



**Portland General Electric Company**  
121 SW Salmon Street • 1WTC0306 • Portland, OR 97204  
portlandgeneral.com

October 8, 2024

***Via Electronic Filing***

Public Utility Commission of Oregon  
Attention: Filing Center  
P.O. Box 1088  
Salem, OR 97308-1088

RE: UE 435 – In the Matter of Portland General Electric Company, Request for a General Rate Revision

Dear Filing Center:

Enclosed for filing today in the above-reference docket is Portland General Electric Company's (PGE) Errata to PGE's Reply Testimony 1800 filed on August 14, 2024 and PGE's Surrebuttal Testimony 2900 filed on October 1, 2024.

Upon further review, PGE has identified the following items to be corrected.

- 1) Footnote 22 – "Staff/400" instead of "Staff/100"
- 2) Footnote 121 – "Staff Exhibit 405" instead of "Staff Exhibit 406"
- 3) Footnote 135 – Should be "pp. 233 – 234" instead of "pp. 133 – 134"
- 4) Footnote 195 – Should be "PGE" instead of "PGL"
- 5) Footnote 189 – Should be "Roger A. Morin, Modern Regulatory Finance, 2021, page 144-145. See also Roger A. Morin, New Regulatory Finance, 2006, p. 128" instead of "Roger A. Morin, New Regulatory Finance, 2006, p. 128"

If you have any questions, please feel free to contact me at (503) 464-7488. Please direct all formal correspondence and requests to the following e-mail address:

[pge.opuc.filings@pge.com](mailto:pge.opuc.filings@pge.com).

Sincerely,

*/s/ Jaki Ferchland*

Jaki Ferchland  
Senior Manager, Revenue Requirement

1 Staff then applied seven additional screening criteria to determine its final proxy sample.  
2 Specifically, it excluded companies that did not meet the following criteria:

- 3 1. Has a *Value Line* beta of 1 or less;
- 4 2. Forecasted by *Value Line* to have positive dividend growth;
- 5 3. Long-term Issuer Credit Rating between Baa2 and A1, inclusive, from Moody's and  
6 from BBB- to A, inclusive, from S&P;
- 7 4. No decline in annual dividends in the last five years, according to *Value Line*;
- 8 5. Has heavily regulated electric utility revenue;
- 9 6. Has a debt capital structure of 45% to 55%, inclusive, comprised of long-term debt,  
10 according to *Value Line*;<sup>22</sup> and
- 11 7. Has no recent merger and acquisition activity.<sup>23</sup>

12 Applying the screening criteria resulted in 14 electric utilities in Staff's proxy sample.<sup>24</sup>

13 After selecting the proxy sample, Staff employs two versions of a three-stage DCF model  
14 to estimate the cost of equity.<sup>25</sup> The first is a three-stage dividend discount model that  
15 incorporates a terminal valuation based on perpetual growth (Model X).<sup>26</sup> The second model  
16 is a three-stage dividend discount model that incorporates a terminal valuation based on  
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<sup>22</sup> Staff also performed a sensitivity to include companies with a debt capital structure of 40% to 60%, inclusive, but Staff found this relaxed screening criteria had no impact on its modeling results. See Staff/4+00, Muldoon/9, footnote 7.

<sup>23</sup> Staff/400, Muldoon/9.

<sup>24</sup> *Id.*, 10.

<sup>25</sup> *Id.*, 15.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Id.*, 15-16.

<sup>28</sup> Staff Exhibit 402.

**CAPM Inputs and Implementation**

1 **Q. What inputs does Staff rely upon in its implementation of the CAPM.**

2 A. Staff uses a risk-free rate based on 30-year U.S. Treasury bond yields as of February 24, 2024  
3 (4.348%).<sup>121</sup> Staff also calculates an MRP using annualized S&P 500 return data over 30-years  
4 (9.08%) paired with current 30-year U.S. Treasury yields (4.348%), resulting in an MRP of  
5 4.73%.<sup>122</sup> Staff's beta estimates are sourced from *Value Line* as of Q3 2023.<sup>123</sup> While Staff  
6 applies the Hamada Adjustment betas in the DCF Model, Staff does not apply the Hamada  
7 Adjustment to its CAPM results. That is, Staff's CAPM estimates do not account for  
8 differences in financial leverage between the proxy companies and PGE.

