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March 30, 2020

Via Electronic Filing & upload to Huddle

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

RE: Docket No. UE 370 – In the Matter of PORTLAND GENERAL ELECTRIC COMPANY, Renewable Resource Automatic Adjustment Clause.

Enclosed for electronic filing are Cover letter, Staff Testimony, Certificate of Service and Service List:

Exhibit 100, confidential pages are: 7, 22 to 25 and 35
Exhibits 101 – 104

Exhibit 200, confidential pages are: 6, 10 and 11
Exhibits 201-204
Exhibit 205 is confidential

Exhibit 300, confidential pages are: 3, 9, 17, 19, 24 to 27 and 29
Exhibit 301
Exhibit 302 page 9 is confidential
Exhibit 303 is confidential
Exhibit 304 is confidential and electronic spreadsheet.

As agreed with the PUC.FILINGCENTER, all parties will not be providing hard copies with this filing.

With PGE's approval, this filing of both confidential and non-confidential will be uploaded to Huddle by close of business today.

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

CERTIFICATE OF SERVICE

UE 370

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 30th day of March, 2020 at Salem, Oregon

Kay Barnes

Kay Barnes
Public Utility Commission
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UE 370 – SERVICE LIST

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CASE: UE 370
WITNESS: STEVE STORM

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 100

Opening Testimony

MARCH 30, 2020

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

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

Q. Please describe your educational background and work experience.

A. My witness qualification statement is included as Exhibit Staff/101.

Q. What is the purpose of your testimony?

A. I serve as the summary witness for the Public Utility Commission of Oregon Staff (Staff) in consolidated proceedings Docket Nos. UE 370 and UE 372. My testimony describes my analysis and includes recommendations regarding issues I have identified regarding Portland General Electric Company's (PGE or Company) proposed increase in its Schedule 122 – Renewable Resources Automatic Adjustment Clause (RAC) rates to include cost recovery for portions of the Wheatridge Renewable Energy Facility (WERF). My testimony addresses PGE's proposed changes and provides Staff's proposed changes to PGE's Schedule 122.

Q. What other Staff witnesses are sponsoring testimony?

Staff witness Caroline Moore addresses PGE's proposal to sell Renewable Energy Credits (RECs) to its retail subscribers of renewable portfolio options programs in Exhibit Staff/200.

Staff witness Moya Enright analyzes PGE's request, originally filed in Docket No. 372, to recover costs associated with two energy storage microgrid projects through Schedule 122 RAC rates in Exhibit Staff/300.

Q. Did you prepare any exhibits for this docket?

A. Yes. I prepared Exhibits Staff/101, consisting on one page, Staff/102, consisting of two pages; Staff/103, consisting of one page; and Staff/104, consisting of one page.

Q. How is your testimony organized?

A. My testimony is organized as follows:

PART 1, BACKGROUND AND SUMMARY OF RECOMMENDATIONS

Q. Please summarize PGE's request in Docket No. UE 370.

A. PGE requests cost recovery, through its Schedule 122, of costs for specific facilities and shared facilities that represent the wind-related portions of the Wheatridge Renewable Energy Facility (WREF). The Company requests an incremental revenue requirement that includes the fixed costs of its WREF investments and the associated O&M costs, income taxes, property taxes and other applicable fees and costs, including Schedule 125 eligible net variable power costs (NVPC) prior to 2021.

Q. When does PGE propose cost recovery to begin?

A. PGE requests a rate effective date simultaneous with the in service date of its WERF investments. The Company's initial filing proposed this date to be December 31, 2020, the date by which its wind-related WERF investments are contractually obligated to be in service. PGE's response to Staff Data Request 25 provided an updated Wheatridge in service date of October 2, 2020.

Q. Please summarize PGE's request in Docket No. UE 372.

A. PGE's filing in this docket requested recovery of the Company's costs associated with the Beaverton Public Safety Center (BPSC) and the Anderson Readiness Center (ARC) energy storage microgrid pilots.

Q. Please provide a brief explanation of why these two dockets were consolidated.

A. Parties to the two proceedings determined, at the prehearing conferences for each, that consolidation was appropriate, as each docket involved changes to PGE's Schedule 122 rates and rate effective dates that are in reasonably close proximity of one another. The Parties determined it would be more efficient to have one procedural schedule addressing both dockets. Administrative Law Judge Allan J. Arlow granted Parties' motion to consolidate the two dockets into one in his Prehearing Conference Memorandum and Ruling issued January 17, 2020.The consolidated docket is Docket No. UE 370.

Q. What is the impact of Staff's recommendations in Exhibit 100 on the RAC annual revenue requirement proposed by PGE?

A. Staff's recommendations regarding issues discussed in Exhibit 100 collectively result in a $1,827 thousand reduction to the annual revenue requirement PGE proposed in its initial filing in this proceeding. This represents a 6.9 percent decrease.

Q. What is the impact of Staff's recommendations in Exhibit 300 on the RAC annual revenue requirement proposed by PGE?

Staff's recommendation regarding issues discussed in Exhibit 300 result in a reduction of the entire annual revenue requirement requested by PGE for cost recovery of the two microgrid pilots.

Q. Please summarize Staff's recommendations in this proceeding?

A. Staff recommends the Commission take the following actions:

Investments Proposed in Docket No. UE 370

1. Find PGE's decision to invest in the Wheatridge Facility to be prudent, based on the assumptions and analysis performed by the Company in Docket No. LC 66, the Company's 2016 IRP, and Docket No. UM 1934, the Company's RFP proceeding associated with its revised renewable action item in its 2016 IRP.
2. Consider ratepayer protections in PGE's Annual Update Tariff (AUT), which is the proceeding that addresses the Net Variable Power Costs (NVPC) impacts associated with Production Tax Credits (PTC), capacity factors, and other aspects of NVPC.
3. Require that PGE provide Staff with its final update of Wheatridge's in service date, if different than the current estimate of October 2, 2020, 30 days in advance of the updated in service date.
4. Deny, if Wheatridge's in service date is later than December 31, 2020, PGE proposed cost recovery in Docket No. UE 370 and require PGE to refile its application for cost recovery.
5. Require that PGE provide Staff an attestation by PGE's chief executive officer that the Wheatridge facility for which it is seeking cost recovery is in commercial operation and generating electricity that is delivered to PGE customers at locations within the Company's service area prior to the rate effective date resulting from this proceeding.
6. Deny, without prejudice, PGE's request to recover a $16 million (which includes a $1 million calculation error) "punch list" investment that would be made subsequent to PGE's requested rate effective date.

7. Authorize PGE to recover its Wheatridge costs with an annual revenue requirement that includes depreciation expense calculated using the appropriate depreciation parameter values, as discussed in Staff's testimony.
8. Direct PGE to update its Schedule 125 Net Variable Power Cost (NVPC) rates to reflect the annualized NVPC impacts (savings) of Wheatridge at the same time it updates its Schedule 122 rates.
9. Deny PGE's request to create a deferred tax asset that would be used to carry-forward PTC that PGE will be unable to utilize in years 2021 through 2026.
10. Deny PGE's request to sell Wheatridge-produced RECs within the first five years of its in service date as part of this proceeding.
11. Deny PGE's proposal to sell Wheatridge-produced RECs to its retail subscribers of renewable portfolio options programs.
12. Deny PGE's request in this case and require PGE to re-file in a different ratemaking proceeding for Wheatridge cost recovery if it is not commercially available on or prior to December 31, 2020 such that the Company qualifies for 100 percent of PTC generated by the projects.

Investments Proposed in Docket No. UE 372

13. Reject PGE's current filing as ineligible for cost recovery under PGE's Schedule 122 RAC mechanism, without prejudice, and allow the Company

to refile for cost recovery in its next general rate case proceeding or, if appropriate, following the conclusion of Docket No. AR 616.

