

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF THE STATE OF OREGON**

**UE 294**

**Cost of Capital**

**PORTLAND GENERAL ELECTRIC COMPANY**

**Direct Testimony and Exhibits of**

*Patrick G. Hager  
Brett Greene*

**February 12, 2015**

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## I. Introduction

1 **Q. Please state your names and positions with Portland General Electric (“PGE”).**

2 A. My name is Patrick G. Hager. I am the Manager of Regulatory Affairs at PGE. I am  
3 responsible for analyzing PGE’s cost of capital. My qualifications are included at the end of  
4 PGE Exhibit 400.

5 My name is Brett Greene. I am the Assistant Treasurer and Director of Treasury & Tax  
6 for PGE. I am responsible for managing the company’s treasury function including  
7 financing as well as the tax department. My qualifications are also included at the end of  
8 this testimony.

9 **Q. What is the purpose of your testimony?**

10 A. The purpose of our testimony is to recommend PGE’s cost of capital and capital structure  
11 for the 2016 test year. PGE’s requested cost of capital and capital structure are necessary to  
12 maintain its current credit profile for access to the debt and equity markets, to fund its  
13 significant capital investments planned for 2016, and to provide PGE the opportunity to earn  
14 a fair return for equity shareholders while keeping its costs reasonable. As Dr. Villadsen  
15 discusses in her testimony (PGE Exhibit 1100), guidance regarding the appropriate  
16 authorized cost of capital is provided by the Bluefield<sup>1</sup> and Hope<sup>2</sup> United States Supreme  
17 Court decisions as well as ORS 756.040.

18 **Q. What is PGE’s requested overall cost of capital for this filing?**

19 A. We request and support a 7.667% cost of capital for the 2016 test year. This cost of capital  
20 includes a 9.9% authorized Return on Equity (ROE) based on the recommended range

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<sup>1</sup> Bluefield Water Works v. Public Service Comm’n - 262 U.S. 679 (1923)

<sup>2</sup> FPC v. Hope Nat. Gas Co. - 320 U.S. 591 (1944)

1 provided by of Dr. Villadsen in PGE Exhibit 1100. This point estimate is for revenue  
2 requirement purposes. Table 1 below shows the recommended cost of the two components  
3 of PGE’s capital, common equity and long-term debt. Table 1 also shows PGE’s forecasted  
4 2016 capital structure.

**Table 1**  
**PGE’s Weighted Cost of Capital**  
**Test Year 2016**

<u>Component</u>	<u>Average Outstanding (\$000) [1]</u>	<u>Percent of Capital [2]</u>	<u>Component Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$2,441,400	50.00%	5.433%	2.717%
Common Equity	\$2,443,817	50.00%	9.90%	4.950%
<b>Total</b>	<b>\$4,885,217</b>	<b>100.00%</b>		<b>7.667%</b>

[1] “Average Outstanding” reflects PGE’s projected average values of long-term debt and common equity for 2016.

[2] “Percent of Capital” reflects PGE’s long-term targeted capital structure of 50% debt, 50% equity, and is used to calculate PGE’s weighted average cost of capital (“Weighted Cost”).

5 **Q. How is the remainder of your testimony organized?**

6 A. In the following section, we describe PGE’s financial goals and how we manage  
7 counterparty risks and liquidity. Section III provides a review of financial and market  
8 regulation changes as well as the recent and near future financial market and economic  
9 conditions. We discuss PGE’s cost of long-term debt, including new and redeemed  
10 issuances, in Section IV. In Section V, we discuss PGE’s capital structure. Section VI  
11 provides Mr. Greene’s qualifications.

## II. PGE's Financial Goals

1 **Q. What is PGE's overall financial goal?**

2 A. Our overall goal is to provide adequate capital and liquidity to fund PGE operations at the  
3 least cost and least risk to customers. For protection against unforeseen changes in cash  
4 flow and to manage daily cash and liquidity needs, we rely on our revolving lines of credit.

5 **Q. Does PGE have additional financial goals?**

6 A. Yes. As part of our overall financial goal, we have additional goals regarding financial  
7 performance and counterparty credit risk:

- 8 • Solid financial performance:
  - 9 ▪ Maintain investment grade credit ratings;
  - 10 ▪ Access financial markets at reasonable terms to provide liquidity for
  - 11 operations and capital expenditures;
  - 12 ▪ Achieve an actual return on equity that is commensurate with the return on
  - 13 equity achieved by a group of utilities with similar characteristics, service
  - 14 territory, and business risks;
  - 15 ▪ Maintain a capital structure of approximately 50% debt and 50% equity
  - 16 over time;
  - 17 ▪ Set retail prices at a level sufficient to recover prudently incurred costs,
  - 18 including an overall return on utility investment, while taking into account
  - 19 the economic conditions facing our customers; and
- 20 • Manage counterparty credit risks, wholesale and retail.

### A. Solid Financial Performance

21 **Q. Why is it important for PGE to maintain an investment grade rating?**

1 A. It is essential for PGE to keep an investment grade rating in order to secure financing, both  
2 debt and equity, at reasonable rates and to maintain access to wholesale energy markets,  
3 especially in today's volatile financial environment. Without an investment grade rating,  
4 PGE's access to financing would be more limited, at higher rates, and PGE would have to  
5 provide significant additional collateral to its counterparties in the wholesale power market.

6 **Q. What does PGE do to maintain its investment grade credit rating?**

7 A. Fundamentally, PGE's credit rating is a function of its financial performance, which is  
8 driven by PGE's retail prices and its ability to manage costs. The rating agencies, as well as  
9 equity investors, expect companies to achieve certain financial performance standards to  
10 achieve an investment grade credit rating, as demonstrated in the financial and liquidity  
11 ratios that the rating agencies publish. PGE takes various steps to ensure that our financial  
12 performance continues to place us within the range of the appropriate financial ratios. We  
13 accomplish this through our continuous financial management which includes: closely  
14 monitoring our budgets; minimizing our costs to finance operations through the optimal use  
15 of revolvers, long-term debt, and equity; closely monitoring our capital structure; and by  
16 analyzing our counterparty risks and taking any appropriate mitigation measures. Using all  
17 of these measures helps us maintain our financial performance levels that are necessary to  
18 maintain our credit ratings.