9 **Q. What concerns do you have with Staff's risk-free rate?**

10 A. Staff relies on current yields on long-term Treasury bonds as its risk-free rate, which is not  
11 reflective of the capital market conditions that will prevail when PGE's rates are in effect.

12 Since the time of my Direct Testimony, inflation has persisted and remains above the  
13 Federal Reserve's target of 2% on average. As of June 2024, the U.S. Bureau of Labor  
14 Statistics reports that the Consumer Price Index was 3.0%, which is above the Federal  
15 Reserve's target of 2.0% on average.<sup>124</sup> While this is lower than the high of 9.1% in 2022, it  
16 is a continuation of a trend since June 2023 where CPI has persisted at around 3.0%.<sup>125</sup>  
17 The Federal Reserve has maintained a restrictive monetary policy to combat inflation.<sup>126</sup>

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<sup>121</sup> Staff/400, Muldoon/31 and Staff Exhibit 4056. *Note*, Staff states that they also rely on the 10-year U.S. Treasury bond to determine the risk-free rate. However, Staff Workpaper 406 labels the risk-free rate as "30-Yr UST Yield." Based on yields posted on the WSJ website cited by Staff, it appears that Staff is only 30-year U.S. Treasuries and not 10-year U.S. Treasuries in its CAPM.

<sup>122</sup> *Ibid.*

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<sup>124</sup> U.S. Bureau of Labor Statistics, Consumer Price Index News Release, USDL-24-1325, July 11, 2024, [https://www.bls.gov/news.release/archives/cpi\\_07112024.htm](https://www.bls.gov/news.release/archives/cpi_07112024.htm).

<sup>125</sup> PGE/600, Figueroa – Liddle/25.

<sup>126</sup> Federal Reserve, "Transcript of Chair Powell's FOMC Press Conference," July 31, 2024, <https://www.federalreserve.gov/mediacenter/files/fomepresconf20240731.pdf>.

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2 *Modern Regulatory Finance* states:

3 In capital markets, where returns are a probability distribution, the answer that  
4 takes account of uncertainty, the arithmetic mean, is the correct one for  
5 estimating discount rates and the cost of capital. While the **geometric mean**  
6 is appropriate when measuring performance over a long time period, it **is**  
7 **incorrect when estimating a risk premium to compute the cost of**  
8 **capital.**<sup>133</sup>

9 Standard MBA textbooks also agree that the arithmetic mean is the appropriate metric  
10 when estimating the cost of capital. Brealey, Myers, and Allen's *Corporate Finance* textbook  
11 says:

12 If the cost of capital is estimated from historic returns or risk premiums, use  
13 arithmetic averages, not compound annual rates of return<sup>134</sup> (i.e., geometric  
14 averages)

15 Staff's reliance on a historic MRP estimated using the geometric mean will downwardly  
16 bias the MRP, which can be shown statistically.<sup>135</sup> While I do not endorse Staff's 30-year  
17 MRP analysis period, *Kroll* reports that the historic MRP measured from 1993 to 2023 is  
18 5.66% using the geometric mean, whereas it is 7.47% measured using the arithmetic  
19 average.<sup>136</sup> Staff's estimate of the MRP is inconsistent with its stated purpose (i.e., to measure  
20 the cost of capital) and downwardly biases Staff's CAPM estimates by about 161 bps.<sup>137</sup>

21 My third concern with Staff's MRP is that they subtract the current risk-free rate from the  
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<sup>133</sup> Roger A. Morin, *New Regulatory Finance*, p. 151. (emphasis added)

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<sup>135</sup> The arithmetic average of a series can be approximated as:

$$\text{Arithmetic Average} = \text{Geometric Average} + \text{Variance of the Series} / 2$$

Because the variance is a positive number, the arithmetic average is larger than the geometric average. See also, Leonardo R. Giacchino and Jonathan A. Lesser, "Principles of Utility Corporate Finance," 2011, pp.

