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September 19, 2017

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
Attention: Filing Center
201 High Street SE, Suite 100
Post Office Box 1088
Salem, Oregon 97308-1088

Re: UM 1808 – Joint Stipulation and Testimony Pursuant to NW Natural’s Updated Depreciation Study

Dear Filing Center:

Attached for filing in the above-captioned docket is the Joint Stipulation and Testimony in Support of the Stipulation.

Please contact me if you have any questions or require any further information.

Sincerely,

/s/ Zachary D. Kravitz

Zachary D. Kravitz
Associate Counsel

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1808

In the Matter of

NORTHWEST NATURAL GAS
COMPANY, dba, NW NATURAL

Updated Depreciation Study Pursuant
to OAR 860-027-0350

STIPULATION

1 This Stipulation resolves all issues among all parties to this docket related to
2 Northwest Natural Gas Company's ("NW Natural" or "Company") Updated Depreciation
3 Study Pursuant to OAR 860-027-0350 ("Depreciation Study") filed with the Commission
4 in Docket UM 1808 on December 20, 2016.

5

6

PARTIES

7 1. The parties to this Stipulation are Staff of the Public Utility Commission of
8 Oregon ("Staff"), the Northwest Industrial Gas Users ("NWIGU"), the Citizens' Utility
9 Board of Oregon ("CUB"), and NW Natural (together, the "Stipulating Parties").

10

11

BACKGROUND

12 2. On December 20, 2016, NW Natural filed with the Oregon Public Utility
13 Commission ("Commission") the updated Depreciation Study of its gas plant in service
14 as of December 31, 2015, pursuant to OAR 860-027-0350, which requires each
15 energy utility to file with the Commission an updated depreciation study at least once
16 every five years. ORS 757.140 requires each public utility to carry a proper and

1 adequate depreciation account, and to conform its depreciation accounts to the rates
2 so ascertained and determined by the Commission. The Commission may make
3 changes in such rates of depreciation from time to time as the Commission may find
4 necessary. The purpose of the Depreciation Study is to determine the annual
5 depreciation accrual rates and amounts for accounting and ratemaking purposes. The
6 Depreciation Study included descriptions of the methods used in the estimation of
7 depreciation, the summary of annual depreciation accrual rates, the statistical support
8 for the life and net salvage estimates, and the detailed tabulations of annual
9 depreciation (“depreciation rates”).

10 3. The Depreciation Study set forth an annual system depreciation expense
11 of \$76.4 million when applied to depreciable plant balances as of December 31, 2015,
12 which reflected an approximate \$200,000 increase to NW Natural’s annual
13 depreciation expense.

14 4. On June 5, 2016, NW Natural, Staff, and NWIGU participated in a
15 settlement conference at the Commission’s office in Salem, Oregon. The discussions
16 resulted in a settlement among the Stipulating Parties. The Stipulating Parties agree
17 that the depreciation rates agreed to in this Stipulation will result in annual
18 depreciation expense of approximately \$75.1 million, resulting in an approximate \$1.3
19 million decrease from the annual depreciation expense proposed in the Depreciation
20 Study. Attached Stipulation Exhibit “A” Table 1 includes a complete list of all NW
21 Natural depreciation parameters for all utility plant by FERC account.

1 **TERMS OF STIPULATION**

2 5. This Stipulation resolves all issues regarding the changes to the
3 Company's depreciation rates proposed in the Depreciation Study.

4 6. The Stipulating Parties agree that the changes shown in Stipulation
5 Exhibit "A" should be made to the depreciation rates in the Depreciation Study.

6 7. The Stipulating Parties agree that the depreciation rates set forth in
7 Stipulation Exhibit "A" are reasonable and should be adopted.

8 8. NW Natural agrees to use the depreciation rates in Stipulation Exhibit "A",
9 if approved by the Commission, as the basis for its depreciation rates in the Company's
10 next general rate case proceeding. NW Natural will simultaneously update its
11 depreciation rates on its books when new retail rates are effective following its next rate
12 case. In the event that NW Natural does not file a general rate case by February 28,
13 2018, the Stipulating Parties will meet to determine a process for NW Natural to change
14 the depreciation rates on its books and in customer rates based on the depreciation
15 rates in Stipulation Exhibit "A".

16 9. The Stipulating Parties agree to submit this Stipulation to the Commission
17 and request that the Commission approve the Stipulation as presented.

18 10. This Stipulation will be offered into the record of this proceeding as
19 evidence pursuant to OAR 860-001-0350(7). The Stipulating Parties agree to support
20 this Stipulation throughout this proceeding and any appeal, (if necessary) provide
21 witnesses to sponsor this Stipulation at the hearing, and recommend that the
22 Commission issue an order adopting the settlements contained herein.

1 11. If this Stipulation is challenged, the Stipulating Parties agree that they will
2 continue to support the Commission's adoption of the terms of this Stipulation. The
3 Stipulating Parties agree to cooperate in cross-examination and put on such a case as
4 they deem appropriate to respond fully to the issues presented, which may include
5 raising issues that are incorporated in the settlements embodied in this Stipulation.

6 12. The Stipulating Parties have negotiated this Stipulation as an integrated
7 document. If the Commission rejects all or any material part of this Stipulation, or adds
8 any material condition to any final order that is not consistent with this Stipulation, each
9 Stipulating Party reserves its right, pursuant to OAR 860-001-0350(9), to present
10 evidence and argument on the record in support of the Stipulation or to withdraw from
11 the Stipulation. Stipulating Parties shall be entitled to seek rehearing or reconsideration
12 pursuant to OAR 860-001-0720 in any manner that is consistent with the agreement
13 embodied in this Stipulation.

14 13. By entering into this Stipulation, no Stipulating Party shall be deemed to
15 have approved, admitted, or consented to the facts, principles, methods, or theories
16 employed by any other Stipulating Party in arriving at the terms of this Stipulation, other
17 than those specifically identified in the body of this Stipulation. No Stipulating Party
18 shall be deemed to have agreed that any provision of this Stipulation is appropriate for
19 resolving issues in any other proceeding, except as specifically identified in this
20 Stipulation.

21 14. This Stipulation may be executed in counterparts and each signed
22 counterpart shall constitute an original document.

1 15. This Stipulation is entered into by each Stipulating Party on the date
2 entered below such Stipulating Party's signature.

3

STAFF

NWIGU

By: _____

By: _____

Date:_____

Date:_____

NW NATURAL

CITIZENS' UTILITY BOARD OF
OREGON

By: _____

By: _____

Date:_____

Date:_____

1 15. This Stipulation is entered into by each Stipulating Party on the date
2 entered below such Stipulating Party's signature.

3

STAFF

NWIGU

By: _____

By: _____

Date: _____

Date: _____

NW NATURAL

CITIZENS' UTILITY BOARD OF
OREGON

By:  _____

By: _____

Date: 9-15-17 _____

Date: _____

1 15. This Stipulation is entered into by each Stipulating Party on the date
2 entered below such Stipulating Party's signature.

3

STAFF

By:  _____

Date: 9/15/17 _____

NWIGU

By: _____

Date: _____

NW NATURAL

By: _____

Date: _____

CITIZENS' UTILITY BOARD OF
OREGON

By: _____

Date: _____

1 15. This Stipulation is entered into by each Stipulating Party on the date
2 entered below such Stipulating Party's signature.
3

STAFF

By: _____

Date: _____

NWIGU

By: _____

Date: _____

NW NATURAL

By: _____

Date: _____

CITIZENS' UTILITY BOARD OF
OREGON

By: Michael R. Gandy

Date: 9/19/17

1 15. This Stipulation is entered into by each Stipulating Party on the date
2 entered below such Stipulating Party's signature.

3

STAFF

By: _____

Date: _____

NWIGU

By:  _____

Date: 9-15-17 _____

NW NATURAL

By:  _____

Date: 9-15-17 _____

CITIZENS' UTILITY BOARD OF
OREGON

By: _____

Date: _____

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

UM 1808

In the Matter of

NORTHWEST NATURAL GAS
COMPANY,

Updated Depreciation Study Pursuant
to OAR 860-027-0350.

