
FERC	45.27
IBM Application Management Services (AMS)	648.08
Montana Energy Conferece	54.36
Pacific Northwest Utilites Conference Committee (PNUCC)	73.72
Utilities Telecom Council (UTC)	61.38
Western Electric Industry Leaders (WEIL)	41.68
Grand Total	10,771.03

Classification	Total	Removed from Base Allocated Expense
1. Not Included in Base Year	$ 8,270.71	
2. Net to Zero	$ (0.00)	
3. Remove from UG 325	$ 1,606.92	$ 1,606.92
AGA/EEI Accounting for Energy Derivatives Introduction Workshop & Seminar	$ 35.78	$ -
Board of Director Meetings	$ 45.58	$ 45.58
Center Point Energy	$ 130.73	$ 130.73
Critical Infrastructure Protection User Group (CIPUG)	$ 23.90	$ 23.90
Energy Insurance Mutual (EIM)	$ (267.07)	$ -
FERC	$ 45.27	
IBM Application Management Services (AMS)	$ 648.08	$ -
Montana Energy Conferece	$ 54.36	$ 54.36
Pacific Northwest Utilites Conference Committee (PNUCC)	$ 73.72	$ -
Utilities Telecom Council (UTC)	$ 61.38	$ -
Western Electric Industry Leaders (WEIL)	$ 41.68	$ 41.68
Grand Total	$ 10,771.03	$ 1,903.17

Classification	(Multiple Items)
Year	2016

Row Labels	Sum of Oregon's Allocation	Sum of Transaction Amount
CD	5433.787989	62342.68
GD	71.3979856	819.16
Grand Total	**5505.185974**	**63161.84**

This Table sums 2016 Airfair Expense that is allocated or directly assigned to Oregon but which is more appropriately directly assigned to non-Oregon jurisdictions. It includes reallocation of expenses not included in test year. This table is used to calculate Allocation Factors, but is not used to calculate adjustments to test year system allocation amounts.

Docket No UG 325

Ferc Acct	Accounting	Transaction Amount	Classification	Association - 2
921000	2016	7,435.47	IBM Application Management Services (/	IBM Application Management Services (AMS)
921000	2016	1,499.92	Center Point Energy	Center Point Energy
930200	2016	596.10	3. Remove from UG 325	Colstrip
926100	2016	704.20	Utilities Telecom Council (UTC)	Utilities Telecom Council (UTC)
930200	2016	596.10	3. Remove from UG 325	Colstrip
921000	2016	-402.20	1. Not Included in Base Year	Western Electricity Coordinating Council (WECC)
930200	2016	-389.20	1. Not Included in Base Year	Colstrip
921000	2016	467.20	3. Remove from UG 325	EEI
930200	2016	215.20	3. Remove from UG 325	Pacific Northwest Utilites Conference Committee (PNUCC)
921000	2016	617.70	2. Net to Zero	EEI
921000	2016	600.20	Energy Insurance Mutual (EIM)	Energy Insurance Mutual (EIM)
921000	2016	-295.50	1. Not Included in Base Year	
813000	2016	-267.20	1. Not Included in Base Year	WUTC - IRP
930200	2016	125.00	3. Remove from UG 325	Board of Director Meetings
930200	2016	97.00	3. Remove from UG 325	Bonneville Power Administration (BPA)
926100	2016	25.00	1. Not Included in Base Year	
926100	2016	25.00	1. Not Included in Base Year	
921000	2016	25.00	1. Not Included in Base Year	
921000	2016	25.00	1. Not Included in Base Year	
921000	2016	648.20	3. Remove from UG 325	EEI
921000	2016	563.70	Montana Energy Conferece	Montana Energy Conferece
921000	2016	64.40	1. Not Included in Base Year	
930200	2016	80.00	1. Not Included in Base Year	
930200	2016	478.20	2. Net to Zero	Weil Meeting
930200	2016	130.10	1. Not Included in Base Year	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	133.10	1. Not Included in Base Year	Colstrip
930200	2016	478.20	Western Electric Industry Leaders (WEIL	Western Electric Industry Leaders (WEIL)
921000	2016	466.20	3. Remove from UG 325	Governors Safety Electric Panel Meeting
921000	2016	156.20	1. Not Included in Base Year	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	173.10	1. Not Included in Base Year	Colstrip
921000	2016	451.20	3. Remove from UG 325	EEI
930200	2016	182.20	1. Not Included in Base Year	
921000	2016	466.20	2. Net to Zero	Governors Safety Electric Panel Meeting
921000	2016	30.00	3. Remove from UG 325	EEI
921000	2016	334.70	3. Remove from UG 325	Colstrip
930200	2016	218.20	1. Not Included in Base Year	Pacific Northwest Utilites Conference Committee (PNUCC)
921000	2016	832.20	3. Remove from UG 325	Electric Vehicle Infrastructure
930200	2016	235.20	1. Not Included in Base Year	
921000	2016	617.70	3. Remove from UG 325	EEI
921000	2016	250.20	1. Not Included in Base Year	
930200	2016	260.20	1. Not Included in Base Year	Pacific Northwest Utilites Conference Committee (PNUCC)
813000	2016	267.20	1. Not Included in Base Year	WUTC - IRP
813000	2016	267.20	1. Not Included in Base Year	WUTC - IRP
921000	2016	295.50	1. Not Included in Base Year	
926100	2016	312.20	1. Not Included in Base Year	EEI

926100	2016	316.20	1. Not Included in Base Year	
926100	2016	328.20	1. Not Included in Base Year	
930200	2016	380.20	2. Net to Zero	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	380.20	Pacific Northwest Utilites Conference Co	Pacific Northwest Utilites Conference Committee (PNUCC)
921000	2016	176.20	3. Remove from UG 325	Bonneville Power Administration (BPA)
930200	2016	633.20	3. Remove from UG 325	Colstrip
926100	2016	340.20	1. Not Included in Base Year	EEI
930200	2016	583.10	3. Remove from UG 325	Colstrip
930200	2016	342.20	1. Not Included in Base Year	Colstrip
921000	2016	342.20	1. Not Included in Base Year	
930200	2016	354.20	1. Not Included in Base Year	Pacific Northwest Utilites Conference Committee (PNUCC)
921000	2016	334.70	2. Net to Zero	Colstrip
930200	2016	442.20	3. Remove from UG 325	Bonneville Power Administration (BPA)
930200	2016	332.90	Board of Director Meetings	Board of Director Meetings
930200	2016	389.20	1. Not Included in Base Year	Colstrip
930200	2016	389.20	1. Not Included in Base Year	Colstrip
926100	2016	402.20	1. Not Included in Base Year	EEI
921000	2016	402.20	1. Not Included in Base Year	Western Electricity Coordinating Council (WECC)
921000	2016	402.20	1. Not Included in Base Year	Western Electricity Coordinating Council (WECC)
930200	2016	436.20	3. Remove from UG 325	Columbia Grid Meeting
928000	2016	274.20	Critical Infrastructure Protection User Gr	Critical Infrastructure Protection User Group (CIPUG)
930200	2016	430.70	3. Remove from UG 325	Colstrip
930200	2016	244.50	Pacific Northwest Utilites Conference Co	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	361.20	3. Remove from UG 325	Colstrip
930200	2016	221.10	Pacific Northwest Utilites Conference Co	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	342.20	3. Remove from UG 325	Transmission Planning Group Meeting
930200	2016	451.24	1. Not Included in Base Year	
930200	2016	336.20	3. Remove from UG 325	Bonneville Power Administration (BPA)
930200	2016	276.20	3. Remove from UG 325	Columbia Grid Meeting
930200	2016	256.20	3. Remove from UG 325	Columbia Grid Meeting
930200	2016	538.44	1. Not Included in Base Year	EEI
930200	2016	63.00	2. Net to Zero	O Power
930200	2016	546.95	1. Not Included in Base Year	EEI
813000	2016	551.96	1. Not Included in Base Year	
921000	2016	30.00	Montana Energy Conferece	
921000	2016	30.00	Montana Energy Conferece	
930200	2016	242.10	3. Remove from UG 325	Colstrip
930200	2016	-63.00	2. Net to Zero	O Power
921000	2016	615.20	1. Not Included in Base Year	EEI
921000	2016	-334.70	2. Net to Zero	Colstrip
930200	2016	-380.20	2. Net to Zero	Pacific Northwest Utilites Conference Committee (PNUCC)
930200	2016	636.20	1. Not Included in Base Year	Colstrip
921000	2016	-466.20	2. Net to Zero	Governors Safety Electric Panel Meeting
930200	2016	-478.20	2. Net to Zero	Weil Meeting
930200	2016	790.20	1. Not Included in Base Year	Colstrip
921000	2016	-617.70	2. Net to Zero	EEI
930200	2016	1,055.00	1. Not Included in Base Year	
930200	2016	-1,673.70	Energy Insurance Mutual (EIM)	Energy Insurance Mutual (EIM)

107000	2016	38,996.13	1. Not Included in Base Year	

Sum of Transaction Amount	Column Labels			
Row Labels	**CDAA**	**GDAA**	**GDOR**	**Grand Total**
2014	**233250.3**	**55636.4**	**70786.64**	**359673.34**
Ambiguous	141693.06	14619.76	60196.44	216509.26
Unambiguous	91557.24	41016.64	10590.2	143164.08
2015	**190649.25**	**45546.78**	**59367.41**	**295563.44**
Ambiguous	106487.37	20804.84	39999.59	167291.8
Unambiguous	84161.88	24741.94	19367.82	128271.64
2016	**300614.09**	**36922.43**	**70982.96**	**408519.48**
Ambiguous	149411.88	21375.61	43599.2	214386.69
Unambiguous	151202.21	15546.82	27383.76	194132.79
Grand Total	**724513.64**	**138105.61**	**201137.01**	**1063756.26**

2016	**300614.09**	**36922.43**	**70982.96**	**408519.48**
Ambiguous	149411.88	21375.61	43599.2	214386.69
Unambiguous	151202.21	15546.82	27383.76	194132.79
Directly Assigne Non-Oregon	$ 62,343	$ 819	0	
Percent of Unambiguous Direct	41%	5%	0%	
Direct Assign Ambiguous Non-Oregon	$ 61,604.5	$ 1,126.3		
Total Direct Assignment Adj	$ 123,947.2	$ 1,945.4		$ 125,892.62

Many flight descriptions are ambiguous. This table calculates the percent of unabiguous flights that were reallocated and applies the same percentage to flights with ambiguous descriptions. Two examples of ambiguoud descriptions are "Airfare, Alaska blahblah, Phoenix" and "AIR". Source data is voluminous and is not printed.

Row Labels	Sum of System	Sum of Gas South Amt SUM
CD	712229.3483	62077.91
GD	26223.9676	7963.17
Grand Total	**738453.3159**	**70041.08**

	CD	GD
Sum of System Cost	712229.3483	26223.9676
Air Travel Expense	123947.1832	1945.438216
Non Labor O&M Allocation Adj	836176.5315	28169.40581
Total Non-Oregon non-labor O&M	$108,253,171	$15,196,457
Percent increase in directly assigned Non-Oregon O&M	0.8%	0.2%
Total Non-Oregon Labor O&M	$80,771,271	$12,729,523
Labor O&M Allocatio Adj	$623,898.96	$23,596.49

This table applies the same O&M percentage adjustment to Labor O&M as that calculated for non-labor O&M. A percentage adjustment is necessary because labor allocations are self-recorded by Avista employees and there is no clear audit mechanism for Staff to make corrections. The data underlying the Non Labor O&M expense reallocation is voluminous and was not printed.

Assets
Avista Classification of unambiguious air travel transactions

[redacted]

Total		$360,562,552
A&G CDAA Expense		68867833.5
Total CDAA Expense		122676952.2
A&G share of CDAA		0.561375485
Weighted Assets	$	202,410,977.42

This table calculates Non-Utility assets for incorporation into the Staff Allocation Factor.

Staff Allocation Factor

Four Factor Allocation for Electric & All Gas
For the Twelve Months Ended December 31, 2015Including Staff Reassignment of Common Expenses and Plant

	Total	Electric	Gas North	Oregon
Direct Non-Labor				
Avista Total	$114,544,169	$92,286,479	$15,966,692	$6,290,998
Staff Adjustment	$623,899	$531,878	$92,021	
Staff Total	$115,168,068	$92,818,356.62	$16,058,713.35	$6,290,998
Avista Percentage	100.000%	80.569%	13.939%	5.492%
	100.001%	80.595%	13.944%	5.462%
Direct Labor				
Avista Total	$87,619,611	$64,757,717	$16,013,554	$6,848,340
Adjustment	$2,887,916	$500,206	$123,693	
Staff Total	90,507,527.49	65,257,922.98	16,137,246.99	6,848,340.00
Avista Percentage	100.000%	73.908%	18.276%	7.816%
	97.499%	72.102%	17.830%	7.567%
Year End Customers at 12/31/15				
Total	709,694	374,962	235,378	99,354
Avista Percentage	100.000%	52.834%	33.166%	14.000%
Net Direct Plant (Ending Balance at 12/31/15)				
Amount	$2,961,417,554	$2,309,776,654	$427,886,508	$223,754,392
Adjustments	$232,299,124	$29,888,147		
Staff Total	$3,193,716,678	2,339,664,800.76	427,886,508.00	223,754,392.00
Percentage	100.000%	77.995%	14.449%	7.556%
	93.661%	73.257%	13.398%	7.006%
Four Factor				
Total	400.000%	285.306%	79.830%	34.864%
	400.000%	278.762%	78.333%	34.035%
Avista Factor	100.000%	71.326%	19.958%	8.716%
Staff Factor	**97.783%**	**69.691%**	**19.583%**	**8.509%**

(1) Excludes Resource Costs: Electric - 501, 547, 555, 557, 565 & Gas 804, 805, 808, 811

	CDAA	GDAA
Plant	$ 30,001,002	$ -
Labor	$ 623,899	$ 23,596
Airfair	$ 123,947	$ 1,945
Non-air Non-labor O&M	$ 712,229	$ 28,169
Non-Labor O&M Total	$ 836,177	$ 30,115
Depreciation Exp	$ 2,540,746	

This table summarizes the adjustments made to base year common expenses.

Avista Classification of unambiguious air travel transactions

Ferc	Svc	Jur	Desc	Base Year Total	Allocation Factor 2015	Allocation Factor 2016	Allocated
403000	CD	AA	DEPRECIATION EXPENSE	(1,839,904)	8.702%	8.716%	(160,108)
403000	CD	AA	DEPRECIATION EXPENSE	19,837,481	8.702%	8.716%	1,727,575
403000	GD	AA	DEPRECIATION EXPENSE	270,001	30.918%	30.366%	82,717
404000	CD	AA	AMORT OF LIMITED TERM PLANT	17,817,949	8.702%	8.716%	1,551,905
404000	CD	AA	AMORT OF LIMITED TERM PLANT	1,839,904	8.702%	8.716%	160,108
404000	GD	AA	AMORT OF LIMITED TERM PLANT	344,533	30.918%	30.366%	105,631
409000	CD	AA	FEDERAL INCOME TAXES	(3,732,489)	8.702%	8.716%	(324,801)
410100	CD	AA	DFIT EXPENSE DR	4,770,385	8.702%	8.716%	414,571
411100	CD	AA	DFIT EXPENSE CR	2,066,022	8.702%	8.716%	179,760
813000	GD	AA	OTHER EXPENSE	1,899,427	30.918%	30.366%	581,415
870000	GD	AA	OPER SUPV/ENG	1,586,634	30.918%	30.366%	485,912
874000	GD	AA	DIST EXPENSES OPER-MAINS&SVCS	944,248	30.918%	30.366%	289,135
877000	GD	AA	DIST EXP OPER-MEA & REG STAT-C	10,316	30.918%	30.366%	3,133
878000	GD	AA	DIST EXP OPER-MTR & HOUSE REG	107,596	30.918%	30.366%	32,983
879000	GD	AA	DIST EXP OPER-CUST INSTALL EXP	174,934	30.918%	30.366%	53,608
880000	GD	AA	DIST EXP OPER-OTHER EXPENSES	697,801	30.918%	30.366%	213,480
881000	GD	AA	DISTRIBTION RENTS	57,176	30.918%	30.366%	17,457
901000	CD	AA	SUPERVISION	638,304	14.029%	14.000%	89,447
903000	CD	AA	CUST ACCOUNTS EXP-RECORDS & CO	14,462,285	14.029%	14.000%	2,026,682
904000	CD	AA	UNCOLLECT ACCTS	5,874,998	14.029%	14.000%	823,333
905000	CD	AA	MISC CUST AC EX	571,184	14.029%	14.000%	80,058
910000	CD	AA	CUST SVC & INFO EXP-MISC	331,679	14.029%	14.000%	46,473
920000	CD	AA	ADMIN & GEN SALARIES	41,451,094	8.702%	8.716%	3,609,660
920000	GD	AA	ADMIN & GEN SALARIES	342,858	30.918%	30.366%	104,846
921000	CD	AA	OFFICE SUPPLIES & EXPENSES	5,654,158	8.702%	8.716%	492,430
921000	GD	AA	OFFICE SUPPLIES & EXPENSES	1,160	30.918%	30.366%	357
923000	CD	AA	OUTSIDE SERVICES EMPLOYED	10,836,595	8.702%	8.716%	943,661
923000	GD	AA	OUTSIDE SERVICES EMPLOYED	4,522	30.918%	30.366%	1,398
924000	CD	AA	PROPERTY INSURANCE	1,544,019	8.702%	8.716%	134,464
924000	GD	AA	PROPERTY INSURANCE	11,271	30.918%	30.366%	3,422
925100	CD	AA	INJURIES & DAMAGES NON PB	4,189,880	8.702%	8.716%	364,891
926100	CD	AA	EMPLOYEE PENSIONS & BENEFITS N	1,206,229	8.702%	8.716%	105,075
926100	GD	AA	EMPLOYEE PENSIONS & BENEFITS N	116,288	30.918%	30.366%	35,740
928000	CD	AA	REGULATORY COMMISSION EXPENSES	1,277,400	8.702%	8.716%	111,257
928000	GD	AA	REGULATORY COMMISSION EXPENSES	1,437	30.918%	30.366%	440
930100	CD	AA	GENERAL ADVERTISING EXPENSE	3,084	8.702%	8.716%	268
930200	CD	AA	MISC GENERAL EXPENSE	3,543,303	8.702%	8.716%	308,648
930200	GD	AA	MISC GENERAL EXPENSE	534,405	30.918%	30.366%	163,040
931000	CD	AA	MISC GENERAL-RENTS	1,155,101	8.702%	8.716%	100,598
935000	CD	AA	MAINT OF STRUCTURE & IMPROVEME	11,100,580	8.702%	8.716%	966,772
	GD	**AA**		**7,104,607**			**2,174,714**
	CD	**AA**		**126,601,664**			**12,185,262**
	Dep			**17,997,577**			**1,567,467**
	Total Allocated			**151,703,848**			**15,927,442**

Docket No UG 325

Allocation Factor 2016	Allocated	Allocation Factor 2016	Base Year Adj	Allocated	Staff Allocation Adjustment	Allocation Factor Adjustment ('000s)
8.716%	(160,366)	8.509%		(156,557)	3,809	4
8.716%	1,729,035	8.509%	(2,531,207)	1,472,591	(256,444)	(256)
30.366%	81,988	30.366%		81,988	-	-
8.716%	1,553,012	8.509%		1,516,129	(36,883)	(37)
8.716%	160,366	8.509%		156,557	(3,809)	(4)
30.366%	104,621	30.366%		104,621	-	-
8.716%	(325,324)	8.509%		(317,597)	7,726	8
8.716%	415,787	8.509%		405,912	(9,875)	(10)
8.716%	180,075	8.509%		175,798	(4,277)	(4)
30.366%	576,780	30.366%		576,780	-	-
30.366%	481,797	30.366%		481,797	-	-
30.366%	286,730	30.366%		286,730	-	-
30.366%	3,133	30.366%		3,133	-	-
30.366%	32,673	30.366%		32,673	-	-
30.366%	53,121	30.366%		53,121	-	-
30.366%	211,894	30.366%		211,894	-	-
30.366%	17,362	30.366%		17,362	-	-
14%	89,363	14.000%		89,363	-	-
14%	2,024,720	14.000%		2,024,720	-	-
14%	822,500	14.000%		822,500	-	-
14%	79,966	14.000%		79,966	-	-
14%	46,435	14.000%		46,435	-	-
8.716%	3,612,877	8.509%	(623,899)	3,473,986	(138,891)	(139)
30.366%	104,112	30.366%	(23,596)	96,947	(7,165)	(7)
8.716%	492,816	8.509%		481,112	(11,704)	(12)
30.366%	352	30.366%		352	-	-
8.716%	944,518	8.509%		922,086	(22,432)	(22)
30.366%	1,373	30.366%		1,373	-	-
8.716%	134,577	8.509%		131,381	(3,196)	(3)
30.366%	3,422	30.366%		3,422	-	-
8.716%	365,190	8.509%		356,517	(8,673)	(9)
8.716%	105,135	8.509%		102,638	(2,497)	(2)
30.366%	35,312	30.366%		35,312	-	-
8.716%	111,338	8.509%		108,694	(2,644)	(3)
30.366%	436	30.366%		436	-	-
8.716%	269	8.509%		262	(6)	(0)
8.716%	308,834	8.509%	(836,177)	230,349	(78,485)	(78)
30.366%	162,277	30.366%	(30,115)	153,133	(9,145)	(9)
8.716%	100,679	8.509%		98,288	(2,391)	(2)
8.716%	967,527	8.509%		944,548	(22,978)	(23)
	2,157,385		**(53,711)**	**2,141,075**	**(16,310)**	**(16)**
	12,190,658		**(1,460,075)**	**11,849,643**	**(341,015)**	**(341)**
	1,568,669		**(2,531,207)**	**1,316,033**	**(252,635)**	**(253)**
	15,916,712		**(4,044,994)**	**15,306,752**	**(609,960)**	**(610)**

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 706

Exhibits in Support Of Opening Testimony

March 1, 2017

Support Exhibit for Staff Plant Adjustment

Docket No UG 325

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	17,917,613	17,917,613			17,917,613
Period					
1	17,917,613	17,917,613	17,917,613	1,279,830	671,910
2	0	0	16,850,555	3,839,489	1,293,472
3	0	0	14,734,061	6,399,148	1,196,538
4	0	0	12,651,495	8,958,807	1,106,950
5	0	0	10,600,284	11,518,466	1,023,992
6			8,578,108	14,078,125	947,125
7			6,582,836	16,637,784	876,171
8			4,612,398	17,917,613	810,414
9			3,496,864	17,917,613	799,305
10			3,217,107	17,917,613	799,305
11			2,937,351	17,917,613	799,305
12			2,657,594	17,917,613	799,305
13			2,377,837	17,917,613	799,305
14			2,098,081	17,917,613	799,305
15			1,818,324	17,917,613	799,305
16			1,538,568	17,917,613	799,305
17			1,258,811	17,917,613	799,305
18			979,054	17,917,613	799,305
19			699,298	17,917,613	799,305
20			419,541	17,917,613	799,305
21			139,784	17,917,613	399,384
22			0	17,917,613	0
23			0	17,917,613	0
24			0	17,917,613	0
25			0	17,917,613	0
26			0	17,917,613	0
27			0	17,917,613	0
28			0	17,917,613	0
29			0	17,917,613	0
30			0	17,917,613	0
31			0	17,917,613	0
32			0	17,917,613	0
33			0	17,917,613	0
34			0	17,917,613	0
35			0	17,917,613	0
36			0	17,917,613	0
37			0	17,917,613	0
38			0	17,917,613	0
39			0	17,917,613	0
40			0	17,917,613	0
41			0	17,917,613	0
42			0	17,917,613	0
43			0	17,917,613	
44			0	17,917,613	

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
17,917,613	0		17,917,613		2,640,194
1,279,830	(212,772)	16,850,555	1,279,830	17,384,084	232,947
2,559,659	(443,165)	14,734,061	2,559,659	15,792,308	423,234
2,559,659	(477,092)	12,651,495	2,559,659	13,692,778	366,966
2,559,659	(508,448)	10,600,284	2,559,659	11,625,889	311,574
2,559,659	(537,484)	8,578,108	2,559,659	9,589,196	256,990
2,559,659	(564,387)	6,582,836	2,559,659	7,580,472	203,157
2,559,659	(589,221)	4,612,398	2,559,659	5,597,617	150,016
1,279,830	(164,296)	3,496,864	1,279,830	4,054,631	108,664
0	279,757	3,217,107	0	3,356,986	89,967
0	279,757	2,937,351	0	3,077,229	82,470
0	279,757	2,657,594	0	2,797,472	74,972
0	279,757	2,377,837	0	2,517,716	67,475
0	279,757	2,098,081	0	2,237,959	59,977
0	279,757	1,818,324	0	1,958,202	52,480
0	279,757	1,538,568	0	1,678,446	44,982
0	279,757	1,258,811	0	1,398,689	37,485
0	279,757	979,054	0	1,118,933	29,987
0	279,757	699,298	0	839,176	22,490
0	279,757	419,541	0	559,419	14,992
0	279,757	139,784	0	279,663	7,495
0	139,784	0	0	69,892	1,873
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

Docket No UG 325

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
4,541,528	0	1,209,439	0	(102,655)	(7,582,607)
400,703	0	268,764	0	(8,402)	(620,599)
728,025	0	249,567	0	(15,244)	(1,126,025)
631,237	0	211,172	0	(14,798)	(1,093,050)
535,953	0	172,777	0	(14,356)	(1,060,379)
442,062	0	134,382	0	(13,917)	(1,027,990)
349,460	0	95,987	0	(13,482)	(995,862)
258,050	0	57,592	0	(13,051)	(963,976)
186,918	0	19,197	0	(6,639)	(490,368)
154,757	0	0	0	(424)	(31,340)
141,860	0	0	0	(389)	(28,728)
128,963	0	0	0	(354)	(26,117)
116,067	0	0	0	(318)	(23,505)
103,170	0	0	0	(283)	(20,893)
90,273	0	0	0	(247)	(18,281)
77,376	0	0	0	(212)	(15,670)
64,480	0	0	0	(177)	(13,058)
51,583	0	0	0	(141)	(10,446)
38,686	0	0	0	(106)	(7,834)
25,789	0	0	0	(71)	(5,223)
12,892	0	0	0	(35)	(2,611)
3,222	0	0	0	(9)	(652)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)

Docket No UG 325

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)				
		pv of contribution to fixed costs			-4,843,232
		Interest			7.29%
		Term			50
		levelized cont. to fixed costs			-363,860
18,623,513	14,018,488				
		REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS
1,553,243	1,460,474	1,553,243	947,875	(605,368)	(605,368)
2,819,215	2,492,510	2,819,215	1,895,751	(923,465)	(1,528,833)
2,661,187	2,212,271	2,661,187	1,895,751	(765,436)	(2,294,269)
2,505,229	1,958,235	2,505,229	1,895,751	(609,478)	(2,903,747)
2,351,186	1,728,060	2,351,186	1,895,751	(455,436)	(3,359,182)
2,198,918	1,519,620	2,198,918	1,895,751	(303,168)	(3,662,350)
2,048,291	1,330,982	2,048,291	947,875	(1,100,416)	(4,762,766)
1,097,603	670,625	1,097,603	0	(1,097,603)	(5,860,368)
212,960	122,345	212,960	0	(212,960)	(6,073,328)
195,213	105,451	195,213	0	(195,213)	(6,268,541)
177,466	90,139	177,466	0	(177,466)	(6,446,007)
159,718	76,279	159,718	0	(159,718)	(6,605,725)
141,971	63,754	141,971	0	(141,971)	(6,747,696)
124,224	52,453	124,224	0	(124,224)	(6,871,921)
106,477	42,274	106,477	0	(106,477)	(6,978,398)
88,730	33,124	88,730	0	(88,730)	(7,067,127)
70,983	24,916	70,983	0	(70,983)	(7,138,110)
53,236	17,570	53,236	0	(53,236)	(7,191,346)
35,488	11,013	35,488	0	(35,488)	(7,226,834)
17,741	5,177	17,741	0	(17,741)	(7,244,575)
4,434	1,217	4,434	0	(4,434)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)
0	0	0	0	(0)	(7,249,009)

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	5,056,496	11,487,055			11,487,055
Period					
	(6,430,558)				
1	11,487,055	11,487,055	11,487,055	820,504	430,765
2	0	0	10,802,960	2,461,512	829,250
3	0	0	9,446,067	4,102,520	767,106
4	0	0	8,110,925	5,743,527	709,670
5	0	0	6,795,885	7,384,535	656,485
6			5,499,460	9,025,543	607,206
7			4,220,283	10,666,551	561,717
8			2,957,027	11,487,055	519,559
9			2,241,854	11,487,055	512,438
10			2,062,501	11,487,055	512,438
11			1,883,148	11,487,055	512,438
12			1,703,794	11,487,055	512,438
13			1,524,441	11,487,055	512,438
14			1,345,088	11,487,055	512,438
15			1,165,735	11,487,055	512,438
16			986,382	11,487,055	512,438
17			807,029	11,487,055	512,438
18			627,676	11,487,055	512,438
19			448,323	11,487,055	512,438
20			268,969	11,487,055	512,438
21			89,616	11,487,055	256,046
22			0	11,487,055	0
23			0	11,487,055	0
24			0	11,487,055	0
25			0	11,487,055	0
26			0	11,487,055	0
27			0	11,487,055	0
28			0	11,487,055	0
29			0	11,487,055	0
30			0	11,487,055	0
31			0	11,487,055	0
32			0	11,487,055	0
33			0	11,487,055	0
34			0	11,487,055	0
35			0	11,487,055	0
36			0	11,487,055	0
37			0	11,487,055	0
38			0	11,487,055	0
39			0	11,487,055	0
40			0	11,487,055	0
41			0	11,487,055	0
42			0	11,487,055	0
43			0	11,487,055	
44			0	11,487,055	

pv of contribution to fixed costs	0
Interest	7.29%
Term	50
levelized cont. to fixed costs	0

REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS
995,791	947,875	(47,915)	(47,915)
1,807,410	1,895,751	88,340	40,425
1,706,098	1,895,751	189,653	230,078
1,606,112	1,895,751	289,638	519,716
1,507,355	1,895,751	388,396	908,112
1,409,735	1,895,751	486,015	1,394,127
1,313,168	947,875	(365,292)	1,028,835
703,677	0	(703,677)	325,157
136,529	0	(136,529)	188,628
125,152	0	(125,152)	63,476
113,774	0	(113,774)	(50,298)
102,396	0	(102,396)	(152,694)
91,018	0	(91,018)	(243,713)
79,641	0	(79,641)	(323,353)
68,263	0	(68,263)	(391,616)
56,885	0	(56,885)	(448,501)
45,507	0	(45,507)	(494,008)
34,130	0	(34,130)	(528,138)
22,752	0	(22,752)	(550,890)
11,374	0	(11,374)	(562,264)
2,843	0	(2,843)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)
0	0	(0)	(565,106)

NPV calculations for ER 5144 Under Avista Assumptions
Including Staff Adjustment

Docket No UG 325

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	870,140	1,562,518			1,562,518
Period					
Staff Adj	(692,378)				
1	(110,826)	(110,826)	(110,826)	(7,916)	(4,156)
2	560,456	560,456	456,231	16,284	13,017
3	712,887	712,887	1,148,832	131,438	59,792
4	400,000	400,000	1,453,055	326,083	97,044
5	0	0	1,292,570	549,300	104,774
6			1,110,808	772,517	96,926
7			931,793	995,734	89,660
8			755,321	1,226,866	82,937
9			576,057	1,425,883	76,410
10			419,953	1,533,946	71,862
11			324,560	1,562,518	69,952
12			281,506	1,562,518	69,704
13			257,109	1,562,518	69,704
14			232,713	1,562,518	69,704
15			208,316	1,562,518	69,704
16			183,920	1,562,518	69,704
17			159,524	1,562,518	69,704
18			135,127	1,562,518	69,704
19			110,731	1,562,518	69,704
20			86,335	1,562,518	69,704
21			61,938	1,562,518	72,178
22			36,676	1,562,518	62,138
23			14,928	1,562,518	33,734
24			3,121	1,562,518	8,916
25			0	1,562,518	0
26			0	1,562,518	0
27			0	1,562,518	0
28			0	1,562,518	0
29			0	1,562,518	0
30			0	1,562,518	0
31			0	1,562,518	0
32			0	1,562,518	0
33			0	1,562,518	0
34			0	1,562,518	0
35			0	1,562,518	0
36			0	1,562,518	0
37			0	1,562,518	0
38			0	1,562,518	0
39			0	1,562,518	0
40			0	1,562,518	0
41			0	1,562,518	0
42			0	1,562,518	0
43			0	1,562,518	
44			0	1,562,518	

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
1,562,518	(0)		1,562,518		251,995
(7,916)	1,316	(104,226)	(7,916)	(107,526)	(1,441)
24,200	(3,914)	435,945	24,200	446,088	11,955
115,153	(19,377)	1,053,055	115,153	1,100,943	29,505
194,645	(34,161)	1,292,570	194,645	1,372,813	36,791
223,217	(41,455)	1,110,808	223,217	1,201,689	32,205
223,217	(44,202)	931,793	223,217	1,021,301	27,371
223,217	(46,745)	755,321	223,217	843,557	22,607
231,133	(51,869)	576,057	231,133	665,689	17,840
199,016	(42,912)	419,953	199,016	498,005	13,347
108,063	(12,671)	324,560	108,063	372,257	9,976
28,571	14,483	281,506	28,571	303,033	8,121
0	24,396	257,109	0	269,307	7,217
0	24,396	232,713	0	244,911	6,564
0	24,396	208,316	0	220,515	5,910
0	24,396	183,920	0	196,118	5,256
0	24,396	159,524	0	171,722	4,602
0	24,396	135,127	0	147,325	3,948
0	24,396	110,731	0	122,929	3,295
0	24,396	86,335	0	98,533	2,641
0	24,396	61,938	0	74,136	1,987
0	25,262	36,676	0	49,307	1,321
0	21,748	14,928	0	25,802	691
0	11,807	3,121	0	9,024	242
0	3,121	0	0	1,560	42
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

NPV calculations for ER 5144 Under Avista Assumptions
Including Staff Adjustment

Staff/706
Kaufman/10

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Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
433,469	2,611,553	105,470	0	(21,371)	(1,578,558)
(2,478)	63,000	(1,662)	0	(245)	(18,107)
20,565	300,000	6,863	0	(1,618)	(119,490)
50,753	350,000	17,194	0	(2,414)	(178,303)
63,287	400,000	21,466	0	(3,079)	(227,438)
55,398	412,000	18,547	0	(3,235)	(238,957)
47,082	424,360	15,198	0	(3,255)	(240,412)
38,888	437,091	11,850	0	(3,277)	(242,021)
30,688	225,102	8,502	0	(2,276)	(168,105)
22,958	0	5,035	0	(1,025)	(75,730)
17,161	0	2,050	0	(566)	(41,833)
13,970	0	429	0	(175)	(12,931)
12,415	0	0	0	(34)	(2,514)
11,290	0	0	0	(31)	(2,286)
10,166	0	0	0	(28)	(2,059)
9,041	0	0	0	(25)	(1,831)
7,916	0	0	0	(22)	(1,603)
6,792	0	0	0	(19)	(1,375)
5,667	0	0	0	(16)	(1,148)
4,542	0	0	0	(12)	(920)
3,418	0	0	0	(9)	(692)
2,273	0	0	0	(6)	(460)
1,189	0	0	0	(3)	(241)
416	0	0	0	(1)	(84)
72	0	0	0	(0)	(15)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)

NPV calculations for ER 5144 Under Avista Assumptions
Including Staff Adjustment

Docket No UG 325

Total Gross Marg Reqmnt (s)	pv of contribution to fixed costs			0	
	Interest			7.29%	Customer Centric
	Term			50	IRR
	levelized cont. to fixed costs			0	7.290%

3,365,076	REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS	
					-2,380,741
31,150	31,150	100,000	68,850	68,850	100,000
242,475	242,475	392,000	149,525	218,375	392,000
381,888	381,888	425,000	43,112	261,487	425,000
485,672	485,672	472,000	(13,672)	247,815	472,000
499,175	499,175	486,160	(13,015)	234,800	486,160
493,561	493,561	500,745	7,184	241,983	500,745
488,355	488,355	515,767	27,412	269,395	515,767
342,884	342,884	265,620	(77,264)	192,131	265,620
163,600	163,600	0	(163,600)	28,531	0
94,851	94,851	0	(94,851)	(66,320)	0
37,985	37,985	0	(37,985)	(104,305)	0
17,084	17,084	0	(17,084)	(121,389)	0
15,537	15,537	0	(15,537)	(136,926)	0
13,989	13,989	0	(13,989)	(150,915)	0
12,441	12,441	0	(12,441)	(163,356)	0
10,894	10,894	0	(10,894)	(174,250)	0
9,346	9,346	0	(9,346)	(183,596)	0
7,798	7,798	0	(7,798)	(191,394)	0
6,251	6,251	0	(6,251)	(197,645)	0
4,703	4,703	0	(4,703)	(202,348)	0
3,128	3,128	0	(3,128)	(205,476)	0
1,637	1,637	0	(1,637)	(207,113)	0
572	572	0	(572)	(207,685)	0
99	99	0	(99)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0
0	0	0	(0)	(207,784)	0

NPV calculations for ER 5147 Under Avista Assumptions
Including Staff Adjustment

Staff/706
Kaufman/12

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(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	25,196,212	25,196,212			25,196,212
Period					
	0				
1	1,196,212	1,196,212	1,196,212	85,444	44,858
2	7,000,000	7,000,000	8,124,973	756,331	348,855
3	9,000,000	9,000,000	16,566,797	2,570,076	922,713
4	8,000,000	8,000,000	23,064,914	5,598,106	1,491,072
5	0	0	20,574,819	9,197,565	1,679,364
6			17,647,393	12,797,024	1,553,542
7			14,764,006	16,396,483	1,437,105
8			11,921,371	19,910,498	1,329,345
9			9,171,990	22,839,069	1,232,953
10			6,836,885	24,624,783	1,163,903
11			5,268,805	25,196,212	1,128,963
12			4,502,239	25,196,212	1,124,003
13			4,108,838	25,196,212	1,124,003
14			3,715,437	25,196,212	1,124,003
15			3,322,036	25,196,212	1,124,003
16			2,928,635	25,196,212	1,124,003
17			2,535,234	25,196,212	1,124,003
18			2,141,833	25,196,212	1,124,003
19			1,748,432	25,196,212	1,124,003
20			1,355,031	25,196,212	1,124,003
21			961,630	25,196,212	1,097,304
22			577,574	25,196,212	914,400
23			257,534	25,196,212	557,490
24			62,412	25,196,212	178,320
25			0	25,196,212	0
26			0	25,196,212	0
27			0	25,196,212	0
28			0	25,196,212	0
29			0	25,196,212	0
30			0	25,196,212	0
31			0	25,196,212	0
32			0	25,196,212	0
33			0	25,196,212	0
34			0	25,196,212	0
35			0	25,196,212	0
36			0	25,196,212	0
37			0	25,196,212	0
38			0	25,196,212	0
39			0	25,196,212	0
40			0	25,196,212	0
41			0	25,196,212	0
42			0	25,196,212	0
43			0	25,196,212	
44			0	25,196,212	

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
25,196,212	(0)		25,196,212		4,024,734
85,444	(14,205)	1,124,973	85,444	1,160,593	15,552
670,887	(112,712)	7,566,797	670,887	7,845,885	210,270
1,813,745	(311,861)	15,064,914	1,813,745	15,815,856	423,865
3,028,030	(537,935)	20,574,819	3,028,030	21,819,866	584,772
3,599,459	(672,033)	17,647,393	3,599,459	19,111,106	512,178
3,599,459	(716,071)	14,764,006	3,599,459	16,205,700	434,313
3,599,459	(756,824)	11,921,371	3,599,459	13,342,688	357,584
3,514,015	(764,635)	9,171,990	3,514,015	10,546,680	282,651
2,928,571	(593,466)	6,836,885	2,928,571	8,004,438	214,519
1,785,714	(217,634)	5,268,805	1,785,714	6,052,845	162,216
571,429	195,137	4,502,239	571,429	4,885,522	130,932
0	393,401	4,108,838	0	4,305,539	115,388
0	393,401	3,715,437	0	3,912,138	104,845
0	393,401	3,322,036	0	3,518,737	94,302
0	393,401	2,928,635	0	3,125,336	83,759
0	393,401	2,535,234	0	2,731,935	73,216
0	393,401	2,141,833	0	2,338,533	62,673
0	393,401	1,748,432	0	1,945,132	52,130
0	393,401	1,355,031	0	1,551,731	41,586
0	393,401	961,630	0	1,158,330	31,043
0	384,056	577,574	0	769,602	20,625
0	320,040	257,534	0	417,554	11,190
0	195,122	62,412	0	159,973	4,287
0	62,412	0	0	31,206	836
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

NPV calculations for ER 5147 Under Avista Assumptions
Including Staff Adjustment

Docket No UG 325

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
6,923,143	2,850,000	1,700,744	(0)	(159,268)	(11,764,348)
26,752	0	17,943	0	(561)	(41,432)
361,695	300,000	121,662	0	(6,144)	(453,836)
729,111	300,000	246,598	0	(13,130)	(969,877)
1,005,896	300,000	339,392	0	(20,053)	(1,481,249)
881,022	300,000	293,972	0	(22,192)	(1,639,196)
747,083	300,000	239,980	0	(21,570)	(1,593,263)
615,098	300,000	185,988	0	(20,953)	(1,547,727)
486,202	300,000	131,996	0	(19,942)	(1,473,052)
369,005	300,000	79,286	0	(16,612)	(1,227,018)
279,036	300,000	35,357	0	(10,768)	(795,382)
225,223	150,000	8,571	0	(4,060)	(299,905)
198,485	0	(0)	0	(544)	(40,195)
180,350	0	(0)	0	(494)	(36,523)
162,214	0	(0)	0	(445)	(32,850)
144,078	0	(0)	0	(395)	(29,177)
125,942	0	(0)	0	(345)	(25,505)
107,806	0	(0)	0	(296)	(21,832)
89,671	0	(0)	0	(246)	(18,159)
71,535	0	(0)	0	(196)	(14,487)
53,399	0	(0)	0	(146)	(10,814)
35,479	0	(0)	0	(97)	(7,185)
19,249	0	(0)	0	(53)	(3,898)
7,375	0	(0)	0	(20)	(1,493)
1,439	0	(0)	0	(4)	(291)
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0
0	0	(0)	0	0	0

NPV calculations for ER 5147 Under Avista Assumptions
Including Staff Adjustment

Docket No UG 325

Total Gross Marg Reqmnt (s)	pv of contribution to fixed costs				0	
	Interest				7.29%	Customer Centric
	Term				50	IRR
	levelized cont. to fixed costs				0	7.290%

		Staff Adjustment			
28,771,217	REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS	
					-19,399,083
103,697	103,697	0	(103,697)	(103,697)	0
1,204,534	1,204,534	1,110,643	(93,891)	(197,588)	1,110,643
2,530,311	2,530,311	2,330,205	(200,107)	(397,695)	2,330,205
3,756,788	3,756,788	3,414,259	(342,528)	(740,223)	3,414,259
3,925,243	3,925,243	3,414,259	(510,983)	(1,251,206)	3,414,259
3,706,001	3,706,001	3,414,259	(291,741)	(1,542,948)	3,414,259
3,489,448	3,489,448	3,414,259	(75,189)	(1,618,136)	3,414,259
3,221,870	3,221,870	3,414,259	192,390	(1,425,747)	3,414,259
2,647,751	2,647,751	3,414,259	766,508	(659,239)	3,414,259
1,756,174	1,756,174	3,414,259	1,658,085	998,847	3,414,259
782,189	782,189	1,707,130	924,940	1,923,787	1,707,130
273,134	273,134	0	(273,134)	1,650,653	0
248,178	248,178	0	(248,178)	1,402,475	0
223,221	223,221	0	(223,221)	1,179,254	0
198,265	198,265	0	(198,265)	980,990	0
173,308	173,308	0	(173,308)	807,682	0
148,352	148,352	0	(148,352)	659,330	0
123,395	123,395	0	(123,395)	535,935	0
98,438	98,438	0	(98,438)	437,497	0
73,482	73,482	0	(73,482)	364,015	0
48,822	48,822	0	(48,822)	315,193	0
26,489	26,489	0	(26,489)	288,704	0
10,148	10,148	0	(10,148)	278,556	0
1,980	1,980	0	(1,980)	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0
(0)	(0)	0	0	276,576	0

NPV calculations for ER 7139 Under Avista Assumptions
Using vacated lease to calculate operating Savings

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(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	6,184,843	6,184,843			6,184,843
Period					
1	6,184,843	6,184,843	6,184,843	103,081	231,932
2	0	0	6,036,664	309,242	446,484
3	0	0	5,746,390	515,404	413,024
4	0	0	5,467,827	721,565	382,100
5	0	0	5,200,087	927,726	353,464
6			4,942,370	1,133,888	326,931
7			4,693,939	1,340,049	302,439
8			4,454,081	1,546,211	279,740
9			4,222,167	1,752,372	275,906
10			3,991,595	1,958,534	275,906
11			3,761,023	2,164,695	275,906
12			3,530,451	2,370,856	275,906
13			3,299,879	2,577,018	275,906
14			3,069,307	2,783,179	275,906
15			2,838,735	2,989,341	275,906
16			2,608,163	3,195,502	275,906
17			2,377,591	3,401,664	275,906
18			2,147,019	3,607,825	275,906
19			1,916,447	3,813,986	275,906
20			1,685,875	4,020,148	275,906
21			1,455,303	4,226,309	137,860
22			1,273,047	4,432,471	0
23			1,139,042	4,638,632	0
24			1,005,037	4,844,794	0
25			871,032	5,050,955	0
26			737,027	5,257,116	0
27			603,022	5,463,278	0
28			469,017	5,669,439	0
29			335,012	5,875,601	0
30			201,007	6,081,762	0
31			67,002	6,184,843	0
32			0	6,184,843	0
33			0	6,184,843	0
34			0	6,184,843	0
35			0	6,184,843	0
36			0	6,184,843	0
37			0	6,184,843	0
38			0	6,184,843	0
39			0	6,184,843	0
40			0	6,184,843	0
41			0	6,184,843	0
42			0	6,184,843	0
43			0	6,184,843	
44			0	6,184,843	

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
6,184,843	0		6,184,843		2,148,883
103,081	45,098	6,036,664	103,081	6,110,754	81,884
206,161	84,113	5,746,390	206,161	5,891,527	157,893
206,161	72,402	5,467,827	206,161	5,607,108	150,271
206,161	61,578	5,200,087	206,161	5,333,957	142,950
206,161	51,556	4,942,370	206,161	5,071,228	135,909
206,161	42,269	4,693,939	206,161	4,818,154	129,127
206,161	33,697	4,454,081	206,161	4,574,010	122,583
206,161	25,753	4,222,167	206,161	4,338,124	116,262
206,161	24,411	3,991,595	206,161	4,106,881	110,064
206,161	24,411	3,761,023	206,161	3,876,309	103,885
206,161	24,411	3,530,451	206,161	3,645,737	97,706
206,161	24,411	3,299,879	206,161	3,415,165	91,526
206,161	24,411	3,069,307	206,161	3,184,593	85,347
206,161	24,411	2,838,735	206,161	2,954,021	79,168
206,161	24,411	2,608,163	206,161	2,723,449	72,988
206,161	24,411	2,377,591	206,161	2,492,877	66,809
206,161	24,411	2,147,019	206,161	2,262,305	60,630
206,161	24,411	1,916,447	206,161	2,031,733	54,450
206,161	24,411	1,685,875	206,161	1,801,161	48,271
206,161	24,411	1,455,303	206,161	1,570,589	42,092
206,161	(23,905)	1,273,047	206,161	1,364,175	36,560
206,161	(72,157)	1,139,042	206,161	1,206,044	32,322
206,161	(72,157)	1,005,037	206,161	1,072,039	28,731
206,161	(72,157)	871,032	206,161	938,035	25,139
206,161	(72,157)	737,027	206,161	804,030	21,548
206,161	(72,157)	603,022	206,161	670,025	17,957
206,161	(72,157)	469,017	206,161	536,020	14,365
206,161	(72,157)	335,012	206,161	402,015	10,774
206,161	(72,157)	201,007	206,161	268,010	7,183
206,161	(72,157)	67,002	206,161	134,005	3,591
103,081	(36,078)	0	103,081	33,501	898
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
3,696,399	941,508	2,875,952	0	(57,305)	(4,232,858)
140,853	10,000	92,773	0	(1,357)	(100,233)
271,599	20,600	92,773	0	(2,252)	(166,311)
258,488	21,218	92,773	0	(2,219)	(163,871)
245,895	21,855	92,773	0	(2,187)	(161,543)
233,784	22,510	92,773	0	(2,157)	(159,319)
222,117	23,185	92,773	0	(2,128)	(157,191)
210,862	23,881	92,773	0	(2,101)	(155,154)
199,987	24,597	92,773	0	(2,074)	(153,202)
189,327	25,335	92,773	0	(2,048)	(151,300)
178,698	26,095	92,773	0	(2,023)	(149,412)
168,068	26,878	92,773	0	(1,997)	(147,532)
157,439	27,685	92,773	0	(1,972)	(145,661)
146,810	28,515	92,773	0	(1,947)	(143,797)
136,180	29,371	92,773	0	(1,922)	(141,943)
125,551	30,252	92,773	0	(1,897)	(140,097)
114,922	31,159	92,773	0	(1,872)	(138,261)
104,292	32,094	92,773	0	(1,847)	(136,434)
93,663	33,057	92,773	0	(1,822)	(134,617)
83,034	34,049	92,773	0	(1,798)	(132,810)
72,404	35,070	92,773	0	(1,774)	(131,013)
62,888	36,122	92,773	0	(1,753)	(129,452)
55,599	37,206	92,773	0	(1,738)	(128,353)
49,421	38,322	92,773	0	(1,726)	(127,491)
43,243	39,472	92,773	0	(1,714)	(126,641)
37,066	40,656	92,773	0	(1,703)	(125,802)
30,888	41,876	92,773	0	(1,692)	(124,976)
24,711	43,132	92,773	0	(1,681)	(124,163)
18,533	44,426	92,773	0	(1,670)	(123,362)
12,355	45,759	92,773	0	(1,659)	(122,576)
6,178	47,131	92,773	0	(1,649)	(121,803)
1,544	0	92,773	0	(928)	(68,538)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)

NPV calculations for ER 7139 Under Avista Assumptions
Using vacated lease to calculate operating Savings

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pv of contribution to fixed costs	-2,778,214
Interest	7.29%
Term	50
levelized cont. to fixed costs	-208,721

