Oregon
Kate Brown, Governor

**Public Utility Commission**
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September 14, 2016

***Via Electronic Filing and US Mail***

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

**RE: Docket No. UE 308 – In the Matter of**
**PORTLAND GENERAL ELECTRIC COMPANY,**
**2017 Annual Power Cost Update Tariff (Schedule 125).**
**(Long-Term Hedging)**

Enclosed for electronic filing are the following:

UE 308 Exhibits 504a, 504b, 505 and 506.

Confidential Exhibits 504b, 505 and 506 (CD included) are being mailed to parties who have signed Protective Order No. 16-137.

*/s/ Kay Barnes*

Kay Barnes
PUC- Utility Program
(503) 378-5763
kay.barnes@state.or.us

CERTIFICATE OF SERVICE

UE 308

I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 14th day of September, 2016 at Salem, Oregon

Kay Barnes

Kay Barnes
Public Utility Commission
201 High Street SE Suite 100
Salem, Oregon 97301-3612
Telephone: (503) 378-5763

| | |
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CASE: UE 308
WITNESS: LANCE KAUFMAN

# PUBLIC UTILITY COMMISSION
# OF
# OREGON

# STAFF EXHIBIT 504a

**September 14, 2016**

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 031**
**Dated July 14, 2016**

**Request:**

**Does PGE anticipate taking delivery of any gas produced by the proposed [long-term gas] partnership? Please explain.**

*Response:*

Per the Product Marketing Agreement (PMA) with Portland General Gas Supply Company (PGGS) and the counterparty, PGGS will make the most economic decision throughout the life of the contract. PGGS will elect to either: 1) take physical gas, sell it to PGE, who will then market it ourselves, send it to storage, or burn it at our generating plants; or 2) elect to have PGGS's counterparty market the production and receive the net proceeds. At the outset of the PMA, PGGS is electing to have the counterparty market the natural gas and settle financially.

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 032**
**Dated July 14, 2016**

**Request:**

**Is PGE obligated to make any gas purchases with the revenue from the [proposed] partnership? Please explain.**

*Response:*

PGE would not directly receive any revenue from the counterparty. PGGS may receive revenue from the counterparty but is not obligated to make gas purchases with any revenue from the proposed agreement. However, the revenues from the counterparty will be transferred to PGE from PGGS under the Base Contract Gas Purchase Agreement and included as an offset to power costs.

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 033**
**Dated July 14, 2016**

**Request:**

**Is it possible for a spot oil price to decrease and a spot natural gas price to increase simultaneously? If not, why not?**

*Response:*

Yes. It is possible for spot oil and natural gas prices to either move in the same direction or in opposite directions. While many of the macro-level supply and demand drivers similarly influence the market for both energy commodities, the price relationship between oil and gas has fluctuated in the past, at times exhibiting highly similar price behavior and at other times decoupling. The historical correlation between crude oil and natural gas prices over time, however, has generally been neutral to positive.

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 038**
**Dated July 14, 2016**

**Request:**

**Did PGE consider directly investing in the stock of a natural gas production firm? If yes please explain why such an investment was not selected. If no please explain why not.**

*Response:*

PGE did not consider this to be an option. PGE has price exposure to the Sumas, AECO, and US Rockies gas markets. An investment in a publically traded company, however, would not provide an effective gas price hedge on behalf of customers.

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 039**
**Dated July 14, 2016**

**Request:**

**Please provide the production volume distribution shape and parameters for the proposed wells, and provide all supporting documentation for the parameter estimates.**

*Response:*

The production forecast is derived from the details provided in Attachment 039-A, which represents a conservative combination of the following two production estimates:

- Years 1-10: The higher of the curve guaranteed by the counterparty, which is the 90% level of the expected production from the counterparty, or the proved and probable production as estimated by an independent third party reservoir engineer (NSAI).
- Years 11-30: The proved and probable production as estimated by an independent third party reservoir engineer (NSAI).

Attachments 039-A is protected information subject to Protective Order No. 16-137.