19 **Q. Financial performance is an important element for the rating agencies. Do they  
20 consider other factors?**

21 A. Yes. Other factors that rating agencies consider include regulatory and recovery risk,  
22 corporate operations and growth, customer and portfolio diversification, and liquidity and  
23 financial measures. We note that the rating agencies are concerned with PGE's earnings

1 volatility due to one-time but significant write-offs, the asymmetric deadband on the Power  
2 Cost Adjustment Mechanism (PCAM), and Oregon regulation, in general. PGE closely  
3 monitors the evolving rating agencies' methodologies and annually visits the major rating  
4 agencies for presentations and discussions.

5 **Q. Have PGE's bond ratings changed recently?**

6 A. Yes. PGE received two upgrades on its long-term debt from Moody's in the past two years.  
7 PGE's long-term debt ratings from Moody's are two notches higher than Standard & Poor  
8 (S&P). PGE will continue to pursue an upgrade from S&P, which would help lower  
9 financing costs for customers through lower pricing on revolving lines of credit and new  
10 debt.

11 **Q. What does PGE do to ensure an optimal long-term cost of capital?**

12 A. PGE aims to issue long-term debt so that debt maturity schedules closely match investment  
13 lives of our capital projects. We try to use First Mortgage Bonds (FMBs) as the primary debt  
14 because it has lower cost than unsecured alternatives. PGE evaluates private placement  
15 market rates, bank term loans and delayed draw/forward structure to arrive at the lowest  
16 financing costs available to PGE at the time of our financing need.

17 **Q. How does PGE determine the timing of its financing?**

18 A. PGE forecasts its cash needs, which include capital expenditures, debt maturities, dividends  
19 and changes in working capital, and attempts to match its long-term financing proceeds to  
20 meet those requirements. PGE has recently used a delayed draw for its long-term bonds that  
21 allows us to fix the interest rate on the upcoming bond issue, removing interest rate and  
22 funding risk.

1 **Q. Does PGE’s financial performance help PGE to maintain its desired long-term capital**  
2 **structure?**

3 A. Yes. Our desired long-term capital structure is 50 percent equity and 50 percent long-term  
4 debt, although it may fluctuate from year to year. We believe that the 50 percent equity in  
5 our capital structure helps us to better weather difficult financial situations, such as issuing  
6 long-term debt to finance our major construction programs. To maintain this ratio, we use  
7 several techniques and tools as we discussed above. In addition, we require sufficient retail  
8 revenues to maintain the required financial ratios and investor expectations for our long-  
9 term capital structure. In the future, as we look towards a possible new construction cycle,  
10 we are likely to continue to use additional equity, stock repurchases, capital expenditure  
11 programs, and cash from operations to help us maintain our desired capital structure.

**B. Manage Customer and Counterparty Credit Risks**

12 **Q. Why is it important for PGE to manage customer credit risks?**

13 A. PGE attempts to minimize its exposure to customer defaults. PGE’s energy deliveries and  
14 revenues are subject to industry and customer-specific risks and uncertainty, including  
15 potential shut down of plants, curtailment of operations, or new capacity as a result of  
16 changed economic or specific circumstances. In fact, since the onset of the Great Recession  
17 in 2008, a number of our large customers have filed for bankruptcy, liquidated businesses,  
18 changed ownership or permanently shut down operations substantially affecting PGE’s  
19 actual and anticipated energy deliveries. In particular, in 2013, industrial energy deliveries  
20 were affected by the partial or full closure of paper manufacturers and a decline in deliveries  
21 to our solar manufacturing customers. Large customer-related energy deliveries and  
22 revenue risk is asymmetric, in that through our discussions with our large customers, we are



1 often aware of large expansions and increases to loads in advance to plan for adequate  
2 service, but the same notice is not necessarily known or given when customer's energy  
3 deliveries significantly decline.

4 **Q. How does PGE manage this customer credit risk?**

5 A. PGE performs credit reviews of our customers and in particular our large customers and  
6 associated industries, with paper being the most relevant example. Our load forecasters  
7 work closely with PGE's Key Customer Managers to gain better understanding of the  
8 business forecasts provided by our customers and their potential consequences on PGE retail  
9 load. After our review, we then determine the appropriate deposit required by a large  
10 customer. This deposit typically is up to one-sixth of the annual bill.

11 **Q. How does PGE manage counterparty risk?**

12 A. PGE manages its counterparty risk in wholesale power transactions using the same methods  
13 as for our large customers. We perform credit reviews of our wholesale power customers,  
14 both purchasers and sellers, and then determine the appropriate amount of collateral that we  
15 will require as well as a minimum credit rating.

**C. Liquidity Management**

16 **Q. What is PGE's strategy for liquidity management and related revolving credit facility**  
17 **sizing?**

18 A. PGE's strategy is fourfold:

- 19 • Carry sufficient credit levels to support both operational and power supply needs over a  
20 five year forward looking time horizon.
- 21 • Achieve designation of adequate or better from rating agencies (based on Moody's and  
22 S&P's interpretation of our liquidity picture).

- Fund short-term debt requirements using commercial paper or revolving credit facility loans as appropriate. Issue letters of credit in lieu of cash collateral if pricing is right.
- Manage market exposure related to maturing lines of credit by replacing lines one year prior to maturity.

**Q. Has PGE separately analyzed its revolving lines of credit requirements?**

A. Yes. PGE continually analyzes its revolver requirements separately for power supply and other operational needs, the sum of which yields the total liquidity requirement for PGE's needs. The separation has allowed PGE to ensure that its power and gas procurement efforts have enough liquidity to meet collateral requirements while also maintaining sufficient liquidity for operating our electric utility business.