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS
11,557,422	5,697,156				
327,000	307,470	327,000	80,091	(246,909)	(246,909)
580,463	513,196	580,463	160,182	(420,281)	(667,191)
562,820	467,878	562,820	164,987	(397,833)	(1,065,024)
545,904	426,711	545,904	169,937	(375,967)	(1,440,990)
529,661	389,287	529,661	175,035	(354,626)	(1,795,616)
514,044	355,243	514,044	180,286	(333,757)	(2,129,374)
499,006	324,254	499,006	185,695	(313,311)	(2,442,685)
484,505	296,028	484,505	191,266	(293,239)	(2,735,924)
470,313	270,194	470,313	197,004	(273,309)	(3,009,233)
456,178	246,421	456,178	202,914	(253,264)	(3,262,497)
442,057	224,531	442,057	209,001	(233,056)	(3,495,553)
427,952	204,384	427,952	215,271	(212,680)	(3,708,233)
413,862	185,850	413,862	221,729	(192,133)	(3,900,366)
399,788	168,807	399,788	228,381	(171,407)	(4,071,773)
385,731	153,144	385,731	235,233	(150,499)	(4,222,272)
371,692	138,756	371,692	242,290	(129,402)	(4,351,673)
357,669	125,547	357,669	249,558	(108,111)	(4,459,784)
343,665	113,426	343,665	257,045	(86,620)	(4,546,405)
329,680	102,312	329,680	264,756	(64,923)	(4,611,328)
315,714	92,126	315,714	272,699	(43,015)	(4,654,342)
303,300	83,217	303,300	280,880	(22,420)	(4,676,762)
293,969	75,840	293,969	289,307	(4,663)	(4,681,425)
286,191	69,423	286,191	297,986	11,795	(4,669,630)
278,433	63,508	278,433	306,925	28,492	(4,641,138)
270,698	58,056	270,698	316,133	45,435	(4,595,703)
262,986	53,033	262,986	325,617	62,631	(4,533,073)
255,298	48,408	255,298	335,386	80,087	(4,452,985)
247,634	44,150	247,634	345,447	97,813	(4,355,173)
239,996	40,233	239,996	355,811	115,815	(4,239,358)
232,383	36,630	232,383	177,905	(54,477)	(4,293,835)
128,830	19,094	128,830	0	(128,830)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)
0	0	0	0	(0)	(4,422,665)

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(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	(690,386)	854,807			854,807
Period					
Adjustment	**(1,545,193)**				
1	854,807	854,807	854,807	61,058	32,055
2		0	803,900	183,173	61,709
3		0	702,927	305,288	57,084
4		0	603,573	427,404	52,810
5		0	505,715	549,519	48,852
6			409,241	671,634	45,185
7			314,052	793,749	41,800
8			220,047	854,807	38,663
9			166,827	854,807	38,133
10			153,481	854,807	38,133
11			140,134	854,807	38,133
12			126,788	854,807	38,133
13			113,441	854,807	38,133
14			100,094	854,807	38,133
15			86,748	854,807	38,133
16			73,401	854,807	38,133
17			60,055	854,807	38,133
18			46,708	854,807	38,133
19			33,362	854,807	38,133
20			20,015	854,807	38,133
21			6,669	854,807	19,054
22			0	854,807	0
23			0	854,807	0
24			0	854,807	0
25			0	854,807	0
26			0	854,807	0
27			0	854,807	0
28			0	854,807	0
29			0	854,807	0
30			0	854,807	0
31			0	854,807	0
32			0	854,807	0
33			0	854,807	0
34			0	854,807	0
35			0	854,807	0
36			0	854,807	0
37			0	854,807	0
38			0	854,807	0
39			0	854,807	0
40			0	854,807	0
41			0	854,807	0
42			0	854,807	0
43			0	854,807	
44			0	854,807	

Docket No UG 325

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
854,807	0		854,807		125,957
61,058	(10,151)	803,900	61,058	829,354	11,113
122,115	(21,142)	702,927	122,115	753,414	20,191
122,115	(22,761)	603,573	122,115	653,250	17,507
122,115	(24,257)	505,715	122,115	554,644	14,864
122,115	(25,642)	409,241	122,115	457,478	12,260
122,115	(26,926)	314,052	122,115	361,646	9,692
122,115	(28,110)	220,047	122,115	267,049	7,157
61,058	(7,838)	166,827	61,058	193,437	5,184
0	13,347	153,481	0	160,154	4,292
0	13,347	140,134	0	146,807	3,934
0	13,347	126,788	0	133,461	3,577
0	13,347	113,441	0	120,114	3,219
0	13,347	100,094	0	106,768	2,861
0	13,347	86,748	0	93,421	2,504
0	13,347	73,401	0	80,075	2,146
0	13,347	60,055	0	66,728	1,788
0	13,347	46,708	0	53,382	1,431
0	13,347	33,362	0	40,035	1,073
0	13,347	20,015	0	26,689	715
0	13,347	6,669	0	13,342	358
0	6,669	0	0	3,334	89
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

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Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
216,666	0	57,699	0	(4,897)	(361,748)
19,117	0	12,822	0	(401)	(29,607)
34,732	0	11,906	0	(727)	(53,720)
30,115	0	10,075	0	(706)	(52,147)
25,569	0	8,243	0	(685)	(50,588)
21,090	0	6,411	0	(664)	(49,043)
16,672	0	4,579	0	(643)	(47,510)
12,311	0	2,748	0	(623)	(45,989)
8,917	0	916	0	(317)	(23,394)
7,383	0	0	0	(20)	(1,495)
6,768	0	0	0	(19)	(1,371)
6,153	0	0	0	(17)	(1,246)
5,537	0	0	0	(15)	(1,121)
4,922	0	0	0	(13)	(997)
4,307	0	0	0	(12)	(872)
3,691	0	0	0	(10)	(748)
3,076	0	0	0	(8)	(623)
2,461	0	0	0	(7)	(498)
1,846	0	0	0	(5)	(374)
1,230	0	0	0	(3)	(249)
615	0	0	0	(2)	(125)
154	0	0	0	(0)	(31)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)
0	0	0	0	(0)	(0)

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pv of contribution to fixed costs	-643,806
Interest	7.29%
Term	50
levelized cont. to fixed costs	-48,368

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	REVENUE REQ	O&M Savings	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS
888,484	668,789				
74,102	69,676	74,102	0	(74,102)	(74,102)
134,498	118,912	134,498	0	(134,498)	(208,600)
126,959	105,542	126,959	0	(126,959)	(335,559)
119,519	93,423	119,519	0	(119,519)	(455,077)
112,170	82,442	112,170	0	(112,170)	(567,247)
104,905	72,498	104,905	0	(104,905)	(672,152)
97,719	63,498	97,719	0	(97,719)	(769,871)
52,364	31,994	52,364	0	(52,364)	(822,235)
10,160	5,837	10,160	0	(10,160)	(832,395)
9,313	5,031	9,313	0	(9,313)	(841,708)
8,466	4,300	8,466	0	(8,466)	(850,175)
7,620	3,639	7,620	0	(7,620)	(857,794)
6,773	3,042	6,773	0	(6,773)	(864,567)
5,926	2,502	5,926	0	(5,926)	(870,494)
5,080	2,017	5,080	0	(5,080)	(875,574)
4,233	1,580	4,233	0	(4,233)	(879,807)
3,386	1,189	3,386	0	(3,386)	(883,193)
2,540	838	2,540	0	(2,540)	(885,733)
1,693	525	1,693	0	(1,693)	(887,426)
846	247	846	0	(846)	(888,272)
212	58	212	0	(212)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)
0	0	0	0	(0)	(888,484)

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 707

Exhibits in Support Of Opening Testimony

March 1, 2017

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)					
				Financial Impact (Consequential Costs/Revenues)	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
Technology Refresh to Sustain Business Process 2012	14	20	6	4 - $4MM - $10MM	> Four / year	4 - Potential for regulators to impose onerous restrictions or Board or management to make leadership change	< Once / year	4 - > 30,000 customers-hours	< Once / year
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**
						3 - Potential for serious injury Significant damage to equipment, property or business Public health infrastructure impact up to 48 hours	> Four / year		
				Revised Risk if funded/completed					
				Financial Impact (Consequential Costs/Revenues)	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
				1 - < $200k	< Once / 10 years	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	< Once / 50 years	1 - < 1,500 Customer-hours	< Once / year
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**
						3 - Potential for serious injury Significant damage to equipment, property or business Public health infrastructure impact up to 48 hours	< Once / 10 years	1 - Potential for injury	< Once / 50 years

Staff/707
Kaufman/2

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
Technology Expansion to Enable Business Process	10	15	5	3 - Significant releases to the environment Significant non-compliance Equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence	< Once / year			3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	> Four / year	1 - Potential for injury			
				Revised Risk if funded/completed									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
				1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	> Four / year			1 - No likely impact on media or regulatory relationship.	< Once / year				

Staff/707
Kaufman/3

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
Enterprise Business Continuity Plan	6	6	0				< Once / 5 years	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	< Once / 10 years				
				Revised Risk if funded/completed									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
								2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage					

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
Enterprise Security	6	15	9	4 - Significant natural resource damages on a large geographic scale Regulatory intervention due to equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence	< Once / 10 years	3 - Potential for serious injury Significant damage to equipment, property or business Public health infrastructure impact up to 48 hours	> Four / year	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	< Once / year	3 - Potential for serious injury Employee permanently not able to return to position Injury severity >$250,000	< Once / year	3 - >7,500 Customer-hours	< Once / 50 years
				Revised Risk if funded/completed									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
				3 - Significant releases to the environment Significant non-compliance Equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence	< Once / 5 years	2 - Potential for minimal or minor injury Outages and or equipment damage Public health infrastructure impact up to 24 hours	< Once / year	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 10 years	1 - Potential for injury	< Once / 10 years	2 - >1,500 Customer-hours	< Once / 50 years

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)					
				Financial Impact (Consequential Costs/Revenues)	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Safety and Health: Employee	Likelihood
#REF!	0	0	0	Revised Risk if funded/completed					
				Financial Impact (Consequential Costs/Revenues)	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Safety and Health: Employee	Likelihood

Staff/707
Kaufman/6

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Project Risk (no funding if a project, cease funding if an existing project)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
AvistaUtilities.com Redesign	0	0	0										
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood

Staff/707
Kaufman/7

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	ERM Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)					
				Financial Impact (Consequential Costs/Revenues)	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Mobility in the Field	1	3	2	1 - < $200k	< Once / 5 years	4 - Potential for regulators to impose onerous restrictions or Board or management to make leadership change			
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Safety and Health: Employee	Likelihood
				Revised Risk if funded/completed					
				Financial Impact (Consequential Costs/Revenues)	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				1 - < $200k	< Once / 10 years	4 - Potential for regulators to impose onerous restrictions or Board or management to make leadership change			
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Safety and Health: Employee	Likelihood

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Project Risk (no funding if a project, cease funding if an existing project)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Project Atlas	4	16	12	1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	< Once / 10 years	4 - Potential for multiple serious injuries or loss of an individual life Major damage to property or business Public health infrastructure impact up to 72 hours	< Once / year	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	< Once / 5 years	4 - Potential for multiple serious injuries or loss of an individual life Multiple Injuries >$250k each	< Once / year		
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	< Once / 50 years	3 - Potential for serious injury Significant damage to equipment, property or business Public health infrastructure impact up to 48 hours	< Once / year	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 10 years	3 - Potential for serious injury Employee permanently not able to return to position Injury severity >$250,000	< Once / year		

Staff/707
Kaufman/9

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Customer Facing Technology	6	12	6	1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	< Once / 50 years	1 - Potential for injury Public health infrastructure impact up to 8 hours	< Once / 50 years	4 - Potential for regulators to impose onerous restrictions or Board or management to make leadership change	< Once / 5 years	1 - Potential for injury	< Once / 50 years	1 - < 1,500 Customer-hours	< Once / 5 years
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	< Once / 50 years	1 - Potential for injury Public health infrastructure impact up to 8 hours	< Once / 50 years	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 5 years	1 - Potential for injury	< Once / 50 years	1 - < 1,500 Customer-hours	< Once / 5 years

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Fleet Budget	5	9	4	1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	> Four / year	1 - Potential for injury Public health infrastructure impact up to 8 hours	< Once / 5 years	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 10 years	3 - Potential for serious injury Employee permanently not able to return to position Injury severity >$250,000	< Once / 5 years		
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
				1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up	< Once / year	1 - Potential for injury Public health infrastructure impact up to 8 hours	< Once / 50 years	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 50 years	1 - Potential for injury	< Once / 50 years		

Staff/707
Kaufman/11

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
Structures and Improvements and Furniture	5	9	4	3 - Significant releases to the environment Significant non-compliance Equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence	< Once / 5 years	3 - Potential for serious injury Significant damage to equipment, property or business Public health infrastructure impact up to 48 hours	< Once / 5 years	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	< Once / 10 years	3 - Potential for serious injury Employee permanently not able to return to position Injury severity >$250,000	< Once / 10 years	1 - < 1,500 Customer-hours	< Once / 50 years
				Revised Risk if funded/completed									
				Environmental	**Likelihood**	**Safety and Health: Public**	**Likelihood**	**Legal, Regulatory, External Business Affairs**	**Likelihood**	**Safety and Health: Employee**	**Likelihood**	**Customer Service and Reliability (# customers * duration of an outage)**	**Likelihood**
				2 - Large volume transformer oil spill, hazardous waste cleanup, moderate to low volume or level of PCBs, minimal impact to waterways, repeated or moderate air emission exceedence	< Once / 10 years	2 - Potential for minimal or minor injury Outages and or equipment damage Public health infrastructure impact up to 24 hours	< Once / 10 years	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	< Once / 50 years	2 - Potential for minimal or minor injury Lost Time Incident and Severity Rate increases year over year	< Once / 10 years	1 - < 1,500 Customer-hours	< Once / 50 years

Staff/707
Kaufman/12

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Program Risk (no funding if a project, cease funding if an existing program)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Capital Tools and Stores	0	0	0										
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood

Docket No UG 325

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Likelihood of Event	Environmental
COF Long-Term Restructuring Plan Ph1	8	9.5	1.925	< Once / 5 years	3 - Significant releases to the environment Significant non-compliance Equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence
				Likelihood of Event	**Environmental**
				< Once / 10 years	1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up

Docket No UG 325

Unfunded Risk			
Safety and Health: Public	**Legal, Regulatory, External Business Affairs**	**Safety and Health: Employee**	**Customer Service and Reliability (# customers * duration of an outage)**
1 - Potential for injury Public health infrastructure impact up to 8 hours	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	2 - Potential for minimal or minor injury Lost Time Incident and Severity Rate increases year over year	1 - < 1,500 Customer-hours

Revised Risk if funded/completed			
Safety and Health: Public	**Legal, Regulatory, External Business Affairs**	**Safety and Health: Employee**	**Customer Service and Reliability (# customers * duration of an outage)**
1 - Potential for injury Public health infrastructure impact up to 8 hours	2 - Could result in a moderate negative impact to local, online, or industrial relationships and /or regional media coverage	2 - Potential for minimal or minor injury Lost Time Incident and Severity Rate increases year over year	1 - < 1,500 Customer-hours

Docket No UG 325

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Likelihood of Event	Environmental
COF LngTrm Restruct Ph2	13	13.5	0.2	< Once / 5 years	3 - Significant releases to the environment Significant non-compliance Equipment failure, procedural breakdown, human error, oil release, high volume or level of PCBs, air emission moderate exceedence
				Likelihood of Event	**Environmental**
				< Once / 50 years	1 - Isolated spill with 0 to low level PCBs, no migration, air emission minor exceedence, standard clean-up

Unfunded Risk			
Safety and Health: Public	**Legal, Regulatory, External Business Affairs**	**Safety and Health: Employee**	**Customer Service and Reliability (# customers * duration of an outage)**
2 - Potential for minimal or minor injury Outages and or equipment damage Public health infrastructure impact up to 24 hours	3 - Could result in a sustained negative impact to local, online, or industrial relationships and / or national / global media coverage	2 - Potential for minimal or minor injury Lost Time Incident and Severity Rate increases year over year	1 - < 1,500 Customer-hours

Revised Risk if funded/completed			
Safety and Health: Public	**Legal, Regulatory, External Business Affairs**	**Safety and Health: Employee**	**Customer Service and Reliability (# customers * duration of an outage)**
2 - Potential for minimal or minor injury Outages and or equipment damage Public health infrastructure impact up to 24 hours	1 - No likely impact on media or regulatory relationship.	1 - Potential for injury	1 - < 1,500 Customer-hours

Staff/707
Kaufman/17

Docket No UG 325

Please request assistance from one of the Capital IP Team members prior to completion

Business Case	Business Risk Reduction	Unfunded Raw Score	Revised Risk Raw Score	Unfunded Project/Project Risk (no funding if a project, cease funding if an existing project)									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
Ergonomic Equipment	6	10	4							2 - Potential for minimal or minor injury Lost Time Incident and Severity Rate increases year over year	> Four / year	1 - < 1,500 Customer-hours	< Once / 5 years
				Revised Risk if funded/completed									
				Environmental	Likelihood	Safety and Health: Public	Likelihood	Legal, Regulatory, External Business Affairs	Likelihood	Safety and Health: Employee	Likelihood	Customer Service and Reliability (# customers * duration of an outage)	Likelihood
										1 - Potential for injury	< Once / year	1 - < 1,500 Customer-hours	< Once / 10 years

CASE: UG 325
WITNESS: LANCE KAUFMAN

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 708

Exhibits in Support
Of Opening Testimony

March 1, 2017

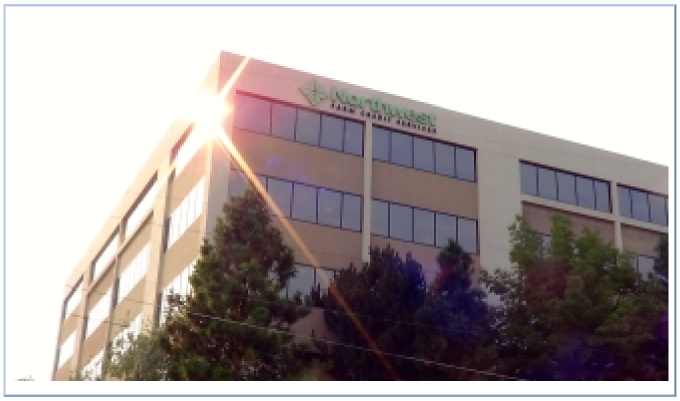
Docket No. UG-325 Staff/708
Kaufman/1

G. Arger Company Real Estae Inc. ***Gene Arger*** — *(509) 926-5311*

Office Property For Sale

Sunset Pointe Office Building

1700 S. Assembly, Spokane, WA 99204



Price:	$7,900,000
Building Size:	66,000 *SF*
Price/SF:	$119.70
Property Type:	Office
Property Sub-type:	Office Building
Property Use Type:	Vacant/Owner-User
Commission Split:	2%
Building Class:	A
Lot Size:	4 *AC*
Listing ID	19260183
Last Updated	1 day ago

Find Out More...

Description

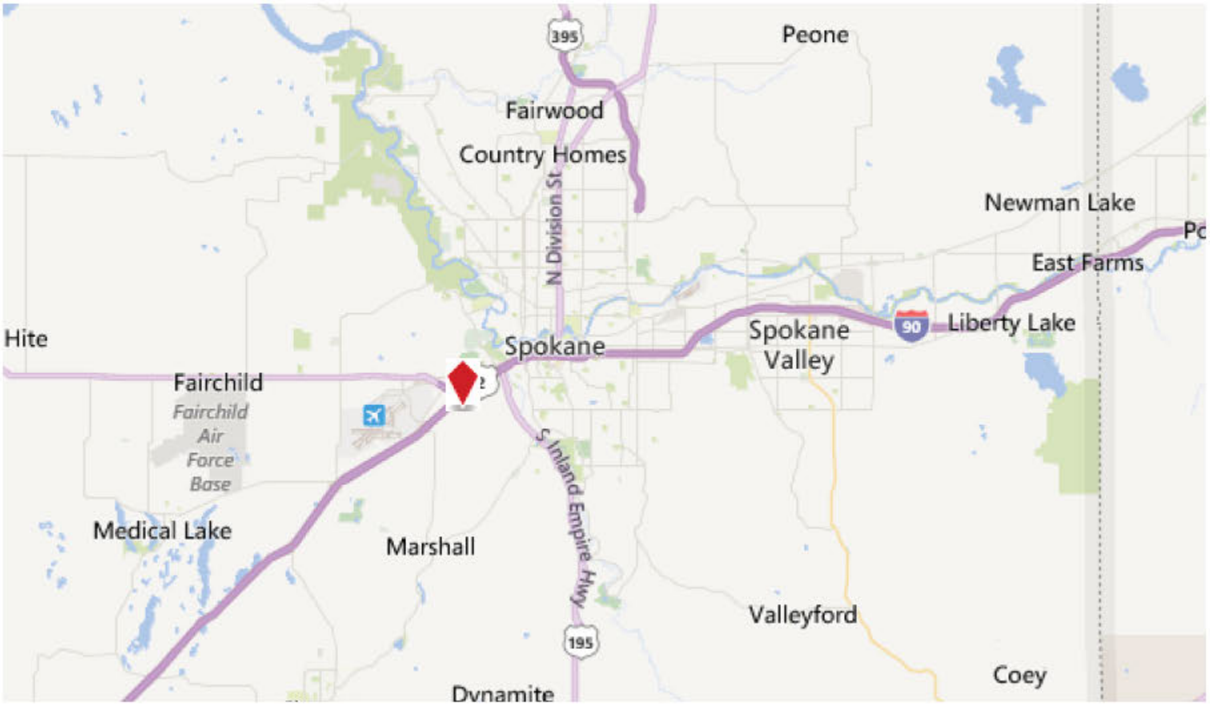
Class A Office Space Prime for an Owner User Corporate Office or Call Center.
Spectacular Spokane Downtown Skyline Views
66000 SF, 3 Stories with Daylight Lower Level
Approximate Land Area 4 +/- Acres
Year Built 1998, Updated Throughout
Excess Parking 3.5 to 1, Two Entrances
Minutes to Spokane Airport, Downtown and I-90 Access
Secured Campus Site
*Additional 5 Acres adjoining property also Available For Sale or Build to Suit
Prime Location for a Call Center/Data Center

Corner of Sunset Highway and Assembly Road. Minutes to Spokane Airport, Downtown Spokane and I-90 Access,
Secured Campus Site

Staff/708
Kaufman/2

Docket No. UG 325

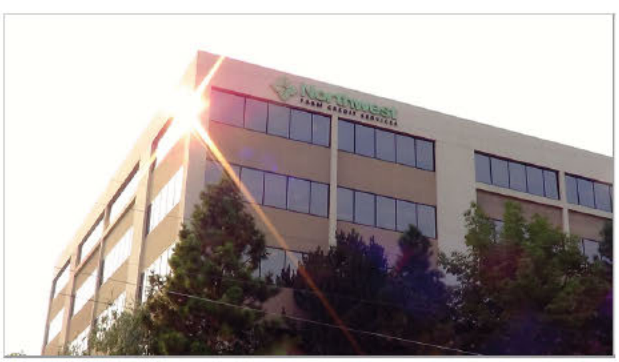
Map of 1700 S. Assembly, Spokane, WA 99204 (Spokane County)



Additional Photos

Sunset Pointe Office Building

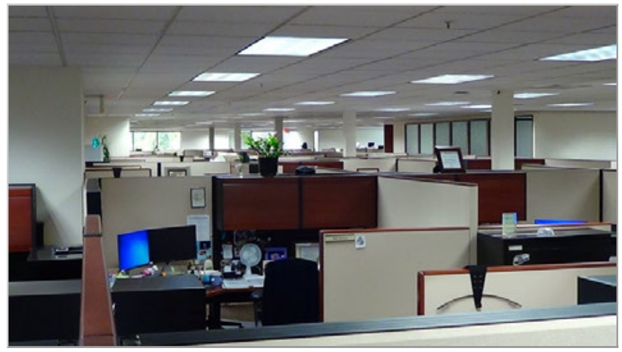
Sunset Pointe Office Building



Sunset Pointe Office Building

Sunset Pointe Office Building

Sunset Pointe Office Building



Sunset Pointe Office Building

Sunset Pointe Office Building

Sunset Pointe Office Building

Sunset Pointe Office Building

Docket No UG 325

Staff/708
Kaufman/4

pre next

Roll over image to zoom in

PANASONIC TOUGHBOOK CF-19 CF-19-KHRAG2M C2D SU-9300 1.2GHZ

Brand: Panasonic
Product Code: S-CF-19 MK3
Specifications: TB_19_Spec.pdf
Availability: In Stock

~~$1,495.00~~
$749.98

Share

QTY: 1

Questions? Call 866-278-4433

***Quantity Discounts Available**

The Toughbook CF-19 CF-19-KHRAG2M Includes: BUY

Intel Core 2 Duo SU9300
1.20GHz (Centrino)

CUSTOMIZE AND BUY

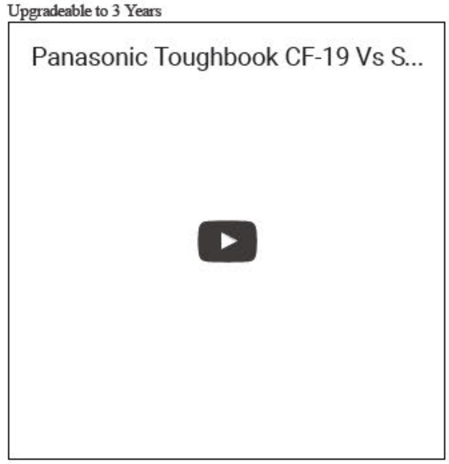
Base Standard Features in CF-19-KHRAG2M:
10.1" XGA (Touch)
160GB SATA HDD
2GB RAM
Intel 802.11a/b/g
Bluetooth
Mechanical Keyboard
Windows 7

$41 /month*
click to apply...

Add to Wish List
Add to Compare

This product is refurbished

*6 Month Warranty
Upgradeable to 3 Years



ADDITIONAL OPTIONS

LCD Options:
--- Please Select ---

Operating System Upgrade Options:
--- Please Select ---

DESCRIPTION **SPECIFICATION**

Questions? Call (866) 278-4433 for assistance

The Convertible Toughbook 19 CF-19-KHRAG2M is tough times two. Intel Core Duo processors give the Toughbook 19 more power than any other Rugged Tablet PC. Centrino Duo Technology enables greater battery life for increased

Staff/708
Kaufman/5

Memory Upgrade Options:

Docket No UG 325

Hard Drive Upgrade Options:

--- Please Select ---

Keyboard Upgrade Options:

--- Please Select ---

Integrated Wireless Upgrade Options:

3G Wireless Broadband - Verizon (+$65.00)

Battery Options:

- [ ] Standard Battery (+$145.99)

Power Options:

- [ ] Additional AC Adapter (+$75.00)
- [x] Vehicle Adapter (+$89.99)

Storage Options:

- [ ] Spare Hard Drive Caddy (Empty) (+$159.99)
- [ ] 80GB Hard Drive Caddy Kit (+$209.99)
- [ ] 120GB Hard Drive Caddy Kit (+$224.99)
- [ ] 160GB Hard Drive Caddy Kit (+$254.99)
- [ ] 250GB Hard Drive Caddy Kit (+$264.99)
- [ ] 320GB Hard Drive Caddy Kit (+$269.99)

Additional Options:

- [x] Gobi internal GPS (+$99.99)
- [ ] Digitizer Pen (+$59.99)
- [ ] Anti-Reflective/Anti-Glare Screen Protector (+$34.99)
- [ ] LCD Cleaning Kit, Includes Screen Protector and LCD Wipes (+$36.99)
- [ ] Panasonic Brand Protective Film (+$79.99)
- [ ] Stylus (+$17.99)
- [ ] Panasonic ToughMate X-Strap (+$59.99)

Mounting Solutions:

- [ ] Ram Mount - Call for Pricing Options

Software Options:

- [ ] Home & Business (Includes Outlook) (+$235.99)
- [ ] Professional (+$389.99)
- [ ] Home & Student (Word, Excel, PP, NO Outlook) (+$129.99)

Mobile Printers:

- [ ] HP OfficeJet 100 (+$349.00)
- [ ] Brother PocketJet6 Kit (+$435.00)

Security Options:

- [ ] Computrace Plus (+$99.99)

Warranty Options:

--- Please Select ---

efficiency and provides built in 802.11a/b/g and Bluetooth wireless technology.

The fully rugged Toughbook CF-19 has a lightweight, compact form factor. Weighing only 5.1 pounds, this latest iteration is a perfect fit when size and versatility are at a premium. The Panasonic Toughbook CF-19 provides robust standard features, the latest additional integrated options, and ruggedized features only Panasonic can offer.

Portability, durability, and functionality make the Toughbook CF-19 the ideal solution for emergency response teams, field and building inspectors, and various mobile professionals.

Tags: Toughbook, CF-19, Touchscreen, CF 19, CF 19, Panasonic, Refurb,

Total: $749.98

BUY NOW

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Terms and Conditions

Docket No UG 325

Staff/708
Kaufman/6

TRUSTWORTHY SHOPPING

Fatal error: Call to a member function get() on a non-object in **/home/rugged/public_html/index.php** on line **105**

CASE: UG 325
WITNESS: MITCH MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 800

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Mitchell Moore. I am a Senior Utility Analyst employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my witness qualification statement, which is found in Exhibit Staff/801.

Q. What is the purpose of your testimony?

A. I am responsible for reviewing the distribution plant capital additions that Avista Corporation (Avista or Company) proposes to include in rate base in this case. I also reviewed the plant maintenance FERC Account 87400, for which I have no adjustment. For reasons explained in more detail below, I recommend a reduction of approximately $9.5 million from the Company's capital forecast. The following table summarizes my recommended Oregon-allocated adjustments:

Description	Avista Filing	Adjustment	Remainder
ER 1001 Old Midland Dev	$658,000	($658,000)	$0
ER 1001 Bonanza Dev	$1,182,000	($740,000)	$442,000
ER 1001 3399 Granite Hill Rd	$27,000	($27,000)	$0
ER 7206 Jackson Prairie Storage	$245,000	($245,000)	$0
2016 – New Growth Residential	$5,688,000	($2,153,000)	$3,535,000
2017 – New Growth Residential	$6,376,000	($3,513,000)	$2,863,000
Management Adjustment	$21,533,000	($2,153,000)	$19,380,000
TOTAL		**($9,489,000)**	**$31,446,000**

Q. Did you prepare any exhibits for this docket?

A. Yes. I prepared the following exhibits:

- Exhibit Staff/801 – Qualifications exhibit.
- Exhibit Staff/802 – Analysis of Bonanza Growth Project and Avista's methodology for calculating Internal Rate of Return.
- Exhibit Staff/803 – Avista responses to Staff Data Requests (DRs): 245(B), 335(A), 346, 367, and 432.
- Exhibit Staff/804 – Avista investor presentation at BMO Capital Markets Road Show.
- Exhibit Staff/805 – Avista's partial response to Staff's DR 181 Attachment D, which includes a list of capital projects with associated transfers to plant, 2015 and 2016, Excel file.
- Confidential Exhibit Staff/806 – Confidential Avista responses to Staff DRs 185C Attachment A, and 417C Attachment D, which are Avista's 5-year Capital Plans for 2015 and 2017.
- Exhibit Staff/807 – Avista's partial response to Staff's DR 182, Attachment AI

CAPITAL ADDITIONS – GAS DISTRIBUTION

Q. Please summarize Avista's filing regarding capital additions.

A. Avista proposes to add approximately $57.8 million in utility plant additions to rate base above the amount as of December 31, 2015.[1] This represents an increase to Avista's net rate base of approximately $44.6 million – or 22 percent over its current net rate base.[2] The costs associated with capital investment make up 84 percent of the Company's requested increase in revenue requirement in this case.[3] Of the $57.8 million that Avista proposes to add in this case, $11.6 million is proposed for general plant projects, which include items and activities such as technology upgrades, website redevelopment, transportation and tool upgrades, and facilities upgrades. These general plant projects are addressed by Lance Kaufman in Staff Exhibit/700.

My testimony focuses on natural gas distribution plant additions for the period between July 1, 2016 and September 30, 2017, in which the Company seeks to add $40.9 million in capital investment to its distribution plant. My testimony also addresses Avista's proposal to include $2.9 million for new customer hookups for the period of October 1, 2017 through September 30, 2018.

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[1] See Avista/500, Smith/6. Staff notes that Avista Witness Machado's testimony totals $55.5 million, reflecting additions beginning July 1, 2016. Avista/600, Machado/12.
[2] See Avista/501, Smith/1. For consistency with prior years, I remove the impact of accumulated deferred federal income tax.
[3] See Avista/100, Morris/6.

The vast majority (approximately 91 percent) of Avista's gas distribution projects are comprised of various programmatic (i.e. ongoing) projects, such as growth-related projects, infrastructure remediation, Aldyl-A Pipe replacement, and street and highway replacement. There are two discrete projects as well: reinforcement of a high pressure line in La Grande, and ongoing investment in the Jackson Prairie underground storage facility.

Q. How did Staff perform its analysis and arrive at its recommended adjustments?

A. My analysis is comprised of three distinct groupings of Avista plant-addition topics: First, I review and discuss the overall context of the Company's capital investment and resulting rate increase request in terms of rate base growth over the past several years, new customer hookups and load growth, and frequency of rate increase requests primarily driven by capital investment.

Second, I analyze and discuss the specific evidence provided by Avista to justify the natural gas distribution capital projects.

Third, I focus on New Growth Projects to determine whether the Company is:

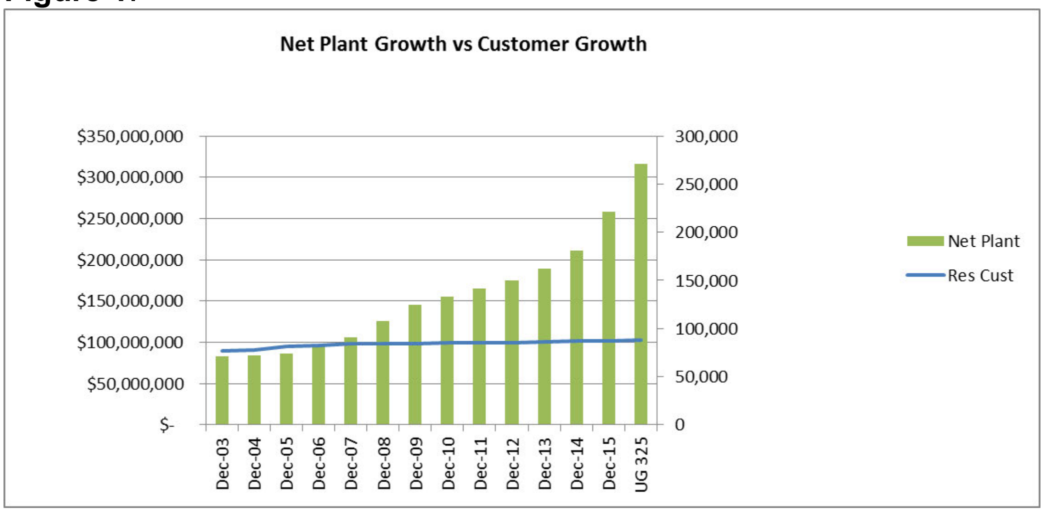
a. adequately demonstrating that the projects make economic sense with regard to return on investment;
b. performing sufficient due diligence in estimating costs for projects; and
c. accurately forecasting costs for its new customer growth budget.

I. Overall Context

Q. What is the overall context of the Company's capital plant additions?

A. As noted above, Avista proposes a 22 percent net increase in rate base. As was the case in the Company's previous general rate case,[4] this represents a dramatic increase over the historical average of rate base growth for the years between 2002 and 2013. The historical average of net plant growth in this period is 7.75 percent. Figure 1 below shows the long-term rate base growth.

Figure 1.



Source: Avista Results of Operations 2003-2015

Since 2007, the Company has filed five general rate cases, seeking rate increases that were primarily driven by capital investment: UG 181 (filed October 12, 2007); UG 201 (filed September 30, 2010); UG 284 (filed September 2, 2014); UG 288 (filed May 1, 2015); UG 325 (filed November 30, 2016). Figure 2 below illustrates the relative magnitude of net plant growth over this period.

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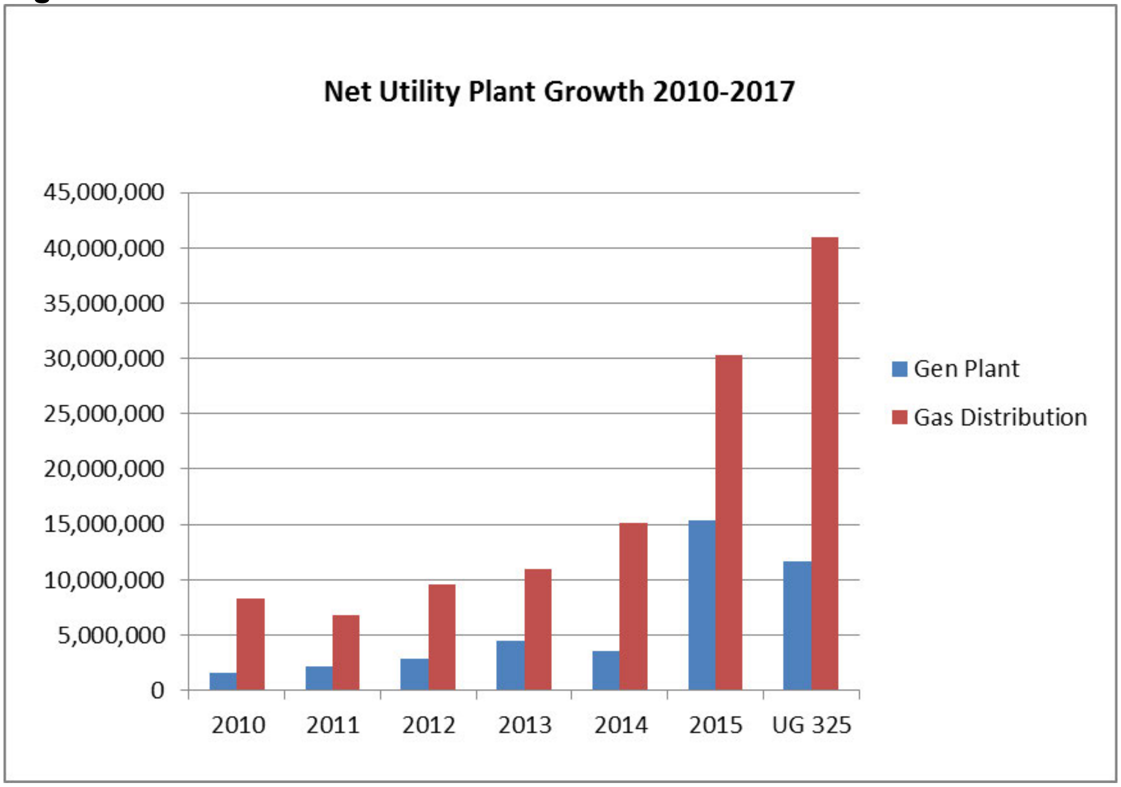
[4] See UG 288 Avista/600, Schuh/9-10.

Figure 2.



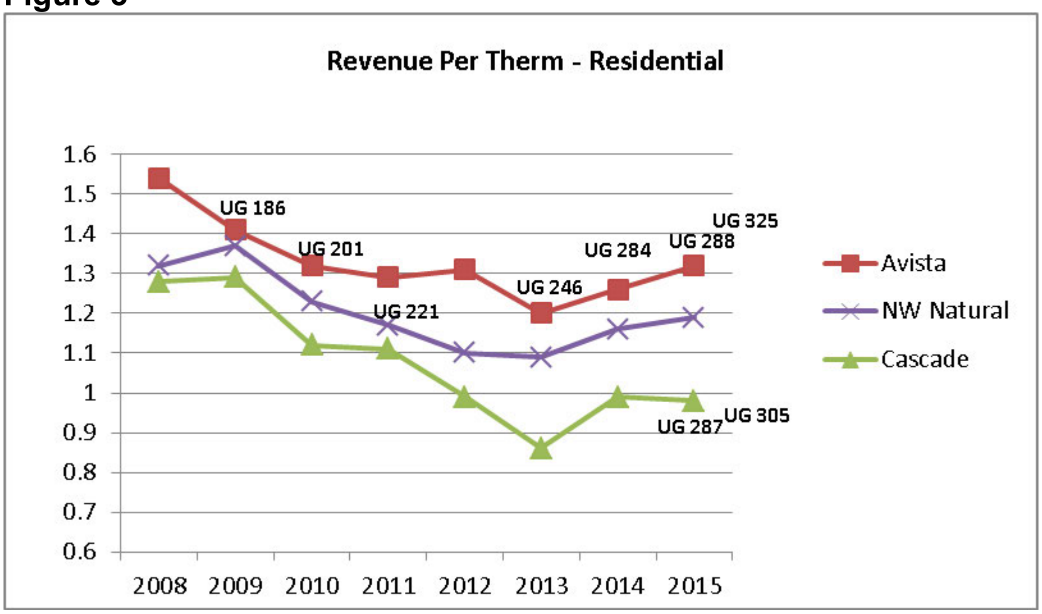
Source: Avista Results of Operations 2005-2016

As Mr. Morris acknowledges in his opening testimony, the Company's investment in rate base has been increasing significantly and is projected to continue to do so, while load growth is relatively flat,[5] and new customer hookups are increasing at about 1.5 percent per year.[6] Avista appears to be somewhat unique among gas distribution companies in Oregon regarding the recent intensity and relative magnitude of its capital investment and the resulting frequent requests for rate relief. By contrast, Cascade, a similarly situated Company in that it also serves more rural areas in Oregon and has

[5] See Avista/100, Morris/6, at Illustration No. 1.
[6] See Avista/700, Forsyth/11.

roughly a similar amount of customers,[7] yet Cascade's two recent general rate filings, in 2015 and 2016, were its first since 2006 and its requested increases in net rate base in the 2015 and 2016 were modest in comparison. Prior to that, Cascade had not filed a general rate case since 1989. By comparison, Cascade's customers' rates are 35 percent lower than Avista's.[8] NW Natural is not as similarly situated, as it has a predominantly urban service territory and much larger rate base and number of customers. NW Natural also had an automatic adjustment clause that enabled annual recovery of pipeline safety and remediation projects.[9] Figure No. 3 illustrates the relationship between residential rates and frequency of general rate cases among the investor-owned LDC's in Oregon.

Figure 3



Source: 2015 Oregon Utility Statistics, pgs 43-44

[7] Avista has 99,117 Oregon customers. Cascade has 68,732 Oregon customers. 2015 Oregon Utility Statistics at 54.
[8] See *2015 Oregon Utility Statistics, pgs. 43-44.*
[9] See UG 221, Order 12-408.

Q. Why is a rate and rate-base growth comparison with other Oregon gas companies relevant in this proceeding?

A. Peer, or benchmarking, analysis is a common means of analysis so as to better understand both best practices and perhaps identify the causes or circumstances that affect utilities. In this case, it is also helpful to contextualize the historical, demographic or other stresses placed on Avista. At a basic level, we are asking the questions as to why Avista appears so different from its Oregon peers, given that the other LDCs also have extensive pipeline safety and remediation requirements. The Company's filing does not address the issue beyond asserting a need for capital investment to maintain, update and replace aging infrastructure in order "to sustain reliability, safety, and service to customers."[10] Staff asked the Company in a data request to elaborate on this issue, specifically with regard to the relative magnitude and frequency of rate increase requests. The Company's response was broad and lengthy, providing a summary restatement of the reasons for the investments contained in its filing.[11] Yet, Staff finds these given reasons to be vague and not sufficiently persuasive in terms of understanding why the Company's capital investment needs are so much larger, relative to historical norms and to other LDCs in Oregon.

As in the Company's previous GRC, UG 288, Staff continues to be concerned that the Company may be over-investing in capital projects in order

[10] See Avista/100, Morris/8 at 10.
[11] See Exhibit Staff/803, Moore/5-10 (Avista response to Staff DR No. 432).

to increase rate base to drive earnings growth in an environment of declining or very modest sales growth.

Q. What indicators give rise to Staff's concern about the Company over-investing in capital projects?

A. First, the magnitude of the Company's investments is extremely high when compared to historical norms and when compared to other Oregon LDCs, as discussed above. In UG 288, when Staff brought up this issue in its opening testimony,[12] the Company's reply testimony asserted that the $46 million capital investment in the 2015 test year was an anomaly caused by several large discrete capital projects that were being completed.[13] The Company stated that its capital investments for 2016 and 2017 were expected to taper off and be between $25 to $32 million per year.[14] As we see, the opposite has occurred in this case as the Company has significantly increased its capital investment. Moreover, the Company's five-year capital investment plan as of August 2016 indicates that system-wide capital investment targets increase from $[redacted] million in 2016 to $[redacted] million in 2017 and remain at that level through 2021.[15] The Company maintains that now is a good time to make investments given the declining trend in natural gas prices, which allows for such investments while customers face only modest overall rate increases.[16]

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[12] UG 288 Exhibit Staff/600, Moore/4-8.
[13] UG 288 Exhibit Avista/1400, Schuh/11.
[14] UG 288 Exhibit Avista/1400, Schuh/11.
[15] See Confidential Exhibit Staff/806 (Avista response to Staff DR 185C).
[16] Avista/200, Thies/7.

My second indicator of concern is that in reports to investors, the Company highlights its utility infrastructure investment and increasing rate base as a positive aspect of the Company's overall financial condition, driving earnings and dividend growth.[17]

Third, in reviewing the Company's capital plan forecasts, it appears that funding for capital projects are driven by system-wide capital targets, with individual projects selected and being funded to meet the target.[18] The Company explained in an all-party workshop that its Capital Planning Group (CPG) reviews each of the proposed projects, which are weighted and prioritized and funded according to business needs.

Fourth, from what Staff can tell, the information reviewed by the CPG in order to approve project funding appears to be vague and high-level. The form for approval by the CPG itself limits the description of project purpose and necessity to 240 characters.[19] It appears that Avista is predisposed to growing its rate base to meet investment targets based on its corporate strategy, and then filing frequent general rate filings to recover the costs of additional investments from ratepayers.

II. Justification for Capital Additions

Q. Does Staff have concerns about the justification for the various capital investments in Avista's filing?

[17] See Exhibit Staff/804 (Avista presentation at BMO Capital Markets Roadshow, December 13, 2016).
[18] See Confidential Exhibit Staff/806 Company response to Staff DRs 185 and 417.
[19] See Exhibit Staff/802, Moore/6 Example of Capital Project Request Form for Bonanza Development.

A. Yes, to some extent. The Company's filing supporting each of the projects included in Mr. Machado's testimony (Avista/600) includes summary business case forms with high-level descriptions.[20] For programmatic projects – which comprise the vast majority of the capital investment in this filing – the funding request and approval amounts are estimates made on a system level. For example, in the business case for ER 1001, New Revenue- Growth, the estimate is system-wide for both gas and electric growth projects.[21] Additionally, the ER numbers for programmatic (ongoing) projects contain multiple individual projects within them, for which the Company does not provide individual support or documentation. Staff found 563 individual projects that were either directly assigned or allocated to Oregon in 2016.[22]

In discovery, Staff asked the Company to provide detailed supporting information for each of the individual projects in 2015, 2016 and 2017.[23] Given the vast number of projects identified, the Company requested that Staff pick a sample of projects about which the Company would supply the information.[24] In response to Avista's request, Staff selected a total of 17 projects for a first step in an in-depth review, with Staff understanding that the remainder of the requested information would follow. After further discussion, Staff agreed to accept the requested information for two groups of projects. Some information was provided February 23, and the remainder will be provided April 10.

[20] Avista/600, Machado/2-127.
[21] *Ibid.*
[22] Exhibit Staff/805, see Company response to Staff Data Request 181 Attachment 'D' (Excel file).
[23] Exhibit Staff/803, Moore/11.
[24] Staff notes that it is a standard approach in audits with large amounts of activities to look at a random sample and then apply the findings to the group as a whole.

Staff also included in its review a trip to Avista's headquarters in Spokane for a two-day workshop, tour the campus, and review the selected projects as well as speak directly with Avista personnel. With regard to the programmatic gas distribution projects, Staff did not have specific concerns with the projects that were reviewed, and was satisfied with the Company's presentation demonstrating that the work being done is prudent. However, Staff was not able to discern why the timing for many of the projects is of such an urgent need that the proposed amount of work needs to be completed within the test year. In this context, Staff does view as a valid goal to also consider the rate impact on customers; that is, to prudently manage costs so as to minimize rates charged to customers. For example, slightly decreasing or even stable rates would be seemingly preferred by customers compared to steadily increasing rates, the latter of which has been the case for Avista.

The adjustments I recommend are primarily focused on investment in new growth projects, as discussed more fully below.

Analysis of New Growth Projects

Q. What does Avista request for new growth-related projects?

A. Mr. Machado's testimony shows actual investment amounts from July 1, 2016 through December 31, 2016, in one column and forecasted investment amounts from January 1 – September 30, 2017 in the second column.[25] Table No. 2 contains a request for the cost of new customer connections for the 12-

[25] Avista/600, Machado/12, Table No. 1.

month period of October 1, 2017 – September 30, 2018.[26] For the purposes of this analysis and my recommended adjustment, I consider the entire additional rate base for new growth since the Company's last rate increase granted in UG 288, which means for a period beginning January 1, 2016.

For new growth revenue projects – which comprise ER Nos. 1001, 1050, 1051 and 1053 – the Company spent approximately $7.6 million in 2016.[27] The Company forecasts an additional $4.9 million for the first three quarters of 2017.[28] Avista's response to date to Staff DR 182 represents a forecast of $5.6 million, which is more in line with the amount spent in 2016.

Q. How does Avista forecast costs for connecting new customers?

A. In its response to Staff Data Request 367, the Company states that it currently only forecasts for new residential connections, but uses historical estimates to estimate new commercial connections.[29] Industrial or large commercial customer connections are considered on a case-by-case basis.[30] For residential customers, the Company states that it derives an associated capital cost of $2,500 per customer based on average use based on a break-even Internal Rate of Return (IRR) of 10 percent.[31] This means that the Company should spend no more than an average of $2,500 per customer to meet its break-even IRR of 10 percent.

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[26] Avista/600, Machado/12, Table No. 2.
[27] See Exhibit Staff/803, Moore/1 (Avista response to Staff data request 245, Attachment B).
[28] See Exhibit Staff/807 Avista response to Staff DR No. 182, Attachment AI.
[29] See Exhibit Staff/803, Moore/4 (Avista response to Staff DR No. 367).
[30] *Ibid*.
[31] *Ibid*.

Q. Does Avista's spending on new customer connections adhere to that policy?

A. No. In 2016, Avista connected 1,414 new residential customers and 194 non-residential customers while spending approximately $7.6 million.[32] On a total basis, this equates to $4,726 per new customer connection. In reviewing 2016 transfers to plant for individual new growth projects (ER Nos. 1001, 1050, 1053) and removing all project descriptions that indicated non-residential projects, Staff found the Company spent approximately $5.7 million for 1,414 new residential customers. This equates to about $4,000 per new residential connection.[33]

Q. Did Staff identify specific residential growth projects that do not appear to be economically beneficial for ratepayers?

A. Yes. Staff identified three projects.

1) Old Midland Road (Project No. 06805184) - - Avista installed 34,000 feet of distribution pipe to serve 90 potential customers in Midland, Oregon. Completed in 2015, the project cost $658,127.[34] This cost does not include the associated capital costs in ER Nos. 1050, 1051, and 1052, which involve the purchase and installation of meters, regulators and encoder receiver transmitters (ERTs). The expected IRR of this project, based on cost estimates, was 4.33 percent, well below the Company's cost of capital.[35]

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[32] See Exhibit Staff/802, Moore/2 (Avista response to Staff DR No. 335, Attachment A).
[33] See Exhibit Staff/805 (Avista response to Staff DR No. 181, Attachment D).
[34] See Exhibit Staff/805 (Avista response to Staff DR No. 181, Attachment D).
[35] See Exhibit Staff/803, Moore/3 (Avista response to Staff DR 346).