# UE 308

# Attachment 039-A

# Provided in Electronic Format only

# Protected Information Subject to Protective Order No. 16-137

Production Forecast

July 28, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 041**
**Dated July 14, 2016**

**Request:**

**Has PGE considered forming a long term fixed price purchase agreement with the proposed affiliate? If no, why not?**

*Response:*

No. The primary objective for pursuing a long-term gas hedging arrangement is to reduce exposure to gas price volatility with a long-term cost-of -service hedge. A fixed-price purchase agreement with an affiliate would not provide customers with a cost-of-service based gas hedge. In addition, 30-year fixed price agreements are either not available on the market or they would have prohibitively costly premiums.

September 8, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 054**
**Dated September 2, 2016**

**Request:**

**Please refer to Page 17 of the Initial Filing in UE 376. PGE is requesting a waiver of OAR 860-027-0048( 4)( e ) due to the price stability provided by the affiliated agreement.**

a. **Please provide all analysis comparing the stability of cost of service pricing against PGE's existing medium and short term hedging strategy.**
b. **Please provide all analysis comparing the stability of cost of service pricing against the use of 10 year financial hedging instruments including fixed for float swaps.**

*Response:*

PGE disagrees with the premise of this data request. The basis of PGE's request for waiver of OAR 860-027-0048(4)(e) is that PGE's long-term gas hedge is a *cost-of-service* proposal. The cost-of-service option provides gas to customers that is not coupled to the market and is determined solely on the cost to produce physical gas. Price stability, however, is a benefit of the proposal as stated in PGE Exhibit 100 (page 15), "The benefit of the proposed hedging program is to limit electric price variability for customers by reducing gas cost volatility."

PGE has not performed the requested analyses because they would require an after-the-fact comparison of PGE's proposal (assuming it is approved by the Commission) against:

a. Corresponding future medium and short-term hedging and future spot market prices; or
b. A corresponding and approved 10-year financial hedging instrument and future spot market prices. As stated in PGE Exhibit 800, pages 42-43, PGE regularly discusses financial gas hedges with institutions that transact them and has not encountered any 10-year hedges that were cost effective in accordance with PGE's proposed first guideline.

September 8, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 056**
**Dated September 2, 2016**

**Request:**

**Please refer to Attachment 6 of the Initial Filing in UE 376. Would a fixed price contract with PGGS consistent with the volumes and prices identified in Attachment 6 have lower price volatility than the proposed contract?**

*Response:*

Fixed price contracts inherently produce lower price volatilities when compared to any alternative but the reduced volatility always comes at a cost. PGE is not proposing to have Attachment 6 or the Purchase Gas Agreement represent a fixed price contract because a long-term fixed price contract, if even available, would include a risk premium that would significantly add to the cost of the contract. PGE believes the cost-of-service option presented in the proposed transaction provides customers a supply of natural gas that has low price volatility and is cost effective when compared to projected natural gas prices.

September 8, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 057**
**Dated September 2, 2016**

**Request:**

**All else equal, does PGE have a preference for a long term gas hedge with lower price volatility?**

**a. If no, why not?**

*Response:*

All else equal, yes, PGE prefers for customers to have low price volatility. However, PGE must consider more than this one aspect when evaluating any potential resource or hedging product. As noted in PGE Exhibit 100:

"The benefit of the proposed hedging program is to limit electric price variability for customers by reducing gas cost volatility" (PGE 100/15).

"… the purpose of such long-term gas hedging is … to reduce the volatility of gas prices that would flow through PGE's power costs to our customer's electric prices" (PGE 100/21).

September 8, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 058**
**Dated September 2, 2016**

**Request:**

**If the response to Staff DR 56 is yes and the response to Staff DR 57 is yes please explain why PGE does not prefer a fixed price contract over a cost of service contract?**

*Response:*

PGE Exhibit 300, pages 2-4, explains the risks and availability of long-term fixed-for-float swaps and physical prepay agreements. PGE Exhibit 800, pages 42-43, further updates the availability of long-term fixed-for-float swaps. In summary and as noted in PGE's response to OPUC Data Request No. 056, long-term fixed price hedge contracts would include a risk premium that would significantly add to the cost of the contracts and make them non-cost effective per PGE's first proposed guideline. Finally, PGE has mitigated the risks of the proposed cost-of-service transaction by the means discussed in PGE Exhibit 800, pages 20-31.