**Q. What were the results of your analysis?**

A. Based on our analysis, we determined that PGE can safely reduce the total size of the credit facilities from \$700 million to \$500 million due to forecasted lower liquidity needs in support of power supply and general operations. This reduction in revolving credit capacity is aligned better with PGE's current risk profile and the substantial completion of generation projects on-line in 2014, 2015 and early 2016. In addition, this reduction is a result of a reduction in PGE's short generation position and low natural gas prices.

**Table 2**  
**Power Supply Liquidity Analysis**  
**(\$ millions)**

	<u>Collateral Range</u>	<u>Revolver Need</u>
20% Price Change	\$70-\$90	\$80
50% Price Change	\$200-\$220	\$210

In determining the appropriate size of credit facilities to support general operations, we consider such factors as an interruption in operational cash flow, lower earnings, temporary

1 lack of access to capital markets, poor hydro and wind conditions, and forced plant outages.

2 We developed several scenarios to “stress” the liquidity requirements of general operations.

3 Under these scenarios, PGE would require approximately \$373-\$563 million of liquidity.

4 **Q. Did you consider any other factors?**

5 A. Yes. In our analysis, we also considered one and two ‘notch’ downgrades by S&P and  
6 Moody’s. Such downgrades would significantly inhibit PGE’s ability to access the capital  
7 markets to support our power operation needs as well as our general operations and capital  
8 investment plans and would require PGE to post additional collateral with our wholesale  
9 power counterparties.

10 **Q. Can you briefly summarize Moody’s and S&P’s liquidity methodologies?**

11 A. Yes. Moody’s has three ratings for a company’s liquidity: good, adequate, or inadequate.  
12 If a company’s sources of liquidity to its uses of liquidity is 200% or above, then Moody’s  
13 would classify its liquidity as “good.” If this ratio is 100%, then Moody’s would consider  
14 the company’s liquidity as “adequate.” Finally, if the ratio is less than 100%, then Moody’s  
15 would consider the liquidity “inadequate.”

16 S&P has five ratings: exceptional, strong, adequate, less than adequate, and weak.  
17 S&P calculates the sources and uses of liquidity under normal business conditions, then  
18 “stresses” the liquidity by reducing the sources of liquidity in a specific manner through  
19 Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA). Since the focus  
20 is on the first three ratings, we describe only those three.

21 In the unstressed scenario, if the company has a minimum ratio of 2x (sources of funds  
22 to uses of funds) and its sources of funds is still positive after a 50% decline in EBITDA,  
23 then S&P rates the company “exceptional.” In the unstressed scenario, if the company has a

1 minimum ratio of 1.5x and its sources of funds are still positive after a 30% decline in  
2 EBITDA, then S&P rates the company “strong.” Finally, to be “adequate,” in the unstressed  
3 scenario, the company must have a minimum ratio of 1.2x and its sources of funds must be  
4 positive after a 15% decline in EBITDA.

5 **Q. What were the results of your analyses?**

6 A. For Moody’s criteria, our analysis found that our liquidity profile would be rated “adequate”  
7 in 2015 and “good” in 2016. For S&P, we would be rated “adequate” with minimal upside  
8 potential based on their rating criteria. Based on this set of analyses, we determined that our  
9 current revolver capacity of \$700 million could be reduced to \$500 million for the test year.  
10 We filed an application in January 2015 seeking to reduce our revolver capacity and expect  
11 it to be approved.

### III. Uncertainty in Regulation, Accounting, and Financial Markets

#### A. Regulation and Financial Markets

1 **Q. What are PGE’s current bond ratings?**

2 A. PGE’s current bond ratings for secured (first mortgage) long-term debt are A1 from  
3 Moody’s and A- from S&P. Ratings for unsecured debts are A3 and BBB respectively.  
4 PGE’s credit ratings are provided in PGE Exhibit 1002.

5 **Q. You noted above that rating agencies consider a Commission’s regulatory policy when  
6 determining a company’s rating. Can you provide some additional detail?**

7 A. Yes. Regulatory policy that supports timely recovery of prudent costs is essential to  
8 maintaining a stable, investment grade credit rating. Both Moody’s and S&P consider  
9 regulatory policy a key factor in their determination of a utility’s creditworthiness. Moody’s  
10 places 25% weight on the factor “Regulatory Framework” (with the other three factors and  
11 their weights being “Ability to Recover Costs and Earn Returns,” 25%, “Diversification,”  
12 10% and “Financial Strength and Liquidity,” 40%).<sup>3</sup> S&P indicates that “[r]egulation is the  
13 most critical aspect that underlies regulated integrated utilities’ creditworthiness.”<sup>4</sup> Key  
14 characteristics in the assessment of regulatory environment for both credit rating firms  
15 include the consistency and predictability of Commission decisions, as well as the ability for  
16 timely recovery of prudently incurred costs.

17 **Q. Have financial analysts or rating agencies noted any concerns regarding regulatory  
18 outcomes as they pertain to PGE?**

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<sup>3</sup> “Rating Methodology – Regulated Electric and Gas Utilities.” Moody’s Investor Service- December 23, 2013.

<sup>4</sup> “Key Credit Factors for the Regulated Utilities Industry.” Standard & Poor’s- November 19, 2013.

1 A. Yes. Sell side analysts have noted that the Public Utility Commission of Oregon (OPUC)  
2 has historically allowed ROEs that are slightly below the national average, but they also note  
3 that recent settlements have included constructive outcomes such as timely rate recognition  
4 of investment, forward looking test years, revenue decoupling, and a renewable adjustment  
5 clause.<sup>5</sup> Moody's has also become more positive regarding regulation overall, increasing  
6 most electric utility bond ratings in 2014. However, as we noted above, the ratings agencies  
7 remain concerned regarding the asymmetric nature and size of the deadbands in the PCAM.  
8 For example, S&P states "POR has historically traded at a discount to its peers primarily due  
9 to perceived asymmetric risk around fuel and power supply cost variability."<sup>6</sup>

10 **Q. Have other financial analysts expressed concerns regarding the PCAM?**

11 A. Yes. Most electric utilities tend to have a 'pass through' of their power costs if a PCAM is  
12 in place, with no deadbands. PGE's asymmetrical deadband is unique. Thus, it is not  
13 unexpected that analysts' concerns surround the wide deadband and the asymmetry of  
14 benefits allocation, which could result in "meaningful" impacts on PGE's earnings,  
15 increasing volatility. Deutsche Bank mentions the following risks for PGE: risks of capex  
16 disallowances and inability to earn close to the authorized return, the possibility of  
17 underrecovery of fuel and purchased power expenses, the company's small size could limit  
18 its access to financing in the event of a severe credit tightening in the economy, and  
19 exposure to a single regulatory jurisdiction.<sup>7</sup> J.P. Morgan lists PGE fuel and purchased  
20 power recovery mechanism as a source of risk: "any combination of a reduction in hydro

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<sup>5</sup> "POR Strong Results; '14-'16 Estimates Raised- Hold." Gabelli & Company- October 29, 2014.