2) 3399 Granite Hill Rd (Project No. 98505046) - Avista installed equipment to serve a new customer at 3399 Granite Hill Rd., which was completed in 2016 at a cost of $27,129.[36] An internet search identifies this address as a 1,042 sq ft residence.[37] Spending such a large amount to connect a residential customer is neither reasonable nor prudent.

3) Bonanza, Oregon (Project No. 98705080) - Avista installed 3.6 miles of 4" pipe and 3.9 miles of 2" pipe to serve the town of Bonanza, Oregon.[38] The preliminary IRR based on a cost estimate of $666,000 was 6.09 percent IRR, also below the Company's cost of capital. The project ultimately cost $1,182,741 due to unexpected bedrock in the trench path. With a quick Google search, Staff was able to obtain a soil survey report from the U.S. Dept. of Agriculture that identifies bedrock at 17-25" inches depth along a significant portion of the project path.[39] The Company should perform due diligence in identifying trenching conditions when determining the economic viability of a potential project.

This Bonanza project was one of the 17 projects for which Staff obtained additional information and did an in-depth review and analysis.[40]See Exhibit Staff/802 for a complete analysis of this project.

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[36] See Exhibit Staff/805, Avista response to Staff DR No. 181, Attachment D.
[37] https://www.zillow.com/homes/for_sale/3399-Granite-Hill-Rd,-Grants-Pass-OR_rb/?fromHomePage=true&shouldFireSellPageImplicitClaimGA=false&fromHomePageTab=buy
[38] See Exhibit Staff/802.
[39] See Exhibit Staff/802, Moore/24-28. For the full report see: https://websoilsurvey.sc.egov.usda.gov/WssProduct/4wifn1bnmam2pvzzd1x1a2ci/DL_00000/20170215_11064811534_1_Soil_Report.pdf
[40] See Exhibit Staff/802.

IV. Recommended Adjustments

Q. Please summarize Staff's recommended adjustments.

A. Staff recommends the following adjustments for natural gas distribution plant:

1) Old Midland Development. I recommend removing the entire cost of the project of $658,000. As noted above, the Company expected the IRR to be 4.33 percent, which is below the cost of capital. Existing customers should not pay the cost of the Company's desire to grow its rate base.

2) 3399 Granite Hill Rd. Development. I recommend removing the $27,129 spent to install equipment to connect a new residential customer for reasons stated above.

3) Bonanza, Oregon Development. An in-depth review of this project, including the spreadsheet model used to calculate the IRR, leads Staff to conclude that a cost of $442,000 for the project would be a neutral result for existing customers.[41] Given that the Company may have been negligent in underestimating the costs by not identifying the bedrock along the trench path (as discussed above), it should not recover costs above a break-even IRR. I recommend removing $740,000 for this project.

4) Jackson Prairie Storage – ER 7206. In 2016 Avista spent $806,641 for the purchase of 680 acres of land adjacent to the storage facility to keep the land above the storage field free from development, conflicts and encroachment issues. Staff does not view this property as used and useful for providing

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[41] See Exhibit Staff/802 for a complete analysis of this project.

service to customers and should not be included in rate base. I remove the Oregon allocated amount of the purchase of $245,000.

4) I recommend an overall adjustment for 2016 New Growth Projects(ER Nos. 1001, 1050, 1051, and 1053) by removing $2.2 million. I estimate that the Company spent $5.7 million on new residential connections in 2016.[42] Based on Avista's break-even amount of $2,500 per new customer, with 1,414 customers, the acceptable amount to spend on new growth should be approximately $3.5 million. I recommend an adjustment of $2.2 million.

5) I also recommend an overall adjustment for 2017 New Growth Projects based on the same methodology described above. Using the Company's forecast of 0.8 percent growth in residential customers would equal 1,527. The 2017 forecast is for three quarters of the year. I therefore take 75 percent of the Company's projected growth in residential customers, which leaves a total of 1,145 new customers. I include $2.9 million related to new customer growth and remove approximately $3.5 million.

6) I make an overall management adjustment for all distribution projects except for those associated with new growth projects ER Nos. 1001, 1050, 1051 and 1053 of 10 percent, removing $2.2 million. This adjustment reflects Staff concerns that a certain portion of projects are not reasonable, prudent, or necessary at this point in time based on: a) findings of imprudence for some of the growth projects that were reviewed in detail; b) lack of evidence to support the timing for this level of capital investment; and c) concerns that the capital

[42] See Exhibit Staff/805, Avista response to Staff DR No. 181 Attachment D.

approval process is geared toward achieving a pre-determined target for spending.

Q. Does this conclude your opening testimony?

A. Yes.

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 801

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Mitchell Moore
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Utility Analyst Energy Rates, Finance and Audit Division
ADDRESS:	201 High Street SE. Suite 100 Salem Oregon 97301-3612
EDUCATION:	Bachelor of Arts, Journalism and Political Science University of Hawaii at Manoa (1992)
EXPERIENCE:	I have been employed by the Public Utility Commission of Oregon since 2009, with my current position being a Senior Utility Analyst in the utility program's Energy Rates, Finance and Audit division.

My prior position at the Commission was as a Senior Telecommunications Analyst, where my assignments included reviewing carrier interconnection agreements, wholesale service quality, and resolution of carrier-to-carrier complaints.

Prior to my utility regulatory career, I worked with AT&T as a loop electronics coordinator, designing and implementing high-speed broadband and fiber optic services in Los Angeles. I have also worked as an outside plant design engineer with Qwest Corporation, and I spent several years as a newspaper reporter with the Honolulu Star-Bulletin.

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 802

Exhibits in Support
Of Opening Testimony

March 1, 2017

Analysis of Bonanza Growth Project
Lance Kaufman, PhD

The Bonanza Growth Project Avista utilized a revenue requirement model to justify the cost of extending natural gas service to the town of Bonanza Oregon. Avista's model contains a number of errors:

- Incorrect application of the internal rate of return analysis.
- Inflated forecast of customer growth.
- Inclusion of gas commodity revenue without gas commodity costs.
- Incorrect timing of revenues.
- Failure to include service connection costs
- Failure to prudently evaluate the soil types in the expansion path.
- Failure to include operation, maintenance, customer service, and billing costs
- Failure to include
- IRR not calculated over lifetime of investment.

Internal Rate of Return

A dollar received today is more valuable than a dollar received in the future. This phenomenon accounts for the fact that interest is paid on loans. This phenomenon also makes valuing cash flows over time complex. NPV and IRR are two methods used to evaluate a series of values received over time. In the NPV model, future cash flows are reduced, or discounted, by a pre-determined percentage. The fixed percentage reduction is called the discount rate. The value of money today is called the present value. The value of money in the future is called the future value. The relationship in the present value of money and the future value of money is given by the following equation:

$$FV = PV * (1 + discount\ rate)^{Number\ of\ periods\ in\ the\ future}$$

Where the discount rate is the change in value over one period of time. This formula can be used to calculate the balance of a savings account over time. Suppose a bank pays five percent interest per year on savings, and interest is paid yearly. If a person saved $100 at the beginning of the year, the amount at the end of two years would be calculated as follows:

$$FV = \$100 * (1.05)^2 = \$110.25$$

If an individual plans to save all extra money received in the account earning five percent, than that five percent represents the person's opportunity cost. The person should be indifferent between a payment of $100 today and $110.25 in two years. The value formula can be rewritten to calculate the present value of a payment in the future:

$$PV = \frac{FV}{(1 + discount\ rate)^{Number\ of\ periods\ in\ the\ future}}$$

With this formula, we can calculate the present value of a future payment. Most complex investment opportunities involve a series of payments over time, not just one future value. The present value of all future cash flows is called the net present value, or NPV.

$$NPV = FV_0 + \frac{FV_1}{(1+d)^1} + \frac{FV_2}{(1+d)^2} + \frac{FV_3}{(1+d)^3} + \frac{FV_4}{(1+d)^4} \cdots$$

The net present value is one method of evaluating the benefit of an investment. If the investment has a positive net present value, then the return from the investment is larger than the opportunity cost implied by the discount rate. The net present value approach to evaluating investments has some limitations when evaluating investments. An alternate approach is to calculate the internal rate of return, or IRR.

The internal rate of return is calculated by finding the discount rate that makes the NPV of an investment equal to zero:

$$0 = FV_0 + \frac{FV_1}{(1+IRR)^1} + \frac{FV_2}{(1+IRR)^2} + \frac{FV_3}{(1+IRR)^3} + \frac{FV_4}{(1+IRR)^4} \cdots$$

Consider a simple example similar to the savings example above. Suppose an investment requires a payment of $100 today and provides a receipt of $110.25 in two years. The IRR is calculated as follows:

$$0 = -100 + \frac{110.25}{(1+IRR)^2}$$

$$100 = \frac{110.25}{(1+IRR)^2}$$

$$100 * (1+IRR)^2 = 110.25$$

$$(1+IRR)^2 = \frac{110.25}{100}$$

$$IRR = \sqrt{\frac{110.25}{100}} - 1 = 1.05 - 1 = 0.05$$

In this case, the internal rate of return is equal to the interest rate paid by the bank. The IRR value provides a means of comparing multiple projects, even if all projects have positive net present values. It is possible for a project with a large NPV to have a small IRR. If funds are limited, it may make more sense for a firm to invest in several smaller projects with high IRRs than to invest in a single project with a high NPV but low IRR.

Avista's IRR analysis differs from traditional IRR analysis. Table XX provides a simplified example of Avista's methodology. Avista's method of calculating internal rate of return is a hybrid of a standard net present value (NPV) analysis and a standard internal rate of return (IRR) analysis. Avista splits cashflows into cost and benefit components, and takes the net present value of the cost component as the input into the IRR calculation of the benefit component. First, the annual revenue requirement (cost) for the life of the project is calculated.[1] Second, the NPV is calculated for only the costs of the project.[2] The NPV is calculated using the Company's cost of capital as the discount rate. Third, the annual incremental revenue (benefit) of the project is calculated. Fourth, the IRR is calculated by adding the NPV of costs as an initial startup cost.[3] This method of IRR calculation does not produce consistent results because it applies a different discount rate to costs than to benefits.

An alternate approach to calculating IRR is to net the annual revenue requirement against the annual incremental revenue.[4] This approach is a customer centric view of IRR because it is evaluating the impact of the project on base customer rates.

Avista's methodology appears to be trying to reconcile an investor's perspective of IRR with customer perspective of IRR. Traditional NPV and IRR analysis focuses only on cash flows, and Avista's capital intensive projects require large and substantial up front investments. However, the process of calculating revenue requirement spreads the upfront cash investment over the life of the project. The revenue requirement calculation also converts return on equity from a non-cash item into a cash item.

A purely investor centric calculation of IRR would be to treat the depreciation and return components of the revenue requirement as benefits, and to include an appropriate period of regulatory lag between when these benefits begin to accrue and when the cash is invested. Under the assumption of no regulatory lag and no regulatory disallowance, the IRR would always equal the cost of equity. From this point of view, there is no reason to forecast incremental revenues or to test the validity of the investment.

When the customer centric approach is used the Bonanza growth project has an IRR of 5.44 percent.[5] Avista currently uses its pre-tax weighted average cost of capital to represent customer discount rates. A consistent application of IRP planning assumptions to growth planning requires that growth projects have an IRR greater than 7.458 percent.

Inflated forecast of customer growth.

Avista assumes that all potential customers become actual customers. It is unrealistic for Avista to expect to achieve 100 percent penetration rate for gas service for an area that is a brownfield development. As an alternative, Staff proposes that Avista assumes a penetration curve and rate that is supported by data for other brownfield developments with similar circumstances. Absent this information, staff assumes a 76% penetration rate.

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[1] Column b lines 2 through 6.
[2] Column d line 7.
[3] Column f line 1 contains "start up costs" and line 7 contains the IRR.
[4] Column d lines 8 through 14.
[5] See page ++

Inclusion of gas commodity revenue without gas commodity costs.

Avista includes gas commodity portion of rates when calculating expected annual revenue. However, gas commodity costs are a pass through cost. The revenue associated with these costs should not impact the investment decision. Staff assumes that only basic charge and the base rate revenue is relevant to calculating the internal rate of return.

Incorrect timing of revenues

Avista bases the revenue requirement calculations under the assumption that the facilities are transferred to plant mid-year. However, Avista assumes that customers provide a full year of revenue in the first year. Staff assumes that 66 customers connect the first year and that Avista only collects a half year of revenue in the year that new customers connect.[6] Staff also assumes that it takes three years to reach the stable 76 percent penetration rate.

Failure to include service connection costs

Avista states that new service connections for Oregon customers cost about $2500 each. However, the cost for these connections are not included in Avista's IRR analysis. Staff adds $2500 in plant for each new customer. This plant is added in the year that revenue begins for the new customer. This adds $290,000 in capital additions to the project.

Failure to prudently evaluate the soil types in the expansion path

Avista states that this project experienced substantial cost overruns due to unexpected trenching costs. Avista forecasted the cost of this project under the assumption that all soil was sandy loam. However, USGS soil surveys indicate that a substantial portion of the trenching path contains shallow bedrock and cemented material. The USGS soil survey is freely available and it requires less than one hour of labor to check soil conditions for this area. A prudent evaluation of this project should have revealed the difficult trenching conditions prior to project approval. Staff includes $300,000 in capital additions for the calculation of the IRR of this project.

Failure to include operation, maintenance, customer service, and billing costs

Avista assumes that there is no incremental operation, maintenance, administrative, general, customer service, and billing costs. Staff assumes that customers incur $4 per month in these types of costs. This estimate is preliminary, and it may be appropriate to also include a fixed annual cost for the maintenance of mains. This adds $240,000 in expenses over the life of the project.

IRR not calculated over lifetime of investment

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[6] See page ++ which shows that currently 66 customers are connected.

Avista includes 44 years of revenue in calculating the IRR. However, the revenue requirement is calculated over 55 years. This results in a mismatch of costs and benefits. Staff adopts the 44 year period for both revenue requirement and revenues.

IRR and NPV using Staff calculations

After making the Staff adjustments identified above, the IRR for this project becomes undefined. This is because project has negative cash flows in nearly every period. The net present value of the project is negative $934,478. This means that the project is a net loss for customers. If the cost of this project had been offset by a customer contribution in aid of construction equal to $740,000 the project would have a NPV of $0.

Asset = CC

AVISTA Corp.

CAPITAL PROJECT REQUEST FORM (CPR)

Request Type	Project(s)
New	98705080
	'Parent' Code

ER	Budget Category	Service Code	Project Title (30 Characters)
1001	9-Mandated	GD-Gas Direct	Bonanza Oregon - Growth Project

Long Project Name (100 Characters)

Approved Budget	Will This Project Include Retirement of Materials or Equipment?	Revenue Type	ER Sponsor	BI Number	WMS Job #	Rate Jurisdiction
X	No	Gas Availability New Revenue	B51	MN306		OR-Oregon
Billing			Estimated Project Completion Date: 12-31-2015		Location: 008-Oregon	Project Start Date
			Billing Contact			

Project Description (Include Purpose and Necessity - 240 Characters)

Install Approximately 3.6 Miles of 4"PE and 3.9 Miles of 2"PE to serve the Town of Bonanza Oregon. This project was approved for $668,159 at a 6.09% preliminary IRR to serve 152 potential customers. A Regulator Station will be constructed as part of the Klamath Lateral Tap relocation project West of Trans-Canada Station 14 to serve this new distribution system

CONSTRUCTION

Office Use only Task	FERC 3XXXXX	Estimated Amount By FERC Number	As Built Amount By FERC Number
	000376	Mains $666,159	Mains
GROSS ADDITIONS		$666,159	
Cost of Removal By FERC (3XXXXX)			
	Total Removal		
Salvage By FERC (3XXXXX)			
	Total Salvage		
Total Removal Less Salvage			
Non Standard Work Breakdown Structure Needed (Optional)			
Peer Task			
Sub Task			
Date Prepared:			
TOTAL COST OF PROJECT		$666,159	

Budget Authorized: $666,159

Office Use Only	Date
Project Set Up By	
Approved By	

APPROVALS

SIGNATURE	DATE
Signature / Print Name Jeff Daniels	02-16-2015
Signature / Print Name David Howell	2/23/15
Signature / Print Name Michael J. Faulkenberry	2/25/15
Signature / Print Name	3/2/15
Signature / Print Name	3/2/15

Project Contact & Extension Jeff Daniels ext 1640 / Michelle Tyree ext. 1648

APPROVAL SIGNATURE(S) REQUIRED

To $99,999 - Director
$100,000-$499,999 - VP or GM Utility
$500,000-$2,999,999 - Sr Vice President/CFO
$3,000,000-$9,999,999 - President/CEO/COO
Over $10,000,000 - Board Chair
Out-of-Budget - Capital Budget Committee

Questions: contact Project and Fixed Asset Accounting (Bill Ext 4500 or Howard ext-2936)

Date Work Completed	
Foreman/ Supervisor	

Revised December 2012

Michelle Tyree

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Parcel Information	Gross Numbers	Forecasted Connects (3yr) %	#	Actual Year 1	Year 2	Year 3
Residential Dwellings	0		125			
Small Commercial Businesses	0		27			
Totals	**0**		**152**	**66**	**0**	**0**
Expected Annual Revenue Analysis					**Current Heating Source**	
Revenue Determinants	**OR Revenue**				**Source**	**Percent**
Residential Basic Charge	$8.00	Residential Basic Charge		$12,000	Propane	0%
Residential Therm Rate	$0.47000	Residential Revenue		$33,840	Wood	0%
Average Residential Therm Usage	576				Oil	0%
Small Commercial Basic Charge	$12.00	Commercial Basic Charge		$3,888	Electric	0%
Small Commercial Therm Rate	$0.38000	Commercial Revenue		$27,702	Combo/Other	0%
Average Small Commercial Therm Usage	2,700	**Expected Annual Revenue**		**$77,430**	**Total**	**0%**
Construction Cost Estimate						
Description	**Cost/Foot**	**Distance**	**Dist Cost**	**Eng Cost**	**Project Cost**	**NPV**
4" PE Main	$ 13.42	20,000	$ 268,480	$26,848	$295,328	
2" PE Main	$ 9.97	20,000	$ 199,400	$19,940	$219,340	
Other Costs(Bridge Crossings, Reg Stations, Paving, Traffic Control, etc)			$ 137,719	$13,772	$151,491	
Total Avista Forecast Cost			**$605,599**	**$60,560**	**$666,159**	**(33,807.79)**
Bedrock Trenching	$60	5,000	$ 300,000		$300,000	
Service Connections	$2,500	116			$288,750	
Total Staff Forecast Cost			**$181,680**	**$60,560**	**$1,254,909**	**(934,478.40)**
Staff Disallowance					($740,000)	
Total Staff Rate Base					**$514,909**	**(419.31)**

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	605,599	605,599			605,599
Period					
1	605,599	605,599	605,599	5,505	22,710
2	0	0	594,072	16,516	43,718
3	0	0	571,614	27,527	40,442
4	0	0	550,302	38,538	37,414
5	0	0	530,050	49,549	34,610
6			510,779	60,560	32,012
7			492,418	71,571	29,614
8			474,896	82,582	27,391
9			458,152	93,593	27,016
10			441,539	104,603	27,016
11			424,927	115,614	27,016
12			408,314	126,625	27,016
13			391,702	137,636	27,016
14			375,089	148,647	27,016
15			358,476	159,658	27,016
16			341,864	170,669	27,016
17			325,251	181,680	27,016
18			308,639	192,691	27,016
19			292,026	203,701	27,016
20			275,413	214,712	27,016
21			258,801	225,723	13,499
22			246,919	236,734	0
23			239,762	247,745	0
24			232,605	258,756	0
25			225,448	269,767	0
26			218,291	280,778	0
27			211,134	291,789	0
28			203,977	302,800	0
29			196,820	313,810	0
30			189,663	324,821	0
31			182,506	335,832	0
32			175,348	346,843	0
33			168,191	357,854	0
34			161,034	368,865	0
35			153,877	379,876	0
36			146,720	390,887	0
37			139,563	401,898	0
38			132,406	412,908	0
39			125,249	423,919	0
40			118,092	434,930	0
41			110,935	445,941	0
42			103,778	456,952	0
43			96,621	467,963	
44			89,463	478,974	

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
605,599	(0)		605,599		342,261
5,505	6,022	594,072	5,505	599,835	8,038
11,011	11,448	571,614	11,011	582,843	15,620
11,011	10,301	550,302	11,011	560,958	15,034
11,011	9,241	530,050	11,011	540,176	14,477
11,011	8,260	510,779	11,011	520,415	13,947
11,011	7,350	492,418	11,011	501,599	13,443
11,011	6,511	474,896	11,011	483,657	12,962
11,011	5,733	458,152	11,011	466,524	12,503
11,011	5,602	441,539	11,011	449,846	12,056
11,011	5,602	424,927	11,011	433,233	11,611
11,011	5,602	408,314	11,011	416,621	11,165
11,011	5,602	391,702	11,011	400,008	10,720
11,011	5,602	375,089	11,011	383,395	10,275
11,011	5,602	358,476	11,011	366,783	9,830
11,011	5,602	341,864	11,011	350,170	9,385
11,011	5,602	325,251	11,011	333,558	8,939
11,011	5,602	308,639	11,011	316,945	8,494
11,011	5,602	292,026	11,011	300,332	8,049
11,011	5,602	275,413	11,011	283,720	7,604
11,011	5,602	258,801	11,011	267,107	7,158
11,011	871	246,919	11,011	252,860	6,777
11,011	(3,854)	239,762	11,011	243,341	6,522
11,011	(3,854)	232,605	11,011	236,184	6,330
11,011	(3,854)	225,448	11,011	229,027	6,138
11,011	(3,854)	218,291	11,011	221,869	5,946
11,011	(3,854)	211,134	11,011	214,712	5,754
11,011	(3,854)	203,977	11,011	207,555	5,562
11,011	(3,854)	196,820	11,011	200,398	5,371
11,011	(3,854)	189,663	11,011	193,241	5,179
11,011	(3,854)	182,506	11,011	186,084	4,987
11,011	(3,854)	175,348	11,011	178,927	4,795
11,011	(3,854)	168,191	11,011	171,770	4,603
11,011	(3,854)	161,034	11,011	164,613	4,412
11,011	(3,854)	153,877	11,011	157,456	4,220
11,011	(3,854)	146,720	11,011	150,299	4,028
11,011	(3,854)	139,563	11,011	143,142	3,836
11,011	(3,854)	132,406	11,011	135,985	3,644
11,011	(3,854)	125,249	11,011	128,827	3,453
11,011	(3,854)	118,092	11,011	121,670	3,261
11,011	(3,854)	110,935	11,011	114,513	3,069
11,011	(3,854)	103,778	11,011	107,356	2,877
11,011	(3,854)	96,621	11,011	100,199	2,685
11,011	(3,854)	89,463	11,011	93,042	2,494
11,011	(3,854)	82,306	11,011	85,885	2,302

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
588,739	0	258,894	95,324	4,245	313,536
13,826	0	9,084	1,981	100	7,373
26,869	0	9,001	3,475	194	14,341
25,860	0	8,836	3,371	187	13,802
24,902	0	8,671	3,272	180	13,289
23,991	0	8,506	3,177	173	12,802
23,124	0	8,341	3,086	167	12,339
22,297	0	8,176	3,000	161	11,896
21,507	0	8,010	2,917	155	11,474
20,738	0	7,845	2,836	150	11,063
19,972	0	7,680	2,755	144	10,654
19,206	0	7,515	2,674	139	10,244
18,440	0	7,350	2,593	133	9,835
17,675	0	7,185	2,512	128	9,425
16,909	0	7,019	2,432	122	9,016
16,143	0	6,854	2,351	117	8,607
15,377	0	6,689	2,270	111	8,197
14,611	0	6,524	2,189	105	7,788
13,845	0	6,359	2,108	100	7,378
13,079	0	6,194	2,028	94	6,969
12,314	0	6,028	1,947	89	6,559
11,657	0	5,863	1,876	84	6,208
11,218	0	5,698	1,827	81	5,974
10,888	0	5,533	1,788	78	5,798
10,558	0	5,368	1,749	76	5,621
10,228	0	5,203	1,710	74	5,445
9,898	0	5,037	1,671	71	5,269
9,568	0	4,872	1,632	69	5,093
9,238	0	4,707	1,593	67	4,916
8,908	0	4,542	1,554	64	4,740
8,578	0	4,377	1,515	62	4,564
8,249	0	4,212	1,476	59	4,388
7,919	0	4,047	1,437	57	4,211
7,589	0	3,881	1,398	55	4,035
7,259	0	3,716	1,358	52	3,859
6,929	0	3,551	1,319	50	3,683
6,599	0	3,386	1,280	47	3,507
6,269	0	3,221	1,241	45	3,330
5,939	0	3,056	1,202	43	3,154
5,609	0	2,890	1,163	40	2,978
5,279	0	2,725	1,124	38	2,802
4,949	0	2,560	1,085	36	2,625
4,619	0	2,395	1,046	33	2,449
4,289	0	2,230	1,007	31	2,273
3,959	0	2,065	968	28	2,097

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	ACTUAL ROR BY YEAR (u)	LEVELIZED	55,784
2,208,597	848,604		Savings or margin by year	
45,907	43,165	5.29%		55,784
80,512	71,182	3.05%		55,784
78,100	64,926	3.31%		55,784
75,802	59,251	3.58%		55,784
73,608	54,100	3.87%		55,784
71,510	49,419	4.15%		55,784
69,502	45,163	4.45%		55,784
67,577	41,289	4.76%		55,784
65,698	37,744	5.09%		55,784
63,826	34,478	5.43%		55,784
61,954	31,468	5.81%		55,784
60,082	28,695	6.22%		55,784
58,210	26,140	6.66%		55,784
56,338	23,788	7.14%		55,784
54,466	21,624	7.67%		55,784
52,594	19,634	8.25%		55,784
50,722	17,804	8.89%		55,784
48,850	16,123	9.60%		55,784
46,978	14,579	10.39%		55,784
45,106	13,162	11.29%		55,784
43,477	11,929	12.16%		55,784
42,330	10,921	12.82%		55,784
41,426	10,049	13.37%		55,784
40,521	9,242	13.95%		55,784
39,617	8,496	14.58%		55,784
38,712	7,807	15.24%		55,784
37,807	7,169	15.95%		55,784
36,903	6,579	16.71%		55,784
35,998	6,035	17.53%		55,784
35,094	5,532	18.41%		55,784
34,189	5,067	19.36%		55,784
33,284	4,639	20.39%		55,784
32,380	4,243	21.51%		55,784
31,475	3,878	22.73%		55,784
30,571	3,542	24.07%		55,784
29,666	3,232	25.54%		55,784
28,762	2,946	27.16%		55,784
27,857	2,683	28.97%		55,784
26,952	2,441	30.99%		55,784
26,048	2,218	33.26%		55,784
25,143	2,013	35.83%		55,784
24,239	1,825	38.77%		55,784
23,334	1,652	42.17%		55,784
22,430	1,493	46.13%		55,784

NPV of Project	-33,808	Customer
Interest	7.29%	Centric
Term	50	IRR
Levelized cont. to fixed costs	-2,540	5.440%

REVENUE REQ	ESTIMATED MARGIN	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS	
				-848,604
45,907	55,784	9,877	9,877	55,784
80,512	55,784	(24,728)	(14,851)	55,784
78,100	55,784	(22,316)	(37,167)	55,784
75,802	55,784	(20,018)	(57,185)	55,784
73,608	55,784	(17,824)	(75,009)	55,784
71,510	55,784	(15,726)	(90,735)	55,784
69,502	55,784	(13,718)	(104,453)	55,784
67,577	55,784	(11,793)	(116,246)	55,784
65,698	55,784	(9,914)	(126,161)	55,784
63,826	55,784	(8,042)	(134,203)	55,784
61,954	55,784	(6,170)	(140,374)	55,784
60,082	55,784	(4,298)	(144,672)	55,784
58,210	55,784	(2,426)	(147,098)	55,784
56,338	55,784	(554)	(147,653)	55,784
54,466	55,784	1,318	(146,335)	55,784
52,594	55,784	3,190	(143,146)	55,784
50,722	55,784	5,062	(138,084)	55,784
48,850	55,784	6,934	(131,151)	55,784
46,978	55,784	8,806	(122,345)	55,784
45,106	55,784	10,678	(111,668)	55,784
43,477	55,784	12,307	(99,360)	55,784
42,330	55,784	13,454	(85,906)	55,784
41,426	55,784	14,358	(71,548)	55,784
40,521	55,784	15,263	(56,285)	55,784
39,617	55,784	16,167	(40,118)	55,784
38,712	55,784	17,072	(23,046)	55,784
37,807	55,784	17,977	(5,069)	55,784
36,903	55,784	18,881	13,812	55,784
35,998	55,784	19,786	33,598	55,784
35,094	55,784	20,690	54,289	55,784
34,189	55,784	21,595	75,884	55,784
33,284	55,784	22,500	98,383	55,784
32,380	55,784	23,404	121,787	55,784
31,475	55,784	24,309	146,096	55,784
30,571	55,784	25,213	171,309	55,784
29,666	55,784	26,118	197,427	55,784
28,762	55,784	27,022	224,449	55,784
27,857	55,784	27,927	252,376	55,784
26,952	55,784	28,832	281,208	55,784
26,048	55,784	29,736	310,944	55,784
25,143	55,784	30,641	341,585	55,784
24,239	55,784	31,545	373,130	55,784
23,334	55,784	32,450	405,580	55,784
22,430	55,784	33,354	438,935	55,784

Bonanza NPV With Staff Assumption

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	1,254,909	1,254,909			1,254,909
Period					
1	1,131,159	1,131,159	1,131,159	10,283	42,418
2	82,500	82,500	1,192,128	31,600	84,752
3	41,250	41,250	1,189,859	54,041	83,041
4	0	0	1,146,208	76,858	78,370
5	0	0	1,103,948	99,674	72,497
6			1,063,743	122,491	67,056
7			1,025,442	145,307	62,032
8			988,900	168,124	57,377
9			953,988	190,940	56,210
10			919,484	213,757	56,007
11			885,050	236,574	55,981
12			850,626	259,390	55,981
13			816,202	282,207	55,981
14			781,778	305,023	55,981
15			747,353	327,840	55,981
16			712,929	350,656	55,981
17			678,505	373,473	55,981
18			644,081	396,289	55,981
19			609,656	419,106	55,981
20			575,232	441,922	55,981
21			540,808	464,739	30,734
22			515,220	487,555	3,679
23			499,102	510,372	919
24			483,949	533,188	0
25			469,118	556,005	0
26			454,288	578,821	0
27			439,457	601,638	0
28			424,626	624,454	0
29			409,795	647,271	0
30			394,965	670,088	0
31			380,134	692,904	0
32			365,303	715,721	0
33			350,472	738,537	0
34			335,642	761,354	0
35			320,811	784,170	0
36			305,980	806,987	0
37			291,149	829,803	0
38			276,319	852,620	0
39			261,488	875,436	0
40			246,657	898,253	0
41			231,826	921,069	0
42			216,996	943,886	0
43			202,165	966,702	
44			187,334	989,519	

Bonanza NPV With Staff Assumption

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
1,254,909	(0)		1,254,909		710,867
10,283	11,247	1,109,628	10,283	1,120,394	15,013
21,317	22,202	1,148,609	21,317	1,170,369	31,366
22,442	21,210	1,146,208	22,442	1,168,034	31,303
22,817	19,444	1,103,948	22,817	1,125,078	30,152
22,817	17,388	1,063,743	22,817	1,083,845	29,047
22,817	15,484	1,025,442	22,817	1,044,593	27,995
22,817	13,725	988,900	22,817	1,007,171	26,992
22,817	12,096	953,988	22,817	971,444	26,035
22,817	11,688	919,484	22,817	936,736	25,105
22,817	11,617	885,050	22,817	902,267	24,181
22,817	11,608	850,626	22,817	867,838	23,258
22,817	11,608	816,202	22,817	833,414	22,335
22,817	11,608	781,778	22,817	798,990	21,413
22,817	11,608	747,353	22,817	764,565	20,490
22,817	11,608	712,929	22,817	730,141	19,568
22,817	11,608	678,505	22,817	695,717	18,645
22,817	11,608	644,081	22,817	661,293	17,723
22,817	11,608	609,656	22,817	626,868	16,800
22,817	11,608	575,232	22,817	592,444	15,878
22,817	11,608	540,808	22,817	558,020	14,955
22,817	2,771	515,220	22,817	528,014	14,151
22,817	(6,698)	499,102	22,817	507,161	13,592
22,817	(7,664)	483,949	22,817	491,525	13,173
22,817	(7,986)	469,118	22,817	476,534	12,771
22,817	(7,986)	454,288	22,817	461,703	12,374
22,817	(7,986)	439,457	22,817	446,872	11,976
22,817	(7,986)	424,626	22,817	432,042	11,579
22,817	(7,986)	409,795	22,817	417,211	11,181
22,817	(7,986)	394,965	22,817	402,380	10,784
22,817	(7,986)	380,134	22,817	387,549	10,386
22,817	(7,986)	365,303	22,817	372,719	9,989
22,817	(7,986)	350,472	22,817	357,888	9,591
22,817	(7,986)	335,642	22,817	343,057	9,194
22,817	(7,986)	320,811	22,817	328,226	8,796
22,817	(7,986)	305,980	22,817	313,396	8,399
22,817	(7,986)	291,149	22,817	298,565	8,002
22,817	(7,986)	276,319	22,817	283,734	7,604
22,817	(7,986)	261,488	22,817	268,903	7,207
22,817	(7,986)	246,657	22,817	254,073	6,809
22,817	(7,986)	231,826	22,817	239,242	6,412
22,817	(7,986)	216,996	22,817	224,411	6,014
22,817	(7,986)	202,165	22,817	209,580	5,617
22,817	(7,986)	187,334	22,817	194,750	5,219
22,817	(7,986)	172,504	22,817	179,919	4,822

Bonanza NPV With Staff Assumption

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
1,222,798	240,768	536,474	208,641	8,811	650,818
25,825	3,168	16,967	3,844	186	13,766
53,954	4,752	18,051	7,155	390	28,791
53,846	5,544	18,350	7,244	389	28,730
51,866	5,544	18,013	7,056	375	27,670
49,965	5,544	17,671	6,859	361	26,654
48,156	5,544	17,329	6,670	348	25,687
46,431	5,544	16,986	6,490	335	24,764
44,784	5,544	16,644	6,316	323	23,884
43,184	5,544	16,302	6,148	312	23,028
41,595	5,544	15,960	5,980	300	22,179
40,007	5,544	15,617	5,813	289	21,330
38,420	5,544	15,275	5,645	277	20,482
36,833	5,544	14,933	5,478	266	19,634
35,246	5,544	14,591	5,310	254	18,785
33,660	5,544	14,248	5,143	243	17,937
32,073	5,544	13,906	4,976	231	17,088
30,486	5,544	13,564	4,808	220	16,240
28,899	5,544	13,222	4,641	208	15,392
27,312	5,544	12,879	4,473	197	14,543
25,725	5,544	12,537	4,306	185	13,695
24,341	5,544	12,195	4,158	175	12,955
23,380	5,544	11,853	4,050	168	12,442
22,659	5,544	11,510	3,966	163	12,056
21,968	5,544	11,168	3,884	158	11,687
21,285	5,544	10,826	3,803	153	11,322
20,601	5,544	10,484	3,723	148	10,957
19,917	5,544	10,141	3,642	143	10,592
19,233	5,544	9,799	3,561	138	10,227
18,550	5,544	9,457	3,480	134	9,861
17,866	5,544	9,115	3,399	129	9,496
17,182	5,544	8,772	3,318	124	9,131
16,499	5,544	8,430	3,237	119	8,766
15,815	5,544	8,088	3,156	114	8,401
15,131	5,544	7,746	3,075	109	8,035
14,448	5,544	7,403	2,994	104	7,670
13,764	5,544	7,061	2,914	99	7,305
13,080	5,544	6,719	2,833	94	6,940
12,396	5,544	6,377	2,752	89	6,575
11,713	5,544	6,034	2,671	84	6,209
11,029	5,544	5,692	2,590	79	5,844
10,345	5,544	5,350	2,509	74	5,479
9,662	5,544	5,008	2,428	69	5,114
8,978	5,544	4,665	2,347	64	4,749
8,294	5,544	4,323	2,266	59	4,383

		Residential	Commercial	509
Annual Revenue		367	1,170	
Percent of New Cust.		82%	18%	

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)	YR	NEW CUST	CUML CUST	RES LOAD @ 12,000 KWH EA	TOTAL CUST
4,834,086	1,832,231					
89,052	83,734	1	66	66		66
165,775	146,564	2	33	99	1,188,000	99
167,848	139,534	3	17	116	1,386,000	116
163,493	127,796	4	0	116	1,386,000	116
158,918	116,800	5	0	116	1,386,000	116
154,544	106,802	6	0	116	1,386,000	116
150,359	97,703	7	0	116	1,386,000	116
146,346	89,416	8	0	116	1,386,000	116
142,438	81,831	9	0	116	1,386,000	116
138,555	74,845	10	0	116	1,386,000	116
134,675	68,404	11	0	116	1,386,000	116
130,796	62,466	12	0	116	1,386,000	116
126,917	56,994	13	0	116	1,386,000	116
123,038	51,952	14	0	116	1,386,000	116
119,159	47,309	15	0	116	1,386,000	116
115,280	43,035	16	0	116	1,386,000	116
111,400	39,103	17	0	116	1,386,000	116
107,521	35,487	18	0	116	1,386,000	116
103,642	32,164	19	0	116	1,386,000	116
99,763	29,111	20	0	116	1,386,000	116
96,336	26,432	21	0	116	1,386,000	116
93,845	24,211	22	0	116	1,386,000	116
91,889	22,290	23	0	116	1,386,000	116
89,998	20,527	24	0	116	1,386,000	116
88,123	18,899	25	0	116	1,386,000	116
86,249	17,393	26	0	116	1,386,000	116
84,374	15,998	27	0	116	1,386,000	116
82,500	14,709	28	0	116	1,386,000	116
80,626	13,516	29	0	116	1,386,000	116
78,751	12,413	30	0	116	1,386,000	116
76,877	11,394	31	0	116	1,386,000	116
75,002	10,452	32	0	116	1,386,000	116
73,128	9,582	33	0	116	1,386,000	116
71,253	8,779	34	0	116	1,386,000	116
69,379	8,038	35	0	116	1,386,000	116
67,504	7,353	36	0	116	1,386,000	116
65,630	6,722	37	0	116	1,386,000	116
63,756	6,140	38	0	116	1,386,000	116
61,881	5,604	39	0	116	1,386,000	116
60,007	5,109	40	0	116	1,386,000	116
58,132	4,654	41	0	116	1,386,000	116
56,258	4,235	42	0	116	1,386,000	116
54,383	3,849	43	0	116	1,386,000	116
52,509	3,495	44	0	116	1,386,000	116

NPV of Project	-934,478	Customer
Interest	7.29%	Centric
Term	50	IRR
Levelized cont. to fixed costs	-70,205	Undefined

TOTAL LOAD	REVENUE REQ	ESTIMATED MARGIN	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS	
					-1,832,231
367	89,052	16,810	(72,242)	(72,242)	16,810
1,188,000	165,775	42,026	(123,749)	(195,991)	42,026
1,386,000	167,848	54,634	(113,214)	(309,205)	54,634
1,386,000	163,493	58,837	(104,657)	(413,861)	58,837
1,386,000	158,918	58,837	(100,081)	(513,942)	58,837
1,386,000	154,544	58,837	(95,708)	(609,650)	58,837
1,386,000	150,359	58,837	(91,522)	(701,172)	58,837
1,386,000	146,346	58,837	(87,510)	(788,682)	58,837
1,386,000	142,438	58,837	(83,602)	(872,284)	58,837
1,386,000	138,555	58,837	(79,718)	(952,002)	58,837
1,386,000	134,675	58,837	(75,838)	(1,027,840)	58,837
1,386,000	130,796	58,837	(71,959)	(1,099,799)	58,837
1,386,000	126,917	58,837	(68,080)	(1,167,879)	58,837
1,386,000	123,038	58,837	(64,201)	(1,232,080)	58,837
1,386,000	119,159	58,837	(60,322)	(1,292,402)	58,837
1,386,000	115,280	58,837	(56,443)	(1,348,845)	58,837
1,386,000	111,400	58,837	(52,564)	(1,401,409)	58,837
1,386,000	107,521	58,837	(48,685)	(1,450,094)	58,837
1,386,000	103,642	58,837	(44,806)	(1,494,899)	58,837
1,386,000	99,763	58,837	(40,927)	(1,535,826)	58,837
1,386,000	96,336	58,837	(37,499)	(1,573,325)	58,837
1,386,000	93,845	58,837	(35,009)	(1,608,334)	58,837
1,386,000	91,889	58,837	(33,052)	(1,641,386)	58,837
1,386,000	89,998	58,837	(31,161)	(1,672,548)	58,837
1,386,000	88,123	58,837	(29,287)	(1,701,834)	58,837
1,386,000	86,249	58,837	(27,412)	(1,729,247)	58,837
1,386,000	84,374	58,837	(25,538)	(1,754,784)	58,837
1,386,000	82,500	58,837	(23,663)	(1,778,448)	58,837
1,386,000	80,626	58,837	(21,789)	(1,800,237)	58,837
1,386,000	78,751	58,837	(19,914)	(1,820,151)	58,837
1,386,000	76,877	58,837	(18,040)	(1,838,191)	58,837
1,386,000	75,002	58,837	(16,166)	(1,854,357)	58,837
1,386,000	73,128	58,837	(14,291)	(1,868,648)	58,837
1,386,000	71,253	58,837	(12,417)	(1,881,065)	58,837
1,386,000	69,379	58,837	(10,542)	(1,891,607)	58,837
1,386,000	67,504	58,837	(8,668)	(1,900,275)	58,837
1,386,000	65,630	58,837	(6,793)	(1,907,068)	58,837
1,386,000	63,756	58,837	(4,919)	(1,911,987)	58,837
1,386,000	61,881	58,837	(3,044)	(1,915,031)	58,837
1,386,000	60,007	58,837	(1,170)	(1,916,201)	58,837
1,386,000	58,132	58,837	704	(1,915,497)	58,837
1,386,000	56,258	58,837	2,579	(1,912,918)	58,837
1,386,000	54,383	58,837	4,453	(1,908,465)	58,837
1,386,000	52,509	58,837	6,328	(1,902,137)	58,837

Bonanza NPV With Staff Assumptions
and Staff Adjustment

(a)	Tax Basis (b)	Book Basis (c)	Rate Base BOP (d)	Accum. Book Deprec. (e)	Tax Deprec. (f)
Total =>	514,909	514,909			514,909
Period					
1	391,159	391,159	391,159	3,556	14,668
2	82,500	82,500	466,214	11,418	31,332
3	41,250	41,250	491,387	20,405	33,624
4	0	0	473,777	29,767	32,653
5	0	0	456,263	39,129	30,206
6			439,606	48,491	27,940
7			423,742	57,853	25,846
8			408,610	67,215	23,907
9			394,158	76,577	23,198
10			379,953	85,939	22,996
11			365,819	95,301	22,970
12			351,694	104,663	22,970
13			337,570	114,025	22,970
14			323,445	123,387	22,970
15			309,320	132,749	22,970
16			295,195	142,111	22,970
17			281,070	151,473	22,970
18			266,945	160,835	22,970
19			252,821	170,197	22,970
20			238,696	179,559	22,970
21			224,571	188,921	14,239
22			213,502	198,283	3,679
23			206,129	207,645	919
24			199,722	217,007	0
25			193,637	226,369	0
26			187,551	235,730	0
27			181,466	245,092	0
28			175,381	254,454	0
29			169,295	263,816	0
30			163,210	273,178	0
31			157,125	282,540	0
32			151,040	291,902	0
33			144,954	301,264	0
34			138,869	310,626	0
35			132,784	319,988	0
36			126,698	329,350	0
37			120,613	338,712	0
38			114,528	348,074	0
39			108,443	357,436	0
40			102,357	366,798	0
41			96,272	376,160	0
42			90,187	385,522	0
43			84,101	394,884	
44			78,016	404,246	

Bonanza NPV With Staff Assumptions
and Staff Adjustment

Book Dep. on Tax Basis (g)	Deferred Taxes (h)	Rate Base EOP (i)	Book Deprec. (j)	Average Rate Base (k)	Interest Expense (l)
514,909	(0)		514,909		292,649
3,556	3,889	383,714	3,556	387,436	5,192
7,862	8,214	450,137	7,862	458,175	12,279
8,987	8,623	473,777	8,987	482,582	12,933
9,362	8,152	456,263	9,362	465,020	12,463
9,362	7,295	439,606	9,362	447,935	12,005
9,362	6,502	423,742	9,362	431,674	11,569
9,362	5,769	408,610	9,362	416,176	11,154
9,362	5,091	394,158	9,362	401,384	10,757
9,362	4,843	379,953	9,362	387,055	10,373
9,362	4,772	365,819	9,362	372,886	9,993
9,362	4,763	351,694	9,362	358,757	9,615
9,362	4,763	337,570	9,362	344,632	9,236
9,362	4,763	323,445	9,362	330,507	8,858
9,362	4,763	309,320	9,362	316,382	8,479
9,362	4,763	295,195	9,362	302,257	8,101
9,362	4,763	281,070	9,362	288,133	7,722
9,362	4,763	266,945	9,362	274,008	7,343
9,362	4,763	252,821	9,362	259,883	6,965
9,362	4,763	238,696	9,362	245,758	6,586
9,362	4,763	224,571	9,362	231,633	6,208
9,362	1,707	213,502	9,362	219,036	5,870
9,362	(1,989)	206,129	9,362	209,815	5,623
9,362	(2,955)	199,722	9,362	202,925	5,438
9,362	(3,277)	193,637	9,362	196,679	5,271
9,362	(3,277)	187,551	9,362	190,594	5,108
9,362	(3,277)	181,466	9,362	184,509	4,945
9,362	(3,277)	175,381	9,362	178,423	4,782
9,362	(3,277)	169,295	9,362	172,338	4,619
9,362	(3,277)	163,210	9,362	166,253	4,456
9,362	(3,277)	157,125	9,362	160,167	4,292
9,362	(3,277)	151,040	9,362	154,082	4,129
9,362	(3,277)	144,954	9,362	147,997	3,966
9,362	(3,277)	138,869	9,362	141,912	3,803
9,362	(3,277)	132,784	9,362	135,826	3,640
9,362	(3,277)	126,698	9,362	129,741	3,477
9,362	(3,277)	120,613	9,362	123,656	3,314
9,362	(3,277)	114,528	9,362	117,570	3,151
9,362	(3,277)	108,443	9,362	111,485	2,988
9,362	(3,277)	102,357	9,362	105,400	2,825
9,362	(3,277)	96,272	9,362	99,315	2,662
9,362	(3,277)	90,187	9,362	93,229	2,499
9,362	(3,277)	84,101	9,362	87,144	2,335
9,362	(3,277)	78,016	9,362	81,059	2,172
9,362	(3,277)	71,931	9,362	74,973	2,009

Bonanza NPV With Staff Assumptions
and Staff Adjustment

Equity Return (m)	O&M & A&G Expense (n)	Property Taxes (o)	Misc. Revenue Items (p)	State Income Tax (q)	Federal Income Taxes (r)
503,399	240,768	220,124	92,162	3,624	267,699
8,930	3,168	5,867	1,422	64	4,757
21,122	4,752	7,052	2,909	153	11,267
22,247	5,544	7,552	3,125	161	11,865
21,437	5,544	7,418	3,059	155	11,432
20,650	5,544	7,277	2,977	149	11,011
19,900	5,544	7,137	2,899	144	10,610
19,186	5,544	6,996	2,824	138	10,228
18,504	5,544	6,856	2,752	134	9,863
17,843	5,544	6,715	2,683	129	9,510
17,190	5,544	6,575	2,614	124	9,161
16,539	5,544	6,435	2,545	119	8,813
15,888	5,544	6,294	2,477	115	8,464
15,236	5,544	6,154	2,408	110	8,116
14,585	5,544	6,013	2,339	105	7,768
13,934	5,544	5,873	2,270	100	7,420
13,283	5,544	5,732	2,202	96	7,072
12,632	5,544	5,592	2,133	91	6,724
11,981	5,544	5,452	2,064	86	6,376
11,329	5,544	5,311	1,996	82	6,028
10,678	5,544	5,171	1,927	77	5,680
10,098	5,544	5,030	1,865	73	5,369
9,672	5,544	4,890	1,818	70	5,142
9,355	5,544	4,749	1,781	67	4,972
9,067	5,544	4,609	1,747	65	4,818
8,786	5,544	4,469	1,714	63	4,669
8,506	5,544	4,328	1,681	61	4,519
8,225	5,544	4,188	1,648	59	4,369
7,945	5,544	4,047	1,615	57	4,219
7,664	5,544	3,907	1,581	55	4,069
7,384	5,544	3,766	1,548	53	3,919
7,103	5,544	3,626	1,515	51	3,770
6,823	5,544	3,486	1,482	49	3,620
6,542	5,544	3,345	1,449	47	3,470
6,262	5,544	3,205	1,415	45	3,320
5,981	5,544	3,064	1,382	43	3,170
5,701	5,544	2,924	1,349	41	3,020
5,420	5,544	2,783	1,316	39	2,870
5,139	5,544	2,643	1,283	37	2,721
4,859	5,544	2,503	1,249	35	2,571
4,578	5,544	2,362	1,216	33	2,421
4,298	5,544	2,222	1,183	31	2,271
4,017	5,544	2,081	1,150	29	2,121
3,737	5,544	1,941	1,117	27	1,971
3,456	5,544	1,800	1,083	25	1,822

Bonanza NPV With Staff Assumptions
and Staff Adjustment

Total Gross Marg Reqmnt (s)	Present Val Gross Marg Reqmnt (t)			Residential	Commercial	509
			Annual Revenue	367	1,170	
			Percent of New Cust.	82%	18%	
2,135,333	795,296				RES LOAD @	
		YR	NEW CUST	CUML CUST	12,000 KWH EA	TOTAL CUST
32,957	30,989	1	66	66		66
67,395	59,585	2	33	99	1,188,000	99
72,415	60,199	3	17	116	1,386,000	116
70,869	55,395	4	0	116	1,386,000	116
68,974	50,694	5	0	116	1,386,000	116
67,164	46,415	6	0	116	1,386,000	116
65,432	42,518	7	0	116	1,386,000	116
63,772	38,964	8	0	116	1,386,000	116
62,159	35,710	9	0	116	1,386,000	116
60,563	32,715	10	0	116	1,386,000	116
58,971	29,953	11	0	116	1,386,000	116
57,379	27,404	12	0	116	1,386,000	116
55,788	25,052	13	0	116	1,386,000	116
54,196	22,884	14	0	116	1,386,000	116
52,604	20,885	15	0	116	1,386,000	116
51,013	19,044	16	0	116	1,386,000	116
49,421	17,347	17	0	116	1,386,000	116
47,829	15,786	18	0	116	1,386,000	116
46,238	14,349	19	0	116	1,386,000	116
44,646	13,028	20	0	116	1,386,000	116
43,211	11,856	21	0	116	1,386,000	116
42,121	10,867	22	0	116	1,386,000	116
41,269	10,011	23	0	116	1,386,000	116
40,484	9,234	24	0	116	1,386,000	116
39,715	8,517	25	0	116	1,386,000	116
38,946	7,854	26	0	116	1,386,000	116
38,176	7,239	27	0	116	1,386,000	116
37,407	6,669	28	0	116	1,386,000	116
36,638	6,142	29	0	116	1,386,000	116
35,869	5,654	30	0	116	1,386,000	116
35,100	5,202	31	0	116	1,386,000	116
34,331	4,784	32	0	116	1,386,000	116
33,562	4,398	33	0	116	1,386,000	116
32,793	4,040	34	0	116	1,386,000	116
32,024	3,710	35	0	116	1,386,000	116
31,254	3,405	36	0	116	1,386,000	116
30,485	3,122	37	0	116	1,386,000	116
29,716	2,862	38	0	116	1,386,000	116
28,947	2,621	39	0	116	1,386,000	116
28,178	2,399	40	0	116	1,386,000	116
27,409	2,194	41	0	116	1,386,000	116
26,640	2,005	42	0	116	1,386,000	116
25,871	1,831	43	0	116	1,386,000	116
25,102	1,671	44	0	116	1,386,000	116