[2+33-2+34](#).

<sup>136</sup> Kroll, Cost of Capital Navigator, accessed July 25, 2024.

<sup>137</sup>  $(7.47\% - 5.66\%) \times \text{Staff's sample average beta of } 0.89 = 1.61\%$ .

(increases), all else equal. There is significant evidence from academic research that supports this inverse relationship. As Dr. Morin summarizes in his textbook:

This is particularly true in high inflation environment. Interest rates rise as a result of accelerating inflation, and the interest rate risk of bonds intensifies more than the average of common stocks, which are partially hedges from the ravages of inflation. This phenomenon has been termed as a “lock-in” premium. Conversely, in low interest rate environments, when bondholders’ interest rate fears subside and shareholders’ fear as loss of earnings power dominate, the risk differential will widen and hence the risk premium will increase.

Published empirical studies demonstrated that risk premiums vary inversely with the level of interest rates, rising when rates fell and declining when interest rates rose. Studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), and Morin (2020), and others demonstrate that beginning in 1980, risk premiums varied inversely with the level of interest rates—rising when rates fell and declining when rates rose.<sup>189</sup>

Looking to the MRP and risk-free rates relied on by Kroll relative to the long-term historic estimates highlights the inconsistencies.

**Figure 5: MRP and Risk-Free Rate Relationships**

	<b>Kroll's Long-Term Historic Estimate</b> 1926 - 2023	<b>Kroll's Current "Normalized" Estimate</b> June 2024
Risk-Free Rate	4.87%	3.5% (-1.37%)
Market Risk Premium	7.17%	5.0% (-2.17%)

Kroll reports the historic long-term (1926-2023) MRP estimate is 7.17%, which is measured relative to a historic long-term (1926-2023) income only return on 20-year government bonds of 4.87%.<sup>190</sup> Whereas, Kroll’s current normalized MRP estimate is 5.0%

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Figure 6: Corrected Staff CAPM Results<sup>194</sup>

	Original		Corrected	
	Staff Screen	Company Screen	Staff Screen	Company Screen
Risk-free Rate	4.35%	4.35%	4.20%	4.20%
Market Risk Premium	4.73%	4.73%	7.17%	7.17%
Beta (Sample Average)	0.92	0.89	0.92	0.93
<b>CAPM</b>	<b>8.7%</b>	<b>8.6%</b>	<b>10.8%</b>	<b>10.8%</b>
<b>Difference</b>			<b>2.1%</b>	<b>2.2%</b>

1 **Q. What is the impact of your concerns on Dr. Kaufman’s CAPM implementation and the**  
 2 **resulting ROE estimates?**

3 A. As discussed above, I disagree with Dr. Kaufman’s revised beta estimates and the Kroll’s  
 4 current “normalized” MRP estimate. I also disagree with his decision to disregard the standard  
 5 financial techniques to adjust for differences in financial leverage between the proxy  
 6 companies and PGE. Given that Dr. Kaufman adopts my CAPM and then makes these  
 7 adjustments, I find that these adjustments downwardly bias his CAPM estimates by 300 to  
 8 340 basis points relative to my reasonable range of CAPM estimates.<sup>195</sup>

**Financial Leverage Adjustments**

9 **Q. What concerns do you have with Dr. Kaufman’s analysis of capital structure impacts on**  
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11 A. Dr. Kaufman criticizes and ultimately throws out the financial leverage adjustments in my  
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 13 ROE is not commensurate with the change in magnitude of the equity ratio for the proxy  
 14 companies in the DCF. This is based on a comparison of the estimated ROEs for proxy

<sup>194</sup> PGE Exhibit 1800C-01.