<sup>6</sup> "POR: Raising EPS and PT on Load Growth and Large Rate Base Opportunity Ahead"-KeyBank, October 28, 2014.

<sup>7</sup> "Planning for next round of growth." Deutsche Bank Market Research- 30 October 2014

1 conditions or an increase in the price of coal or natural gas could adversely impact POR's  
2 near-term earnings."<sup>8</sup>

3 **Q. How does increased earnings volatility impact PGE's cost of capital?**

4 A. Financial theory states that, all else equal, increased earnings volatility results in increased  
5 uncertainty or risk. As we discussed above, investors and creditors require greater  
6 compensation for owning an investment with more risk. A firm with greater earnings  
7 volatility will have a higher cost of capital than a firm with more stable earnings. If the  
8 current PCAM structure results in a higher level of earnings volatility relative to that faced  
9 by comparable firms, then investors' required rate of return for PGE will be higher as well.  
10 As a result, investors will demand a higher return to hold PGE's debt or common stock  
11 increasing the cost to finance the PGE activities.

**B. Update of Financial and Accounting Regulation Changes**

12 **Q. How have financial sector regulations changed?**

13 A. Following the financial crisis, policymakers and regulators have sought to impose tougher  
14 rules and standards on banks in hopes of preventing future systemic crises. Regulatory  
15 efforts have been primarily focused in the following four areas: higher capital requirements  
16 (including higher minimum ratios and higher quality capital); new liquidity standards (new  
17 ratios and requirement for higher quality liquid assets); assigning higher capital  
18 requirements and increasing supervision for the largest (Systemically Important Banks); and  
19 adopting national initiatives (Dodd-Frank and Volker rule).

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<sup>8</sup> "In-line Quarter; Next Rate Filing to Come Early Next Year."-J.P.Morgan-29 October 2014

1 **Q. How will banks meet these new requirements?**

2 A. First, the banks began tightening of lending standards during 2012, making it more difficult  
3 for firms to access credit, potentially increasing firms' costs to obtain credit access. Second,  
4 banks were forced to participate in the liquidity scenarios outlined by central banks around  
5 the world, encouraging many to keep more reserves on hand than they had historically. One  
6 additional result is that U.S. banks have significant excess reserves at the Federal Reserve  
7 Bank (Fed)<sup>9</sup>, leaving less available for lending.

8 **Q. Will these new requirements affect PGE's ability to access funds?**

9 A. Yes. Dodd-Frank is forcing banks and marketers to decide if the added cost of compliance  
10 and reporting is worth the margins of remaining a liquidity provider. In 2015, we could see  
11 some financial stress passed through to PGE and other utilities as banks comply with the  
12 Basel III regulation (full compliance is required by 2019). The impact of this could be an  
13 increase in the costs of carrying credit facilities, as well as a reduction in tenor, and an  
14 upward pressure on the ability to execute FMB issuances at the prices (spreads) that we have  
15 seen during the last couple years. In short, these new requirements have tightened the  
16 availability of funds, which would drive borrowing costs higher.

17 **Q. What challenges does PGE face in connection to imputed debt?**

18 A. PGE faces significant risks and uncertainties connected with imputed debt from purchased  
19 power contracts: S&P "imputes" additional debt to PGE's capital structure based on the  
20 quasi fixed payments from long-term power purchase agreements (PPAs). S&P believes  
21 that because of these quasi-debt instruments an adjustment must be made to the capital  
22 structure to reflect the additional leverage of PPA contracts. Significant increases in the

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<sup>9</sup> <http://research.stlouisfed.org/fred2/series/EXCSRESNS>.



1 debt ratio are a quantitative trigger for potential ratings downgrades. A ratings downgrade  
2 by S&P from PGE's current rating could result in higher interest rates on debt issuances, an  
3 inability to attract equity capital at a reasonable price, and additional collateral postings for  
4 power supply operations.

5 **Q. What challenges does PGE face in connection to Financial Accounting Standards**  
6 **Board Accounting Standards?**

7 A. Accounting Standards Codification (ASC) 810 Consolidation of Variable Interest Entities  
8 (VIE), provides guidance for determining the financial reporting for entities over which  
9 control is attained by means other than through voting rights. Under ASC 810,  
10 consolidation is based on the power to direct significant activities of the VIE and the  
11 obligation to absorb losses that are significant to the VIE. The entity with the power to  
12 direct significant activities and the obligation to absorb significant losses becomes the  
13 "primary beneficiary" of the VIE and, in turn, is required to consolidate the financial  
14 statement of the VIE for financial reporting to the Securities and Exchange Commission  
15 (SEC). ASC 810 requires consolidated financial statements to reflect total assets under  
16 control and total liabilities for which an entity is responsible.

17 Under ASC 810, PGE may be required to reflect the total assets, liabilities and non-  
18 controlling interests of its PPA counterparties on PGE's balance sheet on an ongoing basis  
19 when reporting its financial position on a consolidated basis. Although PGE is not involved  
20 in the creation of these entities and has no equity or debt invested, PGE may be required to  
21 consolidate their financial results with that of PGE. The counterparty entities are expected  
22 to be highly debt-leveraged and consolidating their capital structure will likely distort PGE's  
23 authorized capital structure. High debt leverage will impact PGE's creditworthiness, as the

1 increase to PGE's debt-to-equity percentage increases financial risk. To support PGE's  
2 creditworthiness and realign its capital structure, an increase to PGE's common equity could  
3 be necessary to offset the impact of the additional debt, consolidated under ASC 810.