Bonanza NPV With Staff Assumptions
and Staff Adjustment

NPV of Project		-419	Customer
	Interest	7.29%	Centric
	Term	50	IRR
Levelized cont. to fixed costs		-32	4.910%

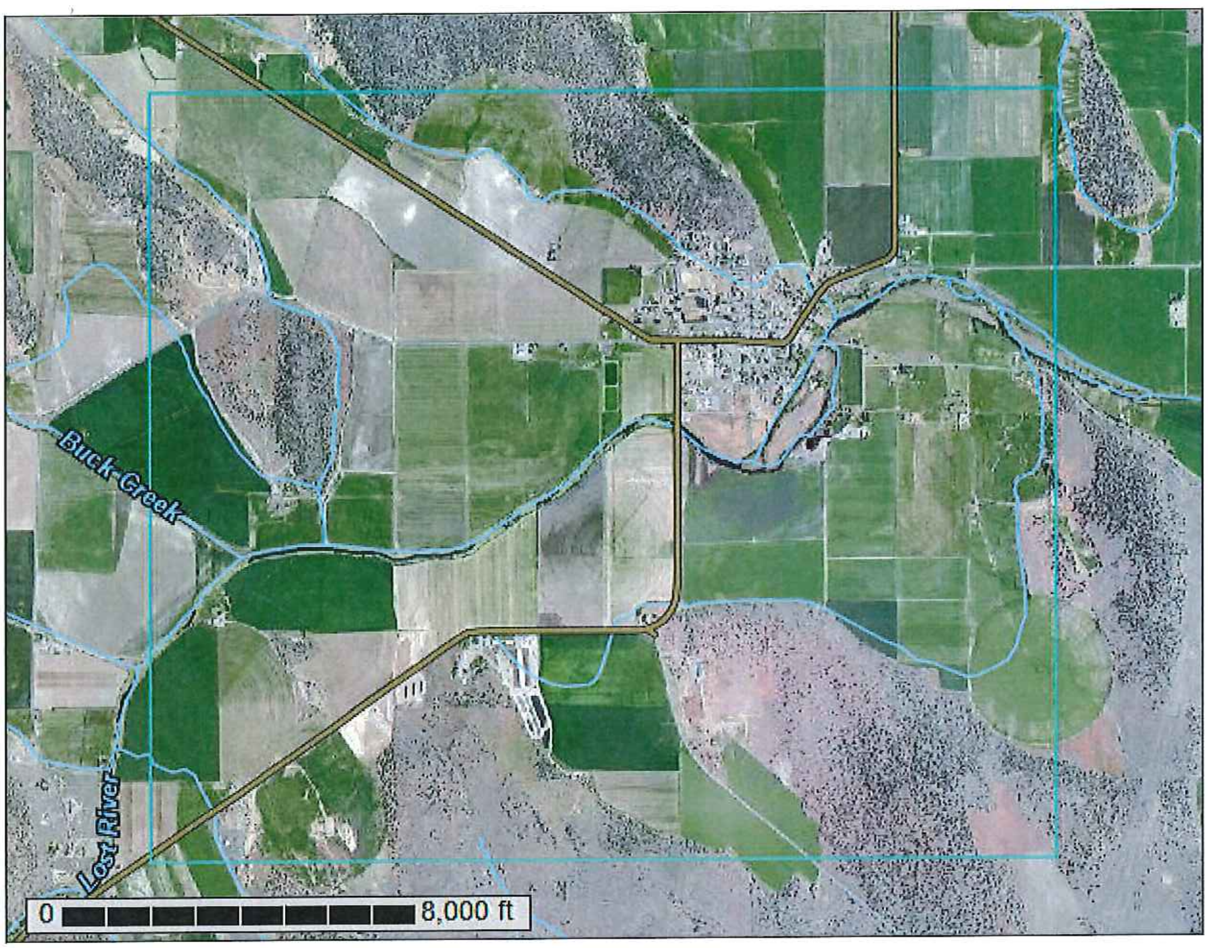
TOTAL LOAD	REVENUE REQ	ESTIMATED MARGIN	ANNUAL (SHORTFALL) EXCESS	CUMULATIVE (SHORTFALL) EXCESS	
					-795,296
367	32,957	16,810	(16,147)	(16,147)	16,810
1,188,000	67,395	42,026	(25,369)	(41,515)	42,026
1,386,000	72,415	54,634	(17,781)	(59,296)	54,634
1,386,000	70,869	58,837	(12,032)	(71,328)	58,837
1,386,000	68,974	58,837	(10,137)	(81,466)	58,837
1,386,000	67,164	58,837	(8,327)	(89,793)	58,837
1,386,000	65,432	58,837	(6,595)	(96,388)	58,837
1,386,000	63,772	58,837	(4,935)	(101,323)	58,837
1,386,000	62,159	58,837	(3,323)	(104,646)	58,837
1,386,000	60,563	58,837	(1,727)	(106,373)	58,837
1,386,000	58,971	58,837	(134)	(106,507)	58,837
1,386,000	57,379	58,837	1,457	(105,050)	58,837
1,386,000	55,788	58,837	3,049	(102,001)	58,837
1,386,000	54,196	58,837	4,641	(97,360)	58,837
1,386,000	52,604	58,837	6,232	(91,128)	58,837
1,386,000	51,013	58,837	7,824	(83,304)	58,837
1,386,000	49,421	58,837	9,416	(73,889)	58,837
1,386,000	47,829	58,837	11,007	(62,882)	58,837
1,386,000	46,238	58,837	12,599	(50,283)	58,837
1,386,000	44,646	58,837	14,190	(36,092)	58,837
1,386,000	43,211	58,837	15,626	(20,466)	58,837
1,386,000	42,121	58,837	16,716	(3,751)	58,837
1,386,000	41,269	58,837	17,567	13,817	58,837
1,386,000	40,484	58,837	18,353	32,169	58,837
1,386,000	39,715	58,837	19,122	51,291	58,837
1,386,000	38,946	58,837	19,891	71,182	58,837
1,386,000	38,176	58,837	20,660	91,842	58,837
1,386,000	37,407	58,837	21,429	113,272	58,837
1,386,000	36,638	58,837	22,198	135,470	58,837
1,386,000	35,869	58,837	22,967	158,437	58,837
1,386,000	35,100	58,837	23,737	182,174	58,837
1,386,000	34,331	58,837	24,506	206,680	58,837
1,386,000	33,562	58,837	25,275	231,955	58,837
1,386,000	32,793	58,837	26,044	257,998	58,837
1,386,000	32,024	58,837	26,813	284,812	58,837
1,386,000	31,254	58,837	27,582	312,394	58,837
1,386,000	30,485	58,837	28,351	340,745	58,837
1,386,000	29,716	58,837	29,120	369,865	58,837
1,386,000	28,947	58,837	29,890	399,755	58,837
1,386,000	28,178	58,837	30,659	430,414	58,837
1,386,000	27,409	58,837	31,428	461,841	58,837
1,386,000	26,640	58,837	32,197	494,038	58,837
1,386,000	25,871	58,837	32,966	527,004	58,837
1,386,000	25,102	58,837	33,735	560,739	58,837

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

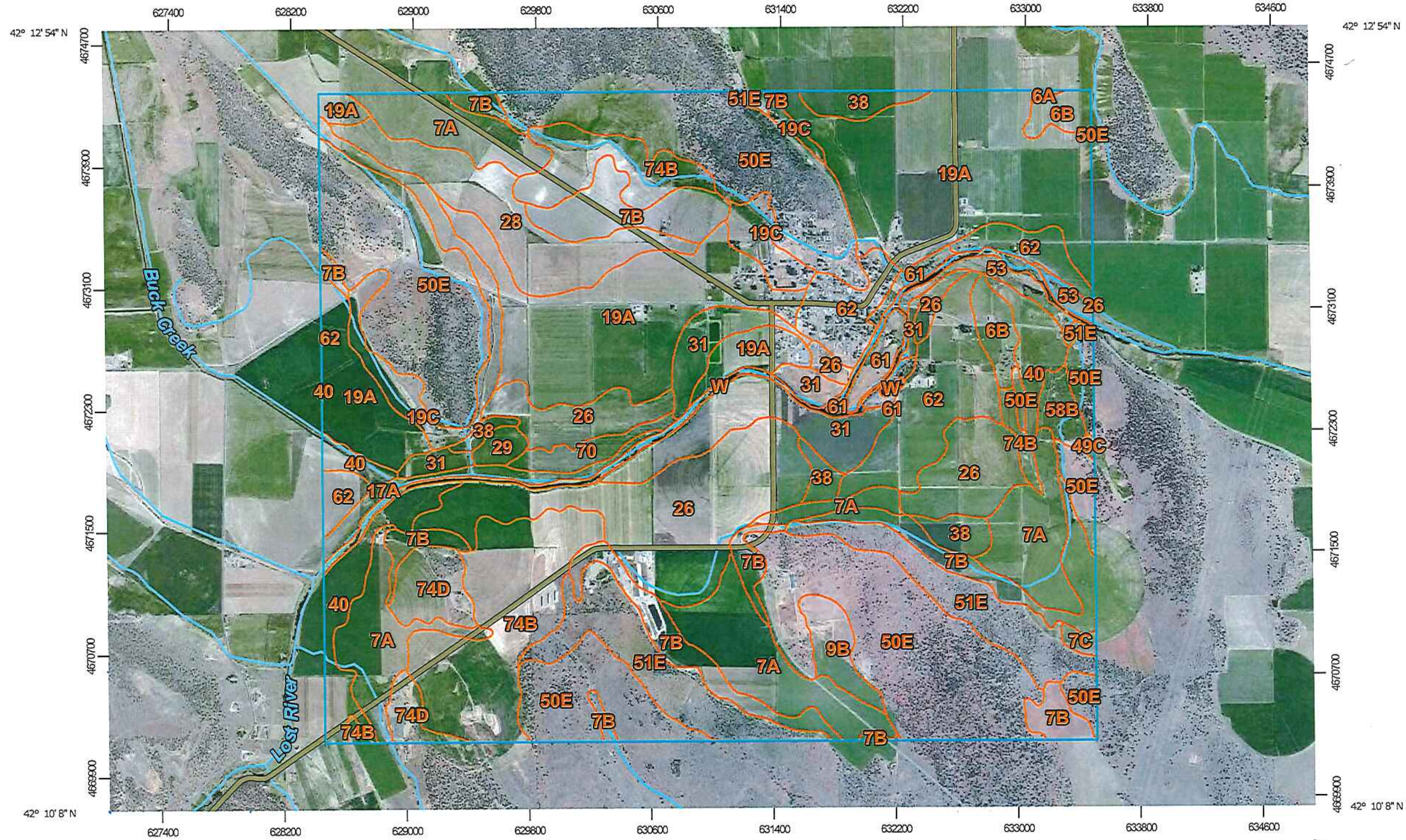
A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for
Klamath County, Oregon, Southern Part



February 15, 2017

Custom Soil Resource Report
Soil Map (Bonanza)



Map Scale: 1:36,000 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 500, 1000, 2000, 3000

Feet: 0, 1500, 3000, 6000, 9000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: SODIC FLAT 10+ PZ (R021XY102OR)
Hydric soil rating: Yes

Minor Components

Malin

Percent of map unit: 15 percent
Landform: Flood plains
Hydric soil rating: Yes

74B—Stukel-Capona loams, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: jdnh
Elevation: 4,100 to 4,700 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stukel and similar soils: 55 percent
Capona and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stukel

Setting

Landform: Structural benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff and diatomite

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 17 inches: loam
H3 - 17 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: LOAMY 10-14 PZ (R021XY200OR)
Hydric soil rating: No

Description of Capona

Setting

Landform: Structural benches
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and residuum derived from tuff and diatomite

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 25 inches: gravelly sandy clay loam
H3 - 25 to 35 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-14 PZ (R021XY200OR)
Hydric soil rating: No

74D—Stukel-Capona loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: jdnj

Elevation: 4,100 to 4,700 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stukel and similar soils: 65 percent
Capona and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stukel

Setting

Landform: Structural benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff and diatomite

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 17 inches: loam
H3 - 17 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: LOAMY 10-14 PZ (R021XY200OR)
Hydric soil rating: No

Description of Capona

Setting

Landform: Structural benches
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and residuum derived from tuff and diatomite

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 25 inches: gravelly sandy clay loam

H3 - 25 to 35 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-14 PZ (R021XY200OR)
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 803

Exhibits in Support
Of Opening Testimony

March 1, 2017

Avista Corp
Actual Transfers to Plant: 2011-2016 (Gas Distribution Capital Projects - Oregon)
Staff DR 245 Attachment B

Erval	Jurisdiction	2011	2012	2013	2014	2015	2016	Grand Total	
1001	OR	1,822,835	1,292,345	4,674,321	3,396,347	6,001,557	6,315,007	23,502,412	
1050	OR	841,182	788,414	736,599	787,048	453,576	489,331	3,978,507	
1051	OR	48,966	15,750	89,376	44,246	61,522	8,445	268,305	
1053	OR	22,706	33,955	22,178	10,321	498,776	825,420	1,368,973	
3000	OR	636,707	27,021	4,563	196,867	930,193	991,367	2,784,713	
3001	OR	1,004,387	837,617	804,043	783,487	448,174	672,744	4,495,694	
3002	OR	169,081	143,105	184,417	287,250	349,332	471,763	1,604,948	
3003	OR	995,701	1,029,378	2,755,198	3,567,878	1,683,354	2,240,480	12,237,688	
3004	OR	53,226	81,384	73,390	37,125	113,239	161,917	520,280	
3005	OR	1,696,889	981,389	4,893,082	4,027,424	4,261,619	4,899,980	20,024,695	
3006	OR	543,199	554,562	640,202	733,040	449,331	339,770	3,142,715	
3007	OR	415,744	458,207	396,328	464,566	349,383	553,265	2,567,924	
3008	OR	238,137	27,847	5,073,838	5,254,289	6,504,790	6,717,981	23,023,305	
3054	OR					84,277	145,716	226,491	
3055	OR				336,615	391,923	654,016	1,329,606	
3057	OR						475,694	475,694	
3117	AA	72,405	79		153,249	8,434	-	234,167	[A]
	OR	22,073	24,128	15,854	430,014	26,176	96,070	614,315	
3203	OR			689,040			5,630,681	6,319,721	
3303	OR					1,423,413	47,778	1,471,191	
7201	OR	1,598,356	52,830	43,101	70,245	107,970	94,034	1,963,874	
Grand Total		10,181,594	6,348,007	21,095,531	20,580,011	24,147,039	31,831,459	112,155,218	

[A] Current allocation factor to OR for ER 3117 GD AA: 30.366%

	2011	2012	2013	2014	2015	2016	Grand Total
OR share of AA balance (by year)	21,986	24	-	46,536	2,561	-	71,107
Total ER 3117 Allocated Balance	44,060	24,152	15,854	476,550	28,737	96,070	685,422

TOTAL GAS NEW INSTALLS SUMMARY
YEAR-TO-DATE THROUGH DECEMBER 2016

GAS	2016 January	2016 February	2016 March	2016 April	2016 May	2016 June	2016 July	2016 August	2016 September	2016 October	2016 November	2016 December	2016 YTD
Medford													
Residential	75	60	78	59	68	65	71	65	74	76	131	94	916
Non-Residential	10	7	11	9	6	8	3	9	16	10	11	15	115
Total Gas Meter Installs	85	67	89	68	74	73	74	74	90	86	142	109	1,031
Klamath Falls													
Residential	21	25	19	20	9	14	19	11	16	26	20	25	225
Non-Residential	6	2	5	2	4			1		4	6	6	36
Total Gas Meter Installs	27	27	24	22	13	14	19	12	16	30	26	31	261
Roseburg													
Residential	15	21	23	11	14	19	9	15	14	23	12	16	192
Non-Residential	2	1	3	3	1	3	1	1		1	4	5	25
Total Gas Meter Installs	17	22	26	14	15	22	10	16	14	24	16	21	217
LaGrande													
Residential	9	8	3	5	7	3	6	4	3	10	16	7	81
Non-Residential		2	2		4	3	1	2		1	1	2	18
Total Gas Meter Installs	9	10	5	5	11	6	7	6	3	11	17	9	99
Oregon Region													
Residential	120	114	123	95	98	101	105	95	107	135	179	142	1,414
Non-Residential	18	12	21	14	15	14	5	13	16	16	22	28	194
Total Gas Meter Installs	138	126	144	109	113	115	110	108	123	151	201	170	1,608

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/08/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Moore	RESPONDER:	David Machado/N. Thorson
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 346	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

For each individual growth project in which capital was transferred to plant between January 1, 2012, through December 31, 2016, please provide: a) the expected Internal Rate of Return on the investment when the project was approved; b) the actual Internal Rate of Return once the project was completed.

RESPONSE:

Six individual growth projects were placed in service and transferred to plant in Oregon during the years 2012-2016. The following list includes these projects.

Project	Location	Expected IRR	Transfers to Plant
Debbie Drive	Klamath Falls	17.90%	$ 55,985
Old Midland Rd	Klamath Falls	4.33%	$ 658,127
Rolling Hills Estates	Roseburg	46.39%	$ 462,477
Kooken Estates	Roseburg	11.66%	$ 93,963
Santa Maria (In Progress)	Roseburg	12.20%	$ 751
Bonanza Oregon	Bonanza	6.08%	$ 1,182,741

Avista does not do post-installation analyses on Growth projects to determine actual Internal Rates of Return. Once the main pipe is in place, the number of customers connecting continues to grow, rendering a 'snapshot' of connected customers immediately after construction of little value.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/09/2017
CASE NO:	UG 325	WITNESS:	David J. Machado
REQUESTER:	PUC Staff - Moore	RESPONDER:	David Machado/N. Thorson
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 367	TELEPHONE:	(509) 495-4554
		EMAIL:	david.machado@avistacorp.com

REQUEST:

Please discuss in detail how Avista forecasts its Capital costs to new customers.

RESPONSE:

The forecast for the new customer capital program is based on the new customer connect forecast supplied by our staff economist. Currently, we only forecast residential new connects, but we have historical data on new commercial connects that we use for estimation purposes. Using these two numbers, we apply the weighted average current cost per new service, which is based on an application of a breakeven IRR for OR and ID, and allowance currently in effect in WA. Using this method, OR residential connects are forecasted at an average of $2,500 per customer. Commercial connects are calculated using an historical average of connect costs, again by a weighted average of all three jurisdictions. This forecast is done in total, for all Avista Natural Gas operations. Apportionment by (Budget Item)BI, to each operating area, is done based on prior year history total spend by ER, rather than on forecasted customers, as we only forecast residential in detail. Staff_DR_367 Attachment A contains the overall forecast for the "New Revenue – Growth" business case for 2017, which includes the budgeted amount, by ER.

Staff_DR_367 Attachment B contains the breakeven IRR for new residential customer connections for Avista's Oregon and Idaho natural gas jurisdictions (as the Washington allowance is governed by the new line extension allowance approved in Washington). This attachment is provided as a pdf file, as the original Excel file was not retained after this was printed. The average residential customer connection cost of $2,500 per customer in Oregon was derived from setting the IRR constant at approximately 10.0% and finding the associated capital cost that would result in this IRR, given the average residential use per customer.

Industrial or very large commercial connects are dealt with on a case-by-case basis, and are not part of the forecast.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/21/2017
CASE NO:	UG 325	WITNESS:	Patrick Ehrbar/David Machado
REQUESTER:	PUC Staff	RESPONDER:	Patrick Ehrbar/David Machado
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 432	TELEPHONE:	(509) 495-8620/495-4554
		EMAIL:	pat.ehrbar@avistacorp.com david.machado@avistacorp.com

REQUEST:

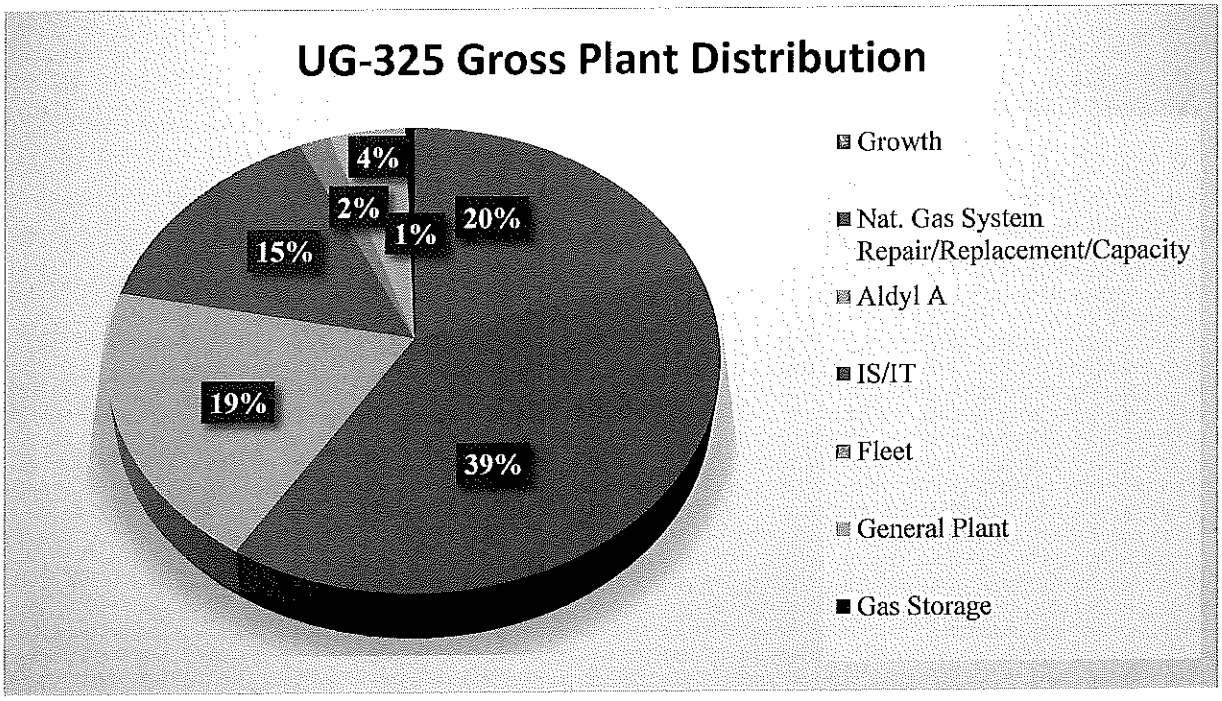
Given the relative frequency and magnitude of Avista's requests for rate increases that have been occurring since 2007 (UG 325 is 5th rate case since then) that are largely driven by capital additions, please provide a narrative explanation of the underlying reasons.

RESPONSE:

The general rate requests over the past 10 years have been driven largely by capital additions as has been discussed in previous general rate cases, as well as in this case. The Company has been investing in capital that targets, among other things, the preservation and enhancement of safety, service reliability (capacity reinforcements) and the replacement of aging infrastructure. Capital additions accounted for 74% of the Company's revenue request in 2014 (Docket No. UG-284), 65% in Docket No. UG-288 (Avista's 2015 rate request), and 84% in this case. The capital investments have been found to be reasonable by the Commission in the Company's prior general rate cases, and are included in customer rates. It is important to note that other utilities may be facing circumstances that are far different than Avista, which may result in more frequent or less frequent revenue adjustments. The revenue adjustments proposed by Avista are specific to the investment needs and operating costs for the Company's Oregon jurisdiction, which are necessary for Avista to continue to provide safe, reliable service, and satisfy numerous compliance requirements.

As Company witness Mr. Thies explained in his testimony, the Company continues to maintain, upgrade, and expand its distribution facilities to meet reliability requirements and capacity needs. More specifically, the need for capital investment is driven by, among other factors, capacity constraints, the systematic replacement of assets that have reached the ends of their useful lives, compliance with federal regulation (e.g., PHMSA rules) or municipal requirements (e.g., street/highway relocations), connections of new customers, the systematic replacement of aged and obsolete technology, and the replacement of supporting facilities and technology. Included within the Company's capital replacement, for example, is its 20-year program to systematically remove and replace select portions of the Aldyl-A pipe in the Company's natural gas distribution system.

Graphically represented below are the major drivers of the capital additions included in this case:



When we look at capital projects that the Company has included in this case for cost recovery, as well as the projects that the Company is currently recovering in rates from rate cases over the past 10 years, they can be organized into the following general categories:

Safety - For safety-related projects, by far the largest project that the Company has undertaken in the last few years, and included, in part, in rates, is the Company's Aldyl-A Pipe Replacement Project (as well as the replacement of the service tees). This is a critically-necessary project which will remediate potentially hazardous conditions in the Company's distribution system. The capital additions included in this case related to Aldyl-A, as shown in the chart above, is 19% of the total additions. Previously, the Company also undertook the Medford Integrity Management Pipe Replacement Project in 2011 which was completed in response to the integrity management regulation as detailed in 49 CFR 192, Subpart O – Pipeline Integrity Management. The regulation requires pipeline operators to evaluate covered segments and mitigate risk to the public by assessing the integrity of pipeline segments by direct assessment or lowering the operating stress of the pipeline which will reduce the consequences of an unforeseen event.

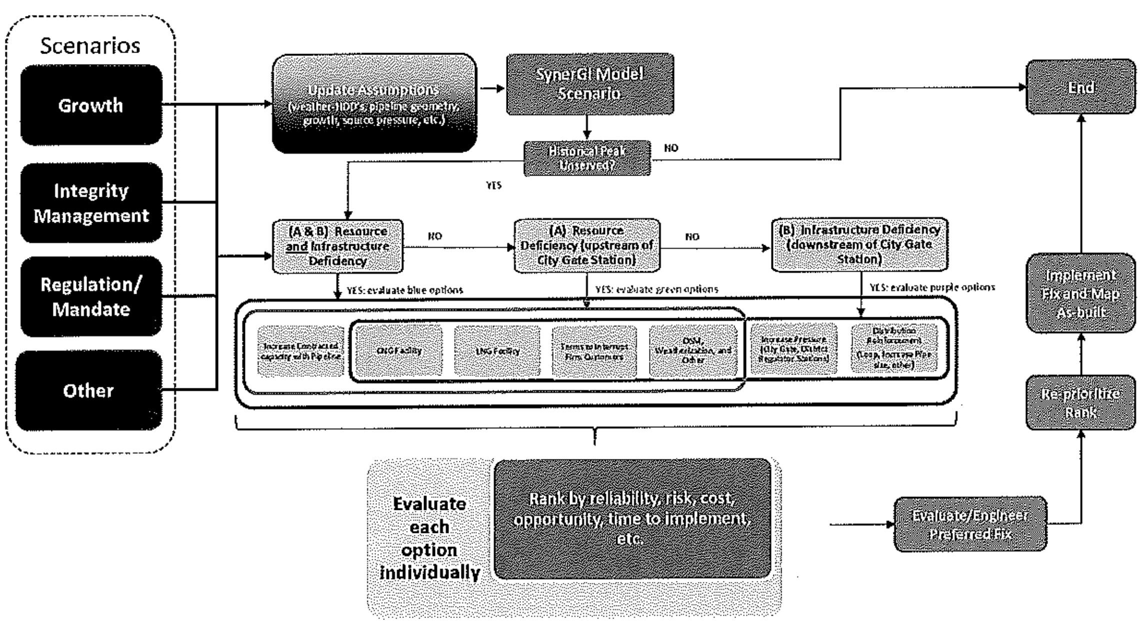
Capacity (Reliability of Service) – Over the past ten years, the Company has also been addressing system capacity issues in its distribution system through detailed engineering analysis. For reliability projects, in this case the Company is seeking recovery of costs related to, primarily, the La Grande (Pierce Road) High Pressure Reinforcement Project. Through engineering analysis (and as discussed in the Integrated Resource Planning ("IRP") process), the Company is facing low-pressure issues on the existing pipeline which may cause customer outages on a design heating degree day (peak day). This is not a new issue for Avista's natural gas distribution system. Pressure issues or capacity shortfalls have also been found in other areas of the system in the past, and the Company has received rate recovery related to projects such as the East Medford Reinforcement Project (completed in five phases going back to 2008), the

Roseburg Reinforcement, the Grants Pass Reinforcement, and the Ladd Canyon and Winston Gate Station rebuilds, to name just a few. The Company did not seek to replace or reinforce these pipelines and gate stations in advance of need; in fact some of these projects were actually delayed, or completed in phases, where feasible. We take seriously the Commission's guidance in Order No. 16-109 where it stated on page 13:

> First, as Avista has implicitly acknowledged, both the East Medford and Ladd Canyon distribution systems have been capacity deficient for some period of time. We urge Avista to maintain up-to-date analyses to ensure adequacy of supply to customers and timing of these projects.

The Company has had capacity issues on its distribution system, and through careful management has been able to delay (but only to a point) the timing of capital additions to remedy these deficiencies. The Company is also very open and transparent, through the IRP process, as it relates to distribution capacity issues. As discussed in depth in the Company's most recent natural gas IRP (Exhibit No. 401, p. 134), "important parts of the distribution planning process include forecasting local demand growth, determining potential distribution system constraints, analyzing possible solutions and estimating costs for eliminating constraints....Distribution planning focuses on determining if there will be adequate pressure during a peak hour." Reproduced from p. 139 of the Company's IRP below is the Company's "Distribution Scenario Process". This process demonstrates the thoroughness of the Company's evaluation process to identify, prioritize, and implement distribution projects that will continue to allow for the safe and reliable delivery of natural gas service to our customers.

Distribution Scenario Process



The Company takes seriously the cost of remediation, and only invests in the necessary capital additions to remediate those deficiencies when absolutely necessary.

Growth – As will be discussed in greater detail later in this response, Avista has seen very stagnant growth in terms of new customer hookups in all of its jurisdictions, including Oregon. As shown in the pie chart above, capital additions related to growth, represent approximately

20% of the capital additions included in the case. To offset those capital additions, the Company has also included the revenue associated with growth projects through the Revenue Adjustment, providing an appropriate matching of revenue and capital expenditure.

Opportunistic – The Company has also made significant capital investments which were completed so that customers would benefit from overall lower billing rates. For example, the Company in its 2008 and 2012 general rate cases included cost recovery related to investments at the Jackson Prairie Natural Gas Storage Facility (JP), as well as the purchase of the Klamath Falls Lateral. Prior to 2008, Oregon customers were not allocated an ownership interest in JP, and therefore did not participate in the natural gas costs savings that come from injecting lower-cost natural gas in the summer for use in the higher priced winter time period. As discussed in Company witness Ms. Morehouse's testimony, the Company uses a JP storage model which provides the Company's natural gas buyers the ability to identify additional opportunities to purchase lower cost natural gas in the immediate term for a sale in a future time period. For each storage purchase transaction, a corresponding forward sale is also made, locking in the benefit for our customers. (Included in this case are capital maintenance costs associated with keeping JP fully functional.)

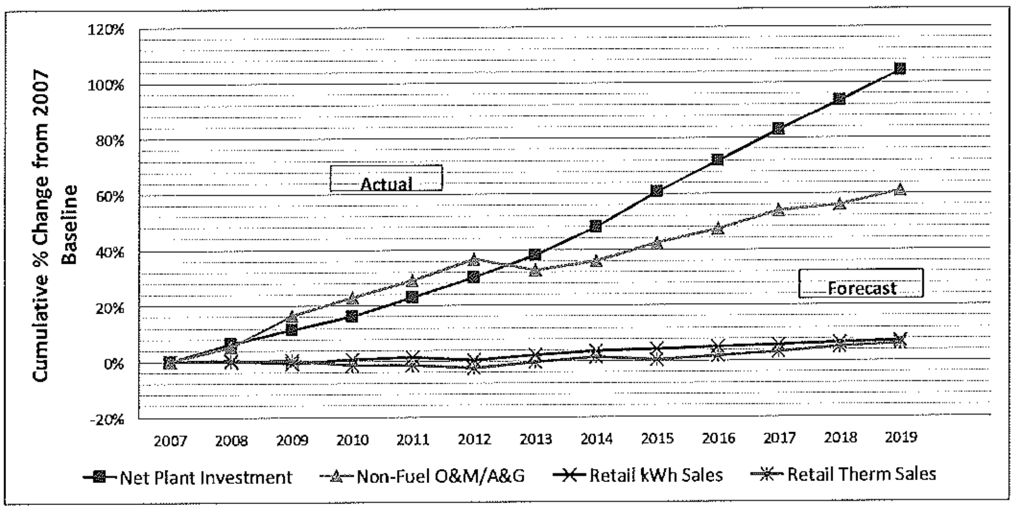
In a similar manner, Avista was able to negotiate a favorable purchase price for the Klamath Falls Lateral from Williams Northwest Pipeline. The cost to Avista's Oregon customers was approximately $2.3 million. The annual savings from the purchase by no longer paying Williams Northwest Pipeline contracted/tariffed rates is $1.4 million annually. While base rates went up for the purchase price, customers saw a net savings through the PGA, a simple payback of just 1.6 years.

Systems-Related Investments – As discussed in great detail in the Company's UG-284 and UG-288 general rate cases, the Company's customer information system was old and outdated and was therefore in need of replacement. The Company deployed a new customer information system (Project Compass) in February 2015. Commission Staff, through its Reply Brief in Docket No. UG-288, did not take issue with the vast majority of the costs associated with the project, and the Commission approved full cost recovery in that case. The Company has also needed to invest in new computer hardware and software systems that allow our employees to more efficiently provide service to our customers (such as the Next Generation radio project, Mobile Dispatch, and the centralized gas dispatch control room), and allow customers to more efficiently interact with the Company through its Integrated Voice Response phone system and through a more robust and user-friendly website.

This response is not meant to be an exhaustive list of every project the Company has undertaken over the past 10 years. As shown in the pie chart included above, much of the Company's capital investment is in the foundational projects associated with the operation of a natural gas distribution company- i.e., relocation of gas mains due to road moves, new customer hookups, replacement of natural gas meters and ERTs, remediation of safety related issues such as isolated steel, leak repair, replacement of damaged facilities, and the like. While Avista would rather redeploy its limited capital dollars to other necessary projects that are prioritized, or not spend the capital at all, the projects the Company has undertaken in Oregon and included for recovery in general rate cases over the past 10 years we believe are not discretionary – they are necessary and satisfy an immediate need. The revenue requirement in this case includes recovery of capital costs that will continue to address, in part, system deficiencies and operational constrictions and, like the projects undertaken in the past 10 years, should be recoverable in rates.

As noted in the Company's response to CUB-009 with regard to capital investment, current information forecasts gross plant additions for Oregon in the 2018 and 2019 time period of approximately $27 million and $29 million, respectively (a lower level of investment as compared to the average annual gross plant additions of approximately $40 million in the 2015-2017 time period).

It is important to note the effect that stagnant growth has also had on the Company. As the Company has represented in Illustration No. 1 in Company witness Mr. Morris' direct testimony, and as reproduced below, the Company has seen increases in net plant investment, as well as non-fuel O&M/A&G, that are greater than the growth in retail therm sales.



As shown above, this is a system issue for Avista (i.e., the disconnect between revenues, expenses and rate base), not just an Oregon issue. As explained below, the Company continues to face cost increases in capital and expense, cost increases that are necessary and immediate to continue to provide safe and reliable service to all of our customers. As such, Avista has needed to file general rate requests in all of our jurisdictions over the past 10 years, not just in Oregon.

Traditionally, increases in costs related to net plant investment and O&M/A&G can be recovered, in part, through therm sales. This includes revenues from increases in the number of customers served on the system (i.e., new customer hookups) as well as increases in customer usage (i.e., use-per-customer). Summarized below are the changes in number of customers, weather normalized usage, and use-per-customer, experienced by the Company from 2007 through 2015 for the Company's sales customers (weather-normalized 2016 usage data was not readily available):

State of Oregon	**2007**	**2015**	**Annualized % Change**
Number of Customers	94,031	98,446	0.8%
Weather Normalized Therm Usage	82,784,034	82,372,683	-0.5%
Use-Per-Customer	73.4	69.7	-1.3%

The data provided above shows that over the past 9 years, the growth in the number of sales customers has been less than 1% on an annualized basis, and overall therm usage and use-per-customer have actually been negative. While a portion of the increased investment will be recovered from new customers hooking up to the system, the lack of load growth from existing customers does not provide revenue to cover all of the necessary cost increases. This is one of the primary reasons why the Company has needed to seek rate recovery over the past 10 years. At the same time, the Company cannot simply defer or wait to invest in its system just because of somewhat stagnant growth. The Company takes seriously its public service responsibility to provide safe and reliable natural gas service.

For detailed discussion and description of capital projects in this case, please see:

- Avista/100, Morris/Pages 5-7 and 8-10;
- Avista/200, Thies/Pages 4-11;
- Avista/600, Machado/Pages 4-29;
- Avista/602, Pages 1- 127;
- Avista/603, Pages 1-12.

Oregon

Kate Brown, Governor

Public Utility Commission
201 High St SE Suite 100
Salem, OR 97301
Mailing Address: PO Box 1088
Salem, OR 97308-1088
Consumer Services
1-800-522-2404
Local: 503-378-6600
Administrative Services
503-373-7394

January 3, 2015

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RE:	Docket No.	Staff Request No.	Response Due By
	UG 325	DR 181 - 203	January 17, 2015

Please provide responses to the following request for information by the due date. Please note that all responses must be posted to the PUC Huddle account. Contact the undersigned before the response due date noted above if the request is unclear or if you need more time. In the event any of the responses to the requests below include spreadsheets, the spreadsheets should be in electronic form with cell formulae intact.

Topic or Keyword: Capital Projects

181. Please provide the following data for each capital project transferred to plant in 2015 and 2016:
    a. The 2014 and 2015 business case sheet.
    b. Additional funding requests.
    c. The amount actually spent.
    d. Each change order and the reason for each change order.
    e. Percent of investment, related depreciation expense, and related rate base allocated, assigned, or charged to Oregon.
    f. Name of Avista employee who approved the investment and all supporting information used by the employee to evaluate the investment.
    g. Description of each component of the investment transferred to plant, including a description of how the investment supports Oregon gas customers.
    h. The cost savings resulting from the investment. Please include a description of how the savings were calculated or estimated.

i. Adjustments, if any, included by Avista in the revenue requirement for this rate case to account for the cost savings provided in response to part g above.
j. Expected vendors or outside service providers;
k. Alternative technologies, systems, vendors, or service providers considered by Avista for the investment;
l. Reason for not selecting each alternative identified in the response to part j above;
m. Total amount of Avista labor costs included in the amount transferred to plant.

182. Please refer to Avista/602. Please provide the following information for 2017 investment:
a. All workpapers underlying the Capital Program Business Case, including the calculations of capital, O&M, other, and approved costs for all years in the Business Case, the Business Risk Score, the Assessment Score, the "Financial" percentage value, and any values appearing in the Recommended Program Description, Alternative Description, and Additional Justification.
b. All work papers supporting the monthly transfer to plant amounts.
c. Percent of investment, related depreciation expense, and related rate base allocated, assigned, or charged to Oregon.
d. Name of Avista employee who approved the investment and all supporting information used by the employee to evaluate the investment.
e. Description of each component of the investment including a description of how the investment supports Oregon gas customers.
f. The cost savings resulting from the investment. Please include a description of how the savings were calculated or estimated.
g. Expected vendors or outside service providers for the item;
h. Alternative technologies, systems, vendors, or service providers considered by Avista for the item;
i. Reason for not selecting each alternative;
j. Total amount of Avista labor costs included in the approved business case spend amount.

183. Please refer to Avista/602 Machado/3. Please explain the following information:
a. Please provide Avista's policy which addresses when to create and update the Capital Program Business Case forms.
b. Please provide Avista's policy which addresses how to use the completed Capital Program Business Case forms.
c. Please provide Avista's policy which addresses the approval process for capital expenses.
d. Please provide Avista's internal guidelines for filling the Business Case forms.
e. Please explain in general how each item under the "Assessments" heading is calculated.
f. Please explain in general how each column under the "Program Cash Flows" heading is calculated.

184. Please provide all Avista capitalization policies and procedures. If such policies do not address the capitalization of labor expenses or IT expenses please explain why not.

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 804

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA

Positioned for performance: An overview of Q3 2016 and beyond

December 2016

NYSE: AVA

www.avistacorp.com

Disclaimer

All forward-looking statements are Avista management's present expectations of future events and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements.

For more information on such factors and uncertainties, consult Avista's most recent form 10-K and 10-Q, which are available on our website at www.avistacorp.com

AVISTA

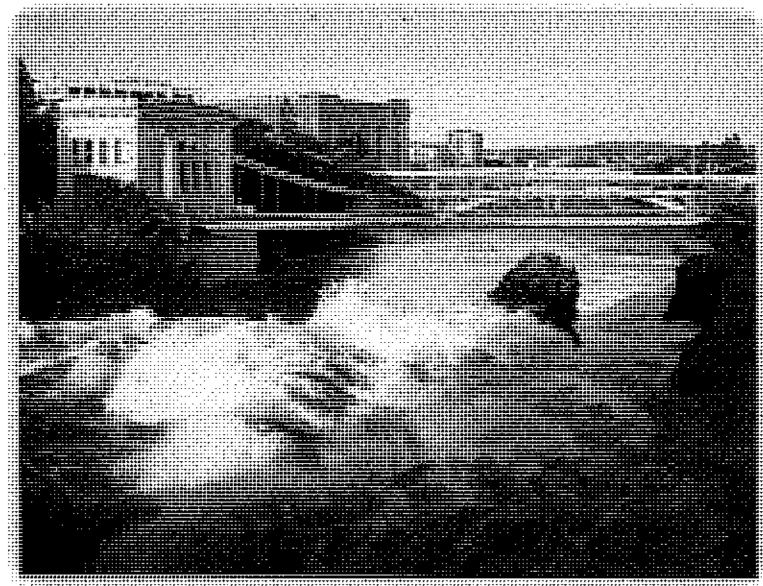
Strong and stable utility core

Avista Utilities

- Regulated electric and natural gas operations
- Serves customers in Washington, Idaho and Oregon
- Contributes about 95% of earnings

Alaska Electric Light & Power Company (AEL&P)

- Regulated electric operations
- Serves customers in City and Borough of Juneau



Long history of service, trust, innovation and collaboration

Photo: Spokane River Upper Falls

AVISTA

Steadily building long-term value

Projecting long-term earnings and dividend growth of 4% to 5%

Avista Utilities

- 5% to 6% rate base growth through utility capital investments
  - Upgrading infrastructure
  - Grid modernization
- Customer and load growth ~1%

AEL&P

- Strong near-term rate base growth through investment in generation
- Customer and load growth ~1%
- Planning to bring natural gas to Juneau

Strategic Investments

- Developing platforms for future growth
  - Targeting expanded natural gas services via LNG*
  - Exploring data science and advanced analytics
  - Investing in emerging technologies

Reliably building value for our customers, investors, communities and employees

*LNG: Liquefied natural gas

Avista Utilities

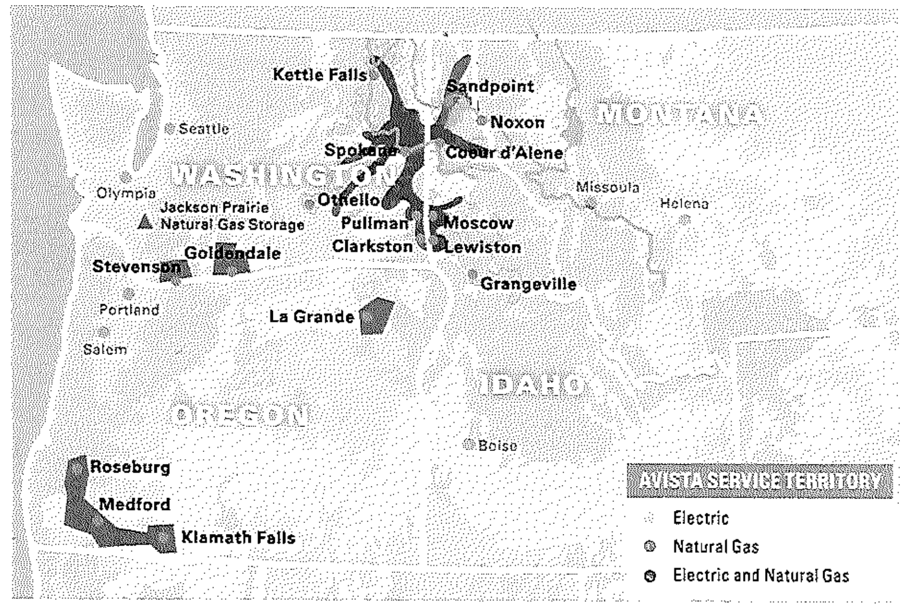
Significant investments in utility infrastructure

Staff/804
Moore/5

Solid foundation and continued commitment to innovation

Providing safe and reliable service for 127 years

- Diverse customer base
  - 30,000 square mile service territory
  - Service area population 1.6 million
    - 375,000 electric customers
    - 335,000 natural gas customers
- Strong customer focus
  - 90% percent or better customer satisfaction ratings every year since 1999
  - Developing key customer initiatives
- Invested in our communities
  - More than $1.5 million per year in charitable donations and over 48,000 volunteer hours from our employees



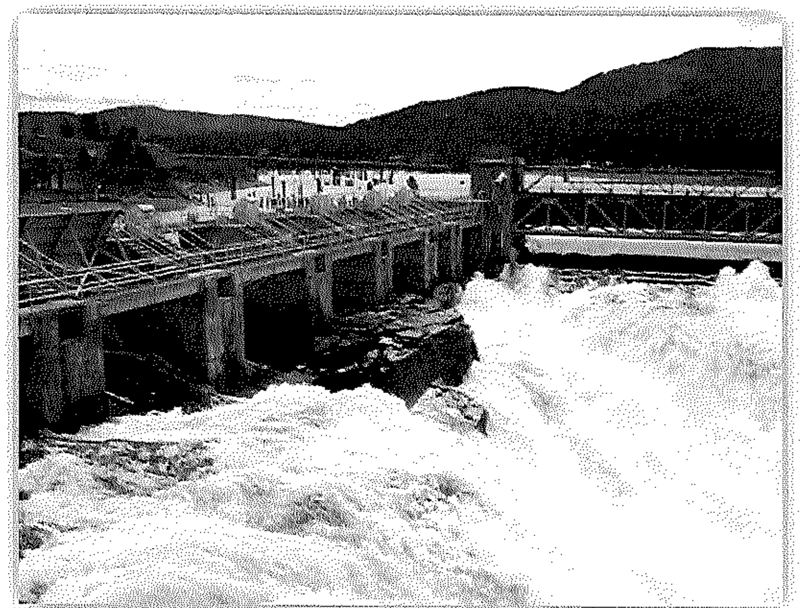
Information as of Dec. 31, 2015

AVISTA

A responsible mix of generation

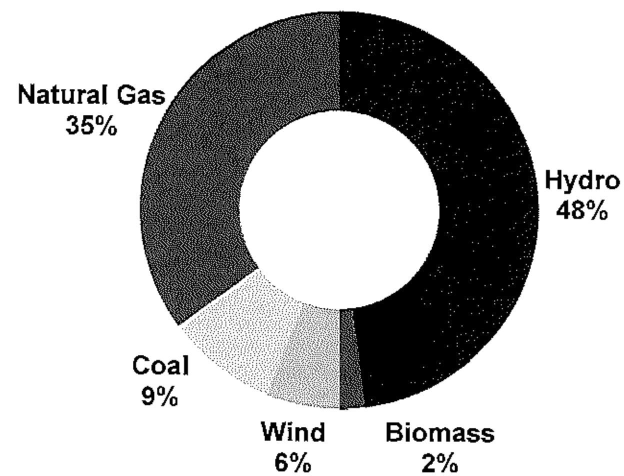
Founded on clean, renewable hydropower

- Strategy is to control a portfolio of resources that responsibly meet our long-term energy needs
- Long resources through 2020; plan to add 96 MW natural gas peaker by the end of 2020
- Exceeds Washington state's 15% Renewable Portfolio Standard for the next 20 years



Post Falls Dam, Idaho

Avista Utilities Electricity Generation Resource Mix*
Dec. 31, 2015



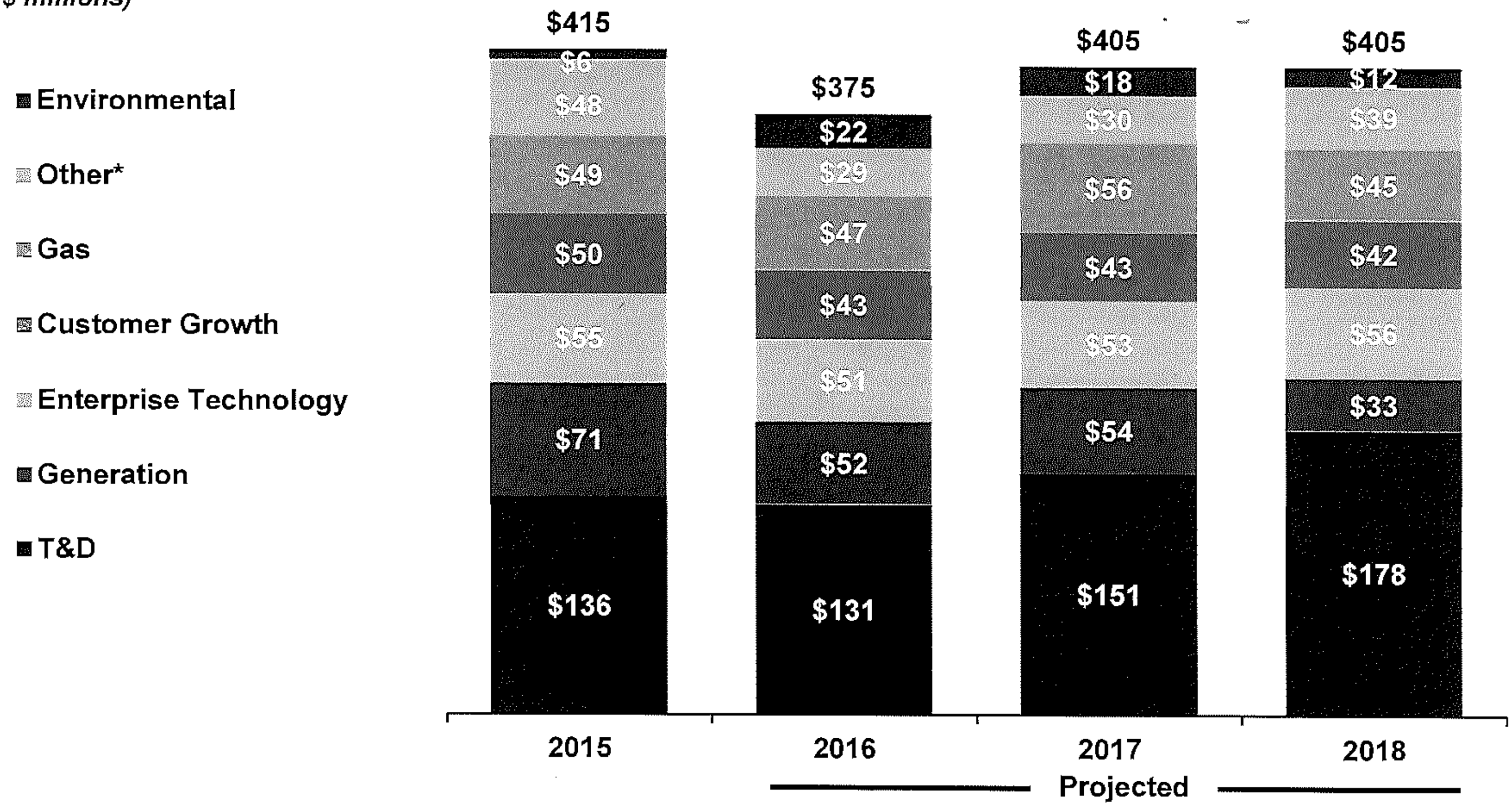
*Based on maximum capacity
Excludes AEL&P

AVISTA

Significant investments to upgrade all systems

5% to 6% rate base growth

Avista Utilities Capital Expenditures**
($ millions)

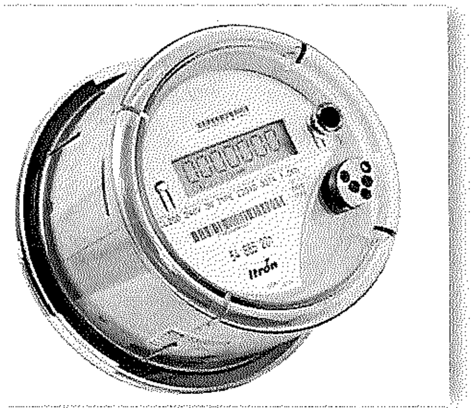


* Other includes Facilities and Fleet

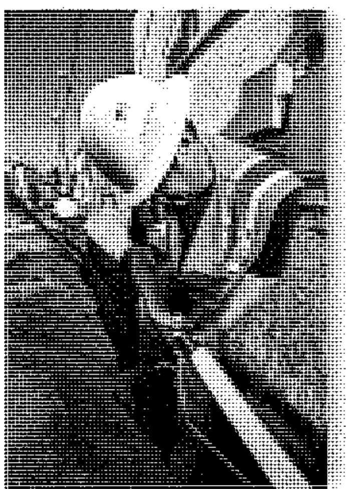
** Excludes capital expenditures at AEL&P of $13 million in 2015, and projected capital expenditures of $17 million in 2016, $5.3 million in 2017 and $5.5 million in 2018

Investing in our utility

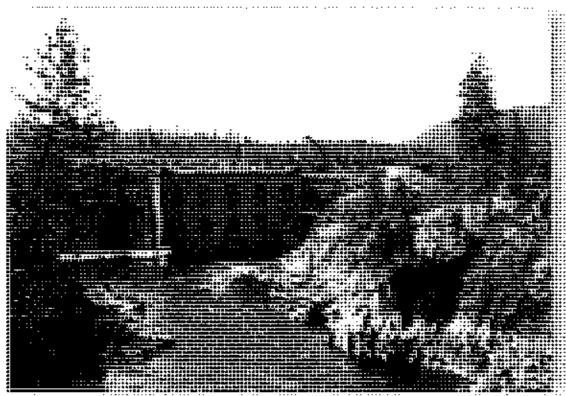
Preserving and enhancing service reliability



Advanced Metering Infrastructure (AMI)

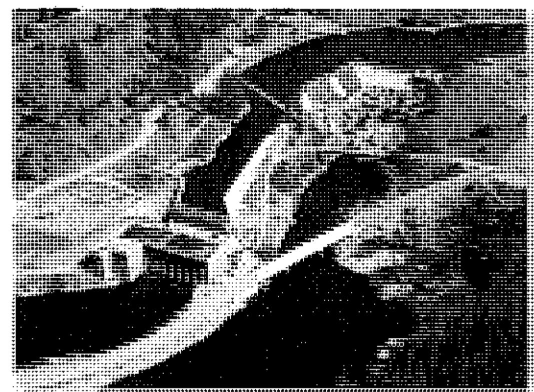


Aldyl A Natural Gas Pipe Replacement



Nine Mile Falls Rehab

Grid Modernization



Little Falls Plant Upgrade

Driving effective regulatory outcomes

Continued recovery of costs and capital investments

Washington

- Feb. 19, 2016, filed an electric and natural gas rate request with a proposed 18-month rate plan designed for new rates effective Jan. 1, 2017, and Jan. 1, 2018. Under this plan, we would not file a rate case for new rates to be effective prior to July 1, 2018.
- Request designed to increase annual electric revenues by 7.6% or $38.6 million, and annual natural gas revenues by 2.8% or $4.4 million effective Jan. 1, 2017.
- The request also includes a second-step increase on Jan. 1, 2018, designed to increase electric revenues by 3.9% or $10.3 million, and natural gas revenues by 1.0% or $0.9 million, for the January through June 2018 period.
- Request based on 48.5% equity ratio and a 9.9% return on equity.