JOINT TESTIMONY IN SUPPORT OF STIPULATION

WITNESSES: John Spanos, Ming Peng, Ed Finklea, and Bob Jenks

September 19, 2017

INTRODUCTION

1 **Q. Please state your names, occupations, and business addresses.**

2 A. My name is John Spanos. My current position is Senior Vice President at
3 Gennett Fleming Valuation and Rate Consultants, LLC. I am testifying on
4 behalf of Northwest Natural Gas Company. My business address is 209
5 Senate Avenue, Suite 630, Camp Hill, PA 17011. My witness qualification
6 statement is set forth in Exhibit 101.

7 My name is Ming Peng. I am a Senior Economist for the Public Utility
8 Commission of Oregon (“Commission” or “OPUC”). My business address
9 is 201 High Street SE, Salem, OR 97301. My witness qualification
10 statement is set forth in Exhibit 102.

11 My Name is Bob Jenks. I am the Executive Director of the Oregon
12 Citizens’ Utility Board (“CUB”). My witness qualification statement is set
13 forth in Exhibit 103.

14 My name is Edward Finklea. I am the Executive Director of the
15 Northwest Industrial Gas Users (“NWIGU”). My business address is 545
16 Grandview Drive, Ashland, Oregon 97520. My witness qualification
17 statement is set forth in Exhibit 104.

18 **Q. What is the purpose of your Joint Testimony?**

19 A. This Joint Testimony addresses the depreciation study submitted by NW
20 Natural to the Commission on December 20, 2016 (the “Depreciation
21 Study”). The purpose of this Joint Testimony is to describe and provide
22 support for the Stipulation between NW Natural, Commission Staff, NWIGU
23 and CUB (together, the “Parties”). The adjustments to NW Natural’s
24 Depreciation Study discussed in the Stipulation are reasonable and will
25 result in fair and equitable rates if adopted by the Commission.

1 **Q. Please describe the Company's depreciation study filing.**

2 A. On December 20, 2016, pursuant to OAR 860-027-0350, the Company filed
3 a detailed Depreciation Study that updated NW Natural's annual
4 depreciation accrual rates and amounts for accounting and ratemaking
5 purposes. ORS 757.140 requires utilities to carry a proper and adequate
6 depreciation account that reflects depreciation rates approved by the
7 Commission. NW Natural hired Gannett Fleming, Inc. to perform the
8 Depreciation Study. The Depreciation Study included descriptions of the
9 methods used in the estimation of depreciation, the summary of annual
10 depreciation accrual rates, the statistical support for the life and net salvage
11 estimates, and the detailed tabulations of annual depreciation ("depreciation
12 rates"). All assets in the study were included in traditional FERC
13 classifications of Intangible Plant, Other Production Plant, Natural Gas
14 Storage and Processing Plant, Transmission, Distribution, and General
15 Plant assets.

16 **Q. Please describe the results of NW Natural's Depreciation Study.**

17 A. Based on the Company's Depreciation Study, the Company proposed
18 annual book depreciation expense of \$76.4 million when applied to
19 depreciable plant balances as of December 31, 2015. Based on NW
20 Natural's proposed depreciation rates, the difference in depreciation expense
21 under the depreciation rates currently in effect for NW Natural and the
22 depreciation expense in the Depreciation Study was approximately \$200
23 thousand.

24

25 **Q. Did Staff conduct an independent review of NW Natural's depreciation**
26 **rates?**

1 A. Yes. Staff's review was independent and comprehensive, as discussed in
2 the following section.

3 **Q. Did NWIGU also conduct an independent review of NW Natural's**
4 **depreciation rates?**

5 A. Yes. NWIGU engaged a third party consultant to assist in its review of NW
6 Natural's depreciation rates and engaged in discovery to assist its review.

7 **STAFF'S REVIEW AND ANALYSIS**

8 **Q. Please provide a summary of Staff's review of NW Natural's**
9 **depreciation rates.**

10 A. Staff reviewed the Company's filing, participated in a workshop on February
11 21, 2017, and conducted field review for asset life assessment. Staff visited
12 the following NW Natural locations: Mist storage, Portland LNG, Sherwood
13 training facility (emergency operations backup), Newport LNG facility and
14 Salem Distribution Service cost of removal. The visits were led by NWN
15 engineers and included a discussion of projected life and salvage rate of
16 the assets.

17 **Q. How did Staff analyze Iowa Curves and Average Service Lives?**

18 A. Depreciation rates are derived from two depreciation parameters: (1) the
19 combination of Survival Curve¹ and Projection Life (Curve-Life), and (2) Net
20 Salvage Rates.² The Curve-Life parameter is the combination of Survivor
21 Curve Type with Dispersion Indicator and Projection Life. Staff utilized the
22 actuarial retirement rate methodology to analyze historical retirement data

¹ "Survivor curves" means a curve that shows the number of units or cost of a given group which is surviving in service at given ages. The survivor curves were developed by the Engineering Research Institute of Iowa State University. These curves are frequently referred to as "Iowa Curves."

² Net salvage is the difference between gross salvage and cost of removal. Net salvage is positive when gross salvage exceeds the cost of removal and reduces the revenue requirement. Conversely, net salvage is negative when cost of removal exceeds gross salvage and increases the revenue requirement.

1 to help determine Iowa curves and average service lives for each
2 depreciation group. Stipulation Attachment A shows the depreciation
3 groups for which the Staff analyses produced differing results from NW
4 Natural, and the final position agreed to by the Stipulating Parties in
5 settlement discussions.

6 **Q. How did Staff analyze curve-lives?**

7 A. Staff began with NW Natural's raw data listed by FERC account; if no data
8 was available for some accounts, Staff looked at data under the same
9 account from other gas companies nationwide. Staff then determined the
10 curve-life statistic based on the minimum sum of the normalized squared
11 deviations. Normalization was done by dividing each deviation by the
12 corresponding observed balance. After that, Staff recommended changes
13 to NW Natural's originally proposed curve-life combination for depreciable
14 property groups. The recommended changes were made in the average
15 service life or dispersion curve (or both) for the FERC account categories in
16 the "Other Production Facilities, Underground Storage Plant, Local Storage
17 Plant, Transmission Plant, Distribution Plant, and General Plant."

18 **Q. How did Staff analyze net salvage rates?**

19 A. Staff analyzed the net salvage rates submitted by NW Natural, and examined
20 the asset retirement activities by comparing year-by-year, three-year and five-
21 year moving averages, as well as the most recent five and ten-year averages.
22 Staff also used information gained during visits to plant facilities to evaluate
23 asset retirement patterns and estimate net salvage rates.

24 For FERC 300 level accounts, both Staff and NW Natural utilized the
25 statistical methods of overall averages, and rolling and shrinking band analyses
26 to study historical data to help estimate net salvage characteristics.

27 **Q. What were the results of Staff's analysis?**

1 A. Staff made multiple account adjustments as part of its analysis, which resulted
2 in depreciation rates increasing for some accounts and decreasing for others as
3 compared with those requested in the Company's Depreciation Study. Staff's
4 review and analysis resulted in a \$73.7 million annual depreciation expense.
5 Staff arrived at this value by adjusting lowa survivor curves, projected average
6 service lives, and net salvage rates that were different from those used by NW
7 Natural.

8 **SETTLEMENT AGREEMENT**

9 **Q. Were the Parties able to resolve their differences for each of the**
10 **accounts where the analyses differed?**

11 A. Yes. On February 21, 2017, Staff, NWIGU and NW Natural participated in
12 a workshop to review and discuss the depreciation parameters in NW
13 Natural's filing. On June 5, 2017, Staff, NW Natural, and NWIGU
14 participated in a settlement conference that resulted in agreed upon
15 depreciation rates described in Exhibit 105 (Adjustment Parameter
16 Comparison). The depreciation rates agreed to in this Stipulation will result
17 in annual depreciation expense of approximately \$75.1 million, resulting in
18 an approximate \$1.3 million decrease from the annual depreciation
19 expense proposed in the Depreciation Study. The overall composite
20 depreciation rate for total depreciable gas plant is 2.71 percent, compared
21 to NW Natural's initially proposed 2.76 percent. Stipulation Exhibit A
22 (Settlement Results) sets forth the detailed account-by-account annual
23 depreciation rates agreed to as part of the Stipulation.