**C. Macroeconomic Uncertainty**

4 **Q. One factor that can certainly affect bond ratings is the economy, as earnings are**  
5 **partially driven by economic growth. Can you provide a brief overview of the market**  
6 **conditions during 2013 – 2014 and going forward?**

7 A. Yes. First, we should note that the U.S. economy has become more integrated into the  
8 world economy over time. Thus, developments in other parts of the world can affect the  
9 U.S. economy and require additional awareness of these developments. In addition, most  
10 developed countries continued to grapple with the challenge of taking appropriate fiscal and  
11 monetary policy actions in the aftermath of the financial crisis. Of significant concern is the  
12 euro area. The euro area grew slightly in early 2014, but the growth slowed in the second  
13 half of the year and there is concern that the area may be entering a deflation state. The lack  
14 of growth in the euro zone can impact the U.S. economy as the demand for its exports will  
15 decline, due to lower income in the euro area as well as the strengthening dollar. Of  
16 particular concern in the euro zone is the recent political development in Greece, which  
17 elected a government that pledged to cancel the austerity program imposed by outside  
18 financial entities in exchange for the additional lending to Greece. The current government  
19 has stated that it will impose no additional austerity measures, which would result in Greece  
20 not meeting the targets set by the financial lenders. This situation will likely continue into  
21 2015 and possibly 2016 and could likely have an impact on the financial markets.

1 Another macroeconomic factor that needs to be considered is the future rise of interest  
2 rates. The Fed ended its quantitative easing in 2014 and most economists expect long-term  
3 interest rates to rise. The question is when will interest rates begin to rise and to what level?  
4 This is a very difficult question to answer but we concur with Dr. Villadsen's discussion,  
5 when she says that consensus forecasts are substantially higher than the recent 2.1-2.4%  
6 yield on 10-year U.S. government bonds (PGE Exhibit 1100, Section III). We also note that  
7 an additional driver of increased interest rates is the strengthening U.S. economy with  
8 growth close to or exceeding 4.0% during the second and third quarters of 2014.

9 **Q. Do potential risks remain in the U.S. or global economies?**

10 A. Yes. Rating downgrades or deteriorating credit quality of a country may result in a decline  
11 in the value of government bonds held by banks, triggering losses. Where the securities are  
12 used as surety for funding or derivatives, banks face calls for additional collateral, draining  
13 liquidity from markets.

14 Banks may be forced to hedge their credit values adjustment risk, usually by purchasing  
15 default protection on the sovereign or shorting government bonds. This will exacerbate  
16 losses as the sovereign bonds' value falls further.

17 Market constraints may necessitate use of proxies for the sovereign, including shorting  
18 or buying insurance on equity indices or major stocks. Banks may short sell the currency as  
19 a de facto hedge. Proxy hedges transmit the volatility into other asset markets. This creates  
20 additional risk as volatility spikes sharply and correlation between major asset classes  
21 becomes unstable, especially in a risk-on risk-off trading environment.

#### IV. Cost of Long-Term Debt

1 **Q. How did you calculate the cost of long-term debt for 2016?**

2 A. PGE Exhibit 1001 presents the amount and the effective cost of PGE's outstanding long-  
3 term debt for the test year. This includes existing bond issuances as of January 15, 2015, as  
4 well as bond issuances and retirements expected in 2015. We included the applicable  
5 adjustments to debt as approved in OPUC Order No. 07-015 when calculating the amount of  
6 debt outstanding. The full amount and cost for each issuance of debt outstanding at year end  
7 is included. We then multiply the amount outstanding by the effective interest rate for each  
8 bond issuance. The effective interest rate represents the internal rate of return for each of  
9 the cash flows associated with each debt issuance, including all unamortized call premiums  
10 and issuance expenses for debt issuances replaced before maturity with less expensive  
11 financings. Table 3 below summarizes PGE's cost of long-term debt for test year 2016.

**Table 3**  
**PGE's Cost of Long-Term Debt (\$000)**

	<u>2016 Forecast</u>	<u>Order No. 14-422</u>	<u>UE 283</u> <u>Difference</u>
Principal Amount	\$ 2,441,400	\$ 2,321,400	\$ 120,000
Annual Interest Cost	\$ 132,641	\$ 126,354	\$ -6,287
<b>Effective Interest Rate</b>	<b>5.433%</b>	<b>5.443%</b>	<b>-0.010%</b>

12 **Q. What future debt issuances did you include in your analysis?**

13 A. We expect to issue \$255 million in long-term fixed rate debt during 2015 (we already issued  
14 \$75 million in January 2015), and have included the full amount in our calculation as our  
15 current best estimate. At this time, we expect to issue \$60 million of long-term debt in  
16 2016. We will provide an update to our cost of long-term debt in our rebuttal testimony,  
17 which will include any changes in long-term debt for 2016.

1 **Q. What is the expected term, coupon rate, and issuance cost for the bonds to be issued in**  
2 **2015?**

3 A. PGE currently expects to issue three tranches of FMBs in 2015: (1) a 15-year tranche that  
4 already has been issued with a locked-in coupon rate of 3.55%; and (2) two 30-year tranches  
5 that will carry an estimated coupon rate of approximately 5%, which we expect to issue in  
6 late 2015. We will update our cost of debt as actual terms become available.

7 **Q. How were the estimated coupon rates and issuance costs derived by PGE?**

8 A. The rates are based on an indicative new issuance pricing analysis, which includes a current  
9 estimated credit spread provided by a subset of the PGE's investment banks and a forecast  
10 of treasury rates from Global Insight.