As an alternative to Staff's primary recommendation immediately above, If the Commission allows recovery of these energy storage pilots through the existing RAC, Staff recommends that the Commission:

a) Enforce the $2 million cap on overnight capital costs for microgrid pilots, in accordance with Docket No. UM 1856, Order No. 18-290.

b) Find the Company's costs associated with the BPSC microgrid to be prudent, subject to Staff review of final cost reports, and the following disallowance:

   i. Disallowance of **[begin confidential]** [redacted] **[end confidential]** in capital costs, which represents an avoidable payment card surcharge paid by PGE to its BPSC microgrid vendor.

c) Find the Company's costs associated with the ARC microgrid to be prudent, subject to Staff review of final cost reports, but impose the following management disallowance:

   i. Due to management imprudence for missing the statutory deadline for procurement, the Commission should assess a one-time 10 percent management disallowance on costs for the ARC microgrid project, equivalent to $97,580.

d) Require PGE to file an updated in-service date for each microgrid pilot, if this should change from the current dates of May 5, 2020, for the BPSC pilot, and December 31, 2020, for the ARC pilot.[1]

e) Require PGE to file an attestation by its chief executive officer that both microgrid pilots are operating, prior to the rate effective date resulting from this proceeding.

f) Require PGE to include the microgrid projects' anticipated Net Variable Power Cost (NVPC) impacts through updating its Schedule 125 rates coincident with the rate-effective date for Schedule 122, and remove all NVPC impacts from PGE's proposed RAC rates that result from this proceeding.

Language Changes to PGE's Schedule 122

14. Deny PGE's request and direct PGE to reflect its anticipated NVPC impacts in its AUT rates, and not in its RAC rates, with a rate effective date coincident with the RAC rate effective date.

15. Deny PGE's proposal to allow for the deferral of the difference between projected costs in the record and updated higher costs or actual costs that cannot be verified until after the compliance filing.

[1] Updated dates in accordance with the Company's response to Staff data request 84. See Exhibit Staff/302 page 1, PGE's response to Staff data request 84.

PART 2, REVENUE REQUIREMENT

Q. What Wheatridge costs is PGE proposing for rate recovery in this proceeding?

A. Costs included in PGE's initial filing included PGE's share of Wheatridge's wind-related capital costs, production O&M costs, insurance and Administrative and General (A&G) expenses, property and payroll taxes, revenue-sensitive costs such as expense associated with uncollectible revenue and OPUC fees, and income taxes.[2] PGE developed the revenue-sensitive amounts using parameters resulting from Order No. 19-129 in Docket No. UE 335, which was PGE's last general rate case. PGE stated that the wind-related portions of Wheatridge are contractually obligated to be in service by December 31, 2020 and that the Company based its Schedule 122 rates on the annual revenue requirement using this in-service date.[3]

Q. What Wheatridge capital costs did PGE propose for rate recovery in this proceeding?

A. Wheatridge capital costs proposed for rate recovery include the "return on" and "return of" $160.6 million in incremental rate base, of which $157.5 million represents incremental gross plant.[4] The components of the "return on" reflect the capital structure and after-tax capital cost parameters authorized in Order No. 19-129, which was PGE's most recently concluded general rate case

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2 Exhibit PGE/101 Armstrong – Batzler/1. Staff discusses PGE's share of these costs in Part 3 of this testimony.

3 Ibid.

4 Exhibit PGE/101 Armstrong – Batzler/1.

proceeding.[5] The return on equity reflects a "gross-up" for Oregon and Federal income taxes, using the 21 percent marginal rate for the latter.[6]

Q. What annual revenue requirement for Wheatridge did PGE propose for Schedule 122 rate recovery in the Company's initial filing?

A. PGE proposed an annual revenue requirement associated with its portion of the Wheatridge Renewable Energy Facility of approximately $26.5 million prior to the inclusion of REC monetization benefits, but inclusive of a "high-level calculation of 2020 NVPC benefits" attributed to Wheatridge in 2020, which are *de minimis*.[7] PGE's opening testimony regarding Wheatridge NVPC stated:

> "The wind related portions of Wheatridge are contractually obligated to be in service by December 31, 2020. As such, our filed estimate is based on this in-service date. As we approach the later part of 2020, and to the extent the in-service date changes, the effective date of the tariffs to recover the incremental impact of Wheatridge will change accordingly. Additionally, any forecasted NVPC associated with Wheatridge prior to January 1, 2021, will be updated and the full annualized amount will be included within Schedule 122 prices consistent with the in-service date of the project. Then, beginning January 1, 2021, any change between the forecasted 2020 NVPC for Wheatridge and the 2021 forecasted NVPC for Wheatridge will be reflected through PGE's Schedule 125 and removed from Schedule 122."[8]

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5 Exhibit PGE/100 Armstrong – Batzler/3. See also Order No. 19-129 in Docket No. UE 335.

6 See; e.g., PGE's workpaper "Wheatridge Revenue Requirement."

7 Exhibit PGE/101 Armstrong – Batzler/2. These benefits are *de minimis* in 2020, as the requested rate-effective date is December 30, 2020.

8 Exhibit PGE/100 Armstrong – Batzler/1-2.

Q. Has PGE made such an update, including to Schedule 122 RAC rates?

A. Yes. PGE filed an update to its proposed revenue requirements on February 14, 2020 that included the Company's forecast of NVPC savings attributable to Wheatridge in 2020, in the amount of $3,769 thousand on an annualized basis. This reduced PGE's requested Schedule 122 annual revenue requirement for Wheatridge to approximately$22.6 million.[9]

Q. What is the impact of Staff's recommendations in Exhibit Staff/100 regarding Wheatridge, if implemented by the Commission, on the Schedule 122 RAC annual revenue requirement proposed by PGE?

A. Staff's recommendations regarding issues discussed in Exhibit Staff/100 collectively result in a $1,827 thousand reduction to the annual revenue requirement PGE proposed in its initial filing in this proceeding. This represents a 6.9 percent decrease. It has two primary impacts, with the first removing the NVPC savings from Schedule 122's annual revenue requirement. The removal of the NVPC savings of $3,769 thousand increases the annual revenue requirement from the $22.6 million level requested in PGE's February 14, 2020 update filing to the $26.5 million requested in PGE;s initial filing.

The second primary impact results from multiple Staff recommendations, including the impact of a recommended reduction in rate base and a recommended use of different values of depreciation parameter values than

[9] See PGE's workpapers included with the February 14, 2020 filing.

used by PGE, and these recommendations collectively yield the $1,827 thousand reduction from the $25.6 million PGE requested in its original filing.

PART 3, SPECIFIC ISSUES RELATED TO THE WHEATRIDGE FACILITY

ISSUE 1, THE WHEATRIDGE RENEWABLE ENERGY FACILITY

Q. What is the Wheatridge Renewable Energy Facility?

A. The Wheatridge Renewable Energy Facility (WREF) is a qualifying renewable resource located in Morrow County, Oregon. WREF includes a 300 MW wind generation facility, a 50 MW solar facility, a 30 MW energy storage facility and site-specific infrastructure necessary for its operation.[10]

PGE will own 100 MW of the wind generation facility and its portion of the shared infrastructure, which includes an O&M building, other site-specific infrastructure such as roads, a new shared substation named Blueridge, and the necessary equipment required to connect the wind generation facility with the Blueridge Substation and the Blueridge Substation to a new transmission facility connecting WERF to the Bonneville Power Administration's (BPA) Morrow Flat Substation located east of Boardman, Oregon.[11]

Q. Who owns the new transmission facility?

A. Umatilla Electric Cooperative, Inc. owns the new transmission facility connecting WERF with BPA's Morrow Flat substation.[12]

Q. Who owns the portion of WREF not owned by PGE?

A. PGE's testimony indicates that subsidiaries of NextEra Energy, LLC (NEE) will own the remaining 200 MW of the wind generation facility, WERF's solar and

10 Exhibit UE 370 PGE/100 Armstrong – Batzler/2.

11 Exhibit UE 370 PGE/100 Armstrong – Batzler/11 and Figure 1 at Armstrong – Batzler/12.

12 Exhibit UE 370 PGE/100 Armstrong – Batzler/11.

battery storage components, and the portion of the shared infrastructure not owned by PGE. Additionally, NEE will both build and operate WERF.[13]

Q. What arrangements has PGE made with respect to the output of the generation and storage facilities not owned by PGE?

A. PGE will purchase the remaining WREF output from NEE under two Purchased Power Agreements (PPA).[14]

Q. How does Staff identify PGE's portion of WREF in this testimony?

A. Staff will identify the wind generation facility owned by PGE and PGE's share of the shared infrastructure collectively as "Wheatridge" or the "Wheatridge facility" (as opposed to WREF).

Q. What WREF costs does PGE seek recovery of in this proceeding?

A. "Wheatridge" costs, or the costs of the wind generation facility owned by PGE, PGE's share of costs for the shared infrastructure, as well as associated O&M costs.

13 Ibid.

14 Exhibit UE 370 PGE/100 Armstrong – Batzler/11.

ISSUE 2, COMPLIANCE WITH PGE'S INTEGRATED RESOURCE PLAN

Q. Did the Commission acknowledge PGE's revised renewable Action Plan?

A. Yes. The Commission's Order No. 18-044 in Docket No. LC 66 acknowledged, subject to certain conditions, PGE's revised Action Plan on February 2, 2018.