September 8, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 059**
**Dated September 2, 2016**

**Request:**

**Has PGE discussed the impact of the proposed PGGS contracts with its credit rating agencies?**

a. **If yes, please provide all such communications.**
b. **If no, when does PGE intend to have such discussions?**

*Response:*

Yes, PGE discussed its gas hedging proposal with a credit rating agency but only as part of an informal conversation by telephone within the last couple of months. The credit rating agency did not express any particular interest in PGE's proposal at that time. The rating agencies are aware of PGE's proposal, however, as reflected in page 3 of the Moody's Credit Opinion provided as Attachment 059-A.

# UE 308

# Attachment 059-A

# Provided in Electronic Format only

Moody's Credit Opinion

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
8 July 2016

Update

Rate this Research

**RATINGS**

**Portland General Electric Company**

| | |
|---|---|
| Domicile | Portland, Oregon, United States |
| Long Term Rating | A3 |
| Type | LT Issuer Rating |
| Outlook | Stable |

*Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.*

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# Portland General Electric Company

## Oregon's Largest Vertically Integrated Utility

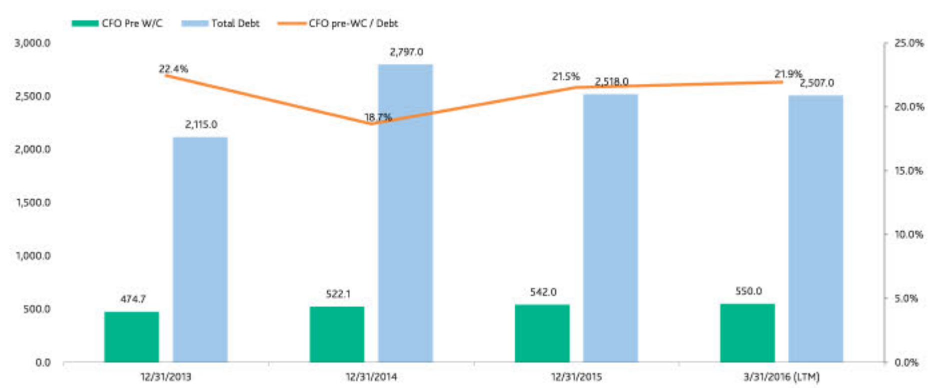
### Summary Rating Rationale

Portland General Electric's (PGE) A3 rating reflects the supportive regulatory treatment afforded by the state of Oregon and strong financial metrics bolstered by a suite of cost recovery provisions approved by the Oregon Public Utilities Commission (OPUC).

PGE's primary challenge is the successful completion and rate recovery associated with the Carty Generating Station (Carty; a 440 MW natural gas-fired baseload plant in Eastern Oregon). Even if the in-service date of Carty extends past the July 31, 2016 target date, we incorporate a view that costs associated with the original plan estimates will be recovered on a timely basis. We see greater risk of cost recovery associated with overruns, but that PGE has enough financial strength, currently, to offer some flexibility and that the company and regulators will ultimately arrive upon an amenable solution.

Longer-term, PGE's supply strategy will evolve in order to replace the 2020 closure of its 585 MW coal-fired Boardman plant and adapt to Oregon laws that require 50% of its power to be obtained by renewable resources. This could result in upward pressure on rates and heighten the risk of customer push-back on rate increases that the company might otherwise pursue.

Exhibit 1




*Source: Moody's Investors Service*

## Credit Strengths

» Supportive regulatory environment and timely cost recovery provisions

» Strong financial profile provides some flexibility to resolve challenges with Carty

## Credit Challenges

» Near-term complications with the timing and costs to complete the Carty Generating Station

» State renewable mandates will likely result in ongoing generation capex to meet legislative requirements

## Rating Outlook

The stable rating outlook reflects our expectation that PGE will continue to receive timely regulatory support for cost recovery, including all costs associated with Carty. The stable outlook also reflects our belief that PGE's CFO pre-WC to debt will be around 20% on an ongoing basis.