11 **Q. Is any long-term PGE debt maturing in 2015 and/or 2016?**

12 A. Yes. \$70 million of 3.46% 5-year FMBs are maturing on January 15, 2015; and \$67 million  
13 of 6.80% 7-year FMBs are maturing on January 15, 2016. The last debt issuance and  
14 redemption is detailed in PGE Exhibit 1001.

## V. Capital Structure

1 **Q. How did you determine the appropriate capital structure for 2016?**

2 A. We evaluated PGE's capital structure using the forecasted income statement and balance  
3 sheet for 2016. Additionally, we considered several factors, including PGE's need to  
4 maintain its financial strength, flexibility and adequate liquidity; its ability to maintain  
5 reliable and economical access to the capital markets; minimizing the cost of capital to  
6 customers and shareholders; and the Commission's Order in UE 283 (Order No. 14-422).  
7 We also considered PGE's desire to maintain a capital structure consisting of 50% long-term  
8 debt and 50% equity.

9 **Q. Does PGE expect to issue common equity in 2016?**

10 A. No. At this time PGE does not anticipate additional equity issuances but we will provide an  
11 update if our financing plans change.

12 **Q. PGE issued 2.4 million shares of common equity in 2013. How did PGE raise this  
13 equity?**

14 A. PGE used a forward structure that is commonly used by companies that allows us to lock in  
15 a common share issuance price but actually issue the shares and receive cash when PGE  
16 requires the cash and to maintain a balanced capital structure. This forward structure  
17 allowed PGE to lock in equity pricing at a favorable at that time level of \$29.50 per share.  
18 PGE has drawn a portion of the cash and issued 1,665,000 of the shares at closing and an  
19 additional 700,000 shares in August of 2013. We expect to exercise the forward contract  
20 and issue the remaining 10.4 million shares in 2015, representing approximately  
21 \$270 million in proceeds, as our capital expenditures progress for our new Carty generating

1 plant. This method of equity issuance also allows PGE to better manage our desired long-  
2 term 50/50 capital structure.

3 **Q. How did customers benefit from the forward structure?**

4 A. Because PGE can draw on the forward structure as it needs cash, we minimize the amount of  
5 'idle' cash and better balance our capital structure over time. Thus, PGE's financing costs  
6 should be lower, all else equal, because our capital structure will be less volatile.

7 **Q. Are you seeking a different capital structure than that in UE 283?**

8 A. Not at this time. In UE 283, Order No. 14-422 adopted a settlement among parties that  
9 reaffirmed PGE's regulated capital structure at 50% equity and 50% debt. PGE's long-term  
10 goal continues to be to maintain our capital structure at 50% equity and 50% debt; however,  
11 the equity ratio fluctuates around the 50% target level, due to the timing and size of debt and  
12 equity issuances. PGE expects the level of equity to exceed 50% by the end of the test year  
13 to accommodate the continued Carty construction progress.

14 **Q. Why does PGE intend to maintain 50% equity in its capital structure?**

15 A. It is the optimal debt-to-equity ratio for PGE because it offers a balance between the ideal  
16 debt-to-equity range and minimizes our cost of capital. The equity portion of PGE's capital  
17 structure is important because it represents how PGE finances its cash needs. In addition,  
18 the equity portion helps offset the leverage and risk that PGE encounters, in part, as it  
19 finishes its large capital expenditure program. It is also required to help offset the leverage  
20 imputed by the rating agencies due to purchased power. In light of ASC 810 (discussed  
21 above), understanding and mitigating the leverage created by imputed debt is also important.  
22 Additionally, as we discuss below, PGE faces risks in today's banking environment because

1 of its small size, and it must maintain a solid capital structure and financial flexibility to help  
2 contain customer costs and retain shareholder value.

3 **Q. Aside from the risks discussed above, what other types of significant risks does PGE**  
4 **encounter today?**

5 A. PGE encounters a variety of risks including:

- 6 • Hydro and wind availability and weather changes: Weather creates risk for PGE in  
7 several ways, including: lower than average stream flows; lower than average wind  
8 flows and the timing of it; and volatility in electricity usage because of sudden,  
9 unexpected weather changes and severe storms. This weather risk is not mitigated by  
10 our decoupling mechanism. These risks can potentially force PGE to purchase more  
11 spot energy, when the markets may be tight. The costs resulting from these purchases  
12 could be greater than what is included in customer prices.
- 13 • Regional economic weakness: Regional economic weakness can adversely affect  
14 PGE's revenues. Weakness in the state of Oregon, can lead to a decline in electricity  
15 usage as customers become more conservative. This can negatively impact PGE's  
16 revenues, thereby reducing PGE's profits, which negatively affect PGE's retained  
17 earnings and returns to investors. Lower retained earnings affect our ability to  
18 reinvest in the business. Oregon's economy was especially hard-hit during the  
19 recession and financial crisis of 2008 and has not completely recovered since then.  
20 The preliminary estimate for the state of Oregon unemployment rate in October 2014  
21 was 7.0%, only 8 other U.S. states had worse unemployment rate than Oregon, and  
22 U.S. average rate was 5.8%.



- 1           • Uncertainty regarding financial and business operations contingencies: as noted in our  
2           SEC annual 10-K and quarterly 10-Q filings<sup>10</sup>. PGE could be vulnerable to cyber  
3           security and physical assets attacks. Electric industry is going through accelerated  
4           technological changes which can make a basic premise of current business model  
5           (economies of scales gained from central generation facilities) obsolete. Our  
6           workforce is aging and PGE is starting to experience difficulties in finding  
7           replacements for key positions.
- 8           • Uncertain federal and state energy policy: legislative or regulatory efforts to reduce  
9           greenhouse gas emissions and water discharges from thermal plants could lead to  
10          increased capital and operating costs. Operating changes required from PGE in order  
11          to comply with existing and new laws related to fish and wildlife also could  
12          materially increase PGE costs.

13 **Q. Do the financial markets agree that these are risks for PGE?**

14 A. Yes. Recent reports from various equity analysts include at least one of the risks listed  
15          above. We have included the most recent reports from Wells Fargo and J.P. Morgan in our  
16          work papers.