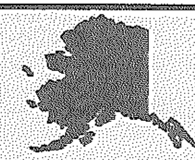
Idaho

- Oct. 24, 2016, filed an all-party settlement agreement designed to increase annual electric base revenues by 2.5% or $6.3 million; plus continued recovery of $4.1 million of costs related to Palouse Wind Project through the PCA mechanism.
- Based on a 9.5% return on equity with a 50.0% common equity ratio.
- New rates would be effective Jan. 1, 2017.

Oregon

- Nov. 30, 2016, filed a natural gas rate request to increase revenues by 9% or $8.5M .
- Request based on 50% equity ratio and 9.9% return on equity.
- The PUC has up to 10 months to review and rule; if approved, new rates would take effect no later than Oct. 1, 2017.

Alaska



- Sept. 16, 2016, filed an electric general rate request to increase revenues by 8.1% or $2.8 million.
- An interim rate increase of 3.86% or $1.3 million was effective Nov. 23, 2016.
- An additional $2.9 million annually from interruptible service was approved to reduce overall revenue requirement from $5.7 million to $2.8 million.
- Request based on a 58% equity ratio and a 13.8% return on equity.
- The RCA has approximately 15 months to rule on the permanent rate increase.

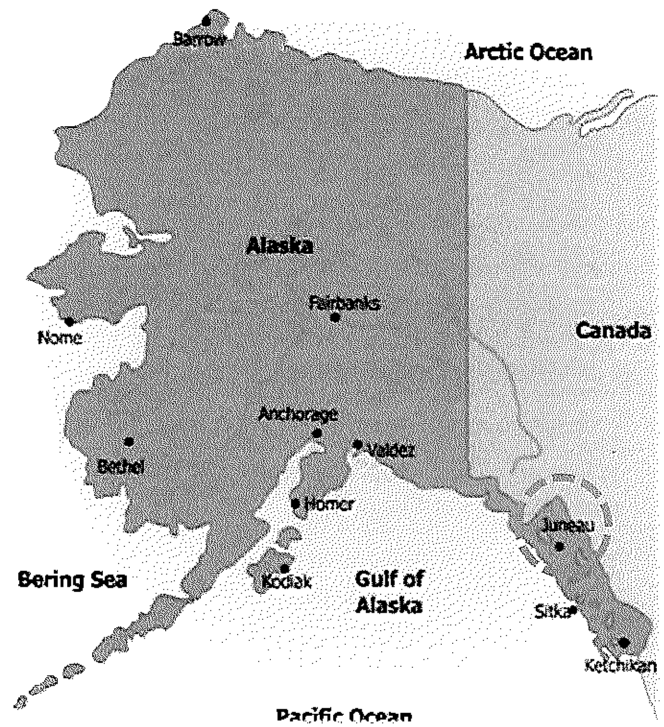
Alaska Electric Light & Power Company (AEL&P)

Growing the utility core

Diversifying our utility footprint

Oldest regulated electric utility in Alaska, founded in 1893

- Serves 17,000 electric customers in the City and Borough of Juneau, meeting nearly all of its energy needs with hydropower
- One of the lowest-cost electric utilities in the state
- Approved capital structure of 53.8% equity and an authorized return on equity of 12.875%

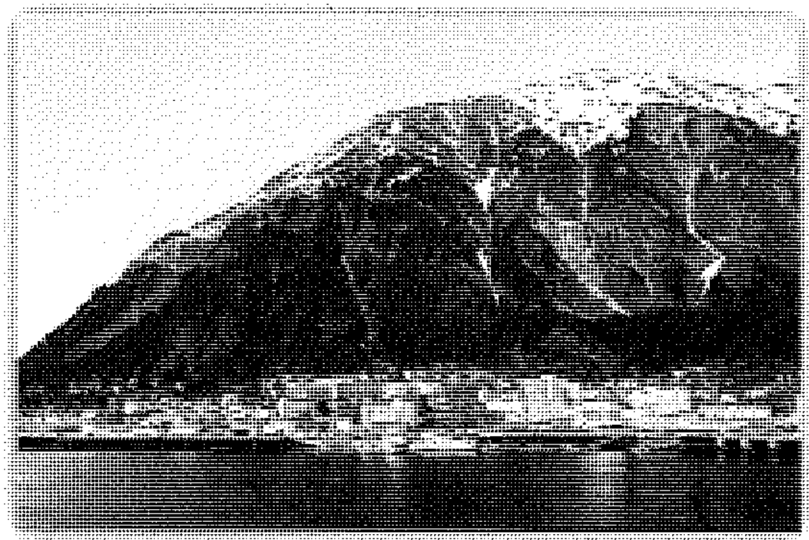


Juneau, Alaska

Opportunity to drive additional growth in Alaska

Planning to bring natural gas to Juneau

- Continuing to work through the key issues
  - Seek low-cost debt financing through mechanisms provided by Alaska Industrial Development & Export Authority (AIDEA)
  - Exploring alternative ways to pay for customers' conversion costs
- Next Step
  - File and obtain from the regulatory commission of Alaska a non-conditional Certificate of Public Convenience and Necessity



Juneau, Alaska

Strategic Investments

Developing platforms for future growth

Creating new growth platforms

- Expand natural gas services via LNG
  - Salix (subsidiary)
    - Generation – diesel substitution
    - Marine fueling
    - Rail fueling
- Targeted investments
  - Energy Impact Partners
    - Private equity fund that invests in emerging technologies, products, services, and business models throughout electricity supply chain with a collaborative, strategic investment approach
  - Plum Energy
    - Small LNG project investments
  - TROVE
    - Leverage AMI, consumer and other data through predictive analytics

Financial

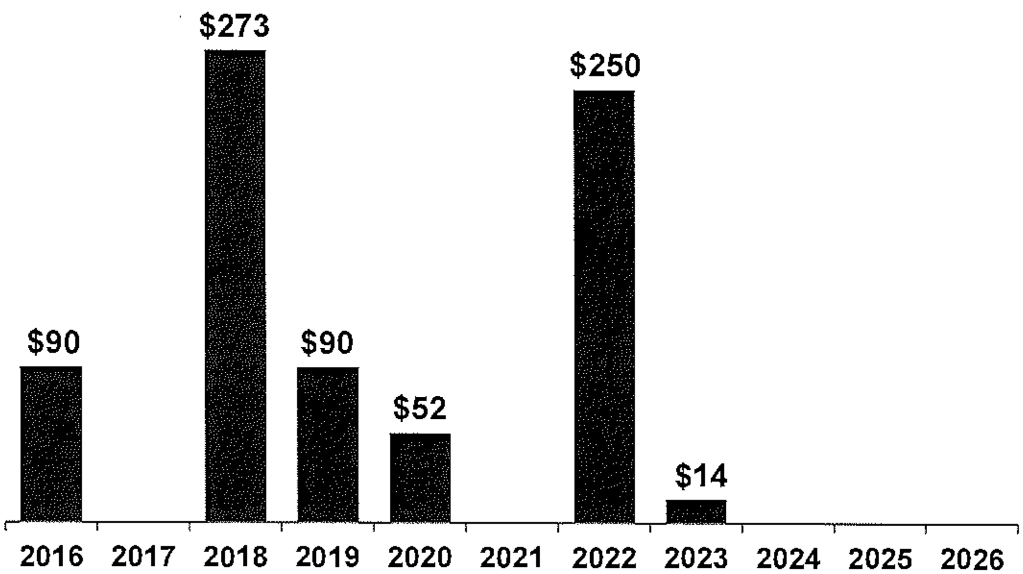
Performance Metrics

Prudent balance sheet and liquidity

$139.8 million of available liquidity at Avista Corp. as of Sept. 30, 2016

- Executed a $70.0 million term loan agreement with an expiration date of Dec. 30, 2016, which was used to repay a portion of $90.0 million bond maturity in August
- In August priced $175 million of Avista Corp. first mortgage bonds with a coupon of 3.54%* and maturity date of December 2051. Expect to issue December 2016
- Issued 1.6 million shares of common stock under our sales agency agreements for total net proceeds of approximately $66 million as of Sept. 30, 2016

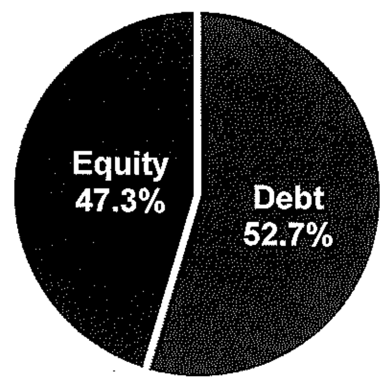
No significant maturities until 2018
($ millions)



Additional long-term debt maturities beyond 2026 not shown

*In connection with this pricing, we cash-settled seven interest rate swap contracts (notional aggregate amount of $125 million) and paid a total of $54 million.

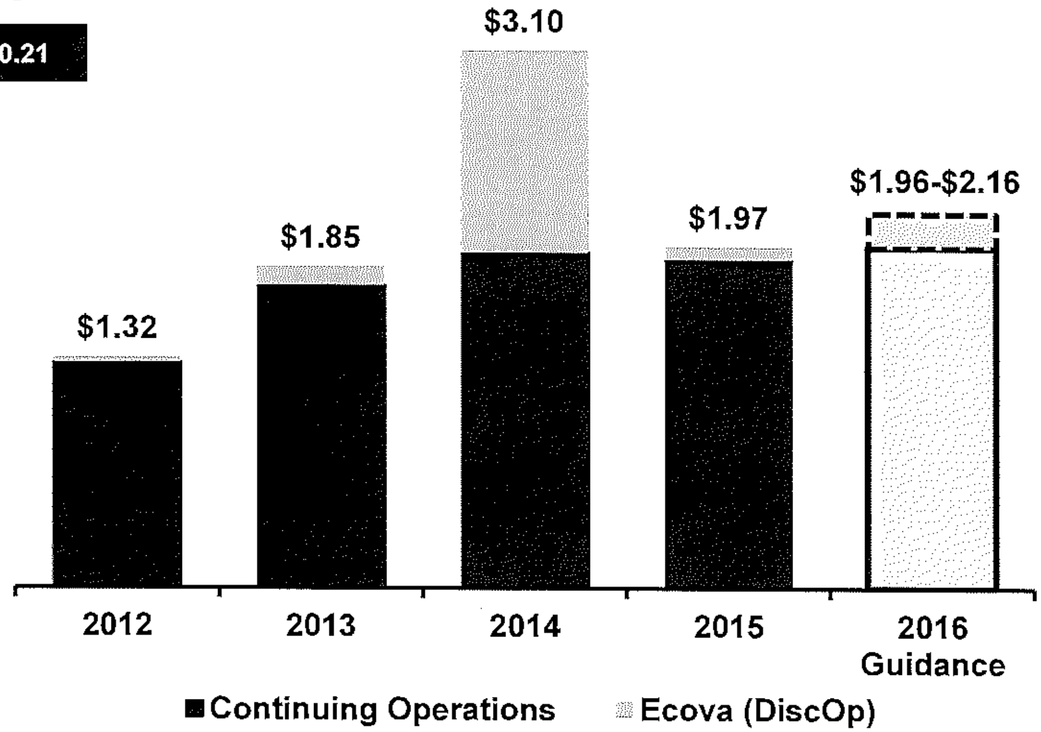
Consolidated Capital Structure
Sept. 30, 2016



Continued long-term earnings growth

Total Earnings per Diluted Share
Attributable to Avista Corporation

Business Segments	Q3 2016	Q3 2015
Avista Utilities	$0.20	$0.20
AEL&P	$0.01	$0.01
Other	$(0.02)	-
TOTAL – Diluted EPS	**$0.19**	**$0.21**



Growth for 2016

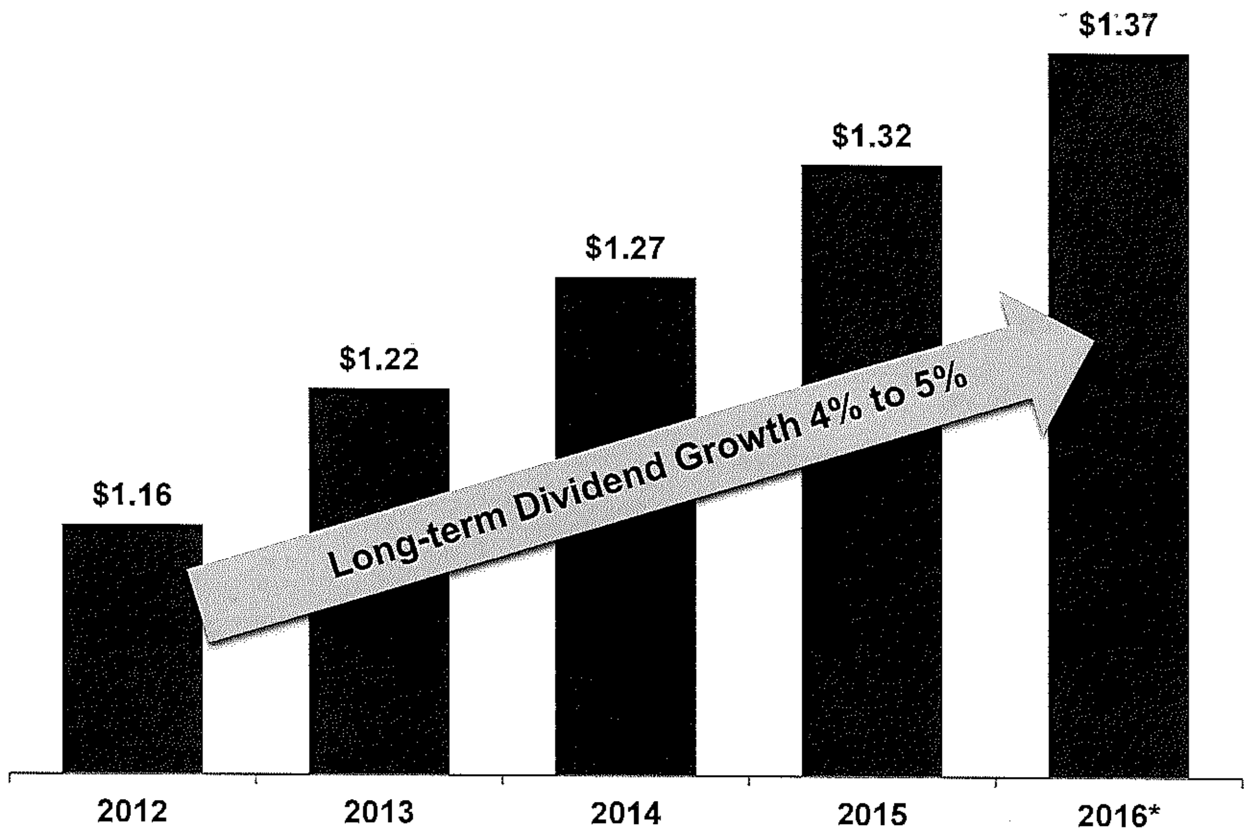
2016 Earnings Guidance	
Avista Utilities	$1.91 - $2.05
AEL&P	$0.09 - $0.13
Other	$(0.04) - $(0.02)
Consolidated	**$1.96 - $2.16**

Guidance Assumptions

- Our outlook for Avista Utilities assumes, among other variables, normal precipitation and temperatures for the remainder of the year.
- Our outlook for AEL&P assumes, among other variables, normal precipitation, temperatures and hydroelectric generation for the remainder of the year.
- Our guidance range for Avista Utilities encompasses expected variability in power supply costs and the application of the ERM to that power supply cost variability.
- The midpoint of our guidance range for Avista Utilities does not include any benefit or expense under the ERM. In 2016 we expect to be in a benefit position under the ERM.

Stable and growing dividend

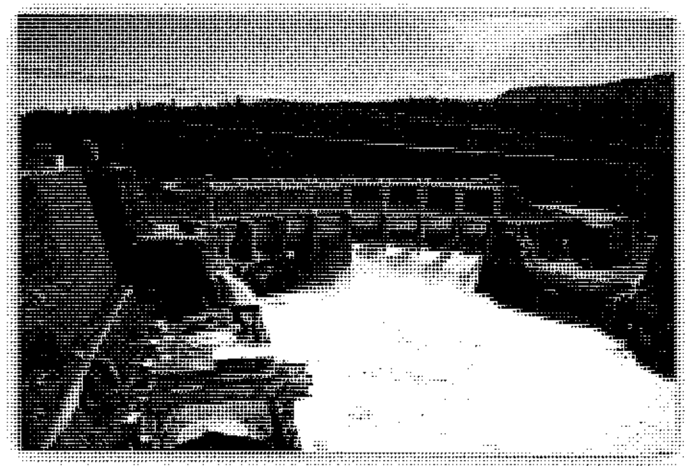
Dividend growth expected to keep pace with long-term earnings growth



*Current quarterly dividend of $0.3425 annualized

An attractive investment

- Strong and responsible core utility
  - Investing substantially to modernize infrastructure and upgrade systems
  - Steady returns and attractive dividend yield*
  - One of the greenest utilities in the U.S.**
- Focus on utility growth
  - Selective acquisitions
  - Developing new products and services and supporting economic development throughout service area
  - LDC opportunity in Juneau
- Positioning for the future
  - Strategically investing in ways to extend access to natural gas via LNG, leverage AMI data through applied analytics, gain insight into leading-edge energy solutions
  - Track record of innovation (e.g. Itron, ReliOn, Ecova)



Reliably building value for our customers, investors, communities and employees

* Dividend yield 3.3% based on stock price as of Sept. 30, 2016

** Source: *Benchmarking Air Emissions of the 100 Largest Power Producers in the United States*, NRDC, July 2015

LDC: Local distribution company

Photo: Cabinet Gorge Dam

AVISTA

We welcome your questions

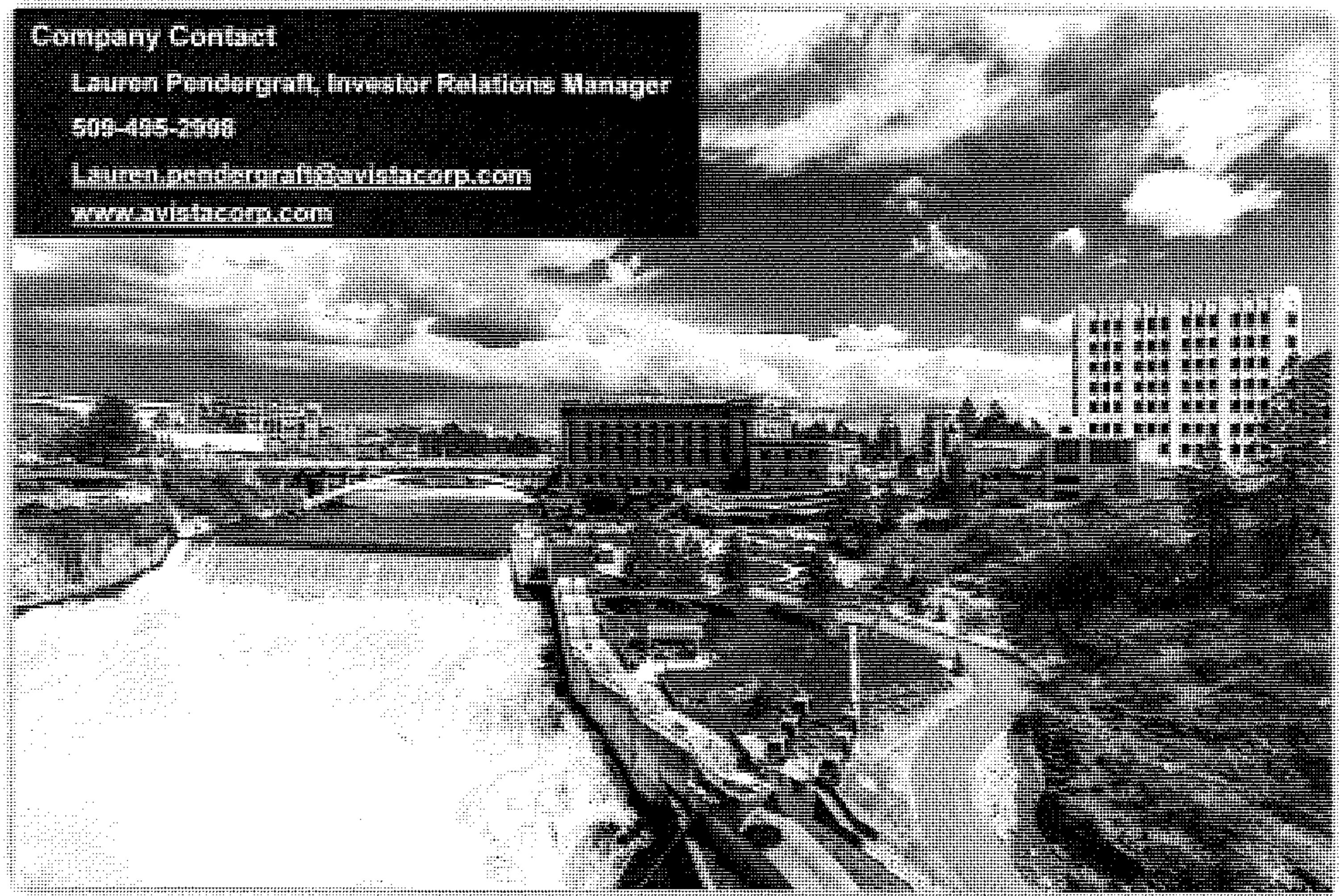


Photo: *Huntington Park, Spokane, Wash.*

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 805

Exhibits in Support
Of Opening Testimony

March 1, 2017

Exhibit 805

is an Excel spreadsheet

(Provided in electronic format)

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 806

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 806 is confidential and

Is subject to Protective Order No.16-460.

(Provided in electronic format)

CASE: UG 325
WITNESS: MITCHELL MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 807

Exhibits in Support
Of Opening Testimony

March 1, 2017

Exhibit 807

are Excel spreadsheets

(Provided in electronic format)

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 900

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Rose Anderson. My business address is 201 High Street, SE Suite 100, Salem, Oregon 97301-3612.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my Witness Qualification Statement, which is found in Exhibit Staff/901.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss Avista's Customer Service & Informational expense, Advertising costs, Atmospheric Testing costs, and Miscellaneous Revenues in the Base Year ending June 30, 2016. My testimony assesses whether Avista's filing follows Commission practice and precedent, including the guidelines for advertising expenses given in OAR 860-026-0022.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

Exhibit 901 — Witness Qualifications Statement.

Exhibit 902 — Avista's response to Staff Data Request 104 providing analysis of Avista's "Category A" advertising expenses.

Exhibit 903 — Photograph of Avista branded flashlights from Avista's response to Staff Data Request 214 providing samples of Avista advertising.

Exhibit 904 – Avista's response to DR 263, including Attachment B and tab AT-01 of Attachment A, regarding Avista's corrected Atmospheric Testing Inspection costs.

Exhibit 905 – Avista's Response to Staff DR 379 on the increase in Atmospheric Testing costs from Base Year to Test Year.

Exhibit 906 – Avista's response to Staff Data Request 262 regarding Atmospheric Testing Inspection Point growth rate assumption.

Exhibit 907 – Revenue Requirement model filed in Avista's UG 325 workpapers.

Exhibit 908 – Avista's response to Staff DR 144 regarding Avista's load forecasting data.

Exhibit 909 – Avista's Rule No. 20 for Miscellaneous customer fees.

Exhibit 910 – Avista's response to Staff DR 393 regarding Avista's Seasonal Reconnect Fee collection.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, CUSTOMER SERVICE & INFORMATIONAL

Q. What did the Company propose to spend in its initial filing on Customer Service & Informational expenses for the test year ending September 30, 2018?

A. Avista proposed $205,000 in Account 908000, $317,000 in Account 909000, and $48,000 in Account 910000 for the Test Year ending September 30, 2018.[1] This is compared to $177,693, $304,839, and $46,473 for each account in the Base Year, respectively.[2]

Q. How did Staff perform its analysis of Avista's proposed Customer Service & Informational expenses?

A. I reviewed Base Year transaction-level data for FERC Customer Service & Informational accounts. Specifically, I looked at accounts 908000 for Customer Assistance and 910000 for Miscellaneous Customer Service. I looked at Account 909000 for Informational Advertising in Issue 2 of my Testimony. I also reviewed historical cost trends for these accounts beginning in 2010.

Q. What is Staff's assessment of Avista's proposed Customer Service & Informational budget for the Test Year?

A. In reviewing transaction-level data for each Customer Service & Informational account in the Base Year, I believe that expenses are appropriate and belong in base rates. The Base Year expenditures for accounts 908000, and 910000 are similar to historical expense levels in these accounts.

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[1] Exhibit Staff/907. Revenue Requirements file in Avista's UG 325 Workpapers.
[2] Exhibit Staff/ 902, Avista's response to Staff DR 104.

Q. What is your adjustment (S) number for Customer Service & Informational?

A. S27.

Q. Please provide a summary table showing Customer Service & Informational adjustments

A. A summary table of Customer Service & Informational expenses is below.

	Company Filing		**Staff**		**Adjustment**	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
Customer Assistance/ 908000		$205,000		$205,000		$0
Misc Customer Service & Info/ 910000		$48,000		$48,000		$0

ISSUE 2, ADVERTISING

Q. What did the Company report spending on Advertising in its initial filing in the Base Year ending June 30, 2016?

A. In Avista's response to Staff Data Request 104 on advertising costs, the Company included $304,838.67 in FERC account 909000 for Informational Advertising in the Base Year.[3] It also included $4,155.69 in advertising expenses from FERC account 908000 for Customer Service, $42,190.32 in FERC account 920000 for Salaries, $232.50 in Account 912000 for Demonstrating expenses, and $1,110.25 in FERC account 930XXX for Miscellaneous General expenses, which includes sub-accounts 930100 and 930200.[4]

Q. Does the Commission have a standard means of defining how advertising-related expenses are treated?

A. Yes, it does. OAR 860-026-0022 sets out how advertising-related expenses are addressed in a rate case.

Q. How did Staff perform its analysis of Avista's proposed advertising expenses?

A. I reviewed the Company's response to Staff Data Request 104.[5] I also followed up with additional data requests and reviewed Avista's responses which included more than 73 samples of advertising media and narrative

[3] Exhibit Staff/902, Avista's response to Staff DR 104.
[4] Exhibit Staff/902, Avista's response to Staff DR 104.
[5] *See* Exhibit Staff/902.

explanations of the Company's reasoning for placing expenditures in each OAR 860-026-0022 category.

Q. What is Staff's assessment of Avista's proposed advertising budget for the Test Year?

A. In reviewing transaction-level data and Avista's response to Staff's Data Requests 104, 213, 214, 264, 313, 314, and 315, most expenses are properly categorized and belong in base rates. The level of expenditures Avista included in "Category A" is accurate and within the .125% of Avista's budget allowed in OAR 860-026-0022(3)(a). I found that all $15,596 of expenses in "Category E" should be moved from base rates to Schedule 493. Staff will continue to assess whether there may be other Low Income expenses included in base rates that should instead be recovered in the appropriate Schedules. I also found one transaction in "Category B" that should be moved 50% to "Category C."

Q. Please explain the adjustment moving $15,596 from "Category E" in Advertising Expenses to Schedule 493.

A. The Low Income Rate Assistance Program (LIRAP) is designed to assist low-income households with energy bills. In contrast, "Category E" as defined by OAR 860-026-0022(2)(e) is for Commission-approved Energy Efficiency programs. In UG 201, Avista requested that all LIRAP-related expenses be removed from base rates and added to Schedule 493 to increase transparency for customers.[6] The expenses labeled by Avista as LIRAP expenses in

[6] *See In re Avista*, OPUC Docket No. UG 246, Order No. 14-015 at 8 (Jan. 21, 2014).

"Category E" of Avista's response to Staff DR 104 should be removed from base rates and recovered through Schedule 493. The result is a downward adjustment of $1,542.35 to Account 908000, a downward adjustment of $13,991.36 to Account 920000, and a downward adjustment of $62.32 to Account 930200.

Q. Please explain the adjustment moving $3,389.76 from "Category B" to "Category C."

A. In Avista's response to Staff DR 214, it provided a photograph of Avista-branded flashlights included in this rate case as a "Category B" expense of $6,779.52.[7] The flashlights display Avista's brand name and phone number. The first option upon calling the phone number is to report an outage or gas leak. This expense is only partly safety related. As the flashlights display Avista's brand name more prominently than any safety information, this expense should be partially placed into the promotional and advertising account 913000 and moved to "Category C." This expense should be removed from the Base Year unless and until Avista meets the burden of proof for showing that it is a reasonable expense related to providing utility service to customers in accordance with OAR 860-026-0022(3)(c). The result is a downward adjustment of $3,389.76 to account 909000.

Q. What is your adjustment (S) number for Advertising?

A. The Advertising adjustment is under the same (S) number as Customer Service & Informational, S27.

---

[7] Exhibit Staff/903, Photo of Avista flashlights.

Q. Please provide a summary table showing Advertising adjustments.

A. A summary table of Advertising expenses is below.

	Company Filing		Staff		Adjustment	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
Customer Assistance/ 908XXX		$205,000		$203,458		($1,542)
Advertising/909 000		$317,000		$313,610		($3,390)
Salaries/92000 0		$4,301,000		$4,287,000		($13,991)
Miscellaneous General/93000 0		$497,000		$496,938		($62)

ISSUE 3, ATMOSPHERIC TESTING

Q. Please describe Avista's Atmospheric Testing program.

A. Atmospheric Testing (AT) expenses include the cost of compliance with a federal safety mandate to inspect all portions of natural gas pipelines in contact with the air for signs of corrosion. Avista groups AT costs into two categories: Inspection and Remediation. Historically, Avista has inspected all meters in Oregon once every three years and performed the majority of remedial actions during the two following non-inspection years. Starting in 2017, the Company is moving to a one-third-of-Oregon-per-year inspection schedule. Avista has contracted out the inspection portion of the program to a third party since 2007.[8]

Q. Has Avista made any adjustments to Atmospheric Testing expense in its filed testimony?

A. Yes. Avista adjusted Atmospheric Testing expenses in its initial testimony upward by $292,831 from the Base Year amount of $91,690 to $384,521.[9] Avista then made a correction to Test Year AT costs in response to Staff DR 263. The result is a downward adjustment of $61,762 from $384,521 to $322,759.

Q. What is Staff's assessment of the expenses Avista included in Atmospheric Testing in the Test Year?

A. I reviewed Company workpapers on Atmospheric Testing and Avista's responses to several Data Requests. I compared historical AT expenses to

[8] See Exhibit Staff/904, Anderson/3, Avista's response to Staff DR 263.
[9] Avista/500, Smith/36.

projected Test Year costs, accounting for the change in inspection schedule starting in 2017. I have two adjustments to recommend for Avista's Test Year AT expense amount. First is the adjustment to inspection costs presented by Avista in Avista's response to Staff DR 263, as discussed above.[10] Second is an adjustment for Avista's Atmospheric Testing inspection point growth rate. Avista used an inspection point growth rate based on a calculation of annual growth rate that was in error. Changing the growth rate to one that is in line with historical trends results in a downward Test Year AT adjustment of $2,609.45

Q. Please explain the reason for the adjustment to Avista's inspection costs in the Test Year.

A. Staff's analysis of AT costs included a comparison of Base Year and Test Year costs as well as historical AT costs. In Avista's initial filing, costs for the inspection portion of the AT program predicted for the Test Year were $190,592 higher than in the Base Year. When Staff inquired as to why inspection costs would increase significantly although the number of inspection points per year decreased by one-third, Avista acknowledged that its calculation was in error. In its response to DR 263, Avista adjusted AT inspection costs in the Test Year downward by $61,762.[11] Avista further explained the increase in inspection expenses from Base Year to Test Year in response to Staff DR 379.[12]

[10] See Exhibit Staff/904, Anderson/1, Avista's Response to DR 263.
[11] Exhibit Staff/904. Anderson/1, Avista's Response to DR 263.
[12] Exhibit Staff/905, Avista's Response to Staff DR 379.

Q. Please explain Staff's adjustment based on the historical AT inspection point growth rate.

A. In Avista's response to Staff DR 262, Avista explained that its estimate of the growth rate of AT inspection points is based on historical inspection point growth rates as well as studies projecting the number of Avista customers in the Test Year.[13] The calculation provided by Avista in its response to this DR is in error. Using the annual growth rate formula provided in Staff workpapers for this adjustment, the historical annual inspection point growth rate is 1.4% lower than that calculated by Avista. Based on a more accurate historical growth rate of 0.2% per year, Avista's inspection costs in the Test Year should be $179,120.80. This is a downward adjustment of $2,609.20 from Avista's corrected Test Year expense as provided in response to DR 262, for a total adjustment of $64,370.

Q. What is your adjustment (S) number for Atmospheric Testing?

A. S26.

Q. Please provide a summary table showing Atmospheric Testing adjustments.

A. A summary table of the AT adjustment to FERC Account 880000 for Other Expenses is on the following page.

[13] Exhibit Staff/906, Avista's Response to Staff DR 262.

	Company Filing		Staff		Adjustment	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
Other Expenses/ 880000		$1,426,000		$1,361,630		$(64,370)

ISSUE 4, OTHER REVENUES

Q. Please summarize what Avista includes in revenue requirement for Other Revenues.

A. Other Revenues in Avista's predicted Test Year ending September 30, 2018 include $97,000 in FERC account 488000 for Miscellaneous Service Revenues, and $1,000 in Account 493000 for Gas Property Rent. Avista excludes expenses in Account 493 – Sales for Resale and Account 495 – Other Gas Revenue from the Test Year.[14]

Q. How does the Company compute Other Revenue in the Test Year?

A. The Company uses the unaltered Base Year amount for Miscellaneous Revenues as the estimate for Test Year Miscellaneous Revenues.[15]

Q. Please describe Miscellaneous Service Revenue.

A. Miscellaneous Service Revenues are revenues from Rule No. 20 in the Company's tariff. This tariff currently includes reconnect charges, late payment fees, and fees for returned checks.

Q. How did Staff perform its analysis of Avista's proposed Miscellaneous Revenues?

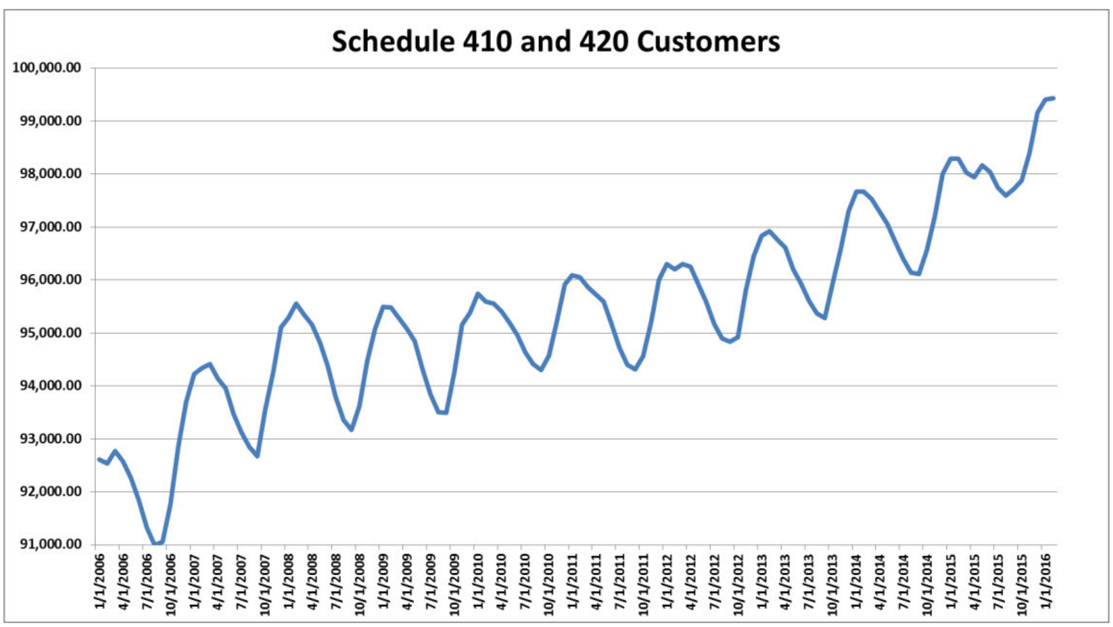
A. I reviewed historical data for FERC account 488000 from Avista's responses to Data Requests 318 and 381. The data show a downward trend in Miscellaneous Revenues since June 2014, even though the number of Avista

[14] Exhibit Staff/907, Revenue Requirements file in Avista's UG 325 Workpapers.
[15] Exhibit Staff/907, Revenue Requirements file in Avista's UG 325 Workpapers.

customers is increasing over time. Historically, number of customers and Miscellaneous Revenues are positively correlated.[16]

Q. What is Staff's assessment of Avista's proposed Miscellaneous Revenues in the Test Year?

A. Since June 30, 2014, revenues in the Miscellaneous Service Revenue account have been decreasing. This is inconsistent with the historical trend of miscellaneous revenues increasing as the number of customers increases over time. Staff's analysis found that the amounts collected on a monthly basis in Avista's account 488000 do not indicate that Avista is consistently collecting Rule 20 Reconnect Fees. Monthly data on Avista's number of customers provided in Avista's response to Staff DR 144 shows that number of customers increases and decreases over time with a seasonal pattern.[17]



Each year, Avista loses hundreds of customers in the spring and then gains a

[16] *See* UG 288 - Staff/900, St. Brown/ 6-7
[17] Staff Exhibit 908. Avista's response to Staff DR 144.

greater number of customers in the fall. Avista's Rule No. 20 includes a Seasonal Reconnect fee of $30 during office hours or $50 during non-office hours.[18] Rule No. 20 also states:

> Further, when service has been discontinued at the Customer's request and then reestablished within a twelve-month period, the Customer shall be required to pay the monthly minimum charges that would have been billed had service not been discontinued.[19]

Avista's response to Staff Data Request 393 states that Avista's Customer Information System reported only 28 Seasonal Reconnects in 2015 and 22 in 2016.[20] Because of the mismatch between the number of customers lost on average each year and the number of reconnect fees charged by Avista, Staff hypothesizes that Avista has not been charging seasonal reconnect fees or minimum monthly charges in accordance with Rule No. 20. Staff's analysis estimates that in the Base Year, Seasonal Reconnect fees and minimum monthly charges as described in Rule No. 20 would have generated at least $90,644.00 in Oregon revenues from Avista's Schedule 410 and 420 customers. If Avista were to collect these fees in the Test Year, Miscellaneous Revenues would likely increase by at least $90,644.00. For this reason Staff recommends an adjustment of $90,644.00 in the Test Year to FERC account 488000.

Q. Has Staff reviewed "Other Gas Revenue-Gas Property Rent"?

A. Yes. Staff has reviewed the Company's "Other Gas Revenue-Gas Property Rent" account and has no adjustments.

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[18] ExhibitStaff/909, Avista's Rule No. 20 for Miscellaneous customer fees.
[19] Exhibit Staff/909, Avista's Rule No. 20 for Miscellaneous customer fees.
[20] Exhibit Staff/910, Avista's Response to Staff DR 397.

Q. What is your adjustment (S) number for Other Revenue?

A. S25.

Q. Please provide a summary table showing Other Revenue adjustments.

A. A summary table of Other Revenue Accounts is below.

	Company Filing		**Staff**		**Adjustment**	
Description/ Account No.	Total Company	OR-Allocated	Total Company	OR-Allocated	Total Company	OR-Allocated
Sales for Resale/ 483XXX		$0		$0		$0
Misc Service Rev/ 488000		$97,000		$187,644		$90,644
Gas Property Rent/ 493000		$1,000		$1,000		$0
Other Gas Rev/ 495XXX		$48,000		$48,000		$0

Q. Does this conclude your testimony?

A. Yes.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 901

Witness Qualifications Statement

Exhibits in Support
of Opening Testimony

March 1, 2017

WITNESS QUALIFICATION STATEMENT

NAME:	Rose Anderson
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Utility Analyst Energy Rates, Finance and Audit Division
ADDRESS:	201 High Street SE. Suite 100 Salem, OR. 97301
EDUCATION:	Master of Science, Agriculture and Resource Economics, University of California Davis, Davis, CA Bachelor of Arts, International Political Economy University of Puget Sound, Tacoma, WA
EXPERIENCE:	I have been employed at the Public Utility Commission of Oregon since September of 2016. My position is Utility Analyst in the Energy Rates, Finance and Audit Division. My current responsibilities include review of Affiliated Interest filings and utility labor cost analysis. Prior to working for the PUC I was a Research Associate at McCullough Research for two years. My responsibilities included economic analysis of energy markets and utilities.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 902

Avista's Response to Staff Data Request 104

Exhibits in Support
of Opening Testimony

March 1, 2017

MISC. RESTATING ADJUSTMENT - ADVERTISING

Purpose: Remove Category A Advertising Expenses Over the Allowed Limit.

	FERC ACCOUNT	CD AA	GD AA	GD OR	Total System	Oregon Allocation	
		Category A Expenses					
	908000 - Customer Service & Info - Advertising			2,613	2,613	**2,613**	
	909000 - Info and Instruct Advertising Expense			67,430	67,430	**67,430**	
	912000 - Sales Expenses - Demonstrating & Selling			233	233	**233**	
	913000 - Sales Expenses - Advertising				-	-	
**	920000 - Admin & General Salaries	309,250		1,267	310,517	**28,178**	
**	930100 - General Advertising Expense	3,040			3,040	**265**	
**	930200 - Misc General Expense	9,026			9,026	**785**	
		321,316	-	71,543	392,859	**99,504**	MR-AD-2

Category A Limit:

Proposed Retail Revenues 06.2016 AMA Balance	103,276,000	84,901,000	ROO
Limit (1/8 of 1%)	0.125%	1,928,000	Eliminate Adder Schedules
	129,095	7,908,000	PF Revenue
Oregon Allocation of Category A Costs	99,504	8,539,000	GRC - Estimated before finalizing adjustments
Adjustment - To Remove Category A Costs over Limit	-	103,276,000	

Notes:

** During the transaction activity review the Company noted there were Category A type expenses recorded to FERC account 930200, so these have been included as part of the Category A Costs.

The level of Oregon allocated Category A expenses are below the Retail Revenue limit. Therefore, no adjustment is necessary.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 903

Advertising Photograph

Exhibits in Support
of Opening Testimony

March 1, 2017

Staff/903
Anderson/1

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 904

Avista's Response to Staff Data Request 263

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 263	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please see the pdf file "Atmospheric Testing – AC Plan – 10.18.16" provided by Avista in the Smith workpapers for Docket UG 325. Please confirm that the inspection costs for 2017 and 2018 in Oregon in Table 1 are in error and should be equal to the amounts in Table 5 on page 3 of the same document for 2017 and 2018 "AC + CS" costs. Please identify the corrected dollar amount of atmospheric inspection expenses to be included in the test year ending September 2018.

RESPONSE:

The inspection costs for 2017 and 2018 as referenced above contain an error. The Atmospheric Testing Expenses included in company workpaper AT-01 for the test year was $243,492 but should have been $181,730. This modification reduces the Company's adjustment by $61,762 to a revised adjustment of $231,069, this revision reduces the Company's revenue requirement by approximately $65,000. Please see Staff_DR_263 Attachment A for the revised adjustment workpapers and Attachment B for a revised copy of the Atmospheric Testing AC Plan.

AVISTA UTILITIES
Oregon Jurisdiction
Twelve Month Test Year Ended September 30, 2018
Atmospheric Testing Expense

Purpose: This adjustment restates actual test period results for atmospheric testing.

Test Period total amount of atmospheric testing		
Atmospheric Testing Expenses	**$**	**243,492**
Follow-up Remedial Actions	**$**	**141,029**
Total Test period Atmospheric Testing/Remedial Action Expense	**$**	**384,521**
Base Period: Atmospheric Testing Expenses	**$**	**52,900**
Base Period Follow-up Remedial Expenses	**$**	**38,790**
	$	**91,690**
Adjustment	**$**	**292,831**

(Atmospheric testing will be completed state-wide in 2016 in OR. Beginning in 2017 one third of each Oregon Construction office will be inspected annually).

Atmospheric Corrosion (AC) – Program Resource Forecast

AC Program Budget Estimate

The information in Table 1 details the budgetary (Expense) estimate for the Atmospheric Corrosion (AC) inspection program in Oregon 2016 through 2018. Expenses include the inspection costs and follow-up remedial actions to correct program identified anomalies based on transitioning the AC inspection cycle that is currently completed once every 3 years by state to an inspection cycle that is completed 1/3 by state/district per year.

Table 1. Inspection

State		2016	2017	2018
OR	-	$508,706	$176,400	$183,507

Follow-up Remedial Action Costs(1)

State		2016	2017	2018
OR	-	$94,988	$117,280	$148,945

(1)Remedial action costs are estimates based on historical remedial action follow-up rates.

Background

The AC Inspection Program is a gas operations program required by the Code of Federal Regulations (CFR) 49 CFR 192.481. The code requirement states (192.481(a)): "Each operator must inspect each pipeline or portion of pipeline that is exposed to the atmosphere for evidence of atmospheric corrosion, as follows: Onshore-At least once every 3 calendar years, but with intervals not exceeding 39 months."

Historically, up until 2004, the AC inspection was accomplished utilizing meter readers who visited the gas meters monthly to acquire a meter read and complete a visual meter inspection coincident with the meter read. Completing the inspections utilizing the meter readers resulted in inconsistent feedback and the inability to expand the inspection criteria due to the competing responsibilities and diversity of the meter reading workgroup. To enhance public safety and expand the program inspection requirements Avista moved to a contracted inspection service in 2007 that specialized in AC inspection. The program is currently administered triennially, by state, consistent with federal inspection requirements.

The triennial AC program has traditionally resulted in follow-up remedial activities that are completed over the next two non-inspection years. The AC inspection results in numerous follow-up remedial actions including painting meters and re-wrapping risers, in situations where the protective coating has failed.