## Factors that Could Lead to an Upgrade

An upgrade could occur if PGE can demonstrate sustainable CFO pre-WC to debt coverage ratio in the 25% range.

## Factors that Could Lead to a Downgrade

Any unexpected negative changes in regulatory treatment by the OPUC would have a negative impact on the rating. Additionally, any sustained weakness in CFO pre-WC to debt, such as a level consistently below 17%, could cause a downgrade.

## Key Indicators

Exhibit 2

**KEY INDICATORS [1]**
Portland General Electric Company

| | 12/31/2012 | 12/31/2013 | 12/31/2014 | 12/31/2015 | 3/31/2016(LTM) |
|---|---|---|---|---|---|
| CFO pre-WC + Interest / Interest | 4.9x | 5.0x | 5.1x | 5.0x | 5.1x |
| CFO pre-WC / Debt | 23.7% | 22.4% | 18.7% | 21.5% | 21.9% |
| CFO pre-WC – Dividends / Debt | 19.5% | 18.5% | 15.6% | 17.7% | 17.9% |
| Debt / Capitalization | 45.6% | 46.9% | 52.7% | 46.7% | 46.2% |

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Globa  Standard Adjustments for Non-Financial Corporations.
*Source: Moody's Financial Metrics™*

## Detailed Rating Considerations

SUPPORTIVE COST RECOVERY PROVISIONS IN OREGON

The primary support of PGE's rating resides in the degree of regulatory support that the company receives from the Oregon regulatory framework. Specifically, the company's relationship with the OPUC has led to constructive rate outcomes and the use of credit-supportive cost tracking mechanisms.

Some of the more material recovery features utilized by PGE include: the use of a forward test year for rate making purposes; annual rate updates for the estimated power costs of the coming year (Annual Power cost Update Tariff, or AUT); lost revenue recovery for retail and small commercial customers whose load decreases due to efficiency and conservation (i.e., "decoupling"), authorized through 2016; and a renewable adjustment clause (RAC) that recovers financing costs of renewable resources that are expected to be placed in service in the current year; subject to a pudency review.

The RAC, in particular, has helped to bridge the financing costs of recent construction (e.g., the 267 MW Tucannon River Wind Farm) until placing such assets into rate base. This type of recovery mechanism helps support the credit of PGE by limiting the time it takes to recover a portion of major expenditures, thereby supporting cash flow stability. Furthermore, it will be an important mechanism going forward, as the company looks to significantly increase its renewable resources through 2040.

OPUC rate relief has been steady and consistent during PGE's recent construction period, including over $63 million of annual revenue effective January 2014, $44 million effective January 2015 and another nearly $15 million effective January 2016. This has helped maintain a strong financial profile throughout the construction phase.

SOME UNCERTAINTY ASSOCIATED WITH THE COMPLETION DATE OF CARTY AND SUBSEQUENT RATE RELIEF FROM THE OPUC

The Carty Generating Station has been under construction since 2013, with an initial cost estimate of up to $514 million. The OPUC approved the $514 million for rate recovery if the plant is online by July 31, 2016. However, in December 2015, PGE decalared the project's engineering, procurement and construction (EPC) contractor ("Abeinsa"; Abeinsa Abener Teyman General Parnership (unrated), an affiliate of Abengoa S.A. (Ca negative)) in default under the construction agreement and later took control of the remaining construction responsibilities for the unit shortly thereafter.

Despite the change in project management, PGE still believes that the plant will be in-service by July 31; however, additional costs to complete the project are now between $635 million and $670 million and the company acknowledges that both completion date and costs could vary from current projections. Moreover, PGE finds itself in legal disputes with insurers of Abeinsa's EPC responsibilities (PGE is seeking to collect on a $145.6 million performance bond) as well as with Abengoa S.A., who is seeking arbitration with PGE over wrongful termination claims.