17 **Q. Can PGE mitigate these risks?**

18 A. PGE can manage some of these risks, but not others. For risks that PGE can manage, PGE  
19          develops management capabilities and core competencies, as well as establishes strong  
20          processes and procedures to mitigate some of the risk. PGE is proactively implementing  
21          programs that will better prepare us for the operational impacts of adverse events. For

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<sup>10</sup> <http://investors.portlandgeneral.com/sec.cfm>

Starting with page 117, Note 18- 2013 SEC Form 10-K

<http://files.shareholder.com/downloads/POR/3830456804x0xS784977-14-59/784977/filing.pdf>

Starting with page 25 Note 7- the most recent 10/28/14 SEC Form 10-Q

1 example, recovery from catastrophic events remain a key strategic focus of PGE. The office  
2 of Business Continuity and Emergency Management has developed formal recovery plans to  
3 address disasters and implement emergency management procedures. Another risk category  
4 is PGE's fuel supply. PGE is developing backup plans for fueling in the event of extended  
5 outages of natural gas pipelines or coal supply. We are looking at gas dispatch modeling  
6 and storage solutions and performing cost-benefit analysis of re-establishing ability of gas  
7 plants to run on oil if pipeline interruptions occur.

8 We note however that there are risks that PGE cannot manage including those  
9 associated with the government or regulatory framework. For these types of risk, we ensure  
10 that we are prepared and aware and capable of responding to them to the best of our ability.

11 **Q. Could the risks addressed above alter the cost of capital you request?**

12 A. Yes. If these risks result in financial distress to PGE and/or its peers, the cost of long-term  
13 debt and the cost of equity will increase, with a resulting long-term cost impact on  
14 customers through increased borrowing costs and possibly a ratings downgrade.

## VI. Qualifications

1 **Q. Mr. Greene, please state your educational background and experience.**

2 A. I received a Bachelor of Science degree in Business Administration from the University of  
3 Portland in 2000. I received a Master of Science in Taxation from Golden Gate University  
4 in 2009. I joined PGE in 2010 as Tax Manager and was Manager of Corporate Finance and  
5 Assistant Treasurer from August 2012 to December 2012. Since January 2013, I have held  
6 the title of Assistant Treasurer and Director of Treasury & Tax.

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

8 A. Yes.

**List of Exhibits**

<b><u>PGE Exhibit</u></b>	<b><u>Description</u></b>
1001	Cost of Long-Term Debt
1002	Standard & Poor's and Moody's Investors Service Credit Ratings