The program is overseen by an Avista program manager. Field inspections are completed using a third party contractor. Through 2014 the AC program was administered by state every three years. Based on the historical inspection cycles, the number of approximate inspections completed are outlined in Table 2.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 905

Avista's Response to Staff Data Request 379

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO.:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 379	TELEPHONE:	(509) 495-4873
		EMAIL:	Ryan.finesilver@avistacorp.com

REQUEST:

Please provide a narrative summary explaining why Atmospheric Inspection expenses in the Base Year ending June 30, 2016 are listed as $52,900 in the file titled “Staff_DR_263 Attachment A.xlsx are only ten percent of total projected 2016 Atmospheric Inspection costs ($508,706) in Table 1 on page 1 of Company’s response to Staff Data Request (SDR) 263, specifically, the file titled “Staff_DR_263 Attachment B.xlsx provided in response to SDR 263.

RESPONSE:

Costs associated with Oregon Atmospheric Inspection expenses during the base year included expenses between July 2015 and June 2016 which totaled $52,900. As previously stated in Staff_DR_260, the actual 2016 calendar year costs associated with Atmospheric Inspections totaled $752,267. This indicates that our 2016 Budget Estimate of $508,706, in Table 1 on page 1 of Company’s response to Staff Data Request (SDR) 263, was significantly lower than our actual level of expense.

During the 2015 calendar year, the Company did not have budgeted expenses related to inspection costs, as 2015 was not an inspection year for Oregon, based on the three year cycle, as previously discussed in the Company’s response to Staff_DRs_260 and 317. The Company’s base year includes the last six months of 2015 and the first six months of 2016, which is an inspection year for Oregon. $1,631 of the $52,900, are for balances recorded in the last six months of 2015, the remainder of $51,269 are for expenses recorded in the first six months of 2016. The 2016 Budget Estimate of $508,706, noted above, is based on a calendar year.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 906

Avista's Response to Staff Data Request 262

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/20/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 262	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please see Table 4 on page 3 of the pdf file “Atmospheric Testing – AC Plan – 10.18.16” provided by Avista in the Smith workpapers for Docket UG 325. Please provide:

a) The approximate number of inspection points in Oregon in 2010; and
b) A narrative explaining why Table 4 is based on the assumption that meter inspection points will grow at rate of one percent after 2016.

RESPONSE:

(a) The approximate number of meters in 2010 was 100,318.

(b) The 1% annual growth rate for meter inspection points beyond 2016 as footnoted in Table 4 is an approximation of the average growth rate based on the 2014 Consumption Report and 2014 Gas Growth Forecast for Oregon. The Company has observed that the actual meter count between 2010 and 2016 has experienced 1.6% growth during that timeframe (100,318 in 2010 and 101,945 in 2016.) The 1% estimate as included in the Atmospheric Testing – AC Plan is conservative compared to the Company’s experience.

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 907

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA UTILITIES
OREGON NATURAL GAS
TWELVE MONTH TEST YEAR ENDED SEPTEMBER 30, 2018
(000's OF DOLLARS)

Staff Testimony Exhibit 907 Version of Tab "2018 Final-TP Detail Summary" in Avista's Revenue Requirement Model

Line No.	Acct. No.	Description	Per Results of Operations Report	Restating Historical Base Year Adjustments: Allocation Factor Adjustment	Miscellaneous Restating Adjustment	Eliminate Adder Schedule Adjustment	Weather Normalization Sales/Purch	Restate Debt Adjustment	Materials & Supplies Investment	Pro Forma Test Year Adjustments: Test Year Expense Adjustment	Test Year Revenue Load Adjustment	Test Year Non-Exec Labor Adjustment	Test Year Executive Labor Adjustment	Test Year Benefits Adjustment	Restated 2016 AMA Test Year
		Adjustment Number	**1.00**	**1.01**	**1.02**	**1.03**	**1.04**	**1.05**	**1.06**	**2.00**	**2.01**	**2.02**	**2.03**	**2.04**	
		Workpaper Reference	**G-ROO**	**G-AF**	**G-MR**	**G-EAS**	**G-WN**	**G-RD**	**G-MS**	**G-FE**	**G-FR**	**G-NEXL**	**G-EXL**	**G-BEN**	
1		SALES OF GAS:													
2	480000	Residential	55,998	0	0	(1,166)	5,339	0	0	0	(20,706)	0	0	0	**39,465**
3	481200	Commercial	28,856	0	0	(461)	2,515	0	0	0	(13,935)	0	0	0	**16,975**
4	481300	Industrial-Firm	398	0	0	(6)	54	0	0	0	(78)	0	0	0	**368**
5	481400	Interruptible	966	0	0	97	0	0	0	0	(1,504)	0	0	0	**(441)**
6	484000	Interdepartmental Sales	13	0	0	0	0	0	0	0	0	0	0	0	**13**
7	499000	Unbilled Revenue	(1,330)	0	0	0	0	0	0	0	171	0	0	0	**(1,159)**
8		SALES TO ULTIMATE CUSTOMERS	84,901	0	0	(1,536)	7,908	0	0	0	(36,052)	0	0	0	**55,221**
9															
10		TRANSPORTATION REVENUES													
11	489300	Transportation - Commercial/Industrial	3,359	0	0	(32)	0	0	0	0	176	0	0	0	**3,503**
12		TRANSPORTATION REVENUES	3,359	0	0	(32)	0	0	0	0	176	0	0	0	**3,503**
13															
14		OTHER OPERATING REVENUES:													
15	483XXX	Sales For Resale	58,301	0	0	(58,301)	0	0	0	0	0	0	0	0	**0**
16	488000	Miscellaneous Service Revenues	97	0	0	0	0	0	0	0	0	0	0	0	**97**
17	493000	Other Gas Revenue - Gas Property Rent	1	0	0	0	0	0	0	0	0	0	0	0	**1**
18	495XXX	Other Gas Revenues	1,858	0	0	(1,858)	0	0	0	0	0	0	0	0	**0**
19		OTHER OPERATING REVENUES	60,257	0	0	(60,159)	0	0	0	0	0	0	0	0	**98**
20															
93															
94		CUSTOMER ACCOUNTS EXPENSES:													
95	901000	Supervision	94	0	0	0	0	0	0	0	0	130	0	78	**302**
96	902000	Meter Reading Expenses	267	0	0	0	0	0	0	4	0	0	0	0	**271**
97	903XXX	Customer Records & Collection Expenses	2,600	(2)	0	0	0	0	0	42	0	0	0	0	**2,771**
98	904000	Uncollectible Accounts	(167)	(1)	0	17	0	0	0	45	0	0	0	0	**(108)**
99		Uncollectible Accounts - Conversion Factor	990	0	0	(17)	87	0	0	0	(394)	0	0	0	**666**
100	905000	Misc Customer Accounts	80	0	0	0	0	0	0	1	0	0	0	0	**81**
101		**CUSTOMER ACCOUNTS OPERATING EXP**	**3,864**	**(3)**	**0**	**0**	**87**	**0**	**0**	**92**	**(394)**	**130**	**0**	**78**	**3,983**
102															
103		CUSTOMER SERVICE & INFO EXPENSES:													
104	908XXX	Customer Assistance Expenses	1,932	0	0	(1,754)	0	0	0	2	0	13	0	12	**205**
105	909000	Advertising	305	0	0	0	0	0	0	12	0	0	0	0	**317**
106	910000	Misc Customer Service & Info Exp	46	0	0	0	0	0	0	2	0	0	0	0	**48**
107		**CUSTOMER SVC & INFO OPERATIN(**	**2,283**	**0**	**0**	**(1,754)**	**0**	**0**	**0**	**16**	**0**	**13**	**0**	**12**	**570**
108															
109		SALES EXPENSES:													
110	912000	Demonstrating & Selling Expenses	0	0	0	0	0	0	0	0	0	0	0	0	**0**
111	913000	Advertising	0	0	0	0	0	0	0	0	0	0	0	0	**0**
112	916000	Miscellaneous Sales Expenses	0	0	0	0	0	0	0	0	0	0	0	0	**0**
113		**SALES OPERATING EXPENSES**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
114															
115		ADMINISTRATIVE & GENERAL EXPENSES:													
116	920000	Salaries	3,811	4	0	0	0	0	0	19	0	187	49	114	**4,301**
117	921000	Office Supplies & Expenses	523	1	(2)	0	0	0	0	23	0	0	0	0	**545**
118	922000	A&G Expenses Transferred	0	0	0	0	0	0	0	0	0	0	0	0	**0**
119	923000	Outside Services Employed	946	1	(33)	0	0	0	0	28	0	0	0	0	**942**
120	924000	Property Insurance Premium	138	0	0	0	0	0	0	7	0	0	0	0	**145**
121	925XXX	Injuries and Damages	394	0	0	0	0	0	0	20	0	0	0	0	**414**
122	926XXX	Employee Pensions and Benefits	142	0	0	0	0	0	0	6	0	0	0	0	**148**
123	928000	Regulatory Commission Expenses	658	0	(1)	0	0	0	0	0	0	0	0	0	**657**
124	928000	Regulatory Commission Fee Expenses	71	0	0	166	0	0	0	40	0	0	0	0	**277**
125		Commission Fees - Conversion Factor	514	0	0	(165)	31	0	0	0	(141)	0	0	0	**239**
126	930000	Miscellaneous General Expenses	501	(1)	8	(2)	0	0	0	19	0	0	0	0	**497**
127	931000	Rents	101	0	0	0	0	0	0	5	0	0	0	0	**106**

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

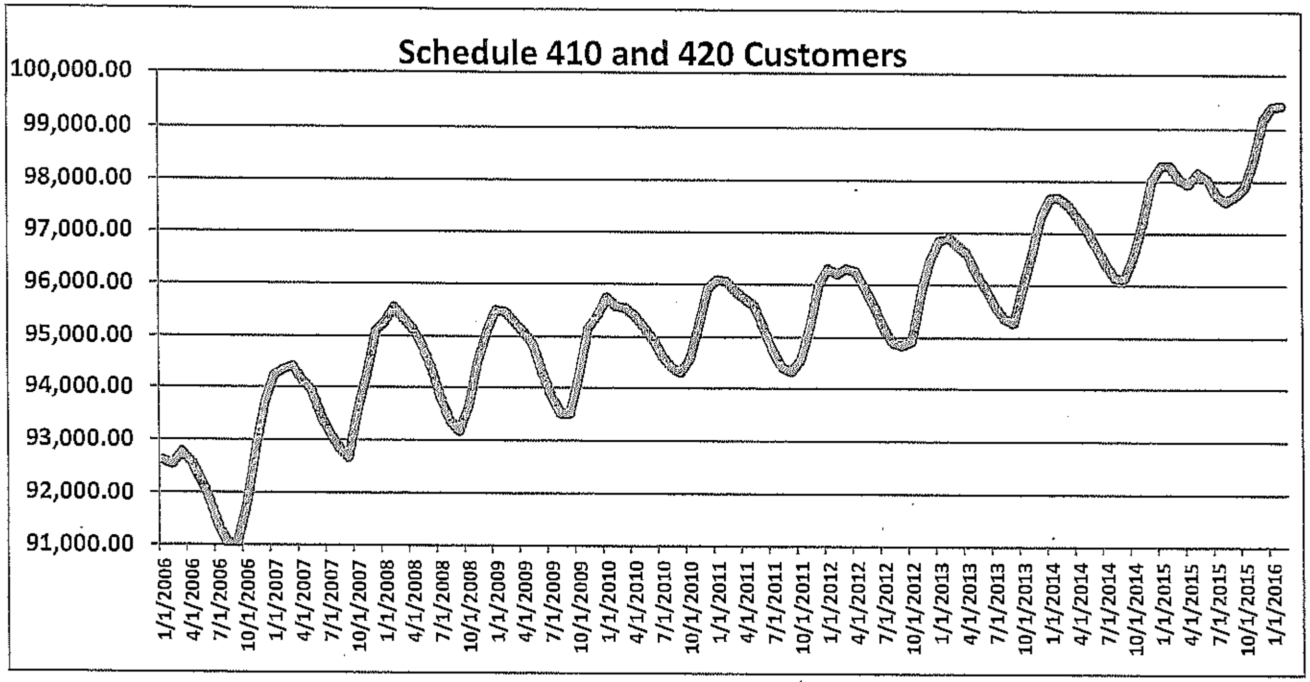
STAFF EXHIBIT 908

Avista's Response to Staff Data Request 144

Exhibits in Support
of Opening Testimony

March 1, 2017

date	Schedule 410 and 420 Customers
1/1/2004	87,372.00
2/1/2004	87,614.00
3/1/2004	87,666.00
4/1/2004	87,341.00
5/1/2004	87,136.00
6/1/2004	86,720.00
7/1/2004	86,347.00
8/1/2004	86,129.00
9/1/2004	86,312.00
10/1/2004	87,290.00
11/1/2004	89,662.00
12/1/2004	87,634.00
1/1/2005	90,088.00
2/1/2005	90,361.00
3/1/2005	90,243.00
4/1/2005	90,205.00
5/1/2005	90,050.00
6/1/2005	89,590.00
7/1/2005	89,275.00
8/1/2005	88,927.00
9/1/2005	89,078.00
10/1/2005	89,959.00
11/1/2005	90,838.00
12/1/2005	92,234.00
1/1/2006	92,606.00
2/1/2006	92,538.00
3/1/2006	92,774.00
4/1/2006	92,578.00
5/1/2006	92,260.00
6/1/2006	91,844.00
7/1/2006	91,329.00
8/1/2006	90,995.00
9/1/2006	91,054.00
10/1/2006	91,759.00
11/1/2006	92,853.00
12/1/2006	93,703.00
1/1/2007	94,231.00
2/1/2007	94,341.00
3/1/2007	94,411.00
4/1/2007	94,138.00
5/1/2007	93,953.00
6/1/2007	93,470.00
7/1/2007	93,120.00
8/1/2007	92,850.00
9/1/2007	92,669.00
10/1/2007	93,559.00



11/1/2007	94,252.00
12/1/2007	95,106.00
1/1/2008	95,283.00
2/1/2008	95,558.00
3/1/2008	95,345.00
4/1/2008	95,151.00
5/1/2008	94,820.00
6/1/2008	94,373.00
7/1/2008	93,790.00
8/1/2008	93,357.00
9/1/2008	93,173.00
10/1/2008	93,622.00
11/1/2008	94,475.00
12/1/2008	95,080.00
1/1/2009	95,498.00
2/1/2009	95,475.00
3/1/2009	95,280.00
4/1/2009	95,083.00
5/1/2009	94,850.00
6/1/2009	94,308.00
7/1/2009	93,844.00
8/1/2009	93,502.00
9/1/2009	93,498.00
10/1/2009	94,238.00
11/1/2009	95,153.00
12/1/2009	95,385.00
1/1/2010	95,745.00
2/1/2010	95,587.00
3/1/2010	95,549.00
4/1/2010	95,406.00
5/1/2010	95,196.00
6/1/2010	94,955.00
7/1/2010	94,630.00
8/1/2010	94,409.00
9/1/2010	94,297.00
10/1/2010	94,569.00
11/1/2010	95,216.00
12/1/2010	95,919.00
1/1/2011	96,083.00
2/1/2011	96,056.00
3/1/2011	95,869.00
4/1/2011	95,728.00
5/1/2011	95,592.00
6/1/2011	95,174.00
7/1/2011	94,726.00
8/1/2011	94,405.00
9/1/2011	94,313.00

10/1/2011	94,557.00	
11/1/2011	95,199.00	
12/1/2011	96,000.00	
1/1/2012	96,301.00	
2/1/2012	96,195.00	
3/1/2012	96,304.00	
4/1/2012	96,249.00	
5/1/2012	95,914.00	
6/1/2012	95,580.00	
7/1/2012	95,174.00	
8/1/2012	94,894.00	
9/1/2012	94,836.00	
10/1/2012	94,920.00	
11/1/2012	95,799.00	
12/1/2012	96,447.00	
1/1/2013	96,838.00	
2/1/2013	96,916.00	
3/1/2013	96,756.00	
4/1/2013	96,605.00	
5/1/2013	96,201.00	
6/1/2013	95,932.00	
7/1/2013	95,603.00	
8/1/2013	95,369.00	
9/1/2013	95,282.00	
10/1/2013	95,937.00	
11/1/2013	96,570.00	
12/1/2013	97,298.00	
1/1/2014	97,666.00	
2/1/2014	97,671.00	
3/1/2014	97,526.00	
4/1/2014	97,288.00	
5/1/2014	97,054.00	
6/1/2014	96,726.00	
7/1/2014	96,400.00	
8/1/2014	96,142.00	
9/1/2014	96,118.00	
10/1/2014	96,556.00	
11/1/2014	97,194.00	
12/1/2014	98,004.00	
1/1/2015	98,293.00	
2/1/2015	98,293.00	* replaced erroneous data outlier, due to Avista's switch to a new database,
3/1/2015	98,032.00	
4/1/2015	97,934.00	
5/1/2015	98,167.00	
6/1/2015	98,036.00	
7/1/2015	97,736.00	
8/1/2015	97,595.00	

9/1/2015	97,713.00
10/1/2015	97,878.00
11/1/2015	98,402.00
12/1/2015	99,161.00
1/1/2016	99,407.00
2/1/2016	99,434.00
3/1/2016	99,532.00
4/1/2016	74,460.00
5/1/2016	74,466.00
6/1/2016	74,266.00
7/1/2016	74,027.00
8/1/2016	73,884.00
9/1/2016	73,809.00
10/1/2016	74,213.00
11/1/2016	74,768.00
12/1/2016	75,240.00
1/1/2017	75,551.00
2/1/2017	75,576.00
3/1/2017	75,574.00
4/1/2017	75,541.00
5/1/2017	75,444.00
6/1/2017	75,218.00
7/1/2017	74,956.00
8/1/2017	74,761.00
9/1/2017	74,735.00
10/1/2017	75,179.00
11/1/2017	75,750.00
12/1/2017	76,261.00
1/1/2018	76,573.00
2/1/2018	76,591.00
3/1/2018	76,572.00
4/1/2018	76,511.00
5/1/2018	76,388.00
6/1/2018	76,141.00
7/1/2018	75,872.00
8/1/2018	75,687.00
9/1/2018	75,673.00
10/1/2018	76,133.00
11/1/2018	76,727.00
12/1/2018	77,247.00
1/1/2019	77,563.00
2/1/2019	77,587.00
3/1/2019	77,563.00
4/1/2019	77,496.00
5/1/2019	77,369.00
6/1/2019	77,119.00
7/1/2019	76,850.00

8/1/2019	76,667.00
9/1/2019	76,660.00
10/1/2019	77,129.00
11/1/2019	77,728.00
12/1/2019	78,254.00
1/1/2020	78,573.00
2/1/2020	78,599.00
3/1/2020	78,574.00
4/1/2020	78,504.00
5/1/2020	78,374.00
6/1/2020	78,124.00
7/1/2020	77,857.00
8/1/2020	77,676.00
9/1/2020	77,675.00
10/1/2020	78,150.00
11/1/2020	78,755.00
12/1/2020	79,286.00
1/1/2021	79,609.00
2/1/2021	79,637.00
3/1/2021	79,612.00
4/1/2021	79,544.00
5/1/2021	79,416.00
6/1/2021	79,168.00
7/1/2021	78,900.00
8/1/2021	78,721.00
9/1/2021	78,722.00
10/1/2021	79,198.00
11/1/2021	79,807.00
12/1/2021	80,341.00

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	12/30/2016
CASE NO:	UG 325	WITNESS:	Grant D. Forsyth
REQUESTER:	PUC Staff - Anderson	RESPONDER:	Grant D. Forsyth
TYPE:	Data Request	DEPT:	Financial Planning & Analysis
REQUEST NO.:	Staff – 144	TELEPHONE:	(509) 495-2765
		EMAIL:	grant.forsyth@avistacorp.com

REQUEST:

See Avista's response to Staff's DR 193 in the UG 288 rate case. Please provide a complete data and code documentation of the input/output files used to generate the final dataset for the monthly load forecast described in Avista/700, Forsyth, filed in this rate case, UG 325, so that results can be replicated. Please include the following:

a) Source of data;
b) Input/output files for intermediate files with identification and explanation of what variables are used to merge them into final data; and
c) Input/output files of programs, analyses done in the program and any other comments that are necessary for someone else to run the program.

RESPONSE:

a., b., and c.: The table below is a guide to the files that have been included in the folder ***Staff_DR_144 Attachment A.zip*** which are related to the billed forecast described in Avista/700, Forsyth. A "major folder" means a folder with one or more sub-folders and sub-files. The list contains five major folders and one major file.

Table Guide to Staff_DR_144 Attachment A

Folder/Files	Description	Comments
(1) "June 2016 OR Base Data Files for SAS" (major folder)	**Base data used for SAS regressions in SAS/ETS.**	**Contains base data that was exported into SAS/ETS.**
OR410UPCMEDROS.csv (sub-file)	Base data for 410 UPC regressions for Medford and Roseburg.	Because of lagged price, the data starts in 2005 instead of 2004.
ORAllOTHERSCHEDULES.csv (sub-file)	Base data for all other SAS UPC and customer forecasts.	Note that data series that start after 2004 may contain missing data indicator -9999.
WHS.csv (sub-file)	Base historical data for forecasting Western Housing Starts (WHS).	This historical series was used to forecast WHS, which used a regression driver in certain models for transportation and special contract customers. The method used was Linear (holt) Exponential Smoothing.

Folder/Files	Description	Comments
(2) "June 2016 OR Gas Model Runs" (major folder)	Regression output for models ruu through SAS/ETS, including WHS forecast output.	This is a large file set. For certain schedules, there is a both a customer and UPC forecast. Some schedules may only have a UPC forecast because there is only customer or the customer forecast is based on a simple moving average model. In some file names you will see "THM" instead of "UPC." This means the forecast is for total therms iustead of UPC. This occurs when the schedule reflects only one customer. The output for each regressiou is shown in four tahs: Output, Parameters, Fit Tests, and Error Tests. "Output" shows the forecasted valnes aud historical data. "Parameters" shows the regression parameters. "Fit Tests" show a range of fit statistics like RMSE and R2. "Error Tests" show tests for white noise and error stationarity.
Folder/Files	Description	Comments
(3) "June 2016 Forecast Assumptions Sheets" (major folder)	Contains folders and files related to population forecasts, industrial production, and other inputs to the forecasting process. Also includes base data downloaded from IHS at the time of the forecast.	In some cases data used for WA and ID forecasts may be part of the files/data shown.
"OR IHS April-Feb Forecasts" (sub-folder)	Contains IHS forecasts files used at the time of the forecast.	The file "Copy of AkamaiFileDownload.xls" contains the data used for Roseburg (Douglas County); Klamath Falls (Klamath County); and La Grande (Union County). The file "Copy of Metro Analysis Forecast Data Annual Data - Medford, OR(1).xlsx" contains the IHS data used for Medford (Jackson County MSA)
"Population Forecasts and Data" (sub-folder)	Contains files related to population forecast.	The file "Copy of CertifiedPopEst2015_Web_Excel97.xls" contains estimates Prepared by Population Research Center College of Urban and Public Affairs for Portland State University. These are used to produce a historical population estimate for 2015. See also DR 154 for more detail. The file "Population Forecasts 2016 Forecast.xlsx" contains the historical and extrapolated population series used in the forecast. Formulas are included.
"Regional Indicator Data Base June 2016 Forecast.xlsx" (sub-file)	Contains data related to the forecast of industrial production and the combined forecast of Meford's (Jackson County) population growth rate.	The tabs "Industrial Production Forecast"; "Employment Forecast"; and "Population Forecast" show the relevant data and calculations.
"HDD and CDD Weather Normalization Data.xlsx" (sub-file)	Contains data related to the calculation of heating and cooling degree days.	The 20-year moving average of weather used for the 2016 forecast is 1996-2015.
"2016 IRP and Forecast Prices - Copy.xlsx" (sub-file)	Contains wholesale price forecasts for 2016 IRP.	Forecasts provided by Avista's Gas Supply Department.

Folder/Files	**Description**	**Comments**
(4) "fmsproj_or_copy.sas7bcat" (major folder)	**Contains project folders for SAS/ETS time-series forecasting window.**	**This file contains the inputted regression equations iu the SAS/ETS window. The Company is currently using SAS 9.4. The equations ueed to be connected to the sub-files "OR410UPCMEDROS.csv" and "ORAllOTHERSCHEDULES.csv" from the major folder "June 2016 OR Base Data Files for SAS." These two csv files need to be imported into SAS/ETS and the re-connected to the project files.**
Folder/Files	**Description**	**Comments**
(5) Gas Data and Forecasts Juue 2016.2.xlsx (major file)	**Contains raw billing data, price data, and the summary values of the load forecast as it comes out of Financial Planning and Analysis. Includes visual graphics of various model assumptions such as population, weather, indnstrial production, and prices.**	**The tab "OR June 2015 Forecasts" contaius the output and summary total from the forecast output from the major folder "June 2016 OR Gas Model Runs"**

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 909

Avista's Rule No. 20

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA CORPORATION
dba Avista Utilities

RULE NO. 20
MISCELLANEOUS CHARGES

The following schedule summarizes the Company's service charges to its natural gas customers:

Disconnect (normal business hours)..no charge

*Reconnect charge for non-pay/Customer convenience................. $30 -during office hours****
(Reference Rule 11) .... $50 -other than office hrs****

* Seasonal Reconnect $30 -during office hours****
(Reference Schedule 410 and 420) $50 -other than office hrs****

Returned checks from the Bank (Reference Rule 9) .... $ 25

Late Payment Fee .... 1.9% of unpaid balance (C)(I)
(Reference Rule 9).. over $200

2nd Meter Test within 12 Month Period .... Company cost of***
(Reference Rule 18) performing test

Deposits to establish credit - (Reference Rule 7) .... Based on premise usage

Penalty Charge for Excess Therms Taken During Curtailment $1.00/therm
(Reference Rule 14)

Customer Requested Removal and Replacement of Meter/Communication Equipment…..$221.61
(Reference Rule 17)

Monthly Meter Reading Expense ………………………………………………… $50.88/month
(Reference Rule 17)

* Avista Utilities may charge and collect any unusual costs incident to the discontinuance or restoration of a service which has resulted from the customer's action or negligence. In addition, this Commission approved fee may be charged whenever the Company visits a residential service address intending to reconnect service, but due to customer action, the Company is unable to complete the reconnection at the time of the visit. Further, when service has been discontinued at the Customer's request and then reestablished within a twelve-month period, the Customer shall be required to pay the monthly minimum charges that would have been billed had service not been discontinued.

*** Cost based on company formula which allows the Company to recover expenses for payroll, taxes, insurance, and company vehicle used.

**** Office hours are between 8 a.m. and 5 p.m. on weekdays, other than holidays. (Reconnects must be accomplished before 5PM in order to merit the "during office hour" charge).

CASE: UG 325
WITNESS: ROSE ANDERSON

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 910

Avista's Response to Staff Data Request 393

Exhibits in Support
of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/14/2017
CASE NO.:	UG 325	WITNESS:	Patrick Ehrbar
REQUESTER:	PUC Staff	RESPONDER:	Shawn Bonfield
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 393	TELEPHONE:	(509) 495-2782
		EMAIL:	shawn.bonfield@avistacorp.com

REQUEST:

Please refer to Rule No. 20, and Schedule 410, Special Condition 5 as approved in Advice No. 08-03-G, as revised, and as in Avista's current tariff book.

a. Please provide the number of customers, on an annual basis in each year from 2008 through 2016, for which service was disconnected at the customer's request and then reestablished within a twelve-month period;
b. Of the number of customers identified in response to subpart a above, please provide the number of customers that were charged a seasonal reconnect fee;
c. Of the number of customers identified in response to subpart a above, please provide the number of customers that were charged, at the time of reconnection, with the monthly minimum charges that would have been billed had service not been discontinued, and, for this group, provide the average amount of a customer's accumulated monthly minimum charges; and
d. Please explain any differences in the customer numbers provided in response to subparts a, b, and c.

RESPONSE:

Due to Avista's conversion of its Customer Information System (CIS) conversion in February 2015 we are unable to accurately report on the number of customers voluntarily disconnected and reconnected prior to the conversion. The following data provides is from February 2015 to present.

a.

	# of Customer Requested Disconnects with Service Reestablished within 12 Months*
2015	28
2016	22

b.

	# of Customers Charged a Reconnect Fee after Service Disconnected and Reestablished within 12 Months*
2015	9
2016	11

c.

	# of Customers Back Billed Minimum Charges*	Average Amount Billed*
2015	9	$21.58
2016	9	$62.30

* All responses based on the year disconnect occurred.

d. Customers who requested to disconnect service for remodeling, major repairs, or a structural fire, we are aware of in one instance, were not charged a reconnection fee or back-billed the monthly minimum charges. Customers are only charged the reconnection fee and back-billed the minimum charges if they are requesting a seasonal disconnect and then later reestablish service. Also, the seasonal reconnect charge and back-billing of the minimum charges is not assessed to landlords who take over service at their premises in between tenants.

CASE: UG 325
WITNESS: ABDOULAYE BARRY

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1000

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Abdoulaye Barry. I am a Senior Financial Analyst employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my witness qualification statement, which is found in Exhibit Staff/1001.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to review Avista Corporation's (Avista's or Company's) distribution operation and maintenance (O&M), customer accounts, various A&G, memberships, dues and donations, and meals and entertainment-related expenses, set forth the relevant background, my analysis and recommendations.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following Exhibits:

- Exhibit Staff/1001 – Witness Qualification Statement
- Exhibit Staff/1002 – Avista responses to Staff Data Request Nos. 350, 369, 371, 389, and 390

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, (S-28) DISTRIBUTION O&M EXPENSES

Q. **What is the company's proposal for distribution O&M expenses in its filing?**

A. Avista is proposing to increase distribution operation expenses from $8.061 million in the Base Year to $8.967 million in the Test Year.[1] This represents an increase of more than $906,000 or 11.24 percent. The Company in its filing indicates that "Except for a few specific cost items, non-labor costs were adjusted using the most current consumer price index ("CPI"). Historical labor costs were also adjusted for increases through the twelve months ended September 30, 2018 test year."[2] Adjustments made to the Base Year Operation Expenses included mostly the Atmospheric Corrosion Testing adjustment for $293,000, adjustments totaling $203,000 to the various distribution O&M accounts, $264,000 for non-executive labor adjustment and $172,000 for benefits adjustment.[3]

Q. Please describe your review and analysis of Avista's distribution O&M expenses.

A. Staff first reviewed the distribution O&M expenses for the historical base years of 2016, 2015 and 2014. This review included looking at trends, transactional details and adjustments proposed by Avista. Based on this review and the adjustments made by Avista, Staff has determined that the increase in operation expenses is mostly due to the Company's proposed increase in labor

[1] Avista/502, Smith/2, line 79.
[2] Avista/500, Smith/5, lines 11-13.
[3] Avista/501, Smith/6-7,10, line 79.

costs. Staff looked at the annual increase in distribution O&M expenses for the past three years to determine whether the proposed increase in the Test Year is consistent with historical increases. However, because the data for 2014 appears to be an outlier with distribution O&M expenses dropping by more than 29 percent the following year, Staff therefore issued a Data Request (DR)[4] for the transactional details for the years 2012 and 2013 to complete the trend analysis. Staff also reviewed costs totaling more than $783,000 related to the Atmospheric Corrosion Inspection, Program Compliance and the Leak Survey Program and issued DR No. 369. Staff also issued DR No. 371 requesting Avista to provide a detailed explanation to justify the increase of more than $108,000 or 43 percent in FERC Account 880000 from 2015 to 2016[5].

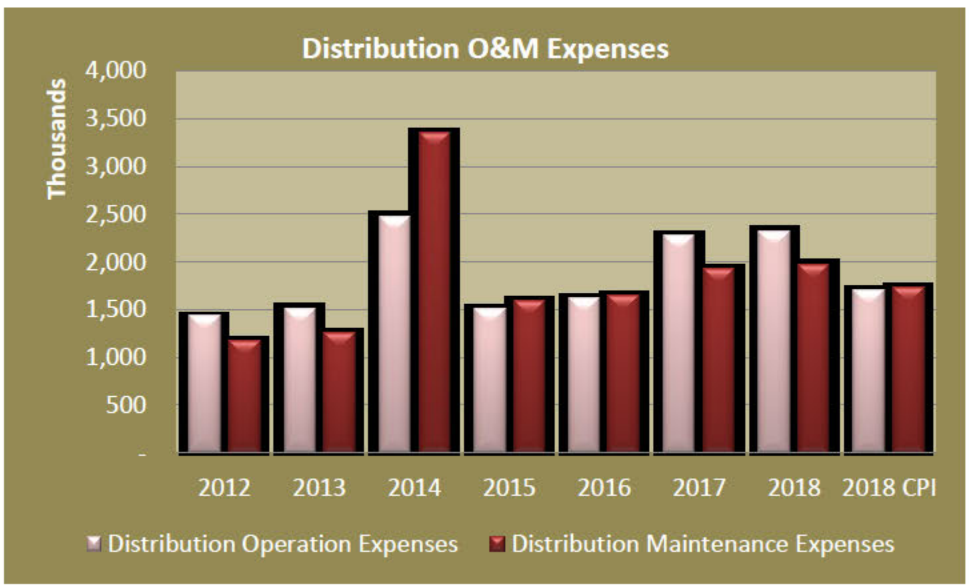
Q. Do you recommend any adjustments to Avista's Distribution O&M?

A. In response to Staff DR No. 371, Avista indicated that the increase of more than 43 percent or $108,000 in Other Distribution Expenses represented mileage charges adjustments recorded to FERC Account 880000. Avista also indicated in its response that there was a corresponding decrease in FERC Account 879000 to offset this increase. However, an analysis of this account based on historical trend shows a decrease of only four percent from 2015 to 2016. Therefore, Staff is recommending an adjustment that reduces the expense by $36,000, representative of a four percent increase. Also, in its response to Staff DR No. 369, Avista indicated that the total expenses for Oregon for the Leak Survey Program from 2012 – 2016, was approximately

[4] See Staff/1002, Barry/1, Avista Response to Staff DR No. 350.
[5] See Staff/1002, Barry/3, Avista Response to Staff DR No. 371.

$1,912,130 with a 20 percent annual allocation for surveys of residential areas, or $382,426. However, the amount of $522,358 was allocated to the 2016 base year. Staff continues to engage in discovery to better understand the Company's allocation to Oregon. Therefore, while Staff recommends no additional adjustment to the Distribution O&M expenses at this time, Staff continues to analyze the issue.

Chart 1: Distribution O&M Expenses Trend



Q. Does Staff have any additional adjustments to distribution O&M expenses?

A. My review of the transactional details in the Company's response to Staff DR No.168 indicate that included in the Distribution O&M expenses are charges that are not allowed or only partially allowed in rates based on Commission policy. These include meals, entertainment, memberships and dues. However, these expenses are discussed in my testimony on Issue Nos. 4 and 5 below, and any adjustments are also discussed below.

ISSUE 2, (S-29) CUSTOMER ACCOUNTS

Q. What is the Company's proposal for Customer Accounts expenses in its filing?

A. Avista proposes to increase Customer Accounts expenses, excluding uncollectible accounts, from $3.041 million in base year 2016 to $3.425 million in the test year.[6] This represents an increase of more than $383,000 or 13 percent. However, non-labor customer accounts were only escalated by 2.5 percent in 2017 and by 2.40 percent in 2018. Except for the Fee Free program adjustment of $131,000, adjustments made to the base year Customer Accounts expenses were mostly labor-related and included $130,000 for non-executive labor adjustment and $78,000 for benefits adjustment.[7]

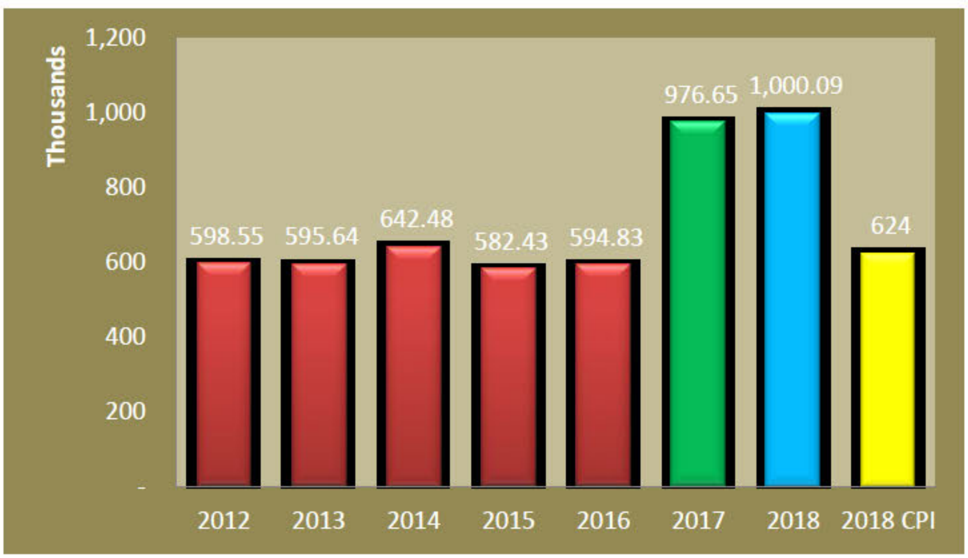
Q. Please describe your review and analysis of Avista's Customer Accounts expenses.

A. I reviewed the customer accounts expenses and this review included looking at trends, transactional details and adjustments proposed by Avista. Staff also looked at the annual increase in these expenses for the past five years to determine whether the proposed increase in the Test Year is consistent with historical increases. Again, because 2014 data appears to be an outlier with operation expenses dropping by more than 24 percent the following year, Staff submitted DR No. 350 for data for 2012 and to complete the trend analysis.[8] Based on this review, Staff has determined that the average total customer

[6] Avista/502, Smith/2, lines 95-97, 100.
[7] Avista/501, Smith/7,11, lines 101.
[8] Exhibit Staff/1002, Barry/1.

accounts expenses was $603,000 and when we exclude 2014, which was an outlier, the average drops to $593,000. Therefore, by escalating the highest average customer expenses using the aggregate CPI of 4.9 percent, the test year total for customer accounts expenses should be $624,338. However, Avista is projecting non-labor customer accounts expenses of $1 million.[9] This is because at least 17 percent of benefits and the total payroll tax loading are included in the non-labor customer expenses.

Chart 2: Customer Accounts Expenses



Q. What is Staff's recommendation?

A. Avista does not provide in its filing an explanation for the inclusion of the payroll tax loading and the elimination of only 83 percent instead of 100 percent of benefits in the customer accounts expenses.[10] Therefore, at this time Staff recommends reducing the non-labor customer accounts expenses before escalation by $109,729 for the payroll tax loading in sub account 515.

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[9] See Avista Smith Workpaper 2.00 G-FE: 2016 - TP Expense Adjustment (Benefit Tab).
[10] See Avista Smith Workpaper 2.00 G-FE: 2016 - TP Expense Adjustment.

While Staff recommends no adjustment for the payroll benefits loading as I continue to analyze the issue, my recommendation for an adjustment for the payroll tax loading is illustrated in Table 1 below.

Table 1: Payroll Tax Loading

Ferc Acct	Ferc Acct Desc	515 Payroll Tax loading		515 Total
		2015	2016	
901000	SUPERVISION	1,918	2,272	4,190
902000	METER READING EXP	4,675	4,648	9,323
903000	CUST ACCOUNTS EXP-RECORDS & CO	43,413	49,764	93,177
905000	MISC CUST AC EX	1,759	1,280	3,039
	Grand Total	51,765	57,964	109,729
	Adjustment			109,729

ISSUE 3, (S-30) ADMINISTRATIVE & GENERAL EXPENSES

Q. Which Administrative and General (A&G) expenses accounts are included in Staff's review?

A. My review of A&G expenses is focused on the following FERC Accounts: 921000 for office supplies and expenses, 930200 for Miscellaneous General Expense, 931000 for Miscellaneous General Rents. FERC Accounts 922000 and 930100 for Administrative Expense Transfer and General Advertising Expense, respectively, had no activity and therefore were excluded from Staff's review.

Q. What is the Company's proposal for A&G expenses in its filing?

A. For the above three FERC accounts, Avista is proposing to increase A&G expenses including labor from $1.12 million to $1.15 million. This represents an increase of only two percent. The only adjustments made by the Company to these A&G expenses are an increase of $47,000 for test period adjustment and a reduction of $28,000 for Membership Dues and Subscriptions adjustments.

Q. Please describe your review and analysis of Avista's A&G expenses.

A. I reviewed the A&G expenses and this review included looking at trends, transactional details and adjustments proposed by Avista. Staff also looked at the annual increase in these expenses for the past five years to determine whether the proposed increase in the Test Year is consistent with historical increases. Based on this review, Staff has determined that overall these A&G expenses increased by only 2.1 percent which is below the average for the previous 5 years of 3.9 percent. However, as discussed in the above issues, Avista is including with non-labor A&G expenses 17 percent of the payroll benefits and the total payroll tax loading.[11] Therefore Staff proposes a reduction of $3,640 in A&G expenses at this time for the payroll tax loading as it continues to review the payroll benefits loading.

Table 2: A&G Expenses Adjustments

Ferc Acct	Ferc Acct Desc	515 Payroll Tax loading		515 Total
		2015	2016	
921000	OFFICE SUPPLIES & EXPENSES	902	1,007	1,909
930200	MISC GENERAL EXPENSE	693	1,038	1,731
	Grand Total	1,595	2,045	3,640
	Adjustment Rate	100%	100%	
	Adjustment Amounts	1,595	2,045	3,640

Q. Does Staff have any additional adjustments to A&G expenses?

A. My review of the transactional details in the Company's response to Staff DR No.168 indicate that included in the A&G expenses are charges that are not allowed or only partially allowed in rates based on Commission policy. These include meals, entertainment, memberships and dues. However, these expenses are discussed in my testimony on Issue Nos. 4 and 5 below, and any adjustments are also discussed below.

[11] See Avista Workpaper: Smith WP (Avista)(Dec2016)\Smith\2.00 G-FE.

ISSUE 4, (S-31) MEMBERSHIPS, DUES & DONATIONS

Q. What is the Company's proposal for memberships, dues and donations expenses in its filing?

A. As shown in Smith's workpaper[12] for Membership and Dues filed with the rate case, Avista identified $79,565 of Oregon-allocated memberships and dues expenses to Oregon based on the expenditure type: 830-Dues. Eighty-three percent of these expenses were paid to two trade organizations, American Gas Association and Western Energy Institute. Based on this, the Company made adjustments applying the allowed rate of 75 percent for trade organizations and estimated that 20 percent of the remaining $7,974 in memberships and dues expenses related to individual memberships in professional organizations directly related to their duties.[13] In response to Staff DR No. 389, the Company decreased the level of expense to be removed to $25,527, for a proposed increase in filed revenue requirement to $2,612.[14]

Q. What is the historical treatment for memberships and dues expense?

A. For ratemaking purposes, 100 percent of expenditures associated with memberships in industry research organizations and 75 percent of expenditures on membership in national or regional trade organizations have been allowed in rates. Staff will proposed for disallowance memberships or dues that have no benefit to Oregon ratepayers.

[12] See Avista Smith Workpaper 3.01 G-MD: 2016 Membership and Dues.
[13] Ibid.
[14] Exhibit Staff/1002, Barry/5, Avista Response to DR 389 revised.

Q. Please describe your review and analysis of Avista's Dues and Memberships expenses.

A. I reviewed Avista's workpaper on Memberships and Dues and Avista's response to Staff DR No. 389. The expenses attributed to the two trade organizations are consistent with Commission policy, and Staff was able to identify a number of individual memberships in professional organizations directly related to employee duties sufficient to support the proposed expense.

In addition, I reviewed the Company's response to Staff DR No. 169 to ensure that Avista has captured all memberships and dues, as shown on its workpaper, and no other expenses were charged to other expenditure types. Based on this review, Staff identified additional memberships and dues totaling $19,368 and submitted Data Request No. 390. In its response, Avista agrees that those items were charged to the incorrect expenditure type and should be included with the memberships and dues expenses.[15] The majority of the additional dues are paid to a trade organization, Northwest Gas Association, of which 75 percent is allowed. Of the remaining $294 in memberships, the Company seeks to include $59, which Staff finds representative of memberships in professional organizations directly related to employee duties sufficient to support the proposed expense.[16] The Company states the impact of the correction is a reduction in revenue requirement of $5,000, with a

[15] Exhibit Staff/1002, Barry/12.
[16] Staff Exhibit/1002, Barry/12.

reduction of expense to $33,048.[17] Staff concurs but calculates the correction results in an additional reduction of $5004.

Q. Please describe your review and analysis of Avista's Subscriptions expenses.

A. While reviewing Avista's response to Staff Data Request No. 169, I identified subscription expenses totaling $48,496 and I issued DR No. 391 requesting an explanation of the benefits these subscriptions provide to the Oregon ratepayers.

Q. Do you recommend any adjustments to Avista's Subscriptions Expenses?

A. Staff proposes the removal of all subscriptions because the explanation provided by Avista in its response is not sufficient to indicate that these subscriptions are required for the provision of safe and reliable services to Oregon ratepayers. This will reduce the Company's other expenses by $27,933 and the A&G expenses will be reduced by $18,686 and the total adjustment is $48,496.

[17] Staff Exhibit/1002, Barry/12.

ISSUE 5, MEALS & ENTERTAINEMENT, TRAVEL, GIFTS AND AWARDS

Q. **What is the Company's proposal for meals, entertainment, travel, gifts and awards expenses in its filing?**

A. Based on a review of the Company's adjustments indicated on the revenue requirement workpaper, the Company made reclassifications and removals that reduced expenses by $29,198. The Company also allocated to Oregon $5,160.73 for costs related to travel using the Company airplane.[18]

Q. What is the Commission's established policy regarding meals, travel, entertainment, gifts and awards?

A. Costs for food, entertainment, and gifts are historically treated as discretionary expenses that should be shared equally by ratepayers and shareholders.[19] Charitable contributions and donations to community affairs, and economic development organizations are excluded.[20] For other miscellaneous expenses, including travel, the Company bears the burden to demonstrate that such expenses reasonably lead to the provision of safe and reliable services.

Q. Please describe your review and analysis of Avista's expenses.

A. I first reviewed the Company's response to Staff Data Request No. 169 to identify all items related to meals, entertainments, gifts, travel and awards regardless of the expenditure type. I also checked the allocation to make sure that the Company applied the correct allocation rate by comparing Oregon's portion to the overall total. Based on this review, I identified

[18] See Avista Smith Workpaper1.02 G-MR: 2016 OR Misc Restating.
[19] See *In the Matter of Portland General Electric*, OPUC Docket UE 197, Order No. 09-020 at 21 (January 22, 2009).
[20] Ibid.

expenses totaling $452,556 for adjustments consistent with the Commission's policy on sharing discretionary expenses.

Q. What does Staff recommend for an adjustment to Avista's meals, gifts, entertainment and travel expenses?

A. In accordance with Commission precedent as set forth *In the Matter of Portland General Electric*, OPUC Docket UE 197, Order No. 09-020 (January 22, 2009), I recommend adjusting meals, gifts and entertainment expenses by 50 percent. Staff recommends an adjustment of $226,278. Staff also recommends a 50 percent adjustment to the Company's corporate airplane expense, an additional adjustment of $2,580.

Q. Does this conclude your opening testimony?

A. Yes.

CASE: UG 325
WITNESS: ABDOULAYE BARRY

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1001

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Abdoulaye Barry
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Financial Analyst Energy Rates, Finance & Audit Division
ADDRESS:	201 High Street SE., Suite 100 Salem, OR. 97301
EDUCATION:	Master of Science in Financial Analysis Portland State University Portland, Oregon BS in Accounting and Financial Management University of Conakry Conakry, Guinea
EXPERIENCE:	I have been working for the Oregon Public Utility Commission since August 2016 as a Senior Financial Analyst in the Energy Rates, Finance and Audit Division. Prior to joining the Commission, I worked as a Lead Accountant for Iberdrola Renewables where I was responsible for the financial oversight of construction and operations capital expenditures and the review of the accounting and performance of operations activities. I also worked for more than 5 years in various accounting roles for Xerox Corporation including GL accounting, revenue recognition, software royalties accounting, fixed assets accounting and accounting controls.

CASE: UG 325
WITNESS: ABDOULAYE BARRY

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 1002

Exhibits in Support Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/02/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 350	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

As a supplement to SDR No. 58, Please provide in an Excel format the Transactions Summary by FERC Accounts for 2012 and 2013.

RESPONSE:

The Company supplemented Staff_DR_058 with the requested information.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/13/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 369	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Referencing Avista's response to SDR No.168 Attachment A, which shows distribution operation and maintenance expenses in the base year include costs related to atmospheric corrosion inspection, program compliance and the leak survey program totaling more than $783,000.

Please indicate whether the inspections, surveys and compliance testing included in these expenses are **performed annually** or on **a multi-year basis**.

If a type of testing is performed on **a multi-year basis**, please identify the test and provide the overall expense total for a full testing cycle and the portion of that amount that is allocated to the base year.

RESPONSE:

As discussed in the Company's responses to Staff_DR_260 and 317, the inspections, surveys and compliance tests included as part of the Atmospheric Corrosion (AC) program, will now be completed on an inspection cycle that is completed by 1/3 by state/district each year. Previously, Avista's Atmospheric Corrosion (AC) program inspection cycle to identify and correct anomalies, was administered by state (Oregon, Washington, and Idaho) every three years. The twelve months ended December 31, 2016 and 2013 are the two most recent years where Oregon incurred a full year's worth of expenses for field inspections costs under the prior AC program inspection cycle. The expense for inspection and follow-up remedial action costs during these years were $859,381 and $752, 276 respectively, on an Oregon basis.

Leak Survey of business districts and high occupancy structures and high occupancy areas will continue to occur annually. Leak Survey of residential areas will continue to occur every five years (rotation of 20 percent annually). The total expenses for Leak Survey from 2012 – 2016, was approximately $1,912,130 on an Oregon basis.

Program compliance costs are not individually tracked, but are included as a project cost specific to a program, such as Atmospheric Corrosion or Leak Survey. Program compliance does not have a defined cycle therefore, there is no financial data included with the Company's response.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 371	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

See Avista's response to SDR No.168 Attachment A

a. Please provide a narrative explanation for the increase of 43 percent in the base year of non-labor Other Distribution expenses in FERC account 88000;
b. Please provide a spreadsheet with more transactional details on airfare, lodging and business meals charged to FERC account 88000; and please include the names of the travelers and identify the purpose of each trips.
c. Please provide an explanation of any business purpose for purchase of knives from Buck Knives for $5,000.

RESPONSE:

a. The total expense included in FERC account 880000 for the base year was $363,257. $187,112 of this balance is Transportation Loaders, recorded in Organization Z88. Transpiration Loaders in the twelve months prior to the base year totaled $57,072 which was $130,040 less than in the base year. Had the activity in Z88 been excluded from FERC 880000, the Company would have experienced a net expense reduction.

   The increase in Z88 Transportation loadings to FERC 880000 was attributed to the Avista conversion to Maximo work management system early in 2015. A feature which was included as part of the Maximo system, gave employees the ability to record the charges for the number of vehicle miles associated with a particular work order along with the labor charges in the timekeeping module. The feature required the employee to enter their beginning/ending mileage, and the mileage was then automatically charged to a project/task, which matches the apportionment of which their labor was charged. It was later determined that this feature was not functioning as designed, so the Company reviewed all accounts and recorded manual adjustments to appropriately record the mileage charges. However, these adjustments were recorded at the FERC level, to overall to FERC 880000 - Miscellaneous Operating Expense. Most of the Gas Servicemen's time is expensed to FERC account 879000 - Customer Installations Expense, so there was a corresponding decrease in organization Z88 Transportation loadings in FERC account 879000, to offset the increase in FERC account 880000.