The construction, cost and legal uncertainties are credit negative for PGE. If Carty comes online after the July 31 date, PGE could have to re-file for full cost recovery of the plant with the OPUC. This heightens the potential for cost recovery provisions to be changed from what has already been determined. Moreover, the recovery of over $120 million of increased costs is uncertain, regardless of whether the plant comes online by month-end or not.

Despite these uncertainties, we see no ratings or outlook impact at this time for three reasons: 1) we believe that the $514 million of initial budgeted costs will eventually be recovered in rates, even if PGE has to pursue in a second rate proceeding, 2) PGE has a strong financial position, at the moment, which provides for some flexibility on the timing of Carty cost recovery and 3) the request for pricing (RFP) process which determined the plan for Carty construction resulted in the OPUC approving Abeinsa as the EPC; therefore, PGE was not directly responsible for the selection of an EPC contractor that was later found to be defunct.

That said, these construction, cost and legal uncertainties come at a time when political tension within the state has increased, following a controversial legislative bill that passed in March (see below, regarding Senate Bill 1547). If these political tensions create difficulty in PGE receiving cost recovery for Carty, or if PGE's cooperative relationship with the OPUC is harmed, PGE's credit profile could deteriorate.

STRONG FINANCIAL METRICS PROVIDE A DEGREE OF FLEXIBILITY FOR CARTY UNCERTAINTIES

PGE's LTM 1Q16 cash flow to debt was about 22%, which positions the company well within its A3 rating category. This level of cash flow production also provides the company with some financial flexibility to withstand cost overruns and timing uncertainties associated with Carty. The aforementioned rate relief that PGE has received over the past three years, additional cash flow from Carty and a smaller base capex plan (i.e., $357 million in 2017, $301 million in 2018 and $282 million in 2019 - all of which could increase with additional renewables and/or investment in gas reserves that the company is pursuing) will help support financial metrics appropriate for the A3 rating (e.g., high-teens cash flow to debt).

Our projections at the time when PGE launched its most recent generation construction plan estimated that the company would have to produce between $500 and $650 million of CFO pre-WC in order to maintain high-teens cash flow to 2016 debt metrics and uphold its current rating profile. PGE's performance is on track with that estimate and ratings support, as the company produced $550 million of CFO pre-WC through LTM 1Q16.

Going forward, we expect that PGE will be able to produce cash flow to debt metrics in the low-20% range on a sustainable basis.

OREGON RENEWABLE LEGISLATION WILL TRANSFORM PGE'S SUPPLY MIX

In March, Oregon Senate Bill 1547 (SB 1547)was signed into law, which requires large Oregon utilities to make several changes to the way its generation supply functions. Most importantly, the bill prevents large utilities from including the costs associated with coal-fired generation in retail rates after 2030 and sets renewable portfolio standard (RPS) thresholds, such that PGE will have to source 50% of its power from renewables by 2040.

While PGE had already agreed to close its Boardman coal-fired plant (around 527 MW of PGE-owned capacity) by 2020 and SB 1547 contains an exception for PGE's part-owned Colstrip coal-fired unit (a 2,100 MW plant in Rosebud, MT; PGE owns roughly 14%) to produce through 2035, the bill will require a drastic change for the company that currently obtains less than 20% of its supply from renewables. We also see this as adding to the company's capital plans beyond what is currently projected.

SB 1547 also contains specific cost recovery provisions to facilitate PGE's transition (e.g., an automatic adjustment clause); however, the replacement of relatively low-cost coal units with new and more expensive renewable generation will result in rising rates for customers. We view this as limiting the overall bill capacity of customers and increases the potential for heightened politicization of the rate making process down the road. Like the situation with Carty, should these circumstances result in difficulty for PGE obtaining other forms of cost recovery or weaken the utility's relationship with regulators, it would be negative for PGE's credit.

## Liquidity Analysis

PGE's liquidity is adequate, as we expect for Carty cost overruns to reduce available liquidity over the short term. Aside from the one-time costs of Carty, we expect that PGE will be albe to consistently produce over $550 million in cash flow from operations, compared to $357 of capex budgeted in 2017 and dividends likely to be under $110 million (PGE paid $102 million in dividends through LTM 1Q16). This means that PGE could be free cash flow positive in 2017, based on the base capex plan, but will likely require external financing to supplement other renewable or gas reserves investments.