24 **Q. Did the Stipulating Parties agree on curve-life for underground storage**
25 **accounts?**

1 A. Yes. For Account 352.00 – Wells, the Stipulating Parties agreed to utilize a
2 R2.5-55 curve that reflected all the critical factors for life expectancies for
3 NW Natural's account.

4 **Q. Did the Stipulating Parties agree on net salvage rates for local storage**
5 **accounts?**

6 A. Yes. The net salvage rates for the local storage accounts in the
7 Depreciation Study ranged from -5 percent to -20 percent. The Stipulating
8 Parties agreed to utilize a 0% net salvage rate for Account 361—
9 STRUCTURES AND IMPROVEMENTS, which they agree appropriately
10 reflects the critical factors for this account. Net salvage rates for all other
11 local storage accounts remained unchanged from the Company's filed
12 Depreciation Study.

13 **Q. Did the Stipulating Parties agree on net salvage rates for transmission**
14 **plants?**

15 A. Yes. For Account 367 - Gas Mains, the Stipulating Parties agreed to -30
16 percent for this depreciation study, based upon the similarity of net salvage
17 characteristics between gas transmission and distribution, and the lack of
18 recent retirement activities.

19 **Q. Did the Stipulating Parties agree net salvage rates for distribution**
20 **assets?**

21 A. Yes. For Account 376.12-MAINS - HP 4" AND OVER under the
22 DISTRIBUTION PLANT, the Stipulating Parties agreed upon a net salvage
23 rate of -56 percent for this depreciation study.

24 **Q. When will NW Natural implement the new depreciation rates?**

25 A. NW Natural will change its depreciation rates on its books and move the
26 depreciation rates into customer rates at the time rates are effective in the
27 Company's next general rate case, which the Company is contemplating

1 filing in late 2017 or in 2018. In the event NW Natural does not file by
2 February 28, 2018, the Parties will meet to determine a process for NW
3 Natural to change the depreciation rates on its books and in customer rates
4 using the depreciation rates in Stipulation Exhibit A (Settlement Results).
5 The Parties will notify the Commission in this docket of how the Parties
6 intend to proceed following that meeting.

7 **Q. Does the Stipulation represent a complete resolution of the issues in**
8 **this docket?**

9 A. Yes.

10

11

JOINT RECOMMENDATION

12 **Q. What do the Parties recommend regarding the Stipulation?**

13 A. We recommend that the Commission adopt the Stipulation in its entirety.

14 **Q. Does this conclude your testimony?**

15 A. Yes.

WITNESS QUALIFICATIONS STATEMENT

NAME: JOHN J. SPANOS

EMPLOYER: GANNETT FLEMING VALUATION AND RATE CONSULTANTS,
LLC

TITLE: SENIOR VICE PRESIDENT

ADDRESS: 207 Senate Avenue, Camp Hill, Pennsylvania 17011

EDUCATION AND TRAINING Bachelor of Science degree in Industrial Management and Mathematics
from Carnegie-Mellon University

. Master of Business Administration from York College of Pennsylvania

Completed courses conducted by Depreciation Programs, Inc.:
“Techniques of Life Analysis,” “Techniques of Salvage and Depreciation
Analysis,” “Forecasting Life and Salvage,” “Modeling and Life Analysis
Using Simulation,” and “Managing a Depreciation Study.”

Completed “Introduction to Public Utility Accounting” program
conducted by the American Gas Association.

President – Society of Depreciation Professionals – 2012
Certified Depreciation Professional

WORK EXPERIENCE Gannett Fleming Valuation and Rate Consultants, LLC
Sr. Vice President - 2012-present
Vice President – 2000-2012
Manager, Depreciation and Valuation Studies – 1999-2000
Supervisor of Depreciation Studies – 1996-1999
Depreciation Analyst – 1986-1996

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: Expert Witness, Case Manager, Economist, Policy Analyst, Econometrician, and Principal Analyst

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.

Principal Analyst & Case Manager, Settlement Leader/Negotiator for Depreciation and Ratemaking:

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)
5. PGE Colstrip Coal-fired power plant Shutdown (UM 1809)

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 performed 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.

WITNESS QUALIFICATION STATEMENT

NAME: Bob Jenks

EMPLOYER: Oregon Citizens' Utility Board

TITLE: Executive Director

ADDRESS: 610 SW Broadway, Suite 400
Portland, OR 97205

EDUCATION: Bachelor of Science, Economics
Willamette University, Salem, OR

EXPERIENCE: Provided testimony or comments in a variety of OPUC dockets, including UE 88, UE 92, UM 903, UM 918, UE 102, UP 168, UT 125, UT 141, UE 115, UE 116, UE 137, UE 139, UE 161, UE 165, UE 167, UE 170, UE 172, UE 173, UE 207, UE 208, UE 210, UE 233, UE 246, UE 283, UG 152, UM 995, UM 1050, UM 1071, UM 1147, UM 1121, UM 1206, UM 1209, UM 1355, UM 1635, UM 1633, and UM 1654. Participated in the development of a variety of Least Cost Plans and PUC Settlement Conferences. Provided testimony to Oregon Legislative Committees on consumer issues relating to energy and telecommunications. Lobbied the Oregon Congressional delegation on behalf of CUB and the National Association of State Utility Consumer Advocates.

Between 1982 and 1991, worked for the Oregon State Public Interest Research Group, the Massachusetts Public Interest Research Group, and the Fund for Public Interest Research on a variety of public policy issues.

MEMBERSHIP: National Association of State Utility Consumer Advocates
Board of Directors, OSPIRG Citizen Lobby
Telecommunications Policy Committee, Consumer Federation of America
Electricity Policy Committee, Consumer Federation of America
Board of Directors (Public Interest Representative), NEEA

326 Fifth Street
Lake Oswego, Oregon
97034

Phone 503-303-4061 ofc
503-413-0156 cell
E-mail: efinklea@nwigu.org

Edward A. Finklea

Primary Professional Experience

Lead counsel for the Northwest Industrial Gas Users (“NWIGU”) from 1986 until 2008 in all regulatory interventions concerning Williams Gas Pipeline West and TransCanada Gas Transmission Northwest, and before state regulatory commissions concerning regulation of the five regional natural gas local distribution companies (“LDCs”).

Represented NWIGU before the Federal Energy Regulatory Commission in interstate pipeline rate and certificate proceedings, before the Oregon Public Utility Commission in natural gas rate and other regulatory proceedings, before the Washington Utilities and Transportation Commission in natural gas rate, safety and other regulatory proceedings and in proceedings before the Idaho Public Utility Commission..

Employment History

Executive Director for the Northwest Industrial Gas Users, August 2012 to present

Adjunct Professor at Northwestern School of Law, Lewis and Clark College “Law and Economics” Current

Senior Counsel, NiSource Corporate Services Inc.
Regulatory counsel to interstate pipeline, representing company before Federal Energy Regulatory Commission and advising company on federal regulatory compliance and business transactions. November, 2009 to November, 2011

Executive Director, Energy Action Northwest. Organization advocated for siting and permitting of interstate pipelines, liquefied natural gas terminals, and high voltage transmission projects in Oregon and Washington.

Represented organization before state legislature and in media relations. July, 2008 to October, 2009

Partner, Cable Huston Benedict Haagensen & Lloyd. Private law practice specializing in energy law. 2004 until July 2008.

Managing Partner, Energy Advocates LLP. Founded firm with offices in Portland, Oregon and Washington D.C. 1997-2003

Partner, Ball Janik LLP. 1994-1997

Partner, Heller Ehrman White & McAuliffe. 1990-1994

Partner, Tonkin Torp Galen Marmaduke & Booth. 1986-1990

Associate, Garvey Schubert. 1986-1988

Assistant General Counsel to Northwest Natural Gas handling state regulatory matters and providing counsel to the company on energy projects, including a landfill gas project. 1984-1986

Counsel to the Bonneville Power Administration litigating electric rate issues in administrative hearings and defending BPA before the Ninth Circuit Court of Appeals. 1982-84

Trial Attorney for the Federal Energy Regulatory Commission in hydroelectric licensing and co-generation regulation. 1981-82

Law Clerk for the Council on Wage and Price Stability, Executive Office of the President of the United States. 1980-81

**Summary of
Professional
Engagements**

Represented Columbia Gulf Transmission in general rate proceeding before the Federal Energy Regulatory Commission.

Represented applicants in proceeding before Federal Energy Regulatory Commission seeking authorization to provide incentive fuel mechanism and natural gas hub services.

Represented industrial gas consumers in contract negotiations for the purchase of natural gas commodity and interstate pipeline services.

Counsel to a medical center interconnecting a cogeneration plant with an investor-owned utility and advising client on long-term gas purchasing arrangement for electric generation.

Represented numerous clients to secure direct connections to interstate pipelines, addressing all regulatory issues involving certification of connecting facilities and operations of private pipelines.

Represented liquefied natural gas developer in governmental relations associated with securing federal and local permits for development of an energy project.

Represented customers in negotiating special contracts for purchasing natural gas distribution services from local utilities.

Represented public port authority in a pipeline siting issue.

Represented Eugene Water and Electric Board in select issues concerning Bonneville Power Administration.

Represented irrigation farmers in electric rate dispute involving FERC-licensed hydroelectric project before the Oregon Public Utility Commission.

Represented clients in trial court and appellate litigation on energy-related issues.

Represented industrial customer in anti-trust litigation and FERC refund proceedings stemming for 2000-2001 Western Energy Crisis.

Represented industrial electric customers in the restructuring of electric utilities in Oregon.

Represented an oil company shipper on an intrastate oil pipeline in rate proceeding before the Washington Utilities and Transportation Commission.

Individual clients while in private practice in addition to NWIGU included Alcoa, Armstrong World Industries, Blue Heron Paper, Boeing, ESCO, James River Paper (now Georgia Pacific) JR Simplot, Legacy Health Systems, MicroChip Technology, NorthernStar Natural Gas, Texaco Gas Marketing, Valley Medical Center, WaferTech, Wah Chang, West Linn Paper, and Weyerhaeuser.

Education

BA in Political Science from the University of Minnesota
1974

J.D. Northwestern School of Law, Lewis and Clark College
1980

**Professional
Memberships**

Admitted to practice law in the States of Oregon and Texas
and before several Federal district and appellate courts.

Adjunct Professor at Northwestern School of Law, Lewis and
Clark College "Northwest Energy Law". 1984 to 2005

Past Chairman of "Energy, Telecom and Utilities" section
of the Oregon State Bar.

Member of the Federal Energy Bar Association.

Lecturer: Buying and Selling Electric Power in the West,
Law Seminars International Conference. Presentations on
natural gas industry. 2004 to 2009.

NORTHWEST NATURAL GAS COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO GAS PLANT AS OF DECEMBER 31, 2015 SETTLEMENT #1

DEPRECIABLE GROUP (1)		SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK DEPRECIATION RESERVE (5)	FUTURE ACCRUALS (6)	CALCULATED ANNUAL		COMPOSITE REMAINING LIFE (9)=(6)/(7)
							ACCRUAL AMOUNT (7)	ACCRUAL RATE (8)=(7)/(4)	
DEPRECIABLE GAS PLANT									
INTANGIBLE PLANT									
303.1	MISCELLANEOUS INTANGIBLE PLANT - SOFTWARE	15-SQ	0	57,110,816.52	20,771,445	36,339,372	3,871,516	6.78	9.4
303.2	MISCELLANEOUS INTANGIBLE PLANT - CUSTOMER INFORMATION SYST	15-SQ	0	32,409,597.11	32,386,120	23,477	1,878	0.01	12.5
303.3	MISCELLANEOUS INTANGIBLE PLANT - INDUSTRIAL AND COMMERCIAL	10-SQ	0	4,146,951.00	4,146,951	0	0	-	-
303.4	MISCELLANEOUS INTANGIBLE PLANT - CRMS	5-SQ	0	682,892.55	529,083	153,810	74,811	10.96	2.1
TOTAL INTANGIBLE PLANT				94,350,257.18	57,833,599	36,516,659	3,948,205	4.18	9.3
OIL GAS FACILITIES									
305.5	STRUCTURES AND IMPROVEMENTS - OTHER	FULLY ACCRUED		13,156.00	13,814	0	0	-	-
311.7	LIQUEFIED PETROLEUM GAS EQUIPMENT	FULLY ACCRUED		4,033.00	8,066	(4,033)	0	-	-
311.8	LIQUEFIED PETROLEUM GAS EQUIPMENT	FULLY ACCRUED		4,209.00	6,585	(2,376)	0	-	-
TOTAL OIL GAS FACILITIES				21,398.00	28,465	(6,409)	0	-	-
OTHER PRODUCTION FACILITIES									
305.11	STRUCTURES AND IMPROVEMENTS - GAS PRODUCTION	FULLY ACCRUED		8,320.00	8,736	0	0	-	-
305.17	STRUCTURES AND IMPROVEMENTS - MIXING STATION	FULLY ACCRUED		46,587.00	51,246	0	0	-	-
318.3	LIGHT OIL REFINING	FULLY ACCRUED		144,896.00	152,141	0	0	-	-
318.5	TAR PROCESSING	FULLY ACCRUED		243,551.00	255,729	0	0	-	-
319	GAS MIXING EQUIPMENT	FULLY ACCRUED		185,448.00	194,720	0	0	-	-
TOTAL OTHER PRODUCTION FACILITIES				628,802.00	662,572	0	0	-	-
UNDERGROUND STORAGE PLANT									
350.2	LAND RIGHTS	70-R4	0	109,624.94	25,143	84,482	1,567	1.43	53.9
351	STRUCTURES AND IMPROVEMENTS	60-R3	0	7,208,244.63	2,542,655	4,665,590	107,894	1.50	43.2
352	WELLS	55-R2.5	0	36,987,527.47	14,224,099	22,763,428	553,219	1.50	41.1
352.1	STORAGE LEASEHOLDS AND RIGHTS	55-S2	0	3,939,511.52	1,516,997	2,422,515	65,713	1.67	36.9
352.2	RESERVOIRS	55-R2.5	0	10,834,054.54	2,976,187	7,857,868	187,441	1.73	41.9
352.3	NONRECOVERABLE GAS	55-S2.5	0	6,440,889.82	3,198,707	3,242,183	101,043	1.57	32.1
353	LINES	55-S2.5 (15)		8,201,963.89	3,226,474	6,205,784	168,887	2.06	36.7
354.1	COMPRESSOR STATION EQUIPMENT - TURBINE 1	50-R3 (10)		4,154,699.66	2,919,205	1,650,965	62,642	1.51	26.4
354.2	COMPRESSOR STATION EQUIPMENT - TURBINE 2	50-R3 (10)		4,154,699.00	2,992,842	1,577,327	61,470	1.48	25.7
354.3	COMPRESSOR STATION EQUIPMENT - TURBINE 3	50-R3 (10)		19,640,514.36	8,920,990	12,683,576	364,670	1.86	34.8
354.4	COMPRESSOR STATION EQUIPMENT - TURBINE 4	50-R3 (10)		13,667,705.75	5,164,074	9,870,402	264,382	1.93	37.3
354.5	COMPRESSOR STATION EQUIPMENT - TURBINE 5	50-R3 (10)		2,587,036.93	733,310	2,112,431	51,933	2.01	40.7
354.6	COMPRESSOR STATION EQUIPMENT - TURBINE 6	50-R3 (10)		257,302.38	3,732	279,301	5,641	2.19	49.5
355	MEASURING AND REGULATING EQUIPMENT	45-S2 (10)		15,967,871.63	5,996,064	11,568,595	362,161	2.27	31.9
356	PURIFICATION EQUIPMENT	45-S2.5 (5)		297,363.00	217,696	94,535	4,086	1.37	23.1
357	OTHER EQUIPMENT	30-R4	0	1,395,284.93	805,728	589,557	30,288	2.17	19.5
TOTAL UNDERGROUND STORAGE PLANT				135,844,294.45	55,463,903	87,668,539	2,393,037	1.76	36.6

NORTHWEST NATURAL GAS COMPANY

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DEPRECIABLE GROUP (1)		SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK DEPRECIATION RESERVE (5)	FUTURE ACCRUALS (6)	CALCULATED ANNUAL		COMPOSITE REMAINING LIFE (9)=(6)/(7)	
							ACCRUAL AMOUNT (7)	ACCRUAL RATE (8)=(7)/(4)		
LOCAL STORAGE PLANT										
361	STRUCTURES AND IMPROVEMENTS									
	LINNTON	60-R3	*	0	4,594,791.02	1,929,918	2,664,873	173,977	3.79	15.3
	NEWPORT	60-R3	*	0	4,656,739.38	2,393,826	2,262,913	201,698	4.33	11.2
	OTHER	55-S2		0	26,757.00	10,494	16,263	474	1.77	34.3
	TOTAL STRUCTURES AND IMPROVEMENTS				9,278,287.40	4,334,238	4,944,049	376,149	4.05	13.1
362	GAS HOLDERS									
	LINNTON	60-R3	*	(20)	2,744,403.58	2,262,406	1,030,878	70,773	2.58	14.6
	NEWPORT	60-R3	*	(20)	5,791,956.36	5,438,575	1,511,773	140,857	2.43	10.7
	OTHER	60-R3		(20)	1,600.14	1,172	748	16	1.00	46.8
	TOTAL GAS HOLDERS				8,537,960.08	7,702,153	2,543,399	211,646	2.48	12.0
363.1	LIQUEFACTION EQUIPMENT									
	LINNTON	50-R1.5	*	(5)	2,975,510.33	2,549,869	574,417	39,027	1.31	14.7
	NEWPORT	50-R1.5	*	(5)	7,308,110.69	7,127,677	545,839	49,060	0.67	11.1
	TOTAL LIQUEFACTION EQUIPMENT				10,283,621.02	9,677,546	1,120,256	88,087	0.86	12.7
363.2	VAPORIZING EQUIPMENT									
	LINNTON	50-S2.5	*	(5)	2,683,660.37	2,624,711	193,132	12,582	0.47	15.3
	NEWPORT	50-S2.5	*	(5)	3,664,362.12	2,612,391	1,235,189	113,272	3.09	10.9
	TOTAL VAPORIZING EQUIPMENT				6,348,022.49	5,237,102	1,428,321	125,854	1.98	11.4
363.3	COMPRESSOR EQUIPMENT									
	LINNTON	30-R1.5	*	(5)	180,903.23	206,897	(16,949)	0	-	-
	NEWPORT	30-R1.5	*	(5)	1,390,925.55	312,641	1,147,831	105,495	7.58	10.9
	TOTAL COMPRESSOR EQUIPMENT				1,571,828.78	519,538	1,130,882	105,495	6.71	10.7
363.4	MEASURING AND REGULATING EQUIPMENT									
	LINNTON	45-R2.5	*	(5)	1,247,664.71	604,263	705,785	49,779	3.99	14.2
	NEWPORT	45-R2.5	*	(5)	113,414.00	117,469	1,616	151	0.13	10.7
	TOTAL MEASURING AND REGULATING EQUIPMENT				1,361,078.71	721,732	707,401	49,930	3.67	14.2
363.5	CNG REFUELING FACILITIES	28-R3		(5)	3,051,295.49	1,328,797	1,875,063	80,014	2.62	23.4
363.6	LNG REFUELING FACILITIES	40-R2.5		(5)	739,473.00	739,473	36,974	1,732	0.23	21.3
TOTAL LOCAL STORAGE PLANT					41,171,566.97	30,260,579	13,786,345	1,038,907	2.52	13.3
TRANSMISSION PLANT										
365.2	LAND RIGHTS	70-R4		0	6,455,176.86	1,764,329	4,690,848	98,229	1.52	47.8
366.3	STRUCTURES AND IMPROVEMENTS	55-R3		0	1,041,984.12	276,967	765,017	18,234	1.75	42.0

NORTHWEST NATURAL GAS COMPANY

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DEPRECIABLE GROUP (1)		SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK DEPRECIATION RESERVE (5)	FUTURE ACCRUALS (6)	CALCULATED ANNUAL		COMPOSITE REMAINING LIFE (9)=(6)/(7)
							ACCRUAL AMOUNT (7)	ACCRUAL RATE (8)=(7)/(4)	
367	MAINS	65-R3	(30)	146,337,788.55	23,351,961	166,887,164	2,756,613	1.88	60.5
367.21	MAINS - NORTH MIST	65-R3	(30)	1,994,582.39	1,029,831	1,563,126	34,256	1.72	45.6
367.22	MAINS - SOUTH MIST	65-R3	(30)	14,949,264.00	9,933,703	9,500,340	236,996	1.59	40.1
367.23	MAINS - SOUTH MIST	65-R3	(30)	34,881,341.36	11,826,299	33,519,445	677,448	1.94	49.5
367.24	MAINS - 11.7M S MIST	65-R3	(30)	17,466,181.89	4,819,695	17,886,341	338,244	1.94	52.9
367.25	MAINS - 12M NORTH S MIST	65-R3	(30)	18,613,651.15	4,821,672	19,376,074	363,412	1.95	53.3
367.26	MAINS - 38M NORTH S MIST	65-R3	(30)	68,232,675.58	17,873,936	70,828,542	1,328,855	1.95	53.3
368	COMPRESSOR STATION EQUIPMENT	45-R3	(5)	7,723,454.21	1,848,512	6,261,115	166,033	2.15	37.7
369	MEASURING AND REGULATING EQUIPMENT	45-R2.5	(8)	3,969,550.28	1,338,603	2,948,511	84,653	2.13	34.8
TOTAL TRANSMISSION PLANT				321,665,650.39	78,885,508	334,226,523	6,102,973	1.90	54.8
DISTRIBUTION PLANT									
374.2	LAND RIGHTS	70-R3	0	1,883,762.30	1,279,056	604,706	10,532	0.56	57.4
375	STRUCTURES AND IMPROVEMENTS	35-R0.5	0	80,217.00	80,217	0	0	-	-
376.11	MAINS - HP 4" AND LESS	65-R2.5	(75)	550,689,047.46	299,268,830	664,437,003	13,961,139	2.54	47.6
376.12	MAINS - HP 4" AND OVER	65-R2.5	(56)	505,679,049.03	200,807,579	588,051,737	11,707,993	2.32	50.2
377	COMPRESSOR STATION EQUIPMENT	35-S2	(5)	818,380.00	611,329	247,970	10,843	1.32	22.9
378	MEASURING AND REGULATING STATION EQUIPMENT - GENERAL	50-R2.5	(20)	31,676,138.08	10,827,326	27,184,040	691,959	2.18	39.3
379	MEASURING AND REGULATING STATION EQUIPMENT - CITY GATE	45-R2	(20)	5,738,811.13	1,784,838	5,101,735	121,789	2.12	41.9
380	SERVICES	58-R2	(80)	710,138,948.30	376,515,207	901,734,900	20,348,276	2.87	44.3
381	METERS	43-S0	0	83,691,721.21	21,166,102	62,525,619	1,866,437	2.23	33.5
381.1	METERS - ELECTRIC	15-R4	0	1,541,674.51	984,268	557,407	44,491	2.89	12.5
381.2	METERS - ERT	16-R2.5	0	40,477,375.90	16,571,371	23,906,005	2,368,813	5.85	10.1
382	METER INSTALLATIONS	32-S0.5	0	59,749,260.42	8,829,443	50,919,817	2,890,225	4.84	17.6
382.1	METER INSTALLATIONS - ELECTRIC	14-R3	0	481,019.77	40,534	440,486	41,438	8.61	10.6
382.2	METER INSTALLATIONS - ERT	20-R2	0	9,473,169.55	4,397,814	5,075,356	369,587	3.90	13.7
383	HOUSE REGULATORS	35-S2	0	1,484,677.80	170,017	1,314,661	43,339	2.92	30.3
387.1	OTHER EQUIPMENT - CATHODIC PROTECTION TESTING	30-S3	0	173,858.98	140,475	33,384	1,433	0.82	23.3
387.2	OTHER EQUIPMENT - CALORIMETERS AT GATE STATION	23-S0.5	0	96,424.00	96,424	0	0	-	-
387.3	OTHER EQUIPMENT - METER TESTING EQUIPMENT	25-S4	0	72,671.00	72,671	0	0	-	-
TOTAL DISTRIBUTION PLANT				2,003,946,206.44	943,643,501	2,332,134,826	54,478,294	2.72	42.8
GENERAL PLANT									
390	STRUCTURES AND IMPROVEMENTS	45-S0	(4)	58,597,461.86	8,332,868	52,608,492	1,332,861	2.27	39.5
390.1	STRUCTURES AND IMPROVEMENTS - SOURCE CONTROL PLANT	45-S0	(4)	18,590,294.85	2,291,003	17,042,904	399,318	2.15	42.7
391.1	OFFICE FURNITURE AND EQUIPMENT								
	FULLY ACCRUED			3,304,510.00	3,304,510	0	0	-	-
	AMORTIZED	20-SQ	0	7,123,378.41	2,400,985	4,722,393	356,208	5.00	13.3
	TOTAL ACCOUNT 391.1			10,427,888.41	5,705,495	4,722,393	356,208	3.42	13.3
391.2	OFFICE FURNITURE AND EQUIPMENT - COMPUTERS								
	FULLY ACCRUED			2,730,228.76	2,730,229	0	0	-	-
	AMORTIZED	5-SQ	0	13,288,888.59	5,599,340	7,689,549	2,657,726	20.00	2.9
	TOTAL ACCOUNT 391.2			16,019,117.35	8,329,569	7,689,549	2,657,726	16.59	2.9

NORTHWEST NATURAL GAS COMPANY

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DEPRECIABLE GROUP (1)		SURVIVOR CURVE (2)	NET SALVAGE PERCENT (3)	ORIGINAL COST (4)	BOOK DEPRECIATION RESERVE (5)	FUTURE ACCRUALS (6)	CALCULATED ANNUAL		COMPOSITE REMAINING LIFE (9)=(6)/(7)
							ACCRUAL AMOUNT (7)	ACCRUAL RATE (8)=(7)/(4)	
392	TRANSPORTATION EQUIPMENT	13-L1.5	10	34,498,851.10	9,599,643	21,449,323	2,367,924	6.86	9.1
393	STORES EQUIPMENT	FULLY ACCRUED		119,406.00	119,406	0	0	-	-
394	TOOLS, SHOP AND GARAGE EQUIPMENT			2,898,854.00	2,898,854	0	0	-	-
	FULLY ACCRUED			13,834,597.86	6,839,875	6,994,723	553,326	4.00	12.6
	AMORTIZED	25-SQ	0	16,733,451.86	9,738,729	6,994,723	553,326	3.31	12.6
	TOTAL ACCOUNT 394								
395	LABORATORY EQUIPMENT			68,016.00	68,016	0	0	-	-
	FULLY ACCRUED			277.00	229	48	14	5.00	3.4
	AMORTIZED	20-SQ	0	68,293.00	68,245	48	14	0.02	3.4
	TOTAL ACCOUNT 395								
396	POWER OPERATED EQUIPMENT	17-S0.5	20	9,170,317.89	3,277,525	4,058,729	312,193	3.40	13.0
397	COMMUNICATION EQUIPMENT	15-SQ	0	88,322.23	38,805	49,517	5,889	6.67	8.4
397.1	COMMUNICATION EQUIPMENT - MOBILE			233,223.04	233,223	0	0	-	-
	FULLY ACCRUED			242,398.13	191,200	51,198	24,243	10.00	2.1
	AMORTIZED	10-SQ	0	475,621.17	424,423	51,198	24,243	5.10	2.1
	TOTAL ACCOUNT 397.1								
397.2	COMMUNICATION EQUIPMENT - NON-MOBILE AND TELEMETER			497,358.00	497,358	0	0	-	-
	FULLY ACCRUED			1,193,495.65	1,106,150	87,346	79,659	6.67	1.1
	AMORTIZED	15-SQ	0	1,690,853.65	1,603,508	87,346	79,659	4.71	1.1
	TOTAL ACCOUNT 397.2								
397.3	COMMUNICATION EQUIPMENT - TELEMETER OTHER			2,567,638.00	2,567,638	0	0	-	-
	FULLY ACCRUED			2,121,913.71	765,420	1,356,494	141,569	6.67	9.6
	AMORTIZED	15-SQ	0	4,689,551.71	3,333,058	1,356,494	141,569	3.02	9.6
	TOTAL ACCOUNT 397.3								
397.4	COMMUNICATION EQUIPMENT - TELEMETER MICROWAVE			497,289.79	497,290	0	0	-	-
	FULLY ACCRUED			1,149,505.47	380,830	768,675	76,634	6.67	10.0
	AMORTIZED	15-SQ	0	1,646,795.26	878,120	768,675	76,634	4.65	10.0
	TOTAL ACCOUNT 397.4								
397.5	COMMUNICATION EQUIPMENT - TELEPHONE	10-SQ	0	490,741.79	94,545	396,197	49,074	10.00	8.1
398.1	MISCELLANEOUS EQUIPMENT - PRINT SHOP			78,890.00	78,890	0	0	-	-
	FULLY ACCRUED			4,359.31	1,889	2,470	291	6.67	8.5
	AMORTIZED	15-SQ	0	83,249.31	80,779	2,470	291	0.35	8.5
	TOTAL ACCOUNT 398.1								
398.2	MISCELLANEOUS EQUIPMENT - KITCHEN	15-SQ	0	12,812.44	4,700	8,112	854	6.67	9.5
398.3	MISCELLANEOUS EQUIPMENT - JANITORIAL	FULLY ACCRUED		14,873.00	14,873	0	0	-	-
398.4	MISCELLANEOUS EQUIPMENT - LEASED BUILDINGS	FULLY ACCRUED		10,120.00	10,120	0	0	-	-
398.5	MISCELLANEOUS EQUIPMENT - OTHER	FULLY ACCRUED		66,739.00	66,739	0	0	-	-
TOTAL GENERAL PLANT				173,494,761.88	54,012,153	117,286,170	8,357,783	4.82	14.0

NORTHWEST NATURAL GAS COMPANY

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						ACCRUAL AMOUNT (7)	ACCRUAL RATE (8)=(7)/(4)	
RESERVE ADJUSTMENT FOR AMORTIZATION								
391.1	OFFICE FURNITURE AND EQUIPMENT			771,790		(154,358)	**	
391.2	OFFICE FURNITURE AND EQUIPMENT - COMPUTERS			5,011,650		(1,002,330)	**	
394.0	TOOLS, SHOP AND GARAGE EQUIPMENT			575,603		(115,121)	**	
395.0	LABORATORY EQUIPMENT			48		(10)	**	
397.0	COMMUNICATION EQUIPMENT			(11,695)		2,339	**	
397.1	COMMUNICATION EQUIPMENT - MOBILE			(20,033)		4,007	**	
397.2	COMMUNICATION EQUIPMENT - NON-MOBILE AND TELEMETER			87,346		(17,469)	**	
397.3	COMMUNICATION EQUIPMENT - TELEMETER OTHER			(341,606)		68,321	**	
397.4	COMMUNICATION EQUIPMENT - TELEMETER MICROWAVE			55,013		(11,003)	**	
397.5	COMMUNICATION EQUIPMENT - TELEPHONE			77,953		(15,591)	**	
398.1	MISCELLANEOUS EQUIPMENT - PRINT SHOP			2,470		(494)	**	
398.2	MISCELLANEOUS EQUIPMENT - KITCHEN			(1,614)		323	**	
TOTAL RESERVE ADJUSTMENT FOR AMORTIZATION				6,206,925		(1,241,386)		
TOTAL DEPRECIABLE GAS PLANT			2,771,122,937.31	1,226,997,205	2,921,612,653	75,077,813	2.71	38.9
NONDEPRECIABLE GAS PLANT								
301	ORGANIZATION		1,174.00					
302	FRANCHISES AND CONSENTS		83,621.00					
304.1	LAND		24,998.00					
350.1	LAND		106,549.00					
360.11	LAND - LNG LINNTON		83,598.00					
360.12	LAND - LNG NEWPORT		536,675.00					
360.2	LAND - OTHER		106,557.00					
365.1	LAND		89,772.00					
374.1	LAND		86,775.00					
389	LAND		11,633,851.00	437,351				
TOTAL NONDEPRECIABLE GAS PLANT			12,753,570.00	437,351				
TOTAL GAS PLANT IN SERVICE			2,783,876,507.31	1,227,434,556	2,921,612,653	75,077,813		

* INDICATES INTERIM SURVIVOR CURVE. EACH UNIT HAS A UNIQUE TERMINAL DATE.
 ** 5 YEAR AMORTIZATION OF RESERVE RELATED TO AMORTIZATION ACCOUNTING.

NORTHWEST NATURAL GAS COMPANY

UM 1808

Exhibit 105. Table 2. Comparison of Estimated Survivor Curves and Net Salvage Rates

GAS PLANT AS OF DECEMBER 31, 2015

<u>DEPRECIABLE GROUP</u>	<u>2015 DEPRECIATION STUDY AS FILED SURVIVOR CURVE</u>	<u>2015 DEPRECIATION STUDY AS FILED NET SALVAGE PERCENT</u>	<u>SETTLEMENT AGREEMENT SURVIVOR CURVE</u>	<u>SETTLEMENT AGREEMENT NET SALVAGE PERCENT</u>			
(1)	(2)	(3)					
DEPRECIABLE GAS PLANT							
INTANGIBLE PLANT							
303.1	MISCELLANEOUS INTANGIBLE PLANT - SOFTWARE	15-SQ	0	15-SQ	0		
303.2	MISCELLANEOUS INTANGIBLE PLANT - CUSTOMER I	15-SQ	0	15-SQ	0		
303.3	MISCELLANEOUS INTANGIBLE PLANT - INDUSTRIAL	10-SQ	0	10-SQ	0		
303.4	MISCELLANEOUS INTANGIBLE PLANT - CRMS	5-SQ	0	5-SQ	0		
TOTAL INTANGIBLE PLANT							
OIL GAS FACILITIES							
305.5	STRUCTURES AND IMPROVEMENTS - OTHER	FULLY ACCRUED		FULLY ACCRUED			
311.7	LIQUEFIED PETROLEUM GAS EQUIPMENT	FULLY ACCRUED		FULLY ACCRUED			
311.8	LIQUEFIED PETROLEUM GAS EQUIPMENT	FULLY ACCRUED		FULLY ACCRUED			
TOTAL OIL GAS FACILITIES							
OTHER PRODUCTION FACILITIES							
305.11	STRUCTURES AND IMPROVEMENTS - GAS PRODUC	FULLY ACCRUED		FULLY ACCRUED			
305.17	STRUCTURES AND IMPROVEMENTS - MIXING STATI	FULLY ACCRUED		FULLY ACCRUED			
318.3	LIGHT OIL REFINING	FULLY ACCRUED		FULLY ACCRUED			
318.5	TAR PROCESSING	FULLY ACCRUED		FULLY ACCRUED			
319	GAS MIXING EQUIPMENT	FULLY ACCRUED		FULLY ACCRUED			
TOTAL OTHER PRODUCTION FACILITIES							
UNDERGROUND STORAGE PLANT							
350.2	LAND RIGHTS	70-R4	0	70-R4	0		
351	STRUCTURES AND IMPROVEMENTS	60-R3	0	60-R3	0		
352	WELLS	50-S3	0	55-R2.5	0		
352.1	STORAGE LEASEHOLDS AND RIGHTS	55-S2	0	55-S2	0		
352.2	RESERVOIRS	50-S2.5	0	55-R2.5	0		
352.3	NONRECOVERABLE GAS	55-S2.5	0	55-S2.5	0		
353	LINES	55-S2.5	(15)	55-S2.5	(15)		
354.1	COMPRESSOR STATION EQUIPMENT - TURBINE 1	50-R3	(10)	50-R3	(10)		
354.2	COMPRESSOR STATION EQUIPMENT - TURBINE 2	50-R3	(10)	50-R3	(10)		
354.3	COMPRESSOR STATION EQUIPMENT - TURBINE 3	50-R3	(10)	50-R3	(10)		
354.4	COMPRESSOR STATION EQUIPMENT - TURBINE 4	50-R3	(10)	50-R3	(10)		
354.5	COMPRESSOR STATION EQUIPMENT - TURBINE 5	50-R3	(10)	50-R3	(10)		
354.6	COMPRESSOR STATION EQUIPMENT - TURBINE 6	50-R3	(10)	50-R3	(10)		
355	MEASURING AND REGULATING EQUIPMENT	45-S2	(10)	45-S2	(10)		
356	PURIFICATION EQUIPMENT	45-S2.5	(5)	45-S2.5	(5)		
357	OTHER EQUIPMENT	30-R4	0	30-R4	0		
TOTAL UNDERGROUND STORAGE PLANT							
LOCAL STORAGE PLANT							
361	STRUCTURES AND IMPROVEMENTS						
	LINNTON	60-R3	*	(5)	60-R3	*	0
	NEWPORT	60-R3	*	(5)	60-R3	*	0
	OTHER	55-S2		(5)	55-S2		0
	TOTAL STRUCTURES AND IMPROVEMENTS						
362	GAS HOLDERS						

	LINNTON	60-R3	*	(20)	60-R3	*	(20)
	NEWPORT	60-R3	*	(20)	60-R3	*	(20)
	OTHER	60-R3		(20)	60-R3		(20)
	TOTAL GAS HOLDERS						
363.1	LIQUEFACTION EQUIPMENT						
	LINNTON	50-R1.5	*	(5)	50-R1.5	*	(5)
	NEWPORT	50-R1.5	*	(5)	50-R1.5	*	(5)
	TOTAL LIQUEFACTION EQUIPMENT						
363.2	VAPORIZING EQUIPMENT						
	LINNTON	50-S2.5	*	(5)	50-S2.5	*	(5)
	NEWPORT	50-S2.5	*	(5)	50-S2.5	*	(5)
	TOTAL VAPORIZING EQUIPMENT						
363.3	COMPRESSOR EQUIPMENT						
	LINNTON	30-R1.5	*	(5)	30-R1.5	*	(5)
	NEWPORT	30-R1.5	*	(5)	30-R1.5	*	(5)
	TOTAL COMPRESSOR EQUIPMENT						
363.4	MEASURING AND REGULATING EQUIPMENT						
	LINNTON	45-R2.5	*	(5)	45-R2.5	*	(5)
	NEWPORT	45-R2.5	*	(5)	45-R2.5	*	(5)
	TOTAL MEASURING AND REGULATING EQUIPMENT						
363.5	CNG REFUELING FACILITIES						
363.6	LNG REFUELING FACILITIES						

TOTAL LOCAL STORAGE PLANT

TRANSMISSION PLANT

365.2	LAND RIGHTS	70-R4		0	70-R4		0
366.3	STRUCTURES AND IMPROVEMENTS	55-R3		0	55-R3		0
367	MAINS	65-R3		(40)	65-R3		(30)
367.21	MAINS - NORTH MIST	65-R3		(40)	65-R3		(30)
367.22	MAINS - SOUTH MIST	65-R3		(40)	65-R3		(30)
367.23	MAINS - SOUTH MIST	65-R3		(40)	65-R3		(30)
367.24	MAINS - 11.7M S MIST	65-R3		(40)	65-R3		(30)
367.25	MAINS - 12M NORTH S MIST	65-R3		(40)	65-R3		(30)
367.26	MAINS - 38M NORTH S MIST	65-R3		(40)	65-R3		(30)
368	COMPRESSOR STATION EQUIPMENT	45-R3		(5)	45-R3		(5)
369	MEASURING AND REGULATING EQUIPMENT	45-R2.5		(10)	45-R2.5		(8)

TOTAL TRANSMISSION PLANT

DISTRIBUTION PLANT

374.2	LAND RIGHTS	70-R3		0	70-R3		0
375	STRUCTURES AND IMPROVEMENTS	35-R0.5		0	35-R0.5		0
376.11	MAINS - HP 4" AND LESS	65-R2.5		(75)	65-R2.5		(75)
376.12	MAINS - HP 4" AND OVER	65-R2.5		(60)	65-R2.5		(56)
377	COMPRESSOR STATION EQUIPMENT	35-S2		(5)	35-S2		(5)
378	MEASURING AND REGULATING STATION EQUIPMEN	50-R2.5		(20)	50-R2.5		(20)
379	MEASURING AND REGULATING STATION EQUIPMEN	45-R2		(20)	45-R2		(20)
380	SERVICES	58-R2		(80)	58-R2		(80)
381	METERS	43-S0		0	43-S0		0
381.1	METERS - ELECTRIC	15-R4		0	15-R4		0
381.2	METERS - ERT	16-R2.5		0	16-R2.5		0
382	METER INSTALLATIONS	32-S0.5		0	32-S0.5		0
382.1	METER INSTALLATIONS - ELECTRIC	14-R3		0	14-R3		0
382.2	METER INSTALLATIONS - ERT	18-R2.5		0	20-R2		0
383	HOUSE REGULATORS	35-S2		0	35-S2		0
387.1	OTHER EQUIPMENT - CATHODIC PROTECTION TEST	30-S3		0	30-S3		0
387.2	OTHER EQUIPMENT - CALORIMETERS AT GATE STA'	23-S0.5		0	23-S0.5		0
387.3	OTHER EQUIPMENT - METER TESTING EQUIPMENT	25-S4		0	25-S4		0

TOTAL DISTRIBUTION PLANT

GENERAL PLANT

390	STRUCTURES AND IMPROVEMENTS	45-S0	(5)	45-S0	(4)
390.1	STRUCTURES AND IMPROVEMENTS - SOURCE CON	45-S0	(5)	45-S0	(4)
391.1	OFFICE FURNITURE AND EQUIPMENT FULLY ACCRUED AMORTIZED	20-SQ	0	20-SQ	0
	TOTAL ACCOUNT 391.1				
391.2	OFFICE FURNITURE AND EQUIPMENT - COMPUTERS FULLY ACCRUED AMORTIZED	5-SQ	0	5-SQ	0
	TOTAL ACCOUNT 391.2				
392	TRANSPORTATION EQUIPMENT	13-L1.5	10	13-L1.5	10
393	STORES EQUIPMENT		FULLY ACCRUED		FULLY ACCRUED
394	TOOLS, SHOP AND GARAGE EQUIPMENT FULLY ACCRUED AMORTIZED	25-SQ	0	25-SQ	0
	TOTAL ACCOUNT 394				
395	LABORATORY EQUIPMENT FULLY ACCRUED AMORTIZED	20-SQ	0	20-SQ	0
	TOTAL ACCOUNT 395				
396	POWER OPERATED EQUIPMENT	17-S0.5	20	17-S0.5	20
397	COMMUNICATION EQUIPMENT	15-SQ	0	15-SQ	0
397.1	COMMUNICATION EQUIPMENT - MOBILE FULLY ACCRUED AMORTIZED	10-SQ	0	10-SQ	0
	TOTAL ACCOUNT 397.1				
397.2	COMMUNICATION EQUIPMENT - NON-MOBILE AND TELEMETER FULLY ACCRUED AMORTIZED	15-SQ	0	15-SQ	0
	TOTAL ACCOUNT 397.2				
397.3	COMMUNICATION EQUIPMENT - TELEMETER OTHER FULLY ACCRUED AMORTIZED	15-SQ	0	15-SQ	0
	TOTAL ACCOUNT 397.3				
397.4	COMMUNICATION EQUIPMENT - TELEMETER MICROWAVE FULLY ACCRUED AMORTIZED	15-SQ	0	15-SQ	0
	TOTAL ACCOUNT 397.4				
397.5	COMMUNICATION EQUIPMENT - TELEPHONE	10-SQ	0	10-SQ	0
398.1	MISCELLANEOUS EQUIPMENT - PRINT SHOP FULLY ACCRUED AMORTIZED	15-SQ	0	15-SQ	0
	TOTAL ACCOUNT 398.1				
398.2	MISCELLANEOUS EQUIPMENT - KITCHEN	15-SQ	0	15-SQ	0
398.3	MISCELLANEOUS EQUIPMENT - JANITORIAL		FULLY ACCRUED		FULLY ACCRUED
398.4	MISCELLANEOUS EQUIPMENT - LEASED BUILDINGS		FULLY ACCRUED		FULLY ACCRUED
398.5	MISCELLANEOUS EQUIPMENT - OTHER		FULLY ACCRUED		FULLY ACCRUED

TOTAL GENERAL PLANT**RESERVE ADJUSTMENT FOR AMORTIZATION**

391.1	OFFICE FURNITURE AND EQUIPMENT
391.2	OFFICE FURNITURE AND EQUIPMENT - COMPUTERS
394.0	TOOLS, SHOP AND GARAGE EQUIPMENT
395.0	LABORATORY EQUIPMENT

397.0	COMMUNICATION EQUIPMENT
397.1	COMMUNICATION EQUIPMENT - MOBILE
397.2	COMMUNICATION EQUIPMENT - NON-MOBILE AND TELEMETER
397.3	COMMUNICATION EQUIPMENT - TELEMETER OTHER
397.4	COMMUNICATION EQUIPMENT - TELEMETER MICROWAVE
397.5	COMMUNICATION EQUIPMENT - TELEPHONE
398.1	MISCELLANEOUS EQUIPMENT - PRINT SHOP
398.2	MISCELLANEOUS EQUIPMENT - KITCHEN

TOTAL RESERVE ADJUSTMENT FOR AMORTIZATION

TOTAL DEPRECIABLE GAS PLANT

NONDEPRECIABLE GAS PLANT

301	ORGANIZATION
302	FRANCHISES AND CONSENTS
304.1	LAND
350.1	LAND
360.11	LAND - LNG LINNTON
360.12	LAND - LNG NEWPORT
360.2	LAND - OTHER
365.1	LAND
374.1	LAND
389	LAND

TOTAL NONDEPRECIABLE GAS PLANT

TOTAL GAS PLANT IN SERVICE

* INDICATES INTERIM SURVIVOR CURVE. EACH UNIT HAS A UNIQUE TERMINAL DATE.

** 5 YEAR AMORTIZATION OF RESERVE RELATED TO AMORTIZATION ACCOUNTING.

*** NEW ADDITIONS AS OF JANUARY 1, 2016 WILL UTILIZE AN ACCRUAL RATE CONSISTENT WITH THE AMORTIZATION PERIOD.