Cost of Long-Term Debt

Expected December 31, 2016 - 2016 Test Year

Updated 01.12.2015

(A)	AWO (B)	Type (C)	Description (D)	Issue Date (E)	Maturity Date (F)	Term (G)	Coupon (H)	Gross Proceeds (I)	DD&E Issue Costs (J)	Call Premium & Unamort. DD&E if Refunded Issu (K)	F/W	Net Proceeds (L)	Embedded Cost (M)	Net to Gross Rate (N)	Face Amount Outstanding (O)	Net Outstanding (P)	Face Amount Weight (Q)	Weighted Rate (R)
												[I - J - K]		[L / I]		[N * O]	[O / Total]	[Q * M]
1	7000000037	Series MTT-9.310% Series		12-Aug-91	11-Aug-21	30	9.310%	\$20,000,000	\$176,577	\$0		\$19,823,423	9.399%	99.117%	\$20,000,000	\$19,823,423	0.842%	0.079%
2	7000000022	Series VI M6.750% Series		4-Aug-03	1-Aug-23	20	6.523%	\$50,000,000	\$521,342	\$1,946,809	1	\$47,531,849	6.985%	95.064%	\$50,000,000	\$47,531,849	2.106%	0.147%
3	7000000023	Series VI M6.875% Series		4-Aug-03	1-Aug-33	30	6.648%	\$50,000,000	\$521,342	\$1,946,809	1	\$47,531,849	7.046%	95.064%	\$50,000,000	\$47,531,849	2.106%	0.148%
4	7000000024	FMB 6.310% Series		26-May-06	1-May-36	30	6.310%	\$175,000,000	\$1,270,865	\$6,199,472	3	\$167,529,663	6.640%	95.731%	\$175,000,000	\$167,529,663	7.370%	0.489%
5	7000000025	FMB 6.260% Series		26-May-06	1-May-31	25	6.260%	\$100,000,000	\$723,857	\$4,132,982	2	\$95,143,161	6.662%	95.143%	\$100,000,000	\$95,143,161	4.212%	0.281%
6	7000000433	FMB 5.800% Series		16-May-07	1-Jun-39	32	5.800%	\$170,000,000	\$1,447,420	\$50,969	3	\$168,501,611	5.861%	99.119%	\$170,000,000	\$168,501,611	7.160%	0.420%
7	7000000027	FMB 5.810% Series		19-Sep-07	1-Oct-37	30	5.810%	\$130,000,000	\$1,627,092	\$0		\$128,372,908	5.899%	98.748%	\$130,000,000	\$128,372,908	5.475%	0.323%
8	7000000266	FMB 5.800% Series		12-Dec-07	1-Mar-18	10	5.800%	\$75,000,000	\$637,500	\$0		\$74,362,500	5.912%	99.150%	\$75,000,000	\$74,362,500	3.159%	0.187%
9	7000000693	FMB 6.800% Series		15-Jan-09	15-Jan-16	7	6.800%	\$67,000,000	\$0	\$0		\$67,000,000	6.919%	0.000%	\$0	\$0	0.000%	0.000%
10	7000000181	FMB 6.100% Series		13-Apr-09	15-Apr-19	10	6.100%	\$300,000,000	\$2,608,223	\$0	4	\$297,391,777	6.218%	99.131%	\$300,000,000	\$297,391,777	12.635%	0.786%
11	7000000182	FMB 5.430% Series		3-Nov-09	3-May-40	30.5	5.430%	\$150,000,000	\$1,034,283	\$0		\$148,965,717	5.477%	99.310%	\$150,000,000	\$148,965,717	6.317%	0.346%
12	7000000185	PCB Clstrip 98A Fixed		11-Mar-10	1-May-33	23	5.000%	\$97,800,000	\$688,885	\$1,521,911	5	\$95,589,204	5.168%	97.739%	\$97,800,000	\$95,589,204	4.119%	0.213%
13	7000000036	PCB Bidmn 98A Fixed		11-Mar-10	1-May-33	23	5.000%	\$23,600,000	\$166,234	\$912,065	5	\$22,521,701	5.346%	95.431%	\$23,600,000	\$22,521,701	0.994%	0.053%
14	7000001028	FMB 3.810% Series		15-Jun-10	15-Jun-17	7	3.810%	\$58,000,000	\$351,307	\$0		\$57,648,693	3.910%	99.394%	\$58,000,000	\$57,648,693	2.443%	0.096%
15	2013-1	FMB 4.47% Series		27-Jun-13	15-Jun-44	31	4.470%	\$150,000,000	\$1,121,463	\$0		\$148,878,537	4.515%	99.252%	\$150,000,000	\$148,878,537	6.317%	0.285%
16	2013-2	FMB 4.47% Series		29-Aug-13	14-Aug-43	30	4.470%	\$75,000,000	\$560,731	\$0		\$74,439,269	4.516%	99.252%	\$75,000,000	\$74,439,269	3.159%	0.143%
17	2013-3	FMB 4.74% Series		15-Nov-13	15-Nov-42	29	4.740%	\$105,000,000	\$671,615	\$0		\$104,328,385	4.781%	99.360%	\$105,000,000	\$104,328,385	4.422%	0.211%
18	2013-4	FMB 4.84% Series		16-Dec-13	15-Dec-48	35	4.840%	\$50,000,000	\$319,817	\$0		\$49,680,183	4.878%	99.360%	\$50,000,000	\$49,680,183	2.106%	0.103%
19	2014-1	FMB 4.39% Series		15-Aug-14	15-Aug-45	31	4.390%	\$100,000,000	\$628,548	\$0	6	\$99,371,452	4.427%	99.371%	\$100,000,000	\$99,371,452	4.212%	0.186%
20	2014-2	FMB 4.44% Series		15-Oct-14	15-Oct-46	32	4.440%	\$100,000,000	\$628,548	\$0	6	\$99,371,452	4.477%	99.371%	\$100,000,000	\$99,371,452	4.212%	0.189%
21	2014-3	FMB 3.51% Series		17-Nov-14	15-Nov-24	10	3.510%	\$80,000,000	\$502,838	\$0	6	\$79,497,162	3.585%	99.371%	\$80,000,000	\$79,497,162	3.369%	0.121%
22	2015-1	FMB 2015 Forecast		15-Jan-15	15-Jan-25	15	3.550%	\$75,000,000	\$375,000	\$0	7	\$74,625,000	3.593%	99.500%	\$75,000,000	\$74,625,000	3.159%	0.114%
23	2015-10	FMB 2015 Forecast		15-Oct-15	15-Oct-45	30	5.000%	\$90,000,000	\$450,000	\$0	7	\$89,550,000	5.032%	99.500%	\$90,000,000	\$89,550,000	3.790%	0.191%
24	2015-11	FMB 2015 Forecast		15-Nov-15	15-Nov-45	30	5.000%	\$90,000,000	\$450,000	\$0	7	\$89,550,000	5.032%	99.500%	\$90,000,000	\$89,550,000	3.790%	0.191%
25	2016-1	FMB 2016 Forecast		15-Jan-16	15-Jan-46	30	5.190%	\$60,000,000	\$300,000	\$0	8	\$59,700,000	5.223%	99.500%	\$60,000,000	\$59,700,000	2.527%	0.132%
Annual expense from loss on reacquired debt										\$17,139		(\$17,139)						
Totals								\$2,441,400,000	\$17,783,487	\$16,728,156		\$2,406,888,357		\$2,374,400,000	\$2,339,905,496	100.00%	5.432%	
Cost of LT Debt (includes annual expense from loss on reacquired debt)																		5.433%

Losses on Other Reacquired Debt	Issue Date	Mat. Date	Reacquisition Date	Gross Proceeds	Total Gain/Loss to Amortize	2016 Expense
700000005.450% Colstrip 98B Fixed	1-May-03	1-May-33	1-May-09	\$21,000,000	\$411,622	\$17,139
						\$17,139

Footnotes

- \$5.8 million in call premia resulting from acquisition of 9.46% and 7.75% issues was allocated evenly among August 2003 issues (see UE 180, PGE Exhibit 1400, page 3).
- There was a \$12 million call premium on the 8.125% redeemed issue. A portion was disallowed in UE 180. The remainder is rolled into the new debt and will be paid over the period of the May 2006 issuances.
- \$5.1 million Trojan 1990B PCBs redeemed early in June 2007. Unamortized loss of \$50,969 was added to the 5.800% series \$170MM issued in May 2007 used to redeem the PCBs.
- "DD&E Issue Costs" (column J) was updated to reflect \$222,000 discount to par at issuance.
- PCB issues put-back to PGE in May 2009. PGE re-marketed in March 2010 (due on original maturity date of 05/01/2033).
- See next tab for Report of Securities
- Assume 5% Coupon for 30 year maturity and 0.5% Cost of Issuance
- Assume 4.19% Global Insight 2016 30 year treasury rate plus a spread of 10

## Standard &amp; Poor's and Moody's Investors Service Credit Ratings

	S&P	Rating Date	Moody's	Rating Date
Senior Secured Debt	A-	2/21/2012	A1	1/30/2014
Senior Unsecured	BBB	2/21/2012	A3	1/30/2014
Short-term/ Commercial Paper	A-2	2/21/2012	P-2	7/2/2012

"Credit Opinion: Portland General Electric Company" February 21, 2012. Standard & Poor's

"Credit Opinion: Portland General Electric Company" July 2, 2012. Moody's Investors Service

"Rating Action: Portland General Electric Company" January 30, 2014 Moody's Global Credit Research