The company's external liquidity consists of a $500 million credit faicility due in November of 2019. The lone financial covenant in the facility limits PGE's debt level to 65% of total capitalization as defined. As of March 31, 2016, PGE was in compliance with the financial covenant at 49.9%. Importantly, the facility does not contain any material adverse change provisions or rating triggers that would cause acceleration, default, or puts, although rating sensitive pricing applies. The company had no commercial paper or direct bank borrowing outstanding, but had $11 million of letters of credit issued at March 31, 2016.

PGE's next long-term debt maturity is in April 2019 when $300 million of notes come due.

## Profile

Portland General Electric Company (PGE; A3 stable) is an integrated electric utility company, servicing over 844,000 retail customers throughout Portland and Salem, Oregon and surrounding areas. PGE's retail rates are regulated by the Oregon Public Utility Commission (OPUC).

## Rating Methodology and Scorecard Factors

Exhibit 3

| Rating Factors | | | | |
|---|---|---|---|---|
| **Portland General Electric Company** | | | | |
| **Regulated Electric and Gas Utilities Industry Grid [1][2]** | **Current LTM 3/31/2016** | | **Moody's 12-18 Month Forward View As of Date Published [3]** | |
| **Factor 1 : Regulatory Framework (25%)** | **Measure** | **Score** | **Measure** | **Score** |
| a) Legislative and Judicial Underpinnings of the Regulatory Framework | A | A | A | A |
| b) Consistency and Predictability of Regulation | A | A | A | A |
| **Factor 2 : Ability to Recover Costs and Earn Returns (25%)** | | | | |
| a) Timeliness of Recovery of Operating and Capital Costs | Aa | Aa | Aa | Aa |
| b) Sufficiency of Rates and Returns | A | A | Aa | Aa |
| **Factor 3 : Diversification (10%)** | | | | |
| a) Market Position | Baa | Baa | Baa | Baa |
| b) Generation and Fuel Diversity | Baa | Baa | Baa | Baa |
| **Factor 4 : Financial Strength (40%)** | | | | |
| a) CFO pre-WC + Interest / Interest (3 Year Avg) | 5.0x | A | 4x - 5x | A |
| b) CFO pre-WC / Debt (3 Year Avg) | 20.9% | Baa | 16% - 20% | Baa |
| c) CFO pre-WC – Dividends / Debt (3 Year Avg) | 17.2% | A | 13% - 18% | Baa |
| d) Debt / Capitalization (3 Year Avg) | 48.2% | Baa | 45% - 55% | Baa |
| **Rating:** | | | | |
| Grid-Indicated Rating Before Notching Adjustment | | A3 | | A3 |
| HoldCo Structural Subordination Notching | | | 0 | 0 |
| a) Indicated Rating from Grid | | A3 | | A3 |
| b) Actual Rating Assigned | | A3 | | A3 |

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of 3/31/2016(LTM);
[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.
*Source: Moody's Financial Metrics™*

## Ratings

Exhibit 4

| Category | Moody's Rating |
|---|---|
| **PORTLAND GENERAL ELECTRIC COMPANY** | |
| Outlook | Stable |
| Issuer Rating | A3 |
| First Mortgage Bonds | A1 |
| Senior Secured | A1 |
| Commercial Paper | P-2 |

*Source: Moody's Investors Service*

REPORT NUMBER 1034240

MOODY'S
INVESTORS SERVICE

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 060**
**Dated September 7, 2016**

**Request:**

**Please refer to the workpaper provided with PGE's filing of PGE Exhibit 700 named "7-11 PGE Expected Case updated.xlsm". Please provide this model adjusted to assume the following capital cost and structure:**

| | Long Term Debt | Preferred Equity | Common Equity |
|---|---|---|---|
| Capital Cost | 7.508 % | 8.432 % | 10.50 % |
| Capital Structure | 46.32 % | 1.53 % | 52.15 % |

*Response:*

PGE objects to this request on the basis of relevance for the reasons stated below. Without waiving this objection, PGE responds as follows:

The referenced percentages do not represent anything currently existing or projected for PGE's cost of capital or capital structure. In addition, PGE Exhibit 800, Section III, part C, explains that the proposed transaction would not result in an increase in PGE's cost of capital. Further, if such rates were to be authorized in some distant future, they would not do so in isolation but would likely correspond to higher prices for commodities rather than the lower ones as referenced in OPUC Data Request No. 061. Consequently, the results of this particular static analysis are devoid of meaning.