   By the end of 2015, this problem had been substantially resolved. The large amount expensed in July 2015, was adjusting prior periods, so there was a corresponding drop in May and June of 2015. This crossed the rate period, making the two periods look unusual in comparison.

b. The transaction detail included with the Company's response to Staff_DR_168 includes the most detailed level for transaction descriptions.

c. The purchase of knives from Buck Knives was for a token of recognition to employees for achieving 1 million hours of no lost time by the gas operations department.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/22/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Barry	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 389 Revised	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Referencing Avista's Smith workpaper titled "2016 Membership and Dues.xls".

a) On tab M&D-2 of this workpaper, please identify which of the memberships and dues listed on lines 23 through 46 are included in the $51,520 that the Company seeks to recover in rates, either in whole or in part.
b) For each membership and dues expense identified in response to the above data request, please explain what benefit the expense provides to Oregon ratepayers.
c) Please provide the basis for using an allocation rate of 20% for the expenses identified above as shown on the above referenced workpaper on tab M&D-1

RESPONSE:

a) Please see Staff_DR_389, Attachment A, Tab M&D-1, for a revised Membership and Dues adjustment. During the preparation of this response, the Company identified a few corrections that needed to be made. The impact of the revisions decreases the level of expense to be removed in adjustment 3.01 from $28,045 to $25,527, for an increase to the Company's filed revenue requirement of $2,612.

   In Staff_DR_389, Attachment A, Tab M&D-1, the $54,038 included in this amount are $7,974 of transactions, made up of amounts from lines 29 through 51 of which the Company filed to recover $1,595, which equals 20% of the $7,974.

b) There are 47 transactions, which make up the balance of $7,974 noted above in the request to part a). 22 of these transactions are transactions paid by "CORP CREDIT CARD", which require additional research to identify what associations were paid and for what purposes. 8 of the transactions were various employee names, which also required additional research to identify what associations were paid and for what purposes.

   A description of each organization and the amount paid for Oregon's allocation of the transactions noted above (of which Avista has asked for 20% recovery), have been included below. All of these transactions are for dues associated with employee certifications or memberships in professional organizations and are related to each employee's job responsibility. The Company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization, as well as memberships in organizations that relate to the Company's business functions. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions and in turn provides a benefit to our customers.

Please see Staff_DR_316, Attachment A, beginning on pages 27-28, for the Company's policies as they relate to dues and membership expenses.

American Bar Association (ABA) - $96.23 - The ABA is dedicated to providing members with resources that help them become better legal professionals and to advocating for the rule of law both domestically and abroad. Membership provides access content from award-winning periodicals, nationally recognized speakers and practical online resources. As well as technology training, ethics research and 18 hours of CLE are included with the annual membership along with discounts on products and services.

American Institute of Certified Public Accountants (AICPA) - $94.88 - The American Institute of CPAs is the world's largest member association representing the accounting profession. AICPA members represent many areas of practice, including business and industry, public practice, government, education and consulting. The AICPA sets ethical standards for the profession and U.S. auditing standards for private companies, nonprofit organizations, federal, state and local governments. Membership provides resources on key developments, new rules, hot topics and emerging trends in the CPA profession and the ever-changing accounting world, as well as opportunities to attend — conferences, volunteer groups and task forces — plus gain support through advisory service communities.

Associated Industries - $165.30 –Associated Industries is an organization in the Inland Northwest and beyond that provides resources to our human resources, employment law, safety, and health benefit administration groups to protect and support your workforce. As the business environment changes and becomes ever more complex and regulated, they keep members informed, prepared, and adaptive companies stay productive and effective. Membership provides access to a community of employers with collective purchasing power for health care coverage, professional guidance, and top-tier training and education. Our membership also provides the Company with access to certain areas of expertise that we do not have at sufficient levels within our Company. An example is their support of our Equal Employment Opportunity Commission (EEOC) and Office of Federal Contract Compliance Programs (OFCCP) compliance and reporting obligations. Being able to comply with federal requirements at a cost effective rate is in our customers' best interest.

Association of Corporate Counsel (ACC) - $29.15 – The association of corporate counsel serves the professional needs of the in-house counsel and is the premier source for information, networking opportunities and education for the in-house legal practitioner.

BaseCamp - $42.65 - Basecamp is a web-based project management tool. Membership allows the company to use the tool to organize projects, internal and external communications, and central location for all documents.

Boston College Center for Corporate Citizenship - $217.54 - The Boston College membership provides access to best practices of professional community development counterparts for providing community and customer-focused programs that benefit the customers in the regions we serve. The Center also provides professional training opportunities for professionals in the community development field. This membership supports our work to identify community-based strategies and programs that help reduce the burden of rising energy prices to low income, senior and more vulnerable customers.

District of Columbia Bar Association - $12.62 - The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions. As a professional association, this organization provides continuing legal education for attorneys, in addition to numerous other educational and member-service activities.

Energy Solutions Center Inc. - $4,173.93 - The Energy Solutions Center is a technology commercialization and market development organization representing energy utilities, municipal energy authorities, and equipment manufacturers and vendors. The mission of the Center is to accelerate the acceptance of and deployment of new energy-efficient, gas-fueled technologies that enhance the operations and productivity of commercial and industrial energy users, and improves comfort and reliability for residential energy users. Our membership in this organization significantly enhances Avista's ability to provide low cost, reliable service to our customers. The ESC is a technology commercialization and market development organization representing 46 Utilities and 42 affiliate members from all over the US. The Center's mission is to accelerate the acceptance of and deployment of new energy efficient gas fueled technologies to enhance operations and productivity of commercial and industrial energy users. Together with members, they identify, evaluate and prioritize new market opportunities and then implement market development initiatives designed to move products from R&D to market success. Our membership gives us access to huge amounts of product information, research, case studies and experience gained by other utilities. It gives us a "one stop" shop for practical solutions to issues, exposure to new technology and opportunity to join the solution. For example, the Commercial Building Consortium's development of multi-story, multiple meter piping project. Membership to the Center also provides access to educational and marketing materials, case studies, training manuals, decision analysis software, and other tools and resources designed to enhance the success of those utility customer service professionals responsible for enhancing customer productivity, efficiency, reliability and comfort.

Idaho Association of Building Officials (IDABO) - $37.96 - The Idaho Association of Building Officials (IDABO) is an organization serving those in the building industry. IDABO has members from building departments from all over the state of Idaho, including those in the building industry (from contractors to suppliers) and design professionals. IDABO provides training and education on the building codes. Many of our "customers" are builders and construction associates and their customers become our customers. Avista's involvement in the Builder trade organizations allow us to educate and introduce the benefits of natural gas in the market place and to those who market and sell products using natural gas. We are able to represent and promote our construction practices, company standards, safety messages and the environmental and social value of natural gas. It also allows us opportunity to have a voice in the rule making process relating to permits, contraction practices and legislative issues. In addition it puts a local "face" on the Company, which is of tremendous value in today's world of "virtual relationships". All of this helps the customer acquire a trouble free and smooth transition when working with their natural gas projects.

Idaho State Bar Association (ISBA) - $77.95 - The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions. As a professional association, this organization provides continuing legal education for attorneys, in addition to numerous other educational and member-service activities.

Inland Northwest Society of Human Resource Management - $1.31 – The Inland Northwest Society of Human Resource Management (INSHRM) is a regional, non-profit association which was founded in October 1939. Membership in this organization provides opportunities to develop and maintain the professional competencies, and provides access to resources such as professional code of ethics.

Institute of Internal Auditors (IIA) - $17.43 – This organization provides access to education and resources, which provide guidance to tackle the complex issues faced on a daily basis by internal auditors, which are impacted by almost every aspect of an organization from finance and operations to marketing and human resources, acting as coaches, stakeholder advocates, risk managers, control experts, efficiency specialists, and problem-solving partners.

Law and Society Association - $7.33 - The Law and Society Association is an interdisciplinary scholarly organization committed to social scientific, interpretive, and historical analyses of law across multiple social contexts. Membership in this organization provides access to research and published studies to further engage employees in the sociolegal realms of the law.

State Bar of Michigan - $30.02 - The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions. As a professional association, this organization provides continuing legal education for attorneys, in addition to numerous other educational and member-service activities.

National Association of Corrosion Engineers (NACE) - $150.11 - Today, NACE serves nearly 36,000 members in over 130 countries and is recognized globally as the premier authority for corrosion control solutions. Membership offers technical training and certification programs, conferences, industry standards, reports, publications, technical journals, government relations activities and more.

New York Stock Exchange (NYSE) Board Member LLC - $945.69 - NYSE Equities Membership provides broker-dealers the high-tech solutions needed to make rapid, automated, and anonymous executions. Industry-leading member services experts discover and improve prices, dampen volatility, and add liquidity. Membership brings access to opening and closing auctions for primaries, brand visibility and direct connectivity.

Northwest Public Power Association (NWPPA) - ($90.50) - NWPPA is a not for profit association of 150 public/people's utility districts, electric cooperatives, municipalities and crown corporations in the Western U.S. and Canada. That is a leader in promoting the value and benefits of consumer-owned, locally controlled utilities. Membership provides education, training, public information, governmental relations and many other value added services.

Oregon State Bar Association (OSBA) - $104.49 - The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions. As a professional association, this organization provides continuing legal education for attorneys, in addition to numerous other educational and member-service activities.

Project Management Institute (PMI) - $66.16 - PMI provides resources to for to project management professionals, providing access to globally recognized standards, certifications, resources, tools, academic research, publications, professional development courses and networking opportunities. The dues paid to this organization are for employees who maintain a PMI certification.

Society of Corporate Compliance and Ethics (SCCE) - $25.67 – The Society of Corporate Compliance and Ethics (SCCE) is a 501(c)(6) member-based association for regulatory compliance professionals. SCCE offers training, certification, resources, and publications committed to improving the quality and acknowledgment of the compliance industry. SCCE helps members protect their companies and advance their careers through services including education, updates on regulatory requirements and enforcement, and access to a rich professional network.

Southern Oregon Historical Society (SOHS) - $125.00 - The Southern Oregon Historical Society is a local historical society which maintains local historic records and buildings and properties, and educates the community. The Society also has a Research Library, and Avista has utilized this as a resource for business and archive needs.

Supreme Court Lawyers Registry - $18.19 - The Supreme Court Office of Lawyer Registration maintains a searchable lawyer database and tracks the license status of all Washington lawyers. The Office issues annual registration notices, collects demographic and other data about lawyers, receives registration fees from lawyers, issues lawyers' license cards, and issues certificates of good standing.

Utilities Telecom Council (UTC) $1,305.30 - The Utilities Telecom Council (UTC) is a global trade association dedicated to creating a favorable business, regulatory, and technological environment for companies that own, manage, or provide critical telecommunications systems in support of their core business. The UTC directly represents electric, gas, and water utilities; natural gas pipelines; critical infrastructure companies; and other industry stakeholders. The UTC provides information, products and services that help members: a) Manage their telecommunications and information technology more effectively and efficiently; b) Voice their concerns to legislators and regulators; c) Identify and capitalize on opportunities linked to deregulation worldwide; and d) Network with other telecom and IT professionals. Employees' attendance at conferences sponsored by the UTC provides education and resources to better provide low cost, reliable service to our customers. As a member of the UTC, Avista and its customers benefit through direct access to learning for engineering and operating efficient protection and relay networks, as well as providing an opportunity for Avista to have a voice in developing network standards that benefit the customer by reducing the number of incongruent solutions, thereby optimizing network costs.

Vimeo.com - $17.32 – Our Vimeo membership provides us an opportunity to use a video sharing platform that provides an outlet to share video content to both internal and external users.

Washington Society of Certified Public Accountants (WSCPA) - $45.76 - The society channels its activities in part through more than 10 professional interest sections, committees and task forces. Committees are designed to help members in their professional practice and career advancement. Approximately 300 members are actively involved in sections or committee work, ranging in scope from accounting principles to professional ethics, from industry and government accounting to business and personal taxes. Membership provides access to professional and educational resources that allow employees to stay up to date on current issues, informed on technical changes and in touch with developments in the profession. The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions.

Washington State Bar Association (WSBA) - $156.26 - The dues paid to this organization are for employees who retain licenses to practice in the respective states, however the employee provides professional support to all of Avista Corp, including the Oregon jurisdiction. The company believes it is important to pay for employee certifications as a part of maintaining professional competencies for various positions within the organization. This helps ensure that our employees have access to, and are applying, the most recent trends and requirements when performing business functions. As a professional association, this organization provides continuing legal education for attorneys, in addition to numerous other educational and member-service activities.

Western LAMPAC - $174.32 - Western LAMPAC is an association made up of electric utilities and the International Brotherhood of Electrical Workers (IBEW) with a history of over 30 years of representing the mutual interests of its membership in matters related to public affairs affecting the utility industry. This membership includes over 20 IBEW local union organizations representing over 100,000 bargaining unit members who perform work 24 hours a day, 365 days a year to ensure a safe and reliable supply of energy to customers of the western utilities. Electric and natural gas utilities' craft workers are unionized. A cooperative, collaborative and trusting relationship between the Utilities and Union leadership helps promote problem solving and efficiencies in getting the organizations' work done. Issues addressed at LAMPAC meetings focus on common interests such as training, safety and adaptation to industry changes. Enhancements to safety, training and other workplace procedures provide a direct benefit to customers in reliability and cost of service.

c) As stated in M&D-1, the Company's 20% estimate is a conservative request which the Company has estimated the percentage of the expenditures relate to individual memberships and certifications with professional organizations that directly relate to employees duties or the function of the departments. The Company has consistently applied this allocation which is similar to what recommended to the Company during Staff review of the December 31, 1994 Earnings Report.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/15/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Barry	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 390	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please refer to Staff's Attachment A to this data request, which is derived from Avista's response to Staff data request (SDR) No.169. For each expense identified on this attachment, please:

a. Indicate whether the Company agrees the expense is a membership or dues, and if not, explain why not;
b. If, in response to subpart a above, the Company identifies any memberships or dues, please confirm that these expenses were not included in by Avista in its rate case filing and provide or reference the supporting workpapers showing the adjustments.

RESPONSE:

a. The Company agrees that the expense items identified in Staff's Attachment A are membership and dues items. Upon review of the data, the Company had identified that these items were charged to the incorrect expenditure type.

b. These items were not included in the Company's Membership and Dues adjustment. Had they been included, the Northwest Gas Association amount of $19,074.10 would have been reduced to 75% and the remaining items would have been reduced to 20%. The impact of this correction, reduces the Company's filed revenue requirement by $5,000, for a reduction of expense from $28,045 to $33,048.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 391	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please refer to the tab "Summary Subscription" on Staff's Attachment B to this data request, which is also derived from Avista's response to SDR No.169. For each subscription identified in attachment B, please explain what benefit the expense provides to Oregon ratepayers.

RESPONSE:

The list of 30 vendors provided on the "Summary Subscription" tab of the Extract from Staff's Attachment B tab on Staff's "Subscription Attachment B" file, makes up a list of approximately 100 individual transactions. The descriptions in the "Transaction Desc" tab provide information on what the individual expenses are for. The Company holds various subscriptions that provide industry knowledge and tools that benefit the Company's performance and operations.

Providing a response for each subscription transaction identified in Staff's workpaper is overly burdensome, especially given the overall level of expense. If there are specific transactions which Staff has further questions, that are not addressed below, please advise.

Of the $48,496 identified in Staff's file, the Company has provided details for the larger expense items, accounting for approximately $38,890 of the expenses.

$27,933 is related to Gas Market Data Subscriptions and Gas Market Publications from the vendors PLATTS and IHS Global Inc. These two companies provide subscriptions for daily fundamental pricing and analysis and provide industry knowledge and consulting that assist the Company to make well informed purchase decisions.

The $6,965 for Nasdaq Corporate Solutions covers a variety of services. Nasdaq performs market analysis, webhosting services for our quarterly calls, and access to the Nasdaq IR Insight which provides a variety of research and information.

The $2,946 for Thompson Reuters covers access to their Eikon product (which provides essentially the same functionality as a Bloomberg terminal and was acquired to replace Bloomberg several years ago). Eikon is used extensively by our investor relations, treasury, and credit departments for a variety of functions including, but not limited to, equity analysis and research, capital markets research, financial news, credit reviews, interest rate risk management, performance analysis, and access to financial information and data.

Both Nasdaq and Thompson Reuters provide necessary resources for the Company as a publicly-traded company that relies on the market for securing necessary capital.

CASE: UG 325
WITNESS: SCOTT GIBBENS

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1100

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Scott Gibbens. I am a Senior Economist employed in the Energy Rates, Finance and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my Witness Qualification Statement, which is found in Exhibit Staff/1101.

Q. What is the purpose of your testimony?

A. In my testimony, I will discuss Avista Utilities' proposed rate spread, rate design, medical benefits adjustment, workforce levels, and outside services (contract) labor expense. For further discussion of rate spread and rate design, please see Staff/1400.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared Exhibit Staff/1101. I also prepared Exhibit Staff/1102, Staff references and workpapers, consisting of 5 pages, Confidential Exhibit Staff/1103, a portion of Avista Confidential Response to Data Request No. 363, consisting of 4 pages, Exhibit Staff/1104, Avista Response to Data Request No. 384, consisting of one page, and Exhibit Staff/1105, Confidential Staff workpaper, consisting of one page.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, MEDICAL BENEFITS ADJUSTMENT S-33

Q. Please describe the Company's request regarding medical, dental, vision, and other benefits.

A. The Company has requested approximately $41.7 million in test year expenses relating to medical benefits on a system level, which is approximately $3.4 million on an Oregon-allocated basis.[1] This cost includes such forms of compensation as long-term disability benefits and an employee wellness program. The expense includes costs for both bargaining (union) and non-bargaining (non-union) employees. Benefit plan premiums are typically shared between the Company and the employees. The Company generally shares costs with employees at a ratio of 90/10 (i.e. employees pay 10 percent of premium costs and the Company pays 90 percent).

Q. Please describe the analysis performed by Staff.

A. As noted above, the Company's medical benefits include various categories of expenses. For Deferred Compensation, Employee Assistance, HRA Benefit, Life/Long-Term Disability/Other, Service Awards, and Tuition Aid, the Company did not escalate the 2016 base year costs. The test year total for these amounts is less than it was in 2015. Staff does not propose an adjustment related to these expenses.

For Health Insurance, Staff recommends employer/employee sharing of premium costs at 82/18, rather than that proposed by the Company of 90/10. A survey in the 2016 Kaiser Family Foundation publication indicates that the

[1] See Smith Workpaper, Benefits Adjustment.xlxs in support of Adjustment 2.04.

average employer/employee sharing ratio in the industry is 82/18 for single employees and 71/29 for families. Staff typically relies on Kaiser Family Foundation research for industry health benefit trends and to date has yet to find a compelling reason to rely more heavily on other evidence. Regarding premium sharing, this industry average is relatively stable and consistent. In reviewing reports from 2013, 2014 and 2015, Staff found the average sharing percentage to be within one percent of each other every year, i.e. 82/18 or 83/17 for single coverage.[2]

Because the cost of health insurance increases by 17.8 percent from the base year, Staff used trend analysis of 2013 through 2016 to forecast the 2018 costs before making the premium sharing adjustment. Staff's adjustment comprises the average between the Company's proposal and a three year trend forecast and the difference between sharing the cost at a ratio of 82/18 versus 90/10.

Staff typically proposes no adjustment to sharing between the Company and its bargaining unit employees unless the sharing percentage is deemed unreasonable upon review. These rates are negotiated between the Company and the union, they include a wide range of total compensation elements, and are difficult to adjust without upsetting the carefully negotiated compensation balance.

Q. Does Staff propose any adjustments relating to medical benefits?

[2] See Exhibit Staff/1102, Gibbens/1. For the full report, visit http://kff.org/report-section/ehbs-2016-section-one-cost-of-health-insurance/.

A. Yes. Staff's adjustment consists of two reductions to the Company's proposal. The first adjustment is related to historical trends, and the second adjustment is related to employer/employee sharing. Applying both of these adjustments results in a reduction to expense of $370,000 (Adjustment S-33)[3]. Details and calculations of Staff's adjustment can be found at Confidential Exhibit Staff/1105, Gibbens/1.

[3] Staff notes discrepancies between base year, test year expenses listed in Company workpapers and adjustment exhibits. As such, the total adjustment is an approximation.

ISSUE 2, S-34, WORKFORCE LEVELS/ OUTSIDE SERVICES

Q. Please describe the Company's request regarding workforce levels.

A. The Company is proposing to use workforce levels equivalent to its 2015 actuals, 1,640 total system full time equivalent (FTE) employees and 86 Oregon-allocated FTE,[4] This number is lower than the Company's base year, which has 1,655 total system FTE. This is a calculated number based on the number of hours in labor Avista expects to require. For outside services, or contracted labor, Avista is proposing a -0.4% decrease in the test year from the base year.[5]

Q. Please describe the analysis performed by Staff.

A. Staff looked at the historical trend of FTE and contract labor. In reviewing FTE, Staff found a significant increase in total FTE in 2015, beyond the Company's previous test year estimation in Docket UG 288. In reviewing outside services, Staff found a steady decline in expense, taken together, this could be a sign that the Company is moving labor in-house. This was corroborated by the Company's response to Staff DR No. 363 and by the response to Staff DR No. 384, in which the Company stated that 30 FTE had been hired, replacing contracted labor in IS/IT.[6]

Q. Did the Company cite any other reasons for the increase in FTE?

A. Yes. The Company explains in its confidential response to Staff DR 363 that due to [redacted]

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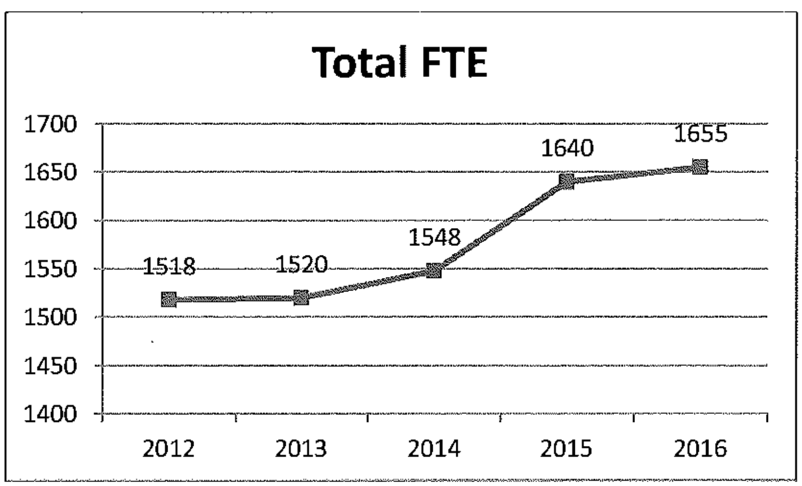
[4] See Exhibit Staff/1102, Gibbens/2.
[5] See Exhibit Staff/1102, Gibbens/5.
[6] See Confidential Exhibit Staff/1103, Exhibit Staff/1104.

[redacted].[7] The Company also stated in response to Staff DR No. 384 that the Medford Storm, Medford East and Credit & Collections projects increased calculated FTE during that year.[8]

Q. What was the total increase of FTE?

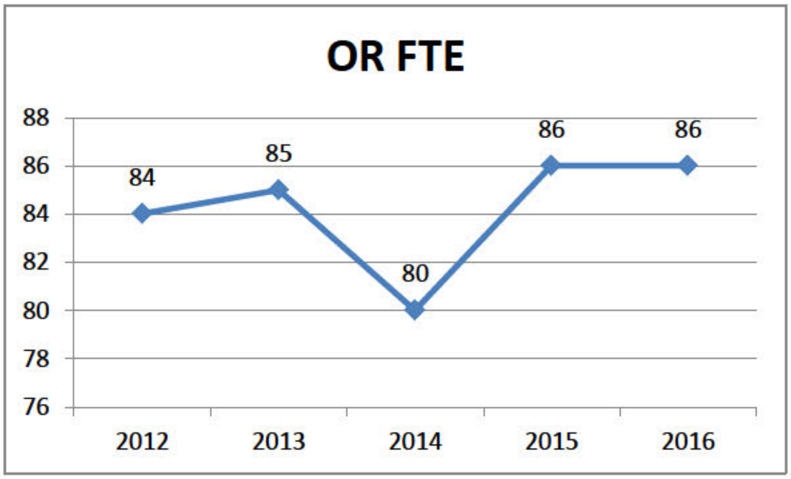
A. As shown in Figure 1 and 2 on the following page, total and Oregon-allocated FTE both increase dramatically in 2015. The FTE increases by roughly six percent for total FTE while the average increase over the other years shown was below one percent.

Figure 1



[7] Confidential Exhibit Staff/1103, Gibbens/3.
[8] Staff/1104, Gibbens/1.

Figure 2



Q. Please provide further detail regarding Staff's analysis of outside services employed.

A. Staff reviewed the last three years of expenses on outside services employed. Table 1 below, shows the Oregon allocated totals and percentage changes. The 2018 test year, is below that of all three previous years, and the account shows a decline overall.

Table 1

Year	Outside Services OR Total	Year/Year Percent Change
2014	$1,268,894	N/A
2015	$1,365,628	7.6%
2016	$946,087	-30.7%
2018	$942,000	-0.4%

Q. Does the decrease in outside services explain the increase in FTE?

A. The large decrease from 2015 to 2016 is equivalent to 6 FTE each making roughly $70,000 annually. While a reduction seems plausible, the timing of the decrease does not match up. FTE increased in 2015, while at the same time outside services also increased by 7.6 percent.

Q. Does Staff propose an adjustment to FTE?

A. Not at this time, while the increase to FTE in 2015 is unusual compared to recent history, the total workforce level, including outside services, seems comparable to prior utility operations. In light of the fact that Avista is operating at roughly equivalent levels to the prior rate case, Staff does not propose any adjustment.

ISSUE 4, RATE SPREAD/ RATE DESIGN

Q. Please describe the Company's proposed rate spread and rate design.

A. The Company's long run incremental cost study (LRIC) showed that Schedules 424, 440, 444, and 456 were all estimated to be subsidizing the other Schedules. The LRIC of providing service to Schedule 420, General Service was estimated to be more than the Company was collecting in revenue at present rates, while Schedule 410, Residential, was generating revenues roughly equivalent to LRIC. Based on that information, Avista proposes to increase residential customer rates by the same percentage as the overall Avista-requested rate increase (14.5 percent in Margin).[9] The remainder of the proposed increase in revenues is allocated to Schedule 420 (18.9 percent in Margin).[10] The customer charge for each schedule is proposed to increase, from $9 to $10 for residential and from $17 to $20 for general service customers.[11]

Q. Does Staff agree with the Company's proposed rate spread?

A. Yes, Avista has proposed a cost-based rate spread which is fair and reasonable given the LRIC results. The increase to residential customers will maintain the unity (cost=revenue) which that schedule currently has. General Service will be brought closer to unity (.94 from .9), and all other schedules will see less subsidization in rates. Staff believes that this general approach

[9] Avista/900, Ehrbar/8.
[10] Ibid.
[11] Avista/900, Ehrbar at 9.

should be taken regardless of the final increase in rates approved by the Commission.

Q. Please explain the approach Staff recommends should the overall increase in rates change from the Company's proposal.

A. Staff considered the rate spread in the event that the overall rate increase diminishes through settlement or Commission decision. If, for example, the approved rate increase is 7.25 percent as opposed to 14.5 percent, if there is an increase to Schedule 410 by the average rate increase, that would result in an increase to Schedule 420 of only an increase of 2.21 percent above the average. The resulting rates would not seem as reasonable. Residential customers would remain close to unity, but the General Service customers would continue to pay less than what the LRIC deemed as fair. If the total increase is not as large, Staff believes that more of the increase should be attributed to Schedule 420. A large bill increase for General Service customers is not as much of a concern if the overall increase is not as large, meaning a larger portion of the increase can be given to that schedule and bring those two classes closer to unity.

Q. What is Staff's proposal for rate spread?

A. In the event that the overall revenue requirement approved by the Commission is below that proposed by the Company, Staff proposes that Schedule 420 receive a percentage increase that is twice that of the overall increase. Schedule 410 would receive the remaining increase. The increase to Schedule 420 would be capped at the Company's proposed margin increase of 18.9%.

This would result in Residential customers receiving less than the average overall increase in any Commission approved rate increase below the Company's requested amount. It would also bring Schedules 410 and 420 closer to unity, without causing a greater rate shock to general service customers.

Q. Does Staff agree with the Company's proposed rate design?

A. No, not entirely. Customer charges are generally thought of as stemming from two types of incremental expenses imposed by each customer. First is the variable Operation and Maintenance (O&M) cost of serving a customer, which includes expenses such as meter reading and billing. The second category of costs is generally thought of as consisting more of fixed, upfront costs, this includes the cost of a customer's meter, the line that connects a customer's home to the customer main and the economic carrying charge associated with those items. Generally, a basic service charge does not cover the entire amount of both fixed and variable customer-related costs combined. Instead, the basic service charge tends to pay for the entire customer O&M and a portion of the meter and service carrying charge. Staff reviewed the percentage of recovery of these expenses overtime and across the three Oregon regulated natural gas utilities.

Table 2

Schedule	Billing, meter reading, meters and services	Customer Charge	Percent of recovery through customer charge
410 Current	$19.24	$9.00	47%
410 Proposed	$19.24	$10.00	52%
420 Current	$24.79	$17.00	69%
420 Proposed	$24.79	$20.00	81%

Table 2 shows that the increase to the Schedule 420 customer charge increases the percentage of recovery of variable and fixed customer costs by a large amount, almost 30 percent higher than the proposed customer charge for residential customers served under Schedule 410.

Table 3 on the following page shows that Avista's proposed customer charge would be the highest percent of recovery among the three Oregon regulated natural gas utilities. Staff notes that each Utility has slight differences in schedule division and cost estimation. However, even when taking the average cost of billing, meter reading, meters and services of the other two utilities, Avista's proposed General Service customer charge is still approximately 20 percent higher recovery and 25 percent higher in nominal terms than the next closest utility.

Table 3

Utility	Billing, meter reading, services etc.	Customer Charge	Percent of recovery via customer charge
NWN Residential	$22.32	$8.00	36%
NWN Commercial	$46.02	$15.00	33%
Cascade Residential	$21.13	$4.00	19%
Cascade Commercial	$30.86	$4.00	13%
Avista Residential	$19.24	$10.00	52%
Avista Commercial	$24.79	$20.00	81%

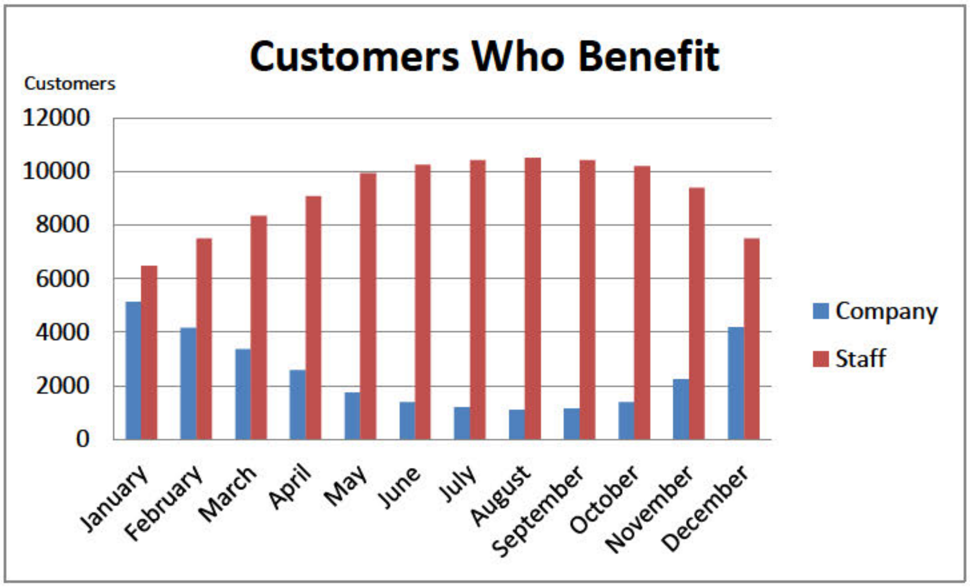
Q. What is Staff's recommendation for rate design?

A. Due to the fact that the Schedule 420 customer charge is already the highest nominal and percentage of total incremental cost, as well as the fact that the per therm rate is lower than the proposed residential rate, Staff recommends not increasing the customer charge for this Schedule at all. This would result in a per therm margin charge that is $0.5878.

Q. Did Staff analyze its proposal?

A. Yes. Staff looked at how the different proposals would have affected Schedule 420 customers, had the proposals been implemented in 2016. Using individual usage data from 2016, Staff calculated the total number of customers who would have a lower bill under Staff's proposal compared to the Company's and vice versa.

Figure 3



As shown in Figure 3, the total number of customers who benefit under Staff's proposal is higher in every month. On average over the year, 79 percent of customers benefit from a lower monthly customer charge.

Q. Does this conclude your opening testimony?

A. Yes.

CASE: UG 325
WITNESS: SCOTT GIBBENS

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1101

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATION STATEMENT

NAME: Scott Gibbens

EMPLOYER: Public Utility Commission Of Oregon

TITLE: Senior Economist
Energy Rates, Finance and Audit

ADDRESS: 201 High St. SE Ste. 100
Salem, OR 97301-3612

EDUCATION: Bachelor of Science, Economics, University of Oregon
Masters of Science, Economics, University of Oregon

EXPERIENCE: I have been employed at the Oregon Public Utility Commission (Commission) since August of 2015. My current responsibilities include analysis and technical support for electric power cost recovery proceedings with a focus in model evaluation. I also handle analysis and decision making of affiliated interest and property sale filings, rate spread and rate design, as well as operational auditing and evaluation. Prior to working for the OPUC I was the operations director at Bracket LLC. My responsibilities at Bracket included quarterly financial analysis, product pricing, cost study analysis, and production streamlining. Previous to working for Bracket, I was a manager for US Bank in San Francisco where my responsibilities included coaching and team leadership, branch sales and campaign oversight, and customer experience management.

CASE: UG 325
WITNESS: SCOTT GIBBENS

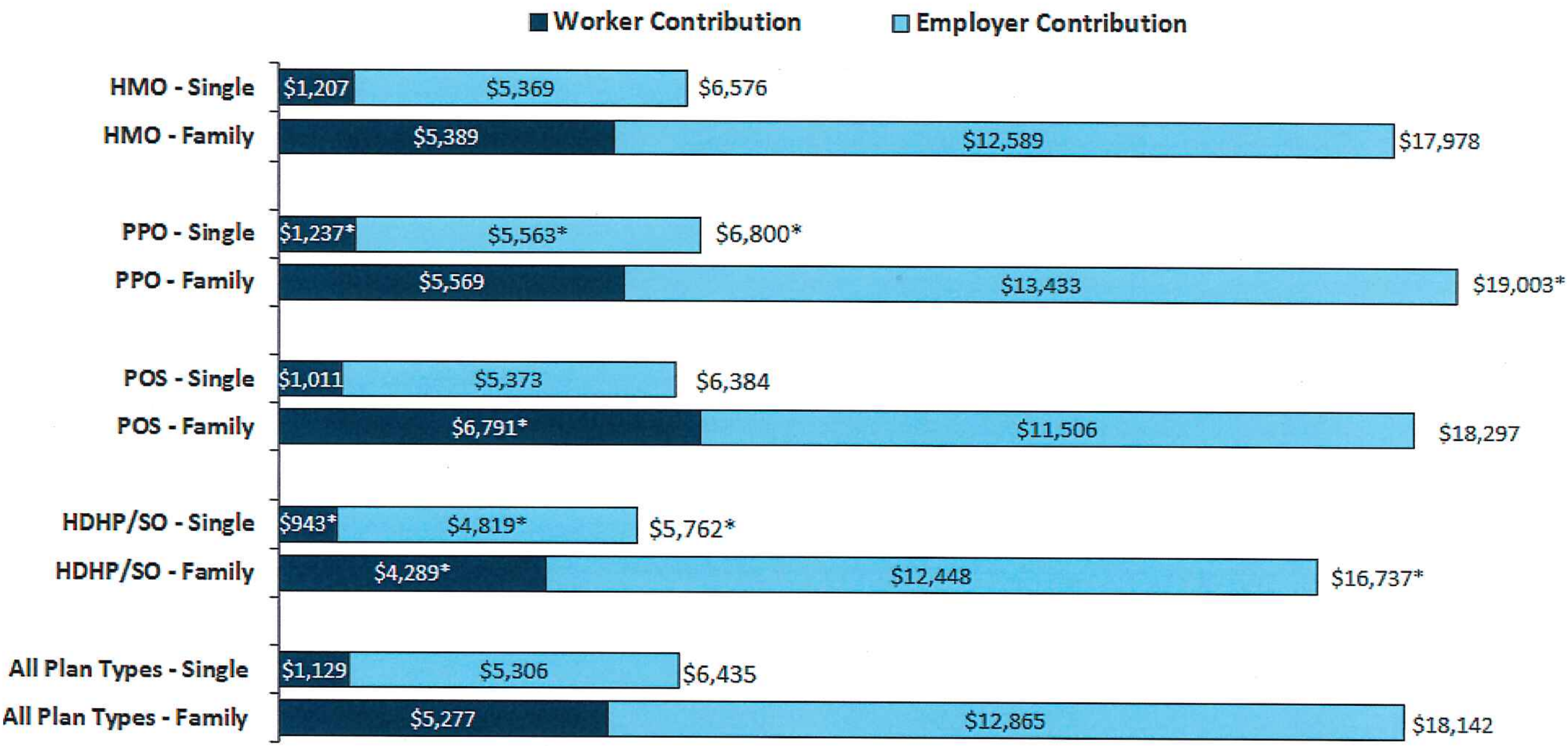
PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1102

Exhibits in Support
Of Opening Testimony

March 1, 2017

Exhibit A:
Average Annual Firm and Worker Premium Contributions and Total Premiums for Covered Workers for Single and Family Coverage, by Plan Type, 2016



* Estimate is statistically different from All Plans estimate by coverage type (p < .05).

SOURCE: Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 2016.

THE HENRY J. KAISER FAMILY FOUNDATION

Pages 2 to 4 of Exhibit 1102

are Excel spreadsheets

(Provided in electronic format)

Page 5 of Exhibit 1102

is Excel spreadsheet

(Provided in electronic format)

CASE: UG 325
WITNESS: SCOTT GIBBENS

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1103

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 1103 is confidential and

Is subject to Protective Order No.16-460.

CASE: UG 325
WITNESS: SCOTT GIBBENS

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1104

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/13/2017
CASE NO.:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Gibbens	RESPONDER:	Annette Brandon
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 384	TELEPHONE:	(509) 495-4324
		EMAIL:	annette.brandon@avistacorp.com

REQUEST:

Regarding the Company's response to Staff DR 93, please provide:

a. An explanation of the total FTE calculation. Please specifically address how exempt employees as well as overtime hours are handled in the calculation;
b. An explanation of how Oregon FTE is calculated. Please address whether this includes both situs assigned and allocated FTE in the explanation;
c. The job description for each new Oregon FTE added beginning in January 2015 to present; and
d. Please provide a narrative explanation for the increase in FTE between 2014 and 2015.
e. Budgeted FTE vs actual FTE on an annual basis from 2011 through 2015. Please provide this information in both total Company and Oregon allocated amounts, in an Excel file.

RESPONSE:

a. The FTE calculation is based on actual regular hours and paid time off hours for the year divided by 2080 hours. Overtime is excluded in this calculation. This is based on the format required by Oregon Staff in order to complete the Restate Wages and Salary adjustment. Please see the Company's response to Staff_DR_351 and Staff_DR_363 for additional information.

b. Oregon-only calculated FTEs is the sum of hours assigned directly to Oregon projects and hours allocated to Oregon based on approved allocation methods. Please see the Company's response to Staff_DR_351 for additional information.

c. The Company does not track FTEs. As noted in part (a), FTEs are a calculation required by Oregon Staff in order to complete adjustment 3.02 Restate Salaries and Wages. Therefore, no job descriptions are available.

d. The primary projects which increase Oregon labor expense between 2014 and 2015 are administrative and general salaries (approved at 3% for union and non-union), allocated IS/IT costs[1], Medford Storm, Medford East and Credit & Collections expense. Please see the Company's response to Staff_DR_363 for additional information.

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[1] Approximately 30 IS/IT employees were hired in 2015 who were previously contract employees. This resulted in an increase in labor expense, however, there is a corresponding decrease in contract expense, but with a net overall savings to the Company.

CASE: UG 325
WITNESS: SCOTT GIBBENS

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1105

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 1105 is confidential and

Is subject to Protective Order No.16-460.

(Provided in electronic format)

CASE: UG 325
WITNESS: GEOFFREY IHLE

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 1200

Interest Rate Hedging Program

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Geoffrey Ihle. My business address is 201 High Street, SE Suite 100, Salem, Oregon 97301-3612.

Q. Please describe your educational background and work experience.

A. My educational background and work experience is set forth in my Witness Qualification Statement, which is found in Exhibit Staff/1201.

Q. What is the purpose of your testimony?

A. I present Staff's recommendations regarding the Company's interest rate hedging losses associated with its 2016 long-term debt issuance.

Q. What is your adjustment (S) number?

A. S35.

Q. Did you prepare exhibits for this docket?

A. Yes. I have prepared the following exhibits:

Exhibit Staff/1201 – Witness Qualification Statement, consisting of one page.

Exhibit Staff/1202 – Avista Confidential response to Staff Data Request (DR) 172 regarding interest rate hedges entered into associated with Avista's 2016 long-term debt issuance, consisting of one page.

Exhibit Staff/1203 – Avista Confidential response to Staff Data Request (DR) 173C regarding Company periodic analysis of analysis of financing risks and requirements, consisting of 20 pages.

Exhibit Staff/1204 – Avista response to Staff Data Request (DR) 341 regarding measuring hedge effectiveness, and narrative surrounding the execution of the interest rate hedges associated with the 2016 long-term debt issuance, consisting of two pages.

Q. How is your testimony organized?

A. After providing background, my testimony is organized as a review of the elements that should be present to conclude the interest rate hedging losses were prudently incurred. Specifically:

Q. Please summarize your recommendations regarding each of these issues.

A. <u>Issue 1</u>. Consistency with an Established Hedge Plan – The seven hedges entered into in anticipation of the 2016 long-term debt issuance were consistent with the Company's internal Hedge Plan. The Hedge Plan describes both what is conceptually trying to be accomplished, and operationally how the program should be managed. The Company has provided extensive documentation demonstrating it was consistent with both.

<u>Issue 2</u>. Hedge Effectiveness – The hedge losses were offset by gains associated with the ultimate debt issuance. In response to discovery, the Company demonstrated this formally. The hedges were effective.

BACKGROUND

Q. Please describe the interest rate hedging losses at issue.

A. The Company proposes to include $[redacted][1] of interest rate hedging losses for recovery associated with a 2016 $175,000,000 debt issuance. These losses stem from seven interest rate swap transactions executed between 2013 and 2016.[2] In Order 15-305, the Commission set out requirements that the Company must comply with associated with the Company's anticipated debt issuances as well as with hedging related to those debt issuances.[3] With regard to the interest rate hedges at issue, the Order requires that "the Company must comply with their internal hedging policies and will stand ready to provide its policy, its own analysis, and documentation to Staff for review upon request."[4] After reviewing the material the Company provided in this General Rate Case, Staff concluded a thorough review of these hedge losses should be conducted. This review has two components. The first is an assessment as to the degree these hedges are consistent with the Company's Hedge Plan. The second is an examination of the realized effectiveness of these hedges.

Q. How did Staff conduct its review?

A. Staff conducted its review through data requests and a workshop with the Company. Staff issued 12 data requests, which yielded over 1,000 pages of discovery. A workshop with the Company was held in Salem, OR on January 23, 2017.

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[1] Avista/201, Thies/4.
[2] Exhibit Staff/1202 (Avista response to Staff DR 172C, Confidential Attachment A).
[3] *See In re Avista Corporation,* OPUC Docket No. UF 4294, Order No. 15-305 (Oct. 06, 2015).
[4] Ibid. at Appendix A, pg. 2.

ISSUE 1. CONSISTENCY WITH AN ESTABLISHED HEDGE PLAN

Q. Does the Company have an established Hedge Plan?

A. Yes. The relevant Hedge Plan was provided in this docket as "Interest Rate Risk Management Plan" (the Plan).[5]

Q. What is the general goal of the Plan?

A. The goal of the Plan "[redacted]."[6]

Q. Are interest rate hedges consistent with the goal of the Plan?

A. Yes. The Company plans future debt issuances far ahead of time considering capital requirements for expected capital expenditures.[7] While the issuance amount and date are known (or estimated through financial forecasts), the interest rate that will be associated with the future issuance is unknown and fluctuates with factors such as the United States Treasury rate and corporate credit spreads. This is the future interest rate variability that the Plan's goal contemplates reducing. Appropriately crafted interest rate hedges will do exactly that. The question of whether the seven hedges in question actually accomplished this is examined in Issue 2.

Q. Do the seven hedges in question conform to the "Financial Instruments Principles" presented in the Plan?

A. Yes. There are eight principles. A discussion of each follows:

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[5] Avista/202.
[6] Avista/202, Theis/2.
[7] *See* Exhibit Staff/1203 (Avista response to Staff DR 173C Confidential Attachment A, page 16).

a. "[redacted]."[8]

[redacted].[9]

[redacted]"[redacted]."[10]

In response to a Staff data request related to this principle, the Company responded as follows:

The seven interest rate hedges that were executed related to the 2016 debt issuance achieved the goals of increasing certainty of cash flow payments related to interest for the forecasted security issuance in advance of the expected issuance and hedged against interest rate movement prior to the issuance. This was achieved by locking in interest rates at various time horizons for a portion of the debt issuance prior to the issuance reducing the uncertainty. Having a known rate provided some certainty on what the interest rate and what the interest payments would be related to the debt issuance. Also, through the execution of the interest rate swaps, we were able to hedge against interest rate movement because we already locked in at a known rate. The interest rate hedges were executed in accordance with our Interest Rate Risk Mitigation Plan.[11]

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[8] Avista/202, Thies/3.
[9] Avista/202, Thies/9.
[10] Avista/202, Thies/2.
[11] Exhibit Staff/1202 (Avista response to Staff DR 172).

c. "[redacted]."[12]

Staff recognizes that interest rate swaps would generally be quite appropriate given the goal of reducing interest rate volatility of a future debt issuance.

d. "[redacted]."[13]

[redacted].[14] [redacted].[15] Copies of this report were provided to Staff for review. Staff found this weekly report to be thorough.

e. "[redacted]

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[12] Avista/202, Thies/2.
[13] Avista/202, Thies/3.
[14] Avista/202, Thies/9-11.
[15] Avista/202, Thies/7.

[redacted].”[16]

As in c. above, the Company evaluates [redacted] The Company also makes a [redacted].

[redacted] “[redacted] Staff reviewed several and found that [redacted] As a practical matter, if a hedge were determined necessary for a particular purpose and it would go over an existing limit, the Company has the latitude to raise the limit.

[redacted] “[redacted]. Staff did not note any exceedances in its spot-check.

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[16] Avista/202, Thies/3.
[17] Avista/202, Thies/3.
[18] Avista/202, Thies/3.

h. "[redacted]."[19]

It is not clear that there were any such events during the life of the [redacted]. In any event, [redacted] referenced in d. above includes [redacted], presumably for use in following this principle.

Q. Does the Plan contain guidance regarding the operational aspects of entering into, monitoring, and exiting interest rate hedges?

A. Yes. The plan provides general guidance for the following:

1. [redacted]).[20] This system creates [redacted].

2. [redacted].[21] This section describes the various [redacted].

[19] Avista/202, Thies/3.
[20] Avista/202, Thies/3.
[21] Avista/202, Thies/5.

3. [redacted].[22] This section indicates [redacted]

4. [redacted].[23] This section [redacted].

5. [redacted].[24] This section [redacted].

6. [redacted].[25] [redacted].

Q. Did the Company adhere to its operational guidelines?

A. Staff believes so. In the testimony the Company filed as well as the discovery Staff reviewed, all material was consistent with and supportive of these guidelines.

ISSUE 2. HEDGE EFFECTIVENESS

Q. What is "hedge effectiveness?"

A. Hedge effectiveness refers to the degree a hedge is successful in shielding the entity entering into the hedge from volatility due to an existing exposure. For example: a utility may know it will need 1,000,000 MMBtu of natural gas next

[22] Avista/202, Thies/6.
[23] Avista/202, Thies/6.
[24] Avista/202, Thies/6.
[25] Avista/202, Thies/7.

month. If it waits until next month to purchase the gas, then all the movement in gas prices between now and next month is uncertainty to the utility. However if the utility is able to hedge its exposure by entering into a contract in which a counterparty agrees to provide the utility with 1,000,000 MMBtu next month for a price determined today, then the utility has eliminated this uncertainty. This represents a perfect (perfectly effective) hedge.

In practice, hedges are often less-than-perfectly effective. If a corporate entity anticipates a future debt issuance, for example, uncertainty is generated from exposure to long-term Treasury rates as well as corporate credit spreads. To the extent the company only hedges the interest rate portion of its exposure, there will still be some residual uncertainty due to movement in credit spreads and the hedge will not have been perfectly effective; however, this should not be viewed as "ineffective."

Q. How does Staff suggest the effectiveness of the Company's seven interest rate swap hedges related to its 2016 long-term debt issuance be measured?

A. Each swap can be viewed as a surrogate for issuing the equivalent notional amount of long-term debt at the earlier date of the swap. That is, the swap allows the Company to wait until its preferred debt issuance date arrives, while largely "locking in" an overall rate for that portion of the issuance. Therefore the Company should be able to demonstrate a roughly $[redacted] gain due to the benefit of issuing the long-term debt later that offsets the loss on the swaps.

Q. Was the Company able to demonstrate an offsetting gain to the swap hedge losses?

A. Yes. During a workshop Staff held with the Company at the Commission offices in Salem, OR on January 23, 2017, Staff and the Company briefly discussed how the Company might demonstrate hedge effectiveness. Staff then issued Staff DR 341 requesting this exposition. The Company responded in part as follows:

> As discussed at the workshop on January 23, 2017, there is a case to be made for offsetting costs and benefits. Under the Company's interest rate hedging program, Avista "averages in" the cost of an upcoming debt issuance by entering into multiple swaps over a period of time (through hedge windows). The hedges are essentially a surrogate for pricing and issuing debt in each of the windows over time. For example, for the December 2016 debt issuance of $175 million, the first hedge was entered into on April 5, 2013. At that time, interest rates (excluding the "spread" related to Avista's credit risk) was 3.2%. Avista entered into a swap for $20 million at a fixed rate of 3.2%.
>
> At the time Avista priced the full $175 million in August 2016, the comparable rate was 1.77%. From April 2013 to August 2016, interest rates decreased. This decrease in interest rates represents a benefit, and is reflected in the coupon rate of the debt issued in December 2016 (the $175 million was priced in August 2016, and issued in December 2016). This benefit, however, is offset by the cost associated with the swap that was executed in April 2013.[26]

Additionally, the Company provided a calculation of the gains realized on the delayed issuance of the long-term debt that offset the hedge losses:

[26] Exhibit Staff/1204 (Avista Response to Staff DR 341).

[CONFIDENTIAL]

[redacted]

[END CONFIDENTIAL] The underlying calculations were provided as well, allowing Staff to verify the calculations.