<sup>195</sup> Rejecting Dr. Kaufman’s adjustments to my CAPM implementation would restore the CAPM-based ROE estimates as presented in PGE Exhibit 603 and 605C.

1 Staff then applied seven additional screening criteria to determine its final proxy sample.  
2 Specifically, it excluded companies that did not meet the following criteria:

- 3 1. Has a *Value Line* beta of 1 or less;
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Figure 6: Corrected Staff CAPM Results<sup>194</sup>

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<sup>194</sup> PGE Exhibit 1800C-01.

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1 **Q. Please summarize the ROE and capital structures recommendations put forth in this**  
 2 **proceeding.**

3 A. Figure 1, below, summarizes the ROE and capital structure recommendations put forth in this  
 4 proceeding, including Staff’s updated recommended range.<sup>7</sup>

**Figure 1: Recommended ROE and Reasonable Ranges**

Party	Recommended ROE	Low Range	High Range	Recommended Equity %
PGE/Figueroa <sup>8</sup>	9.65%	10.25%	11.25%	50.0%
OPUC Staff Rebuttal <sup>9</sup>	n/a	9.22%	9.46%	50.0%
OPUC Staff Direct <sup>10</sup>	n/a	8.96%	9.41%	50.0%
Kaufman (AWEC) <sup>11</sup>	9.25%	7.6%	9.3%	44.6%
Jenks (CUB) <sup>12</sup>	9.2%	9.2%	9.4%	n/a
Perry (Walmart) <sup>13</sup>	n/a	n/a	n/a	n/a

**B. Response to Staff and AWEC**

5 **Q. In rebuttal testimony, Staff and AWEC argue that their respective ROE**  
 6 **recommendation for PGE is reasonable. Do you agree?**

7 A. No. I continue to find that Staff’s revised recommended ROE range of 9.22% to 9.46% and  
 8 AWEC’s recommended ROE of 9.25% are too low, not reflective of market indicators or  
 9 recently allowed returns for other vertically integrated electric utilities, and are derived from  
 10 problematic ROE estimation methodologies.<sup>14</sup>

11 Staff argues that PGE’s requested ROE of 9.65% is a “sizable increase” from its current  
 12 authorized ROE of 9.5% and instead the Commission should authorize an ROE within its

<sup>7</sup> Note, Staff provided a recommended range of ROEs for PGE but did not recommend a point estimate. See Staff/2800, Muldoon/34.

<sup>8</sup> PGE/1800, Figueroa – Liddle/17. Note, in the Figueroa-Liddle Testimony, the Company requested an allowed ROE of 9.75% but has since made a managerial decision to reduce the Company’s requested allowed ROE to 9.65%.

<sup>9</sup> Staff/2800, Muldoon/34.

<sup>10</sup> Staff/~~400-2800~~, Muldoon/5, 7.

<sup>11</sup> AWEC/400, Kaufman/75.

<sup>12</sup> CUB/400, Jenks/70-71.

<sup>13</sup> Note, Walmart does not offer a specific ROE or capital structure recommendation. See Walmart/100, Perry/13-14.

<sup>14</sup> I also continue to find CUB’s recommended ROEs is too low as well.

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 2 **proceeding.**

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Kaufman (AWEC) <sup>11</sup>	9.25%	7.6%	9.3%	44.6%
Jenks (CUB) <sup>12</sup>	9.2%	9.2%	9.4%	n/a
Perry (Walmart) <sup>13</sup>	n/a	n/a	n/a	n/a

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<sup>10</sup> Staff/400, Muldoon/5, 7.

<sup>11</sup> AWEC/400, Kaufman/75.

<sup>12</sup> CUB/400, Jenks/70-71.

<sup>13</sup> Note, Walmart does not offer a specific ROE or capital structure recommendation. See Walmart/100, Perry/13-14.

<sup>14</sup> I also continue to find CUB’s recommended ROEs is too low as well.