Attachment 060-A provides the requested information. Attachment 060-A is protected information subject to Protective Order No. 16-137.

# UE 308

# Attachment 060-A

# Provided in Electronic Format only

# Protected Information Subject to Protective Order No. 16-137

Revision to Expected Case

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 061**
**Dated September 7, 2016**

**Request:**

**Please refer to the workpaper provided with PGE's filing of PGE Exhibit 700 named "7-11 PGE Expected Case updated.xlsm". Please provide a version of this workpaper with the underlying natural gas, crude, and natural gas liquid market prices each decreased by 10 percent.**

*Response:*

PGE objects to this request on the basis of undue burden. PGE notes that the OPUC Staff not only possesses the referenced work paper but has already performed the requested analysis. Without waiving this objection, PGE responds as follows:

The results in Staff Exhibit 500, page 6, lines 12-13, accurately reflect the impacts of the 10% commodity price decrease referenced above. The results in Staff Exhibit 500, page 6, lines 13-15, also accurately reflect the impacts of a 10% commodity price increase, which is just as likely given the conservative nature of the commodity price forecast as noted in PGE Exhibit 800, pages 30-31:

> PGE uses the Wood Mackenzie forecast because it is accepted by all parties as an input to PGE's IRP analyses and because the gas forward curve only addresses the near term. More importantly, the Wood Mackenzie forecast is quite conservative with respect to the referenced commodity prices. For example, if PGE were to use the US Energy Information Administration's 2016 Annual Energy Outlook instead of Wood Mackenzie, the net present value of PGE's proposal would double.

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 062**
**Dated September 7, 2016**

**Request:**

**Please refer to PGE/801 Sims – Faist – Tooman/22 Figure 2. This figure identifies three "non-dominated alternatives" as Market /w Physical RPS, Baseload Gas/RPS only, and Diversified Baseload Gas/Wind.**

a. **Is it PGE's position that PGE customers are indifferent between the three portfolios?**
b. **Please refer to the PGE 2013 IRP at page 209. The Market w/Physical RPS portfolio had a loss of load probability of nearly 12 percent. Did PGE consider this portfolio as a viable option given the 12 percent loss of load probability?**
c. **Please provide the data used to calculate the means and standard deviations of each portfolio in Figure 2. Please identify the weights used when calculating the means and standard deviations.**

*Response:*

a. No. In multi-objective programming, a non-dominated strategy/alternative is defined as a solution point that cannot be improved by any other feasible solution strategy in all objectives under consideration. In PGE Exhibit 801, Figure 2, we can observe this non-dominance in a two-objective (i.e., mean and standard deviation) setting. However, a set of non-dominated alternatives do not necessarily translate as solutions of indifference for the decision maker. The non- dominant set forms the efficient frontier but the utility derived will most likely be different at various points on the efficient frontier. To arrive at a final choice, a variety of techniques such as defining utility functions, weighted combinations, no preference method, goal programming, and constrain methods would need to be employed.

b. PGE'S IRP framework includes reliability as a key driver besides cost and risk (i.e., spread of the cost distribution). The significant loss of load probability (LOLP) difference between the market /Physical RPS portfolio (12% LOLP) with other top portfolios (less than 0.5% LOLP) did make the market portfolio impracticable. If we factor this reliability constraint to our Long-term Variability Trade-off Metric analysis and remove the market portfolio from consideration, we are left with a single point in place of the stated range in the PGE Exhibit 801 (see page 22, paragraph 76). Customers would now be willing to accept $1.00 in increased mean in return for $0.29 (1/3.5) in reduced standard deviation. This represents the higher end of the stated range of willingness-to-pay for risk reduction.

c. Attachment 062-A provides the requested information. Each future is equally weighted in all calculations (i.e., no preference to any specific future).