Q. Did PGE file an update to its 2016 IRP?

A. Yes. PGE filed its 2016 IRP Update (Update) on March 8, 2018 in Docket No. LC 66. The Update incorporated the Company's long-term forecast released in December, 2017, which used updated forecasts of input data, energy efficiency, and QF contracts. Additionally, it included a revised trend component to normal weather.[15]

Q. What PGE energy load-resource balance did the Update include?

A. The Update included a decline in PGE's energy deficit to approximately 4 MWa in 2021, due primarily to the updated load forecast and the execution of additional QF contracts.[16]

Q. Did this decline result—if only partially—from PGE's increased generation from renewable resources acquired as fulfilment of the revised renewable Action Plan?

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15 Pages 15-16 PGE's 2016 IRP Update in Docket No. LC 66.

16 Ibid, page 18. PGE identified the completion rate of QF projects as an area of uncertainty regarding its energy and RPS compliance forecasts on page 22 and that the Company's near-term physical RPS shortage was "highly sensitive to the assumed QF completion rate..." on page 24. See also PGE's response to Staff data request 36c.

A. It seems clear that the decline did not, as PGE's language in footnote 12 to its Update includes that "[t]he assessments [of PGE's capacity, energy, and RPS needs] do not include assumptions regarding potential resource additions from the Renewable RFP."[17]

Q. Please provide an estimated nameplate capacity for a hypothetical wind generation resource located in a site similar in relevant characteristics to the WREF location.

A. Staff approximates the nameplate capacity of the hypothetical wind generation resource as 12 MW.[18]

Q. Did PGE's IRP Update include PGE's revised estimates of a future RPS need?

A. The IRP Update included PGE's forecast that the Company's renewable resource portfolio would have a 53 MWa RPS compliance shortfall in 2025 when banked RECs were excluded and that, with full utilization of banked RECs, PGE's renewable resource portfolio would be RPS non-compliant beginning in 2033 and have a 373 MWa compliance deficit in 2034. The Company did not propose any new actions with respect to renewable generation resources in the Update.[19]

Q. Was a Commission Order issued as a result of the Update?

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17 Ibid, page 15 and referencing language appearing on pages 14-15.

18 Staff bases this calculation on the mathematics implied by the two values located on page 1 of Order No. 18-483 in Docket No. UM 1934.

19 Ibid, pages 19-21.

A. Yes. The Commission adopted Staff's recommendations regarding PGE's Update on May 1, 2018, as memorized in Order No. 18-145 in Docket No LC 66, which was PGE's 2016 IRP proceeding. Staff noted the decline in PGE's 2021 energy deficit from 388 MWa to 4 MWa in that proceeding[20] and recommended the Commission acknowledge PGE's 2016 IRP Update.[21]

Q. Does Staff find that PGE's Wheatridge project is consistent with the Commission's acknowledgement of PGE's 2016 IRP Update?

A. Yes.

[20] Page 4 of Appendix A to Order No. 18-145 in Docket No. LC 66.

[21] Ibid, page 6.

ISSUE 3, PGE'S PROCUREMENT PROCESS AND COMMERCIAL ARRANGEMENTS

Q. Did PGE develop and submit a Request for Proposal (RFP) for fulfillment of the Company's 2016 IRP revised renewable action item?

A. Yes. PGE filed a draft RFP in Docket No. UM 1934 on March 9, 2018. The Independent Evaluator (IE), Bates White Economic Consulting (Bates White), filed its assessment of the draft RFP on April 6, 2018, based on previously filed comments from Staff and other stakeholders. PGE filed its Reply Comments on April 13, 2018.[22]

Q. What necessitated this unusually condensed timeframe?

A. Staff's Report noted that the accelerated timeframe was "due in large part to the tight timeline of the expiring PTC," and noted that this exacerbated many of the issues discussed in the Staff Report.[23]

Q. Did Staff identify any issues associated with PGE's draft RFP in its Staff Report regarding Agenda Item No 2, PGE's Final Draft 2018 RFP for renewable resources?

A. The Staff Report identified the 21 most salient issues, some of which were raised by only one party and some of which were raised by all parties.[24]

Q. What was Staff's recommendation to the Commission?

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22 Page 3 of the May 8, 2018 Staff Report in Docket No. UM 1934 and filed as Agenda Item No. 2 for the May 8, 2018 Public Meeting. This Staff Report is also attached as Appendix A to Order No. 18-171 in Docket No. UM 1934.

23 Ibid, page 3.

24 Ibid, pages 4 – 16 and listed in Table 1 on page 5.

A. Staff recommended the Commission approve PGE's final draft RFP subject to specific conditions and modifications, which it asserted would "help increase the competitiveness of the RFP;" and specifically the competitiveness of power provided under a PPA versus self-build alternatives. These appear below:

- Either relax long-term firm transmission requirements or justify why they are necessary despite the associated cost savings;
- Allow for intra-hour scheduling;
- Either remove damages associated with missing Specific Energy targets or modify the benchmark bid to face similar risk;
- Remove redllne penalties;
- Address competitive imbalance created by the possibility of dynamically transferring PGE generation;
- Publish benchmark bid balancing cost escalation rate; and
- Significantly increase the damage cap.[25]

Q. What action did the Commission take regarding PGE's final draft RFP and Staff's recommendation?

A. The Commission approved PGE's final draft RFP with Order No. 18-171 in Docket No. UM 1934, entered May 21, 2018 and subject to several modifications and guidance by the Commission. The Commission identified these, with reference to Staff's 21 most salient issues, as Issue 6: 15 vs. 60 Minute Scheduling; Issue 7: Specified Energy; Issue 8: Redlines Diminish Score; Issue 9: Conditional Firm Bridge; Issue 15: Generic Fill; and its

[25] Ibid, page 4.Parties here include the IE.

intention to holder a future Commissioner workshop to examine transmission issues.[26]

PGE subsequently issued its RFP for the acquisition of approximately 100 MWa of long-term renewable energy supply, bundled with the associated RECs.[27] Its RFP

Q. What resulted from PGE's RFP?

A. PGE received bids from eight counterparties, which included 26 distinct proposals and three Benchmark bids. These included bids for wind, solar, geothermal and storage projects, and several hybrid technology bids. The bids received represented diversity in geographic location as well, with project sites in Oregon, Washington, Montana, and Nevada.[28]

PGE received the Benchmark bids for evaluation on June 8, 2018, which were reviewed for conformity with the RFP's initial bidder eligibility requirements and subsequently scored and sealed, consistent with the Competitive Bidding Guidelines. The Company received the remaining bids on June 15, 2018 and these were reviewed for conformance with the 2018 RFP initial bidder eligibility requirements.

Q. What results of its RFP process did PGE submit to the Commission?

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26 Pages 3 – 4 of Order No. 18-171 in Docket No. UM 1934.

27 Page of the Staff Report in Docket No. UM 1934 prepared for the December 4, 2018 Public Meeting. This Staff Report was included as Appendix A of Order No. 18-483 in that docket.

28 Ibid, page 9. Table 1 on page 10 includes attributes for each of the 26 bids received.

A. The Company submitted its final short list of bidders and additional material in an October 3, 2018, filing in Docket No. UM 1934,[29] and requested Commission acknowledgement of its final short list of bidders. The Company also discussed its RFP process in this filing.

Q. Did the Commission acknowledge PGE's final short list of bids?

A. Yes. Commission Order No. 18-483 in Docket No. UM 1934 was entered on December 19, 2018 and adopted Staff's recommendation to acknowledge PGE's final short list of bids. The Commission described PGE's final short list as containing

> "…three projects, two of the proposed projects would be build and located in Oregon, the other in Montana, with the three projects totaling approximately 600 MW. The projects include a proposed 100 MW wind power purchase agreement (PPA), a 200 MW wind PPA (which is part of a larger 400 MW project), and the Benchmark, which is a 100 MW built-own transfer (BOT) and 200 MW PPA."[30]

Q. Staff has previously documented in this testimony that PGE's Wheatridge investment at this time is driven primarily by the availability of PTC, and not resource need. Did PGE's testimony discuss PTC in its scoring of bids?

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29 PGE made an errata filing on October 18, 2018 in Docket No. UM 1934, which includes revisions to several pages of the October 3 filing.

30 Page 1 of Order No. 18-483 in Docket No. UM 1934. A footnote to the material excerpted here cited "PGE's Errata Pages, Re-designation of Confidential Information at 29 (Oct 18, 2018); Independent Evaluator Final Closing Report at 1-2 (Oct 3, 2018)."

A. PGE stated that its bid scoring methodology included a downward adjustment to PTC value for PGE-owned resources because PGE's near-term projected taxable income is insufficient to fully utilize the projected PTC benefit as it is earned. PGE assumed in its bid scoring that any PTC PGE earned would be carried forward as a deferred tax asset and used in the 2027-2030 timeframe, with the additional carrying cost for this asset counted against any PGE-owned offer.[31]

Q. What are PGE's commercial arrangements involving Wheatridge?

A. PGE's testimony includes that "[s]ubsidiaries of NextEra Energy, LLC (NEE) will build and operate the entire]WREF] facility…"[32] There are no less than four NEE subsidiaries involved in the Wheatridge project and three primary documents associated with PGE's commercial arrangements involving the Wheatridge costs included for rate recovery in this proceeding. The first document is a Build-Transfer Agreement (BTA) between PGE and **[begin confidential]** [redacted] **[end confidential]** which is a subsidiary of **[begin confidential]** [redacted] **[end confidential]**, with the latter entity a subsidiary of NextEra Energy, LLC. (NEE).[33] The first of these subsidiaries is responsible for the delivery of the completed Wheatridge project to PGE. The second document is an Engineering, Procurement, and Construction (EPC) contract between Wheatridge Wind, LLC, and **[begin confidential]**

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31 Pages 13-14 of PGE's October 3, 2018 filing in Docket No. UM 1934.

32 PGE/100 Armstrong – Batzler/11.

33 Ibid. Staff assumes NextEra Energy {NEE} is a subsidiary of NextEra Energy, Inc. (NYSE: "NEE"), the publicly traded company.

[redacted] **[end confidential]** with the latter entity also a subsidiary of NEE. The EPC contract outlines the project construction responsibilities between the two parties to the EPC contract. PGE will be assigned the EPC contract when the Company takes ownership of the Wheatridge project at its "substantial completion." PGE is not a party to the EPC contract prior to that time.

The third document is an Operations and Maintenance (O&M) Agreement between PGE and **[begin confidential]** [redacted] **[end confidential]** which is also a subsidiary of NEE.[34] Staff notes PGE's representation in testimony that "…NEE is ultimately responsible for the success of the [Wheatridge] project…"[35]

There are also multiple agreements regarding transmission service between Wheatridge and PGE's service area.[36]

Q. What does Staff understand to be the nature of an EPC contract?

A. Staff understands an EPC contract to be a common form of contracting agreement in the construction industry. The EPC contractor carries out the detailed engineering design of the project, procures all the necessary equipment and materials, and constructs to deliver a functioning facility or asset to its client(s).

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34 PGE provided information regarding aspects of the NEE entities' arrangements in the Company's Confidential Response to Staff data request 55.

35 PGE/100 Armstrong – Batzler/12.

36 Ibid.

PGE's testimony states that "NEE is required to meet project substantial completion (i.e., a commercial operation date or COD) by December 31, 2020 and is subject to liquidated damages for failure to meet this date."[37] In other words, there is risk for NEE associated with the COD, and monetary damages due from NEE if the COD is not met by year-end 2020.

PGE's testimony describes the BTA as a fixed price contract to reduce the risk to PGE's customers of schedule delays and construction cost overruns…"[38]

Q. What terms does the O&M Agreement include that should reduce customer risk?

A. Staff issued Staff Data Request 28 based on the labeling in a spreadsheet provided by PGE containing estimated Wheatridge expenses. Staff's data request concerned a **[begin confidential]** [redacted] **[end confidential]** and asked that PGE provide information regarding this expense. PGE's response included that **[begin confidential]** [redacted]

[37] Ibid, page 14.

[38] Ibid, page 13.

[redacted] **[end confidential]**

Q. What two facts influence Staff's assessment of Wheatridge's risk to customers?

A. Staff's testimony above documents that PGE's Wheatridge investment and its timing was—as of the 2016 IRP Update—driven primarily by the availability of PTC, and not by resource need. Additionally, Staff's testimony above cites PGE testimony regarding scoring adjustments for PGE-owned bids due to PGE's near-term taxable income not being sufficiently large to fully utilize the PTC benefit as it is earned.

The significance of these two facts, each of which pertains to PGE's Wheatridge investments included for cost recovery in this proceeding, result in a "break-even" time[39] for PGE customers that is distant from today, as—according to PGE—some amount of PTC benefit will not be realized until the 2027-2030 timeframe.[40] Staff considers investments having long period prior to a "break-even" time to be more risky than those having a short period, and PGE's not being able to realize the full amount of PTC benefit "until the 2027-2030 timeframe" serves to increase customer risk associated with the portion of Wheatridge owned by PGE over that which would pertain if PGE had sufficient near-term taxable income to fully utilize the PTC benefit.

Q. Did PGE's 2016 IRP Update demonstrate the Company's need for additional resources?

A. Yes. PGE's 2016 IRP Update included a 2021 energy deficit of approximately 4 MWa and that its renewable resource portfolio would have a 53 MWa RPS compliance shortfall in 2025 when banked RECs were excluded and that, with full utilization of banked RECs, PGE's renewable resource portfolio would be RPS non-compliant beginning in 2033 and have a 373 MWa compliance deficit in 2034. In other words, a relative small energy need in 2021 and an RPS compliance need beginning no earlier than 2025.

39 Staff defines "break-even point" in this context as the point in time at which, going forward, cumulative benefits are greater than cumulative costs

40 Exhibit PGE/100 Armstrong – Batzler/10.

Q. Did PGE use a robust process that resulted in its Wheatridge investment and did the Commission acknowledge its final short list of bidders?

A. Yes. The process leading to PGE's investment included considerable involvement by Staff and other stakeholders. It included a multi-year 2016 IRP process and PGE's renewable resource RFP process. The Commission acknowledged PGE's revised renewable action plan, with conditions, and PGE met those conditions going forward. Additionally, the Commission acknowledged PGE's final short list of bidders in its 2018 RFP for renewable resources and PGE's testimony states that Bates White, the RFP IE, "…confirmed the selected [final short list] bids were all reasonably priced…"[41]

Q. Did PGE invest in Wheatridge at this time for economic reasons?

A. Yes. Staff understands PGE's investing in Wheatridge at this time, to be in-service as of year-end 2020, is primarily for economic reasons; i.e., to take advantage of existing (current) PTC incentives. PGE's language in its original renewable action plan in the 2016 IRP included that—as stated by the Commission—"the timing of its proposed near-term acquisition is intended to capture the maximum value of the Production Tax Credit (PTC)…"[42]

Q. Is PGE's Wheatridge investment prudent?

41 Exhibit PGE/100 Armstrong – Batzler/10.

42 Pages 5-6 of Order No. 17-386 in Docket No. LC 66.

A. Yes, assuming the project is commercially available on or prior to December 31, 2020, which qualifies it for PTC at 100 percent value, and that final costs are no more than $156,400 thousand assuming Wheatridge is in service by December 31, 2020.[43] The Company's revised Action Plan requested "acknowledgement to conduct an RFP for approximately 100 MWa of RPS-eligible resources that contribute to meeting the Company's energy and capacity needs by 2021."[44]

Absent the availability of fully-valued PTC, and ignoring the relatively small projected 2021 energy deficit, PGE could have deferred an investment similar to Wheatridge for at least four years, depending on whether banked RECs are used for RPS compliance purposes). The context for PGE's decision regarding this renewable resource investment includes that a) it had a relatively small energy deficit projected for 2021; b) it faced a RPS compliance requirement that increases over time; and c) the availability of PTC at "full value" should not have been expected for eligible facilities placed in service after year-end 2020.

Q. Even though Staff finds PGE's decision to invest in Wheatridge in 2020 to be prudent, does Staff recommend conditions to protect customers?

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43 The $156,400 amount includes $15 million of the $16 million Staff recommends the Commission deny PGE recovery of in this docket. Staff sees the value in the $15 million "holdback" for the builder's completion of "punch list" items and takes issue only with the timing for completion of the "punch list" items relative to the Wheatridge rate effective date.

44 Page 6 of the "Revised Addendum to PGE's 2016 Integrated Resource Plan" filed November 9, 2017 in Docket No. LC 66.

A. Yes. Staff recommends the Commission reject PGE's proposal to create a deferred tax asset for PTC earned but not used in the same year. It is unclear whether PGE is requesting an accounting order or other regulatory treatment that would allow for a deferred tax asset to be established.

Q. What would be the effect of PGE's proposed deferred tax asset?

A. The effect of PGE's proposal is that customers will fund, at PGE's authorized rate of return, their own deferred tax benefit, presumably to be used in the 2027- 2030 timeframe. Although PGE's analysis in its RFP process assume a deferred tax asset created for this purpose, Staff disagrees that this represents appropriate ratemaking treatment. Such treatment deprives customers of the full value of PTC produced by Wheatridge. Therefore, Staff recommends the Commission direct PGE to reflect all PTC produced by Wheatridge in its net variable power cost proceedings, as is consistent with current Commission practice.

Q. Does Staff have additional recommendations?

A. Yes. Staff also recommends the Commission deny PGE's request in this case and require PGE to re-file in a different ratemaking proceeding for Wheatridge cost recovery if it is not commercially available on or prior to December 31, 2020 such that the Company qualifies for 100 percent of PTC generated by the projects. Additionally, Staff recommends the Commission cap cost recovery in this proceeding to include a Wheatridge investment of no more

than $156,400 thousand[45] should Wheatridge not be in service by December 31, 2020. This allows cost recovery of no more than the amount PGE initially requested, after a $1 million reduction for the incorrectly calculated amount of holdback for completion of "punch list" items.[46]

45 Staff discusses PGE's capital investment amount in its discussion of Issue 4.

46 Staff discusses this in its discussion of Issue 4.

ISSUE 4. WHEATRIDGE RATE BASE, DEPRECIATION, AND REVENUE REQUIREMENT

Q. What did PGE indicate in its filing regarding the Wheatridge in-service date and rate effective date for cost recovery of Wheatridge?

A. PGE's initial filing in this proceeding requested the Commission "authorize tariffs to collect the annualized [UE 370 RAC Wheatridge revenue requirement] amount beginning with the in-service date of Wheatridge."[47] PGE's testimony stated that the Company's "filed estimate [of Wheatridge annual revenue requirement] is based on this [December 31, 2020] in-service date," and that "…to the extent the in-service date changes, the effective date of the tariffs to recover the incremental impact of Wheatridge will change accordingly."[48]

Q. What did PGE's testimony include regarding its investment in Wheatridge?

A. PGE's initial testimony includes that the Company's forecast of costs associated with Wheatridge include an amount for gross plant in service of "approximately $157.4 million, including allowance for funds used during construction (AFDC) and property taxes." PGE further stated that its estimate for the total capital cost (including AFDC and property taxes) of Wheatridge is equal to the total project cost of the RFP bid.[49]

Q. What is the composition of the approximate $157.4 million?

47 Exhibit PGE/100 Armstrong – Batzler/2.

48 Ibid.

49 Exhibit PGE/100 Armstrong – Batzler/16.

A. Values in workpapers filed with the initial filing[50] showed the $157.4 million to be composed of $148.8 million in Production (generation) investments and $8.6 million in Transmission investments.

Q. Has PGE revised its estimated $157.4 million Wheatridge investment?

A. Yes. PGE's response to Staff data request 30,[51] part "a" of which requested PGE's expected amounts of Wheatridge gross plant in service by FERC account, provided the Company's revised summary of estimated gross plant in-service by FERC account. PGE's summary included an estimated $400 thousand of transmission gross plant in service to be appropriately classified in FERC 352 (Transmission Structures and Improvements) and $3.2 million to be appropriately classified in FERC 353 (Transmission Station Equipment), for a total transmission gross plant in service of $3.6 million.[52] This amount represents a decline of approximately $5.0 million. PGE's response to Staff data request 30 also included a $5.0 million increase in the Company's estimated generation gross plant in service to $153.8 million from the $148.8 million in the Company's initial fling. In other words, PGE's updated estimates of total Wheatridge gross plant in service changed the composition, while the total remained approximately $157.4 million.[53]

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50 PGE's included workpaper "Wheatridge Revenue Requirement," an Excel file, as a component of PGE's initial filing in Docket No. UE 370. This workpaper forms the basis of Exhibit PGE/101 Armstrong – Batzler/1.

51 PGE's response to Staff data request 30 is included as Exhibit Staff/102.

52 PGE's response to Staff data request 29c identified the Company's "reasonable estimate of its share of Blueridge gross plant in service" at $3.6 million.

53 PGE's response noted that "…the estimates [provided] are subject to change and dependent upon final construction costs and detailed list of assets to be obtained."

Q. Please summarize Staff's testimony above regarding PGE's Wheatridge gross plant in service.

A. Table 1 below summarizes this part of Staff's testimony.

Table 1 – Wheatridge Gross Plant in Service

		Original Filing	Response to Staff DR 30
FERC Account	**Class**	**Amount ($Millions)**[54]	**Amount ($Millions)**
344	Production	$148.8	$153.8
352	Transmission		$.04
353	Transmission		$3.2
355	Transmission	$8.6	
Subtotal	Transmission	$8.6	$3.6
Total		$157.4	$157.4

Q. Did PGE's initial filing in this proceeding include investments the Company planned to be in service subsequent to the rate effective date it requested?

A. Yes. PGE's December 3, 2019 filing included a workpaper in Excel spreadsheet format identified as "Wheatridge Revenue Requirement."[55] This file included, in spreadsheet "Plant and Depreciation," a $16 million investment

[54] The "Original Filing" amounts in Table 1 and in Staff's preceding testimony are values found in cell E39 of PGE's workpaper "Wheatridge Revenue Requirement," which was provided as part of the Company's initial filing. PGE, in the same workpaper, used amounts for gross plant in service of $148.5 million for Generation assets and $8.5 million for Transmission assets. Staff is unaware of any reasons for these differences.

[55] The "Wheatridge Revenue Requirement" Excel file, included as a component in PGE's initial filing in Docket No. UE 370, forms the basis of Exhibit PGE/101 Armstrong – Batzler/1.

to be incurred in the month of May, 2021—over four months after the designated in-service date and the associated rate effective date. PGE's workpaper identified this investment as associated with FERC production account 344; i.e., the investment was associated with the generating portion of the PGE-owned Wheatridge wind generating facility.

Q. Has PGE revised its estimated Wheatridge in-service date?

A. Yes. PGE provided, in its February 12, 2020 response to Staff Data Request 25 regarding PGE's current estimate of the in-service date for the PGE-owned portion of the Wheatridge wind generation facility, a then-current estimated in-service date of October 2, 2020.[56] This estimated date, as of the date of filing this Staff testimony, has not been updated.

Q. How has PGE described the $16 million investment included in its workpaper titled "Plant and Depreciation?"

A. PGE's response to Staff Data Request 27[57] included that this amount represented a "Holdback Amount" pursuant to the Build-Transfer Agreement, and stated that "[t]his amount is due *subsequent to all PGE-owned wind turbines being placed in service*" and that "[t]he "Holdback Amount" represents payment for any "punch list" items *that are completed after all Wheatridge turbines are placed into service and begin delivering energy to PGE customers*."[58]

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56 PGE's response to Staff data request 25 is included as Exhibit Staff/103.

57 PGE's response to Staff data request 27 is included as Exhibit Staff/104.

58 Emphasis here added by Staff.

Q. What does Staff recommend regarding this investment that PGE expects to make after the Wheatridge rate effective date?

A. PGE's language in its response to Staff Data Request 27 make clear that the "punch list" items "are completed" subsequent to PGE's proposed rate effective date, which is the same day as the in service date. Staff concludes the $16 million investment in "punch list" items will not be used and useful as of the rate effective date, and therefore cannot be included in rates

Q. What is the language in the BTA regarding this provision?

A. The BTA defines the "Holdback Amount" as meaning **[begin confidential]** [redacted] **[end confidential]** Staff calculates this amount as **[begin confidential]** [redacted] **[end confidential]**, which is $1.0 million less than the amount requested by PGE for this purpose.

Q. What does Staff recommend regarding the $16 million investment in "punch list" items to be completed after the rate effective date?

A. Staff recommends all of the $16 million be excluded from ratemaking in this proceeding: **[begin confidential]** [redacted] **[end confidential]** as this investment will not be used and useful as of the rate effective date. This represents a downward adjustment in generation gross plant in service to approximately $137.8 million.

Q. This recommendation from Staff will result in a downward adjustment to rate base in this proceeding. Did Staff also estimate the impact on annual depreciation?

A. Yes, as well as the impact of other changes Staff made in calculating Wheatridge's depreciation expense. PGE stated in testimony that it estimated "[a]nnualized depreciation expenses total approximately $5.8 million, based on the Commission approved depreciation study from Docket UM 1809, Order No. 17-365."[59] Staff examined PGE's calculations of annual depreciation in spreadsheet "Plant and Depreciation" in the PGE-provided workpaper Excel file "Wheatridge Revenue Requirement" referenced above. This included (cells A34:A40 of spreadsheet "Plant and Depreciation") PGE's assumptions regarding certain depreciation parameters and investment timing, as below:

- "Depreciation values consistent with Tucannon, our most recent wind farm, per our most recent approved depreciation study.
- Generators depreciation group used for Production.
- Poles and Fixtures depreciation account used for Transmission.
- All transmission assumed in-service as of 12/31/20 with depreciation starting 1/1/21.
- Remainder of $141M of assets assumed to be Production assets in-service as of 12/31/20 with depreciation starting 1/1/21.
- Additional $16M of assets assumed in-service 4/30/21 with depreciation starting 5/1/21.
- No other additions assumed after 4/30/19."[60]

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59 PGE/100 Armstrong – Batzler/17.

60 Workpaper "Wheatridge Revenue Requirement," provided by PGE and associated with the Company's initial filing in this proceeding.

Q. Did Staff examine the depreciation parameters PGE used to calculate annual depreciation expense for purposes of ratemaking in this proceeding?

A. Yes. Staff reviewed the parameters used by PGE and compared those with parameters authorized in Order No. 17-365 in Docket No. UM 1809, PGE's most recently concluded depreciation proceeding. These parameters included net salvage rates and annual accrual rates. Staff then used the appropriate depreciation parameter values for the appropriate FERC account, with the latter based on PGE's response to Staff data request 30a.

Q. What source did PGE use for the parameter values it used?

A. PGE's spreadsheet "Plant and Depreciation" in the workpaper "Wheatridge Revenue Requirement" the Company provided with its initial filing indicates it used parameter values "Per UM 1809" (cell V3:V4). The Company's response to Staff data request 31d indicated that it used "Table 2 Net Plant" values for the annual accrual rates for Transmission FERC accounts. PGE's response also cited Commission Order No. 17-365 in Docket No. UM 1809[61] as the source for these values.

Q. What language in Order No. 17-365 is relevant to the depreciation parameter values to use for calculating Wheatridge depreciation expense?

[61] Docket No. UM 1809 is PGE's most recently concluded depreciation proceeding.

A. Order No. 17-365 in Docket No. UM 1809 adopted the depreciation parameter values included in the Stipulating Parties' Stipulation, which was included as Appendix A to the Order. The Stipulation included the following terms[62] relevant to Wheatridge, as numbered in the Stipulation:

> 2. The Parties agree that the changes shown in Exhibit "103, Table 2" to this Stipulation should be made for the identified lives, curves, net salvage value, and rates. With the exception of the parameters set forth in Exhibit "103, Table 2" to this Stipulation, the parameters should remain as filed in PGE's Study.
> 3. Exhibit "102, Table 1" to the Stipulation is a complete list of all PGE depreciation parameters for all plant accounts by location, and depreciation parameters for PGE's Carty Plant.
> 4. As part of the settlement, the Parties agree that for this depreciation study PGE should use the Average Service Life depreciation procedure for the FERC accounts of new generating facilities including Carty Plant placed in service after December 31, 2012. PGE will continue to use the straight-line, Equal Life Group method for all other assets and accounts.
> 6. The revised depreciation parameters described above and set forth in Exhibit "102, Table 1" are reasonable and should be adopted.

Q. What do the terms listed above mean with respect to deprecation parameter values to use for calculating Wheatridge depreciation expense?

A. Taken as a whole, the terms listed above have the following meaning with respect to establishing the appropriate depreciation parameters for Wheatridge:

62 Page 2 of Appendix A to Order No. 17-365 in Docket No. UM 1809.

1. PGE should use the parameter value specified for the Average Service Life (ASL) depreciation procedure.
2. If a value for a parameter is not specified in Exhibit "103, Table 2" for the relevant account/location, the value for that parameter in Exhibit "102, Table 1" applies.

Q. What depreciation parameters did PGE use in calculating the annual depreciation expense for its Wheatridge investments?

A. Table 2 below includes not only values for those depreciation parameters used by PGE in this proceeding, but also those Staff has concluded are appropriate.

Table 2 – Depreciation Parameters for Wheatridge

	PGE		Staff	
FERC Account	Net Salvage Rate	Annual Accrual Rate	Net Salvage Rate	Annual Accrual Rate
344	-7.0%	3.51%		3.62%
352			-15.0%	1.78%
353			-15.0%	2.21%
355	-45.0%	3.34%		

Q. Please explain why Staff used different depreciation parameter values than PGE.

A. Staff concluded PGE did not use the appropriate values for depreciation parameters in calculating Wheatridge depreciation expense.

Q. How did Staff reach this conclusion?

A. Exhibit "103 Table 2" in the Stipulation in Docket No. UM 1809 specifies a FERC account 344 (344.01 for Generators – Wind) ASL annual depreciation rate of 3.62 percent for use with PGE's Tucannon wind farm. Table 2 does not specify a value for the net salvage rate for FERC account 344 for Tucannon

(or for any PGE wind farm).[63] Exhibit "102 Table 1" in the Stipulation specifies, for FERC account 344 (344.01 for Generators – Wind) a net salvage rate for Tucannon of negative 7.0 percent.

Exhibit "103 Table 2" does not specify any parameter values for FERC transmission accounts 352 (Transmission Structures and Improvements) or 353 (Transmission Station Equipment). It does not specify an ASL annual depreciation rate value for FERC transmission account 355 (Transmission Poles and Fixtures) and does specify a negative 45 percent net salvage rate for account 355. Exhibit "102 Table 1" specifies a net salvage rate of negative 15 percent for both accounts 352 and 353. Additionally, Exhibit "102 Table 1" specifies annual depreciation rate values of 1.78 percent and 2.21 percent for, respectively accounts 352 and 353.

Q. Is the use of Tucannon's depreciation parameters for Wheatridge appropriate?

A. Yes, as Tucannon is the most recently constructed of PGE's two owned wind generating facilities. While both PGE and Staff use parameters values for Tucannon, the parameter values Staff uses are the appropriate values while those PGE uses are not.

Q. Please specify the changes Staff made in calculating Wheatridge's depreciation expense.

63 Ibid, pages 14 and 16.

A. Staff made the following changes to the gross book values and depreciation parameter values PGE used in the Company's initial filing:

1. Update generation gross book values based on PGE's response to Staff data request 30a.
2. Reduce PGE's generation (FERC account 344) gross book value by $16 million due to this investment not being used and useful as of the rate effective date.
3. Calculate Wheatridge's annual depreciation expense using the appropriate parameter values for the appropriate FERC accounts, with the latter established in PGE's response to Staff data request 30a.
4. Calculate rate base using the total gross book values resulting from 1 and 2 above, accumulated depreciation calculated in the same manner as PGE, and using the same value for accumulated deferred income tax (ADIT) used by PGE.[64]
5. Calculate Wheatridge's annual revenue requirement using the revised annual depreciation expense and the revised rate base value.

Q. What impact do Staff's changes above have on PGE's requested revenue requirement?

A. Staff's changes listed above and described in Staff's testimony result in a negative adjustment to the annual revenue requirement PGE requested in its initial filing of approximately $1,827 thousand, or 6.9 percent.

Q. Staff uses values from "PGE's original filing" or "PGE's initial filing" in its testimony. Do these two terms mean the same thing in this context?

[64] Staff appreciates using the same ADIT value PGE used is a rough approximation to an ADIT value appropriately calculated. Staff notes that—using PGE's values in its initial filing—ADIT represents 5.5 percent of rate base; i.e., Staff believes using an appropriately calculated value of ADIT would have a small impact on annual revenue requirement.

A. Yes.

Q. Did PGE provide an update to its initial (or original) filing and, if so, why did Staff not base its adjustments on those values?

A. PGE's testimony committed the Company to file an update which included "the full annualized amount" of any forecasted NVPC associated with Wheatridge prior to January 1, 2021.[65] The Company filed a revised revenue requirement estimate on February 14, 2020, as the follow-up to this commitment. This filing revised PGE's requested annual revenue requirement to approximately $22.6 million versus the $26.5 million in its initial filing. The reduction resulted from including a 2020 annualized reduction in net variable power costs (NVPC) of approximately $3.8 million.

Staff did not include the estimated $3.8 million reduction in NVPC as it recommends the Commission order these be included in PGE's Automatic Update Tariff (AUT), consistent with the treatment of NVPC impacts in PacifiCorp's RAC filings in Docket Nos. UE 352 and UE 369. This Staff recommendation by itself has the effect of resetting PGE's requested annual revenue requirement to that in its original (or initial) filing.

Q. What does Staff recommend?

A. Staff recommends the Commission take the following actions regarding the Wheatridge revenue requirement and associated issues:

[65] PGE/100 Armstrong – Batzler/2.

1. Require that PGE provide Staff with its final update of Wheatridge's in service date, if different than the current estimate of October 2, 2020, 30 days in advance of the updated in service date.
2. Require PGE's final update of its estimated service date, if different than October 2, 2020, to be no less than 30 days prior to its requested rate effective date.
3. Require PGE to provide Staff an attestation by PGE's chief executive officer that the Wheatridge facility, as discussed in this Staff testimony, be in commercial operation and generating electricity that is delivered to PGE customers located within the Company's service area prior to the rate effective date resulting from this proceeding.
4. Deny, without prejudice, PGE's request to recover a $16 million (which includes a $1 million calculation error) "punch list" investment that would be made subsequent to PGE's requested rate effective date.
5. Authorize PGE to recover its Wheatridge costs with an annual revenue requirement that include depreciation expense calculated using the appropriate parameter values, as discussed in Staff's testimony.
6. Direct PGE to update its Schedule 125 Net Variable Power Cost (NVPC) rates to reflect the annualized NVPC impacts (savings) of Wheatridge at the same time it updates its Schedule 122 rates. This recommendation accounts for the increase from the approximate $22.6 million annual revenue requirement in PGE's February 14, 2020 filing in this proceeding to the $26.5 million annual revenue requirement in its initial filing in this proceeding.

ISSUE 5, PGE'S PROPOSED REVISIONS TO SCHEDULE 122

Q. Did PGE propose revisions to its Schedule 122, which includes its RAC rates and describes the workings of its RAC mechanism?

A. Yes. PGE proposed multiple changes and Staff lists them individually below and includes Staff's recommendation regarding each proposed change.

Q. What are PGE's proposed revisions and what does Staff recommend regarding each of these?

A. PGE proposed revisions, and the respective Staff recommendations are:

1. PGE proposes to update Schedule 122 to remove reference to a deferral with rate changes occurring each year on January 1, replacing with a proposal that rates will be updated each year by April 1 "to recognize projected changes for the following calendar year."[66]

Q. What does Staff recommend regarding PGE proposal 1?

A. Staff requests that PGE explain its reasons for proposing this timing change.

2. PGE proposes to include new language that would allow for NVPC impacts to be reflected in the RAC revenue requirement if the timing of an AUT does not align with that of the new resource.[67]

Q. What does Staff recommend regarding PGE proposal 2?

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66 Fifteenth Revision of Sheet No. 122-2, appearing in Exhibit PGE/201.

67 Fifteenth Revision of Sheet No. 122-2, appearing in Exhibit PGE/201. See also Exhibit PGE/200 Speer/1.

A. Staff recommends the Commission deny PGE's request and direct PGE to reflect its anticipated NVPC impacts in its AUT rates, and not in its RAC rates, with a rate effective date coincident with the RAC rate effective date. This is consistent with the Commission's recent treatment of PacifiCorp's RAC and Transition Adjustment Mechanism (TAM) ratemaking.[68]

3. PGE proposes to replace a "deferral mechanism" with a balancing account, supported by a deferral that tracks net revenue requirement effects of the resource. PGE includes its formula for this in its proposed Schedule 122 language. PGE proposes the balancing account earn interest at the Commission's authorized rate for deferred accounts.[69]

Q. What does Staff recommend regarding PGE proposal 3?

A. Staff recommends the Commission require that PGE explain how tracking or otherwise deferring capital costs in revenue requirement deferrals is permissible under existing precedent. Staff's understanding of this precedent is that, while expenses can be deferred and are subject to recovery pursuant to an Automatic Adjustment Clause (AAC) mechanism, capital costs must be recovered pursuant to a fixed-rate AAC; i.e., not by a mechanism that provides for retroactive cost recovery. Staff will address the associated legal issues in briefing.

68 See; e.g., Docket No. UE 369.

69 Fifteenth Revision of Sheet No. 122-2, appearing in Exhibit PGE/201.

Staff will seek clarification from PGE regarding how amortization of the deferred balance impacts its Schedule 122 rates.

4. PGE proposes to change, for each calendar year that the Company is required to update its Schedule 122 annual revenue requirement or when updated to include a new resource, its existing December 1st date for a compliance filing to a filing 30 days in advance of the rate change that updates rates "in compliance with the Commission's findings in the Company's initial filing."[70]

Q. What does Staff recommend regarding PGE proposal 4?

A. Staff will confirm PGE does not anticipate more frequent than an annual change.

5. PGE proposes to change Schedule 122's Special Condition 5 to allow for a deferral filing in order to track, should actual costs either exceed projected costs in the record of the proceeding or if actual costs cannot be verified prior to the associated compliance filing.[71]

Q. What does Staff recommend regarding PGE proposal 5?

A. Staff recommends that the Commission deny PGE's proposal to allow for the deferral of the difference between projected costs in the record and updated higher costs or actual costs that cannot be verified until after the compliance

[70] Fourth Revision of Sheet No. 122-3, appearing in Exhibit PGE/201.

[71] Third Revision of Sheet No. 122-4, appearing in Exhibit PGE/201.

filing. Staff will address whether it believes the Commission has independent deferral authority pursuant to ORS 469A.120.

Q. Does this conclude your testimony?

A. Yes.

CASE: UE 370
WITNESS: STEVE STORM

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 101

Witness Qualification Statement

MARCH 30, 2020

WITNESS QUALIFICATION STATEMENT

NAME Steve Storm

EMPLOYER Public Utility Commission of Oregon

TITLE Senior Economist

ADDRESS 201 High Street SE, Suite 100
Salem, OR 97301

EDUCATION MBA; University of Oregon; Eugene, Oregon
AB (Economics); Harvard University; Cambridge, Massachusetts

EXPERIENCE I have been recently employed by the Public Utility Commission of Oregon since October 2018 as a Senior Economist. I was previously employed by the Commission as a Senior Economist 2007-2008, the Program Manager of the Economic and Policy Analysis section 2008-2012, and as an Economist 4 2012-2013. My responsibilities have included performing as well as leading a team of analysts performing economic and financial research and providing technical support on a wide range of policy issues involving electric, natural gas, and telecommunications utilities. I have testified before the Commission on policy and technical issues in multiple dockets.

I have over 35 years of professional experience performing and directing the performing of economic, financial, and other quantitative analysis.

I was employed by NW Natural as a Senior Economist in its IRP team 2013-2018, where my responsibilities included customer and industrial load forecasting; performing cost of service and related financial analysis on a variety of infrastructure projects and alternatives; and preparing quarterly economic information for executive communications.

I was a self-employed financial planner for eight years following an 18 year career in management positions responsible for pricing and cost analysis; financial analysis, planning and management; and strategic planning in the publishing and telecommunications industries. I managed the pricing and cost accounting functions for Pacific Northwest Bell's Directory department and its successor company, US WEST Direct, for five years. I managed the departmental budgeting and management reporting functions at US WEST Direct for three years and had seven years management experience in capital budgeting, financial analysis, and strategic planning functions at US WEST Communications. I managed the corporate financial planning, analysis, and management reporting functions for one year at Electric Lightwave.

CASE: UE 370
WITNESS: STEVE STORM

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 102

Exhibits in Support
Of Opening Testimony

March 30, 2020

February 26, 2020

TO: Steve Storm
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 030
Dated February 12, 2020

Request:

Regarding the PGE's forecasted $157.4 million "gross plant in-service" amount for the Company's Wheatridge wind facility at PGE/100 Armstrong - Batzler/16:

a. Please indicate the expected dollar amounts by FERC account represented in this total.

b. Please indicate the spreadsheet location(s) in PGE's submitted workpaper "Wheatridge Revenue Requirement" of each dollar amount provided in response to "a."

Response:

a. See below for a summary of estimated "gross plant in-service" by FERC account:

FERC Account	Description	Functional Class	Estimated $ Amount
344	Generators	Other Production	$153,800,000
352	Structures and Improvements	Transmission	$400,000
353	Station Equipment	Transmission	$3,200,000

Please note, as described in PGE's response to OPUC Data Request No. 029, NextEra has not provided an itemized list of "gross plant in-service" by asset. As such, while the contract with NextEra is a fixed price contract, the estimates above are subject to change and dependent upon final construction costs and detailed list of assets to be obtained.

b. The total "gross plant in-service" amount agrees to line 25 (cell E39) "Gross Plant" on tab "Wheatridge RevReq" of the "Wheatridge Revenue Requirement" workbook.

PGE has refined its estimate for total "gross plant in-service" for transmission assets. Previously, PGE estimated its share of transmission assets at $8.5 million and used FERC account 355, Poles and fixtures, as a reasonable proxy for such assets and related depreciation. Subsequent to the initial filing, PGE obtained one-line diagrams of the substation assets PGE

will own and was able to make an individual estimate of the cost of such assets, as they will not be itemized separately by NextEra. As such, while the total amount due to NextEra has not changed, PGE has revised the estimate for its share of transmission assets to $3.6 million, with the remaining “gross plant in-service" allocated to Other Production.

CASE: UE 370
WITNESS: STEVE STORM

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 103

Exhibits in Support
Of Opening Testimony

March 30, 2020

February 26, 2020

TO: Steve Storm
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 025
Dated February 12, 2020

Request:

Regarding the wind generation portions of the Wheatridge facility, please provide PGE's current estimate of the in-service date of the portion that PGE will own. Consider this an on-going request and provide an update whenever PGE's estimated in-service date changes.

Response:

The current estimated in-service date is October 2, 2020.

CASE: UE 370
WITNESS: STEVE STORM

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 104

Exhibits in Support
Of Opening Testimony

March 30, 2020

February 26, 2020

TO: Steve Storm
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 027
Dated February 12, 2020

Request:

Regarding cell T6 in spreadsheet "Plant and Depreciation" in PGE's workpaper "Wheatridge Revenue Requirement:"

a. Please confirm a $16 million addition to plant subsequent to the requested rate effective date of December 31, 2020.

b. Please describe the $16 million addition to plant PGE assumes to be in-service on or before April 30, 2021 and its purpose.

Response:

a. The $16 million payment forecasted to occur in April of 2021 represents a "Holdback Amount" pursuant to the Build-Transfer Agreement. This amount is due subsequent to all PGE-owned wind turbines being placed into service. However, upon additional review of the assets tied to this amount, PGE is planning to accrue for this amount consistent with the in-service date of Wheatridge.

b. The "Holdback Amount" represents payment for any "punch list" items that are completed after all Wheatridge turbines are placed into service and begin delivering energy to PGE customers. This payment protects PGE and customers by helping to ensure all final punch list items, required site restoration work, and final documentation is correctly performed per the contract.

CASE: UE 370
WITNESSES: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 200

Opening Testimony

March 30, 2020

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

A. My name is Caroline Moore. I am a Chief Analyst employed in the Energy Resources and Planning Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE., Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My witness qualification statement is found in Exhibit Staff/201.

Q. What is the purpose of your testimony?

A. My testimony discusses PGE's proposal to sell the near-term renewable energy certificates (RECs) associated with Wheatridge generation to residential and small commercial retail customers of PGE's Schedule 7 and Schedule 32 renewable portfolio options programs. The purpose of my testimony is to discuss PGE's proposal and provide Staff's recommendation as to whether it is in the best interest of all ratepayers and participants in the Company's renewable portfolio options programs.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

- Exhibit Staff/201, witness qualification statement.
- Exhibit Staff/202, PGE Renewable Power FAQs.
- Exhibit Staff/203, PGE News Release.
- Exhibit Staff/204, Product Content Label.
- Exhibit Staff/205, confidential DR from PGE.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, BACKGROUND ON WHEATRIDGE RECS

Q. Please describe PGE's proposal to monetize the RECs generated from Wheatridge prior to 2025?

A. In PGE's 2016 IRP, the Commission did not acknowledge the Company's original Action Item to issue a request for proposals (RFP) for 175 MWa of renewable resources. However, the Commission allowed PGE to file a revised Action Plan that better accounted for the short-term rate impacts and long-term risks of a renewable procurement in advance of a Renewable Portfolio Standard (RPS) or resource need.[1] PGE's Revised Renewable Action Plan included a condition that PGE would monetize the RECs associated with the generation of the new renewable resource before 2025 and return that value to customers to reduce the near-term rate impacts.[2] PGE described three potential mechanisms to monetize the RECs for customers:

- REC sales in the wholesale market.
- Selling the RECs to voluntary individual subscribers of a green tariff.
- Alternative policy compliance value - If PGE is subject to additional carbon-related policy obligations before 2025.[3]

[1] *See* LC 66 PGE 2016 Integrated Resource Plan, Commission Order No. 17-386, October 9, 2017, p. 16.
[2] *See* LC 66 PGE 2016 Integrated Resource Plan, PGE's Revised Addendum to 2016 IRP November 9, 2017, pp. 14-15.
[3] *See* LC 66 PGE 2016 Integrated Resource Plan, PGE's Revised Addendum to 2016 IRP November 9, 2017, p. 14.

Q. Did the Commission acknowledge PGE's proposal to monetize the RECs generated from Wheatridge prior to 2025 as a condition of PGE's 2016 Integrated Resource Plan (IRP) Revised Renewable Action Plan?

A. No. In Commission Order No. 18-044, the Commission acknowledged PGE's revised action item to issue a Request for Proposals (RFP) for new renewable energy resources of approximately 100 MWa with five conditions. None of these conditions included PGE's proposal to deliver incremental REC value to customers. Instead, the Commission addressed this issue only with a condition that, "Staff may request that we open a docket to address this issue at a public meeting, if necessary to allow parties and the Commission to fully consider potential mechanisms."[4]

[4] *See* LC 66 PGE 2016 Integrated Resource Plan, Commission Order No. 18-044, February 2, 2018, p. 6.

ISSUE 2, THE USE OF NEAR-TERM WHEATRIDGE RECS FOR PURPOSES OTHER THAN RPS COMPLIANCE

Q. Why does PGE propose to monetize the RECs generated from Wheatridge prior to 2025?

A. PGE states that its proposal is the most beneficial option for customers. This analysis compares the benefits of selling the RECs to PGE's renewable portfolio options customers to the benefits of monetizing the RECs on the wholesale market or retaining the RECs for alternative compliance with a future greenhouse gas regulation policy.[5]

Q. Does Staff agree that PGE's proposal to monetize the RECs generated from Wheatridge prior to 2025 is the most beneficial to customers?

A. No. PGE's analysis fails to consider the unique benefits of retaining the first five years of RECs from Wheatridge for RPS compliance.[6]

Q. How does retaining the RECs associated with Wheatridge generation prior to 2025 for RPS compliance provide unique benefits to PGE customers?

A. ORS 469A.140(3)(c) allows RECs associated with the first five years of generation from facilities that become operational between March 8, 2016, and December 31, 2022 to be banked and carried forward indefinitely for the purpose of complying with a renewable portfolio standard in a subsequent year. Therefore, the same RECs that PGE proposes not to use for RPS

[5] UE 370, PGE / 100, Armstrong – Batzler/18-20.
[6] UE 370, PGE / 100, Armstrong – Batzler/18.

compliance are the only RECs from Wheatridge that qualify for indefinite banking. Further, based on PGE's 2019 IRP, PGE's next RPS-eligible resource procurement will begin operation outside of the eligible window for indefinitely bankable RECs. Meaning, the Company is proposing to sell the only new RECs that it will generate on behalf of customers that will not expire.[7, 8]

PGE uses its REC bank to mitigate compliance risks and achieve cost reductions on a year-to-year basis depending on loads, renewable generation, and market conditions.[9] These banked RECs can directly defer the Company's need to acquire additional RPS resources and will likely save customers money in the long-term if they are retained for banking purposes. Because these RECs do not expire, this benefit does not expire and provides a unique hedge against the long-term cost, risk, and uncertainty associated with higher RPS compliance targets father in the future. PGE's 2019 IRP forecasts that the levelized cost of adding new wind resources is PGE's 2019 IRP forecasts that the levelized cost of adding new wind resources in the near-term ranges from roughly $30 to $60 per MWh stated in 2020 dollars and will not likely be lower before 2040 when the RPS reaches 50 percent.[10,11] It is difficult to imagine that the proposed **[begin confidential**] [redacted] **[end confidential]** value returned to PGE's customers by selling RECs to renewable portfolio options

[7] See LC 73 PGE's 2019 IRP, PGE Final Comments, p. 7.
[8] The Company may procure other indefinite life RECs through contracts