Q. Please summarize your conclusion.

A. The Treasury hedge losses and underlying Treasury gains offset to within $[redacted]. The Treasury portion of the hedges were very highly effective. There were no hedges related to non-Treasury exposure, so no other assessment of effectiveness need be made.

Q. Does Staff have anything else to add?

A. Yes. Staff notes that had these hedges not been entered into, the ultimate borrowing rate would have been more favorable for the Company. That is, because interest rates fell between the times the hedges and the ultimate debt issuance were made, in hindsight the Company would have been better-off without these particular hedges.

Staff stresses that hedge programs should not and generally do not assume that foresight is possible with regard to future values of publicly traded indices, and this is appropriate. Staff does not believe the Company has any special ability to forecast whether interest rates will go up or down in the future. Therefore Staff fully expects that some hedges will ultimately appear favorable and some will appear unfavorable. An unfavorable outcome for a particular hedge in and of itself should not be taken as a sign of an issue or problem with regard to the related hedging program. When examining particular hedges, Staff believes the issues that should be examined are 1) whether the hedges are consistent with an established plan, and 2) whether the hedges were effective. Any analysis beyond this—for example what actions the Company should have expected the Federal Reserve to take with regard to interest rates in the future—is outside what is appropriate for a review of hedges or a hedging program.

CASE: UG 325
WITNESS: GEOFFREY IHLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1201

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Geoffrey Ihle
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Senior Economist Energy Resources & Planning Division
ADDRESS:	201 High Street SE. Suite 100 Salem, OR. 97301
EDUCATION:	B.B.A., Finance, Investments & Banking (1997) University of Wisconsin-Madison
EXPERIENCE:	I have been employed by the Public Utility Commission since August 2016 as a Senior Economist in the Utility Program's Energy – Rates, Finance and Audit Division. My current responsibilities include analysis and technical support for rate, finance, and audit related proceedings, with an emphasis on transmission and regional ISO-related matters. Prior to working for the OPUC I was employed by Berkshire Hathaway Energy subsidiaries PacifiCorp, MidAmerican Energy, and Intelligent Energy Solutions. At PacifiCorp, I held the positions of Senior Analyst-Mid Office Risk, Analyst-Structuring & Pricing, and Manager-Structuring & Pricing. At MidAmerican Energy, I held the positions of Manager, Risk Management, and Director-Risk Management. At Intelligent Energy solutions, I held the position of Director-Strategy. I also completed all course work necessary for Ph.D.'s in both Finance and Real Estate Economics at the University of Wisconsin-Madison. During this time I was a Teaching Assistant for courses such as Introduction to Finance, Low Income Housing Development, and Green and Sustainable Development.

CASE: UG 325
WITNESS: GEOFFREY IHLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1202

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	12/16/2016
CASE NO:	UG 325	WITNESS:	Mark Thies
REQUESTER:	PUC Staff -	RESPONDER:	Jason Lang
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – DR 172	TELEPHONE:	(509) 495-2930
		EMAIL:jason.lang@avistacorp.com	

REQUEST:

See Avista/202, Thies/2, which states: "Authorized Interest Rate Derivative Transactions … shall seek to achieve one or more of the following goals:

- Increase certainty of cash flow payments related to interest for a forecasted security issuance in advance of the expected issuance.
- Hedge against interest rate movement prior to a forecasted security issuance."

Please indicate which of these goals, if either, were met by using the interest rate swaps associated with the 2016 3.54% debt issuance with a settlement date of December 15, 2016. Please quantify and detail the extent to which these goals were met (e.g., cash flow volatility was reduced from X to Y, interest rate exposure was reduced Z percent), showing this analysis in MS Excel format.

RESPONSE:

The attachments provided are **CONFIDENTIAL SUBJECT TO GENERAL PROTECTIVE ORDER**.

The seven interest rate hedges that were executed related to the 2016 debt issuance achieved the goals of increasing certainty of cash flow payments related to interest for the forecasted security issuance in advance of the expected issuance and hedged against interest rate movement prior to the issuance. This was achieved by locking in interest rates at various time horizons for a portion of the debt issuance prior to the issuance reducing the uncertainty. Having a known rate provided some certainty on what the interest rate and what the interest payments would be related to the debt issuance. Also, through the execution of the interest rate swaps, we were able to hedge against interest rate movement because we already locked in at a known rate. The interest rate hedges were executed in accordance with our Interest Rate Risk Mitigation Plan. Please see Staff_DR_172C Confidential Attachment A, which provides each transaction and the amount hedged.

This page is confidential and is subject to

Protective Order No. 16-460.

CASE: UG 325
WITNESS: GEOFFREY IHLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1203

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	1/6/2017
CASE NO:	UG 325	WITNESS:	Mark Thies
REQUESTER:	PUC Staff -	RESPONDER:	Jason Lang
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – DR 173	TELEPHONE:	(509) 495-2930
		EMAIL:jason.lang@avistacorp.com	

REQUEST:

See Avista/202, Thies/2, which states: "Each hedging transaction will address the risks inherent for a specific planned debt issuance. Care should be taken to identify the most appropriate financial product to mitigate a given risk." Please provide a listing of the Company-identified risks inherent to the 2016 3.54% debt issuance with a settlement date of December 15, 2016. Please include with the response the analyses, work papers, and any other information that the Company used or relied upon in support of identification of the most appropriate financial product to mitigate a given risk identified in response to this request, inclusive of un-encumbered delayed start in private place with no or minimal incremental cost.

RESPONSE:

The attachments provided are **CONFIDENTIAL SUBJECT TO GENERAL PROTECTIVE ORDER**.

Please see the Company's response to Staff_DR_023, which includes all the swap transactions to date including the seven transactions related to the 2016 debt issuance, along with the documentation and support for each transaction regarding the apparent risks inherent for each specific debt issuance; which is primarily interest rate risk. The response to Staff_DR_023, also includes the documentation for two financial products; interest rate lock and interest rate swap that were analyzed prior to execution. All of these transactions were undertaken in accordance with the Company's Interest Rate Risk Management Plan.

We determined that the interest rate swap was the appropriate financial product for hedging interest rate risk. We presented the Interest Rate Risk Management plan to the Oregon Public Utility Commission (OPUC) staff, on April 23, 2013, in attendance were Matt Muldoon and Marc Hellman, for the OPUC, and Ryan Krasselt, Liz Andrews, and Pat Ehrbar, for Avista. The presentation outlined the purpose of the plan and the risks associated with the plan, as well as additional support for hedging interest rate risk. Please see Staff_DR_173C Confidential Attachment A for a copy of the presentation.

Pages 2-21 are confidential and is subject to

Protective Order No. 16-460.

CASE: UG 325
WITNESS: GEOFFREY IHLE

PUBLIC UTILITY COMMISSION OF OREGON

STAFF EXHIBIT 1204

Exhibits in Support Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO:	UG 325	WITNESS:	Mark Thies
REQUESTER:	PUC Staff -	RESPONDER:	Jason Lang
TYPE:	Data Request	DEPT:	Finance
REQUEST NO.:	Staff – DR 341	TELEPHONE:	(509) 495-2930
		EMAIL:	jason.lang@avistacorp.com

REQUEST:

See Avista/201, Thies/4. Avista reports roughly $54 million of interest rate hedging losses it relates to a 2016 debt issuance.

a) Please indicate whether or not Avista agrees with this statement: If the $54 million in losses on the Company's $125 million of fixed-float swaps are *hedging* losses, then there must exist $54 million (or so, depending on hedge effectiveness) of offsetting gains that can be demonstrated. If the Company does not agree with this statement, please explain why.

b) If Avista's response to subpart a) is affirmative, please provide a spreadsheet demonstrating in detail a calculation of the gains offsetting the above-referenced swap losses.

RESPONSE:

a. & b.) As discussed at the workshop on January 23, 2017, there is a case to be made for offsetting costs and benefits. Under the Company's interest rate hedging program, Avista "averages in" the cost of an upcoming debt issuance by entering into multiple swaps over a period of time (through hedge windows). The hedges are essentially a surrogate for pricing and issuing debt in each of the windows over time. For example, for the December 2016 debt issuance of $175 million, the first hedge was entered into on April 5, 2013. At that time, interest rates (excluding the "spread" related to Avista's credit risk) was 3.2%. Avista entered into a swap for $20 million at a fixed rate of 3.2%.

At the time Avista priced the full $175 million in August 2016, the comparable rate was 1.77%. From April 2013 to August 2016, interest rates decreased. This decrease in interest rates represents a benefit, and is reflected in the coupon rate of the debt issued in December 2016 (the $175 million was priced in August 2016, and issued in December 2016). This benefit, however, is offset by the cost associated with the swap that was executed in April 2013.

If Avista had "averaged in" the cost of the $175 million debt by actually pricing and issuing debt during each of the seven hedge windows, the overall cost of the $175 million debt would be the same as it is today, including the cost of the swaps. The benefit from the decrease in interest rates is offset by the cost of the swaps. A spreadsheet illustrating these costs and benefits is provided in Staff_DR_341 Attachment A.

The goal of the Company's Interest Rate Risk Management Plan is to reduce cash flow volatility related to future interest rate variability (associated with forecasted debt issuances). The plan reduces interest rate risk associated with the single future date that the forecasted debt is expected to be priced by entering into fixed rate contracts on different dates over the period leading up to the issuance. The fixed rate contracts are entered into based on the guidelines in the Plan.

In summary, the contracts entered into, related to the 2016 debt issuance, can be viewed the same as issuing debt on seven different dates. Utilizing the swaps allows the Company to lock in interest rates for customers over a period of time without having to make interest payments until the contract is settled. The total interest expense reflects the cost of issuing debt based upon a blended rate of each contract.

Furthermore, the analysis in Staff_DR_341 Attachment B shows how the seven interest rate hedges executed, related to the 2016 debt issuance, protected customers from the risk of interest rate variability. It shows the potential cost to customers associated with interest rates moving higher based upon a statistical analysis of the interest rate volatility. The statistical analysis also demonstrates the potential benefit related to interest rates moving lower. The charts illustrate the asymmetrical risk that was inherent in the market at the time each contract was entered.

The analysis calculates the volatility present in the interest rate market at the time each of the seven hedges were executed. The potential risk of interest rates moving higher (VaRC) and the potential risk of interest rates moving lower (VaRL) that existed for each executed interest rate hedge (based on historical interest rate volatility and calculated at a 98% confidence factor). The VaRC is the maximum amount of interest payments avoided if the interest rates increased above the swap rate. The VaRL is the maximum amount that would be paid if interest rates declined below the swap rate. Both are based on a 98% confidence factor.

Chart 1 shows the range interest rates could have moved, until settlement, for each interest rate hedge based on the 1-day volatility over the preceding year, time to expiry, and a 98% confidence factor. Chart 2 shows the range based on a present value basis utilizing the same statistical analysis. Based upon the analysis, the potential impact from interest rates moving higher could have resulted in approximately $72 million of increased interest costs to customers. Entering into these hedges protected customers from this interest rate variability. The main tab is a summary of the analysis for each of the hedges that were executed.

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1300

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Phil Boyle. I am the Consumer Services Manager with the Public Utility Commission of Oregon. My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301-3612.

Q. Please describe your educational background and work experience.

A. My educational background and work experience are set forth in my Witness Qualification Statement, which is found in Exhibit Staff/1301.

Q. What is the purpose of your testimony?

A. To discuss Avista Corporation's (Avista or Company) Fee Free Payment Program proposal in order to provide support for the Program.

Q. Did you prepare any exhibits other than your qualification exhibit for this docket?

A. Yes. I have prepared the following exhibits:

Exhibit 1301 – Witness Qualifications Statement.

Exhibit 1302 – (Confidential) Avista's response to Staff Data Request (DR) Nos. 220 and 224 regarding the Company's calculations to arrive at its request for $131,057 for the Fee Free Payment Program, and the expected monthly adoption growth rate through the test period.

Exhibit 1303 – Graph prepared by Staff demonstrating Avista's expectations for customer adoption rates versus Staff's projections for customer adoption rates.

Exhibit 1304 - Comparison graph prepared by Staff demonstrating Avista's expected adoption rates, the adoption rates of two other Northwest utilities, and Staff's projected adoption rates.

Exhibit 1305 – (Confidential) Graph showing Staff's calculation of payment transactions.

Exhibit 1306 - Avista's response to Staff Data Request (DR) No. 226 regarding customer focus group data that supports the need for a fee free bankcard payment option.

Exhibit 1307 - Avista's response to Staff Data Request (DR) No. 329 regarding the delay on launching the fee free bankcard payment program.

Exhibit 1308 - Avista's response to Staff Data Request (DR) No. 375 regarding Avista's expectations for associated savings such as improved cash flow, reduced bad debt write-of, reduced collection and mailing expense, etc.

Q. How is your testimony organized?

A. My testimony first discusses the history of Avista's proposal to offer fee free payments to customers, followed by my analysis and final recommendations.

HISTORY

Q. Has Avista previously offered customers a method of paying their bills using a credit card?

A. Yes, Avista has historically accepted credit and debit card payments from customers.[1] However, under the current arrangement, the customer must pay a $3.50 convenience fee to the third-party vendor who actually processes the transaction.[2] This transaction fee is retained by the vendor.[3]

Q. Has Avista previously offered a fee free debit and credit card payment option to customers?

A. No. In 2016, the Company had discussions with Staff about the possibility of offering a fee free bankcard payment option. At that time, Avista proposed to begin offering such a program and to defer costs for three years to gain experience after which the Company would seek recovery with its next general rate request.[4] Staff was concerned about a three year deferral, so Avista agreed to offer a one year deferral instead.[5] On January 12, 2016, Avista filed for the deferral, which was docketed as UM 1759. The Commission approved the filing in Order No. 16-122 and allowed the Company to defer 90 percent of its transaction fees up to a cap of $150,000.[6] However, Avista did not proceed with the fee free program at that time.[7]

In its response to Staff DR 329 (Exhibit 1307), the Company explained that the delay in offering the program from late 2016 to early 2017 was due

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[1] Avista/900, Ehrbar/12.
[2] Avista/900, Ehrbar/12.
[3] Avista/900, Ehrbar/12.
[4] Exhibit Staff/1302 (Avista Response to Staff DR 224).
[5] Exhibit Staff/1302 (Avista Response to Staff DR 224).
[6] *In re Avista Corporation*, OPUC Docket No. UM 1759, Order No. 16-122, Appendix A at 6 (Mar. 23, 2016).
[7] Avista/900, Ehrbar/13.

to complexities experienced during the testing phase of implementing Avista's new payment processing vendor, Fiserv.[8] The Company decided to make sure the implementation with Fiserv was 100 percent ready with all security and critical defects being resolved before going live.[9] In addition, the launch was delayed until the first quarter of 2017 because of the coordination necessary for system updates and changes across the Company's Information Technology (IT) system environments.[10] The program is expected to be launched with the Company's next major release window on February 19, 2017.[11]

Q. Why has Avista decided to offer customers the option of making credit and debit card payments without a charge?

A. Avista cites the $3.50 convenience fee as one of the largest frustrations customers complain about, and that customers have grown accustomed to paying for other products and services with a debit or credit card without incurring a separate convenience fee.[12] The Company also states that many local utilities or service providers do not charge a convenience fee and customers are dissatisfied when they must pay one to make their Avista payment.[13] Avista notes that as more and more payments move to electronic methods, utilities are starting to offer fee free payment programs

[8] Exhibit Staff/1307 (Avista Response to Staff DR 329).
[9] Exhibit Staff/1307 (Avista Response to Staff DR 329).
[10] Exhibit Staff/1307 (Avista Response to Staff DR 329).
[11] Exhibit Staff/1307 (Avista Response to Staff DR 329).
[12] Exhibit Staff/1306 (Avista Response to Staff DR 226).
[13] Exhibit Staff/1306 (Avista Response to Staff DR 226).

for all methods of making payments.[14] Additionally, the Company points to a resolution by the National Association of State Utility Consumer Advocates (NASUCA) which urges utilities to eliminate convenience fees for paying utility bills with debit or credit cards.[15]

Q. Are there other utilities in the Northwest that do not charge a convenience fee on debit and credit card payments?

A. Yes, Northwest Natural and Portland General Electric both offer a fee free bankcard payment option to residential customers.[16] In closer proximity to Avista's Spokane headquarters, there are several other entities that do not charge a convenience fee for utilities, such as Inland Power & Light, Vera Water & Power, Modern Electric, City of Spokane, Waste Management, Comcast, CenturyLink and others.[17]

STAFF'S REVIEW

Q. Did you review Avista's proposal to offer a fee free bankcard payment option to residential customers starting in 2017?

A. Yes. In its initial filing, the Company proposed allowing residential customers to make payments with a debit or credit card without incurring the $3.50 convenience fee and has requested $131,057 to cover the expected cost of the transaction fees in the test period.[18] The $131,057 request covers the cost of the expected transaction fees, so it appears this request does not include any

[14] Exhibit Staff/1306 (Avista Response to Staff DR 226).
[15] Exhibit Staff/1306 (Avista Response to Staff DR 226).
[16] Exhibit Staff/1306 (Avista Response to Staff DR 226).
[17] Exhibit Staff/1306 (Avista Response to Staff DR 226).
[18] Avista/900, Ehrbar/12-13.

associated system or set up costs. Avista provided very limited testimony and data in its initial filing. Data provided pursuant to discovery shows the total number of payments received from July 2015 through June 2016 that were subject to a convenience fee was [[redacted]] transactions, which represents 5.1 percent of total customer payment transactions over that same period.[19] In support of its request in this case, the Company relies upon the experience of its new bankcard processing vendor, who stated that once a fee free bankcard option is available, the Company can expect payments via debit or credit card to double within 12 months.[20] The Company projects that the adoption rate for debit/credit card payments to increase to approximately 10 percent by the end of the test period[21] totaling approximately [[redacted]] transactions (this was not modeled by the Company).

Because Avista did not provide any modeling, Staff created a model based on the data provided by Avista. Avista expects to offer the fee free payment program beginning in mid-February 2017 with a starting bankcard usage rate of 5.1 percent, which they expect to grow through the end of the test period to at least 10 percent.[22] Staff was concerned that the steep upward slant of the model was unrealistically aggressive, so we analyzed historical data from two other Northwest utilities about the adoption growth rates they experienced,

[19] Exhibit Staff/1302 (Avista response to Staff Data Nos. 220 and 224).
[20] Exhibit Staff/1302 (Avista response to Staff Data Nos. 220 and 224).
[21] Avista/900, Ehrbar/13.
[22] Avista/900, Ehrbar/13.

which was reviewed and graphed.[23] Utilizing this data, Staff has modeled its expected adoption growth rate against the Company's proposal.[24]

Q. What were Staff's findings regarding the fee free payment program?

A. Staff believes the adoption growth rate necessary to support Avista's contention that they will experience [[redacted]] debit/credit card transactions in the test period is unrealistic. Staff's own analysis suggests a less aggressive growth curve based on the level of participation of the two other Northwest utilities.[25] Staff calculates that Avista's fee free payment program adoption rate at the beginning of the test period will be 6.6 percent, rising to 8.8 percent by the end of the 12 month test period. This growth curve will result in [[redacted]] transactions during that period, rather than the [[redacted]] that the Company projects.[26]

Q. What does Staff recommend?

A. Staff supports Avista's proposal to offer a fee free payment program; however, Staff recommends an adjustment to Avista's request to account for related cost savings that could accrue from the program offering. In UM 1759, the Commission agreed to allow Avista to defer 90 percent of its costs associated with offering the fee free bankcard program up to a $150,000 cap. Deferring only 90 percent of the Company's expenses was in recognition of the fact that there are likely other benefits to the program that have not been quantified,

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[23] Exhibit Staff/1304.
[24] Exhibit Staff/1303.
[25] Exhibit Staff/1303.
[26] Exhibit Staff/1305.

such as improved cash flow, reduced bad debt write-off, lower collection expenses, lower mailing expenses, etc.[27] In the Company's response to DR 375, it states that while Avista does expect there to be some savings associated with the fee free bankcard program, it is unable to quantify these savings at this time.[28] In recognition of these unquantified savings, Staff recommends allowing the Company to recover 90 percent of the fee free bankcard transaction costs. Staff accomplishes this by allowing 90 percent of the payment transaction fee of [[redacted]], resulting in $[redacted]] fee per transaction. Applying $[[redacted]] to Staff's expected total number of fee free bankcard transactions of [[redacted]] results in an allowed program cost of $87,246. This results in a downward adjustment of $43,811.

Q. What is your adjustment number?

A. S-36.

Q. Does this conclude your testimony?

A. Yes.

[27] Order No. 16-122, Appendix A at 5.
[28] Exhibit Staff/1308 (Avista response to Staff DR 375).

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1301

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATIONS STATEMENT

NAME:	Phil Boyle
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Program Manager Consumer Services Section
ADDRESS:	201 High Street SE., Suite 100 Salem, OR 97301
EDUCATION:	Bachelor of Science (Education) Portland State University, 1980
EXPERIENCE:	1980 to 2003 – PacifiCorp I worked at PacifiCorp (Pacific Power) in a variety of customer facing positions over the years, starting as an Energy Consultant, progressing through Sales and Commercial Account Manager position's, to local District Manager and Customer Service Manager. In my 23 years at PacifiCorp I learned about all aspects of customer service and distribution operations. 2004 to 2005 – Oregon Department of Revenue Worked in collections unit collecting delinquent taxes. 2005 to Present – Oregon Public Utility Commission I am currently Program Manager for the Consumer Services Section, beginning my work with the PUC as a Consumer Specialist, advancing to a Senior Compliance Specialist and finally to Program Manager. In these roles I have become very experienced working with utilities to help them comply with Division 21 Administrative Rules.

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1302

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 1302 is confidential and

Is subject to Protective Order No.16-460.

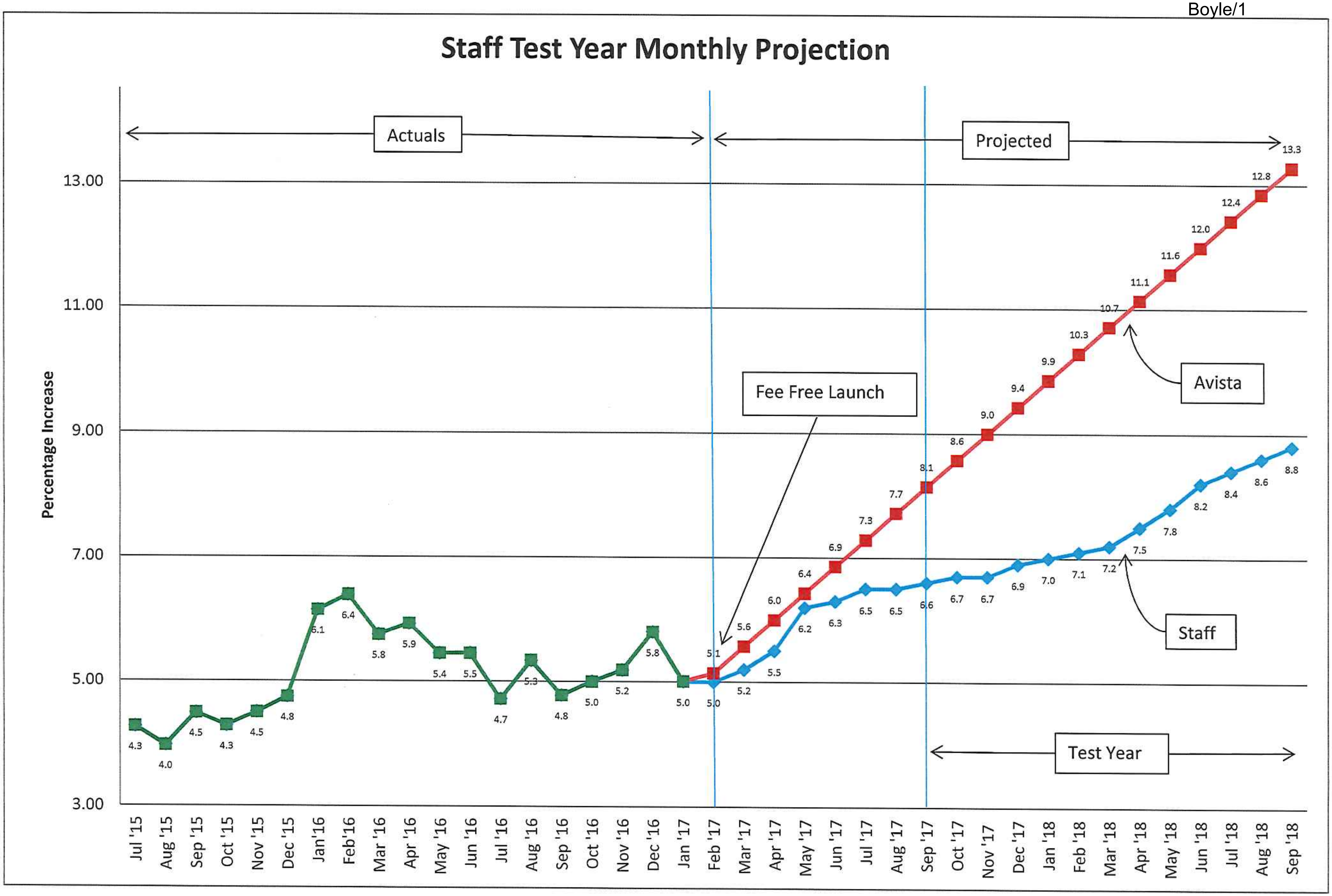
CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1303

Exhibits in Support
Of Opening Testimony

March 1, 2017


Staff Test Year Monthly Projection
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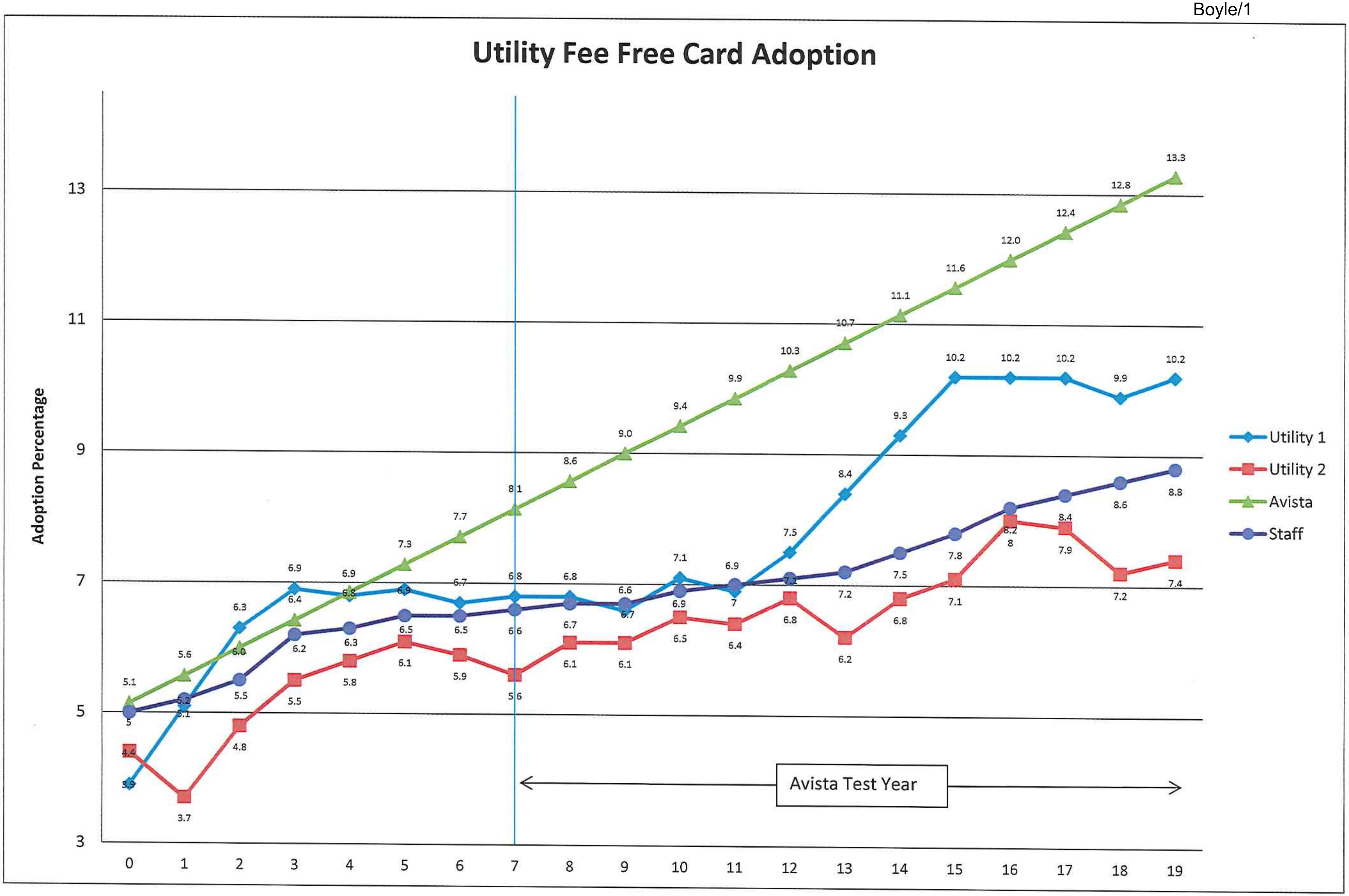
CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1304

Exhibits in Support
Of Opening Testimony

March 1, 2017


Utility Fee Free Card Adoption
Adoption Percentage
Utility 1
Utility 2
Avista
Staff
Avista Test Year

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1305

Exhibits in Support
Of Opening Testimony

March 1, 2017

Staff Exhibit 1305 is confidential and

Is subject to Protective Order No.16-460.

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1306

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/19/2017
CASE NO.:	UG 325	WITNESS:	Patrick Ehrbar
REQUESTER:	PUC Staff	RESPONDER:	Shawn Bonfield
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 226	TELEPHONE:	(509) 495-2782
		EMAIL:	shawn.bonfield@avistacorp.com

REQUEST:

Please provide any customer survey or focus group data that supports Avista's request to offer a fee-free bankcard payment option.

RESPONSE:

The requirement to pay a convenience fee when making a payment is one of the largest frustrations customers express and complain about. The Company does not have specific customer survey or focus group data. The basis supporting Avista's offering the Fee-Free Payment Program can be found in Dockets UM 1759 and ADV 201. The following are excerpts included within the Company's application in Docket UM 1759, which provided the basis of support for offering the Fee-Free Payment Program:

> Payments made by check, cash, pay station, and ACH on the Company's website through an "Avista My Account" are free of charge. The costs associated for the Company to offer these methods are paid for by all customers and not recovered exclusively by those specific customers that use that method of payment. As customer expectations change and more payments are done electronically, utility companies are beginning to offer fee-free payment programs for their residential customers for all methods of payment. As supported by the National Association of State Utility Consumer Advocates (NASUCA) in Resolution 2012-07, "Urging Utilities to Eliminate 'Convenience Fees; for Paying Utility Bills with Debit and Credit Cards and Urging Appropriate State Regulatory Oversight"[1], and as further explained in this Application, Avista believes it is reasonable to offer a fee-free payment program for all payment methods to its residential customers, and recover the costs associated with such a program from all customers through rates.
>
> Avista believes residential customers should not be charged a convenience fee for payments made through any of its payment channels[2]. The requirement to pay a convenience fee when making a payment is one of the largest frustrations customers express and complain about. Customers have grown accustomed to paying for other products and services with a credit card or debit card without a separate, additional fee.

[1] http://nasuca.org/2012-07-urging-utilities-to-eliminate-convenience-fees-for-paying-utility-bills-with-debit-and-credit-cards-and-urging-appropriate-state-regulatory-oversight/

[2] Because commercial customers generally have more methods in which to pay, and their average payment amount is significantly higher than residential, which leads to higher processing costs, at this time Avista is not proposing a fee free program for commercial customers.

In addition, many local utilities or service providers do not charge a convenience fee, which also leads to customers' dissatisfaction or frustration for paying a convenience fee when paying their Avista bill. NW Natural Gas and Portland General Electric are two investor owned utilities that offer a fee free payment program to residential customers. In Avista's Spokane service territory, customers of Vera Water & Power, Inland Power & Light, Modern Electric, and the City of Spokane do not pay a fee for making a payment. Also, customers of service providers for garbage (i.e., Waste Management), cable (i.e., Comcast), phone (i.e., CenturyLink), and cellular phones (i.e., AT&T or Verizon) do not pay a fee for making a payment.

Eliminating these fees would provide additional options for residential customers to pay their bills. As discussed in the National Association of State Utility Consumer Advocates (NASUCA) Resolution 2012-07, "Urging Utilities to Eliminate "Convenience" Fees for Paying Utility Bills with Debit and Credit Cards and Urging Appropriate State Regulatory Oversight", additional fees for paying utility bills can be burdensome.

The option of a fee-free payment when using a credit or debit card would lead to greater satisfaction for all customers that primarily pay for goods and services with these payment methods. There are many reasons why customers would prefer to use their credit or debit card, which may include: (1) receiving loyalty rewards, (2) younger generations that are most likely to pay digitally because they do not use paper checks, (3) using a prepaid card, or (4) customers feel safer using a debit card that includes security protections from their bank. Regardless of the reason a customer may have, they would be more satisfied with the ability to pay by the method of their choice without incurring additional fees.

The more convenient the Company can make it for customers to pay bills, the more it can benefit all customers. Customers that self-serve, pay on time, and are satisfied with the options they have are the least expensive to serve, which is a benefit to all customers. Customers that do not pay on time and end up in the credit collections cycle drive increased costs, which are paid for by all customers. Lastly, customers that are not satisfied tend to call Customer Service more frequently. Every call that comes into the Call Center costs approximately $6 in labor costs alone. This means that every call that can be avoided leads to savings for all customers. Giving customers options to pay by the method of their choice without incurring additional fees will lead to more satisfied customers and ultimately savings for all customers.

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1307

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/27/2017
CASE NO.:	UG 325	WITNESS:	Patrick Ehrbar
REQUESTER:	PUC Staff	RESPONDER:	Shawn Bonfield
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 329	TELEPHONE:	(509) 495-2782
		EMAIL:	shawn.bonfield@avistacorp.com

REQUEST:

Please explain what caused the company to delay the launch of the Fee Free Bankcard Payment Program from 2016 to early 2017, and why the Company now believes the launch will take place in early 2017.

RESPONSE:

Avista's launch of the fee-free payment program was delayed from the fall of 2016 to early 2017 due to complexities the Company experienced during the testing phase of implementing its new payment processing vendor, Fiserv. The launch of fee-free payment program is contingent upon switching to Fiserv for payment processing.

The Company's focus is to make sure that the implementation with Fiserv is 100% customer ready with all security concerns and critical defects being resolved before going live. Customer payments and the movement of money is critical for both our customers and Avista, so we want to be confident that everything is working properly prior to going live.

The implementation was also delayed until the first quarter because of the coordination that is necessary for system updates and changes across the Company's IT system environments. Avista manages updates and changes to software in specific release windows to mitigate risk across these environments and to the business. Also, due to customer payments having a direct impact on the Company's financial system, there was a risk of going live with a new vendor close to year end 2016. Because of these variables the roll out of the program is scheduled to happen on the next major release window, which is currently scheduled for February 19th, with additional contingency dates available if needed in the first quarter.

The Company is confident the launch will take place within the next release window as the additional time has allowed the company to complete additional testing and validation that all systems are on track for the scheduled go live.

CASE: UG 325
WITNESS: PHIL BOYLE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1308

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/01/2017
CASE NO.:	UG 325	WITNESS:	Patrick Ehrbar
REQUESTER:	PUC Staff	RESPONDER:	Shawn Bonfield
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 375	TELEPHONE:	(509) 495-2782
		EMAIL:	shawn.bonfield@avistacorp.com

REQUEST:

Please provide a narrative explanation as to whether the Company expects to experience any cost savings or operational efficiencies due to the introduction of the fee free bankcard payment program. In the response, please explain the expected impact, if any, on Avista's operations, including but not limited to cash flow, collections, uncollectables, customer service workload, and mailing expenses.

RESPONSE:

The Company does believe that it may experience some cost savings and/or operational efficiencies due to the introduction of the fee-free payment program. Included in the Company's Application for the fee-free payment program, Docket UM-1759, were the following statements relating to potential costs savings:

> The more convenient the Company can make it for customers to pay bills, the more it can benefit all customers. Customers that self-serve, pay on time, and are satisfied with the options they have are the least expensive to serve, which is a benefit to all customers. Customers that do not pay on time and end up in the credit collections cycle drive increased costs, which are paid for by all customers. Lastly, customers that are not satisfied tend to call Customer Service more frequently. Every call that comes into the Call Center costs approximately $6 in labor costs alone. This means that every call that can be avoided leads to savings for all customers. Giving customers options to pay by the method of their choice without incurring additional fees will lead to more satisfied customers and ultimately savings for all customers.
>
> Potential cost savings – as noted, each phone call to the Company's Customer Service Call Center costs approximately $6 in labor costs. The Company believes that offering this fee-free program to residential customers may lead to fewer phone calls as customers will have more options for paying their bill free of charge.

In addition to those savings noted above, the Company may see an increase in the number of customers signed up for paperless billing as more customers choose paperless billing with automatic payment service (APS). For each customer that signs up for paperless billing it saves approximately $7 per account per year.

It is possible that the Company may experience additional operational savings and efficiencies, including impacts to cash flow and uncollectibles, as a result of the fee-free payment program.

However, customers currently have several free payment options available today, so the addition of a new free payment option may or may not have an impact on customers' behavior for making payments and making them on time.

Proving the correlation or attributing precise savings experienced back to the fee-free payment program alone may prove challenging. Take for example, paperless billing. Some customers may indeed sign up for paperless billing and APS because they can now do so by debit or credit card, while other customers may sign up for paperless billing out of convenience because they can view their bill from their mobile phone and they then sign up for APS as well. Without extensive customer surveying the Company will not be able to attribute savings experienced as a result of an increase in customers signed up for paperless billing back to the fee-free payment program.

This same issue would apply to any change in call volumes the Company may experience in the future. More customers may elect to self-serve when calling to check on their account balance and make a payment, which could lead to a reduction in calls and result in a decrease in customer service workload. However, customers will now be able to make a payment through a Customer Service Representative without a fee, so it is possible that more customers actually call to make payments than they do now. Weather can have a major influence on call volumes as well. If the Company experiences a warmer than normal winter in the future, it is likely there will be a reduction in call volumes. Attributing the change in call volumes to a single factor or variable would be challenging.

It is important to note that any future savings experienced due to the introduction of the fee-free payment program will be picked up in the base year of a General Rate Case, and captured in that manner.

CASE: UG 325
WITNESS: KATHY ZARATE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1400

Opening Testimony

March 1, 2017

Q. Please state your name, occupation, and business address.

A. My name is Kathy Zarate. I am a Utility Economist employed in the Energy Rates, Finance, and Audit Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My educational background and work experience is set forth in my Witness Qualification Statement, which is found in Exhibit Staff/1401.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to specific issues in Avista Corporation's (Avista or Company) request for general rate revision. I respond to the issues of gains on sales of utility property (Staff Adjustment S37), and operating plant materials and supplies non-fuel (Staff Adjustment S38).

Q. Did you prepare exhibits for this docket?

A. Yes. I have prepared the following exhibits:

Exhibit 1401 — Witness Qualifications Statement

Exhibit 1402 — Avista's Responses to Staff Data Request (DR) Nos. 167, 204, 205, 206 and 207 regarding gains on sales of utility property.

Exhibit 1403 — Avista's Response to Staff Data Request No. 340 explaining why plant material and operating supplies has been increasing since 2014.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1. GAINS AND LOSSES ON SALES OF UTILITY PROPERTY

Q. Please describe your review regarding gains and losses on utility property sales.

A. I took several actions on Avista's treatment of gains and losses on utility property sales within this general rate case filing. First, I studied the Company's testimony and reviewed Avista's recent history of property sales filings. Second, I participated in a phone conference with Avista personnel. Third, I sent five data requests to verify the gains and losses on utility property sales.

Q. What is the historical treatment for Avista's property sales by the Commission?

A. The Commission authorized Avista to use any gains from property sales to reduce its acquisition adjustment (merger premium).[1] The Company's acquisition adjustment was fully amortized in February 2011.[2] The Company has not experienced either a gain or a loss on property sales arising from Oregon operations since that time.[3] In response to several of Staff's data requests, attached as Exhibit Staff/1402, Avista clarified that it has not disposed of any property allocated or used in Oregon since its most recent general rate case.

Q. Did you make any adjustments to Avista's test-year expenditures to account for gains on property sales?

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[1] *In re CP National Corporation*, 123 P.U.R.4th 416 (1991).
[2] Exhibit Staff/1402 (Response to Staff DR 206).
[3] Exhibit Staff/1402 (Response to Staff DR 204).

A. No. Since its last general rate case, Avista has not sold any property that was allocated or used in Oregon. Therefore, the Company does not have any gains or losses from property sales to pass through to customers. Therefore, I propose no adjustment on this issue.

Issue 2. Materials and Supplies (non-fuel)

Q. Please describe the Commission's ratemaking treatment of "materials and supplies."

A. Materials and supplies are treated as a component of working capital. Working capital, which is an issue addressed by Staff Witness Marianne Gardner, is the amount of funds provided by investors to enable the utility to pay its operating expenses prior to the collection of operating revenues from customers and to maintain a normal level of materials and supplies.[4] The Commission has typically authorized natural gas utilities to include an allowance for materials and supplies inventory in rate base.[5] In UG 246, the parties to the case agreed to allow materials and supplies in rate base.[6]

Q. What items are included in rate base for working capital by the Company?

A. In addition to the materials and supplies (non-fuel) addressed in my testimony, the Company included the following components of working capital:

- Gas Storage & Fuel Stock, which is addressed by Staff Witness Lisa Gorsuch in Staff Exhibit 300.
- Prepaid pension, which is addressed by Staff Witness Matthew Muldoon in Staff Exhibit 200.
- Prepaid expenses (excluding pension), which is addressed by Staff Witness Abdoulaye Barry in Staff Exhibit 1000.

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[4] *See* Docket No. UF 2176, Order No. 37112 (Mar. 10, 1960).
[5] *See, e.g.,* Docket No. UF 3275, Order Nos. 77–394 (June 13, 1977) and Docket No. UF 3094, Order No. 74–898 (Nov. 21, 1974).
[6] Avista/500, Smith/12.

Q. How much is Avista proposing to include for materials and supplies in this case?

A. Avista is proposing to include $2,604,000 in materials and supplies expense in this case.[7]

Q. Please indicate your method of analysis on this issue.

A. I reviewed the historical trend to determine if the 2016 Base Year amount for materials and supplies is a reasonable basis for the Company's request for materials and supplies expense in this case.

Q. Could you provide a summary table that displays the last three years of rate base for plant materials and supplies?

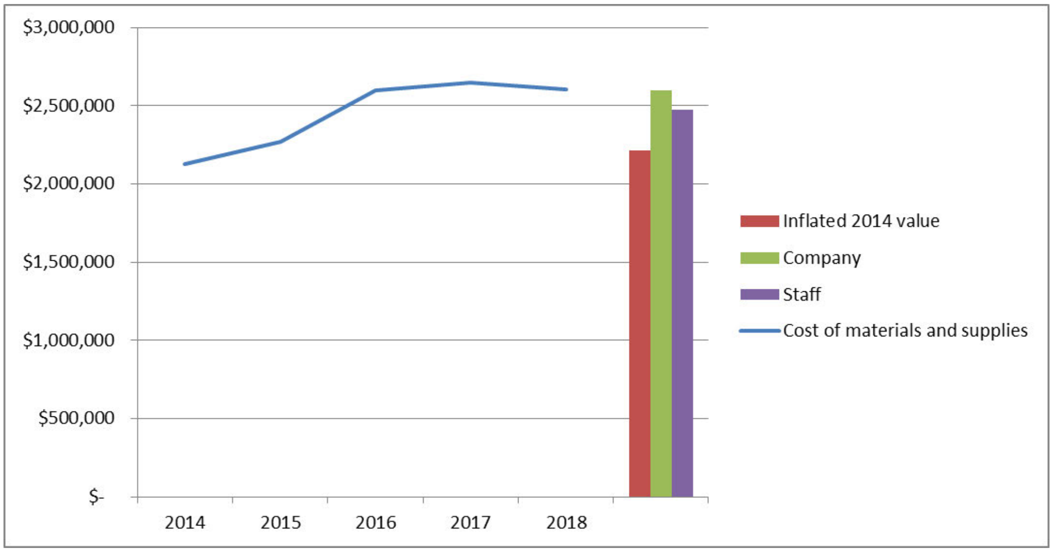
A. Yes. The table below displays the last three years of plant materials and operating supplies and is taken from information contained in Exhibit Staff/1403. The following graph also demonstrates that Avista's Materials and Supplies budget has increased substantially since 2014.

Table 1. Plant Materials and Supplies

Account	Topic	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018*
154-100	Materials and Supplies	2,127,759	2,272,386	2,600,347		2,604,000 (Company)
*=test period						2,476,620 (Staff)
Staff Adjusted						127,380

[7] Exhibit Avista 501/Smith.

Figure 1. Plant Materials and Supplies



Q. In reviewing this trend, what did you conclude?

A. It appears that the Company's Materials and Supplies expense has continued to escalate since 2014. In Staff Data Request 340, I questioned Avista whether it could explain the cost for Plant Materials and Operating Supplies has been increasing since 2014.[8]

Q. What adjustments does Staff propose to the Company's proposed Materials and Supplies?

A. Staff proposes to reduce the Company's proposed Materials and Supplies inventory by $127,380. My adjustment for Materials and Supplies is the difference between the $2,604,000 amount proposed by Avista and my recommended value of $2,476,620.

Q. How did you calculate your proposed adjustment?

[8] Exhibit Staff/1403 (Avista Response to Staff DR 340).

A. I first adjusted Avista's 2016 Base Year using a three-year average (2014, 2015 and 2016) which takes into account more historic data points. The three-year average produces a 2016 Base Year value of $2,333,497.

Q. After deriving the 2016 Base Year value for Materials and Supplies expenses, how did you develop the projection for the test period?

A. The first step was to calculate a monthly growth rate by which to extrapolate Staff's 2016 Base Year value for Materials and Supplies. Going from the 2014 value of $2,127,759 to Staff's 2016 Base Year value of $2,333,497 represents a 9.67 percent increase over three years. Because that is the increase over three years, we need to translate that into a one-year growth rate and that is accomplished by taking the square root of 1.0865 and that yields 1.047. Or an annual growth rate of 4.7 percent.

Q. Please continue.

A. I then take the 12^{th} root of that annual growth rate to get a monthly compounded growth rate. The monthly growth rate is 0.385 percent. Taking the 2016 value of $2,333,497 and escalating that by the monthly growth rate, I derive values through the end of the test period, namely September 30, 2018. At the end of the test period, we have the value of $2,529,340. The average plant value over the test period is $2,476,620. This value is more appropriate to use for a rate base concept.

Q. Does this conclude your testimony?

A. Yes.

CASE: UG 325
WITNESS: KATHY ZARATE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1401

Witness Qualifications Statement

March 1, 2017

WITNESS QUALIFICATION STATEMENT

NAME:	Kathy Zarate
EMPLOYER:	Public Utility Commission of Oregon
TITLE:	Utility Analyst Energy Rates, Finance and Audit Division
ADDRESS:	201 High Street SE., Suite 100 Salem, OR. 97301
EDUCATION:	Bachelor of Arts, Economics Oregon State University, Corvallis, Oregon Bachelor Degree in Law Republic University, Santiago, Chile
EXPERIENCE:	I have been employed by the Public Utility Commission of Oregon since April 2016, with my current position being a Utility Analyst, in the Energy - Rates, Finance and Audit Division. My responsibilities include research, analysis, and recommendations on a range of regulatory issues such as review of affiliated interest filings, property sales applications and rate proposals. I have approximately 10 years of professional experience in contracting and audit review work, including: • Six years as contract specialist for 3 Com, Santiago, Chile, with responsibilities including coordinating and preparing contracts with resellers, reviewing company books and records, coordinating logistics in business delivery, and investigating property theft.

CASE: UG 325
WITNESS: KATHY ZARATE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1402

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	12/16/2016
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff - Zarate	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 167	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Has the Company sold any utility property since the effective date for rates in the last rate case? If so, please describe the transaction and provide any gain from the property sale and the account in which it was recorded.

RESPONSE:

Since the March 1, 2016 effective date of the last rate case, the Company has not disposed of any utility property that was allocated or used in Oregon. The Company had land sales in Washington in March 2016 and November 2016. The March 2016 sale was for land in Harrington and had an overall gain of $1,565. The second sale was for land in Spokane that occurred in November 2016 and netted a loss of $164.82. Both of these were recorded to FERC account 421.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff -	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 204	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please provide a listing of all property sales arising from Oregon operations, including the sales price, net book, net gain, date of sale, and brief description of property sold from calendar year 2012 to present.

RESPONSE:

In August 2015, the Company sold Klamath Falls Svc Station Land with an original cost of $1,320. The gross proceeds from the sale were equal to the original cost so the Company did not experience any gain or loss on the sale.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff -	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 205	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

Please provide a listing of all property sales, including the sales price, net book, net gain, date of sale, and brief description of property sold from calendar 2012 to present for any plant not located in Oregon but included in Oregon rates as a result of Avista allocations procedures.

RESPONSE:

The Company did not have property sales included in Oregon rates during the requested time period.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/04/2016
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 206	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please confirm that the acquisition adjustment described in Order No. 91-671, has been fully amortized and provide the date at which the zero balance was recorded.

RESPONSE:

The acquisition adjustment described in Order No. 91-671, was fully amortized with a zero balance as of February 2011.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	01/05/2017
CASE NO:	UG 325	WITNESS:	Jennifer Smith
REQUESTER:	PUC Staff -	RESPONDER:	Ryan Finesilver
TYPE:	Data Request	DEPT:	Rates & Tariffs
REQUEST NO.:	Staff – 207	TELEPHONE:	(509) 495-4873
		EMAIL:	ryan.finesilver@avistacorp.com

REQUEST:

For any net gains identified in the Company's response to the two data request above, please note whether and to what extent each of such gains from the respective transactions were used to reduce plant in service or otherwise provided to the benefit of Oregon customers. If not, for each such transaction, explain why such gains were not flowed through to the benefit of Oregon customers

RESPONSE:

The Company did not identify any gains/losses from sales of property in the above mentioned Staff data requests (Staff_DR_204 and Staff_DR_205).

CASE: UG 325
WITNESS: KATHY ZARATE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 1403

Exhibits in Support
Of Opening Testimony

March 1, 2017

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	Oregon	DATE PREPARED:	02/06/2017
CASE NO:	UG 325	WITNESS:	Jennifer S. Smith
REQUESTER:	PUC Staff	RESPONDER:	Jennifer S. Smith
TYPE:	Data Request	DEPT:	State & Federal Regulation
REQUEST NO.:	Staff – 340	TELEPHONE:	(509) 495-2098
		EMAIL:	Jennifer.smith@avistacorp.com

REQUEST:

Please explain why the cost for Plant Material and Operating Supplies (FERC Account 154-163) has been increasing since 2014.

Account		2016	2015	2014			
154-163	Topic	2,599,150	2,272,386	2,127,759			

RESPONSE:

Over the past several years, the Company has increased its capital budget. To ensure inventory of frequently used items are available for projects when they are needed, the inventory level in FERC Account 154100 has grown slightly over time. The Company has thousands of inventory items that it orders and maintains in inventory, so it is not possible to identify a specific item or group of items that makes up this increase.