# UE 308

## Attachment 062-A

## Provided in Electronic Format only

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 063**
**Dated September 7, 2016**

**Request:**

**Please refer to PGE/801 Sims – Faist – Tooman/7 Paragraph 10.**

a. **Please provide the definition of a perfect hedge, as used in this paragraph.**
b. **Does PGE consider its proposed gas production investment to be a perfect hedge?**

*Response:*

a. The "perfect hedge" is the ability to lock a portion of quarterly gas demand as simulated in the Mid-Term Strategy model in the base case exactly at the respective forward/ forecasted gas price. This hedge would have two components: 1) a fixed percentage of quarterly gas demand, and 2) a fixed price at the Integrated Resource Plan gas price curve. Perfect hedges are often difficult to establish, particularly when dealing with a fluctuating demand profile. The 'perfect hedge' concept was introduced in PGE Exhibit 801 as referenced to simplify the analysis rather than exclude its applicability to hedges that may not be perfect.

b. No. PGE does not consider the proposed gas production investment to be a perfect hedge. The proposed hedge does not perfectly mirror a fixed portion of PGE's gas needs due to:

- Uncertain production profiles (see PGE's response to OPUC Data Request No. 064 regarding uncertainty); and
- Variability in PGE's gas demand.

The proposed hedge, however, **[Confidential]**.

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 064**
**Dated September 7, 2016**

**Request:**

**Please refer to PGE/800 Sims – Faist – Tooman/34 line 5. Does PGE agree with Staff that the value of the proposed investment is uncertain?**

*Response:*

PGE would agree that the value of any future investment entails a degree of uncertainty because they are all based on projections and forecasts that will inevitably prove to be different from actual experience. This does not mean that the value of the investments is uncertain or that uncertainty should be used to paralyze all such decision making. Based on the due diligence performed and **[Confidential]**, PGE believes it has mitigated most of the uncertainty/risk associated with the proposed transaction.

September 12, 2016

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC**
**UE 308**
**PGE Response to OPUC Data Request No. 065**
**Dated September 7, 2016**

**Request:**

**Please refer to Staff's response to PGE Data Request 3 and the attachment 1 to the response. Does PGE agree that the correlation coefficient between S&P Oil & Gas Exploration & Production Select Industry Index fund and the West Texas Intermediate Crude Oil Spot Price for daily prices between April 29, 2008 and August 15, 2016 is approximately 0.76? If no, what does PGE believe the correlation between the referenced data to be?**

*Response:*

After certain adjustments are made to accurately compare the price of the S&P Index fund to the WTI Crude Oil spot price on the same day, PGE agrees that the approximate correlation coefficient for the period queried is approximately 0.76. PGE, however, would not agree that this correlation coefficient provides any indication that the proposed transaction bears any resemblance to an investment in an exploration & production company, nor would investing in the stock of an oil and gas production company provide any price stability for future natural gas purchases.

CASE: UE 308
WITNESS: LANCE KAUFMAN

# PUBLIC UTILITY COMMISSION
# OF
# OREGON

## STAFF EXHIBIT 504b

**September 14, 2016**

Staff Exhibit 504b is Confidential and

Is subject to Protective Order No.16-137.

CASE: UE 308
WITNESS: LANCE KAUFMAN

# PUBLIC UTILITY COMMISSION
# OF
# OREGON

# STAFF EXHIBIT 505

**September 14, 2016**

Staff Exhibit 505 is Confidential and

Is subject to Protective Order No.16-137.

CASE: UE 308
WITNESS: LANCE KAUFMAN

# PUBLIC UTILITY COMMISSION
# OF
# OREGON

# STAFF EXHIBIT 506

**September 14, 2016**

Staff Exhibit 506 is Confidential and

Is subject to Protective Order No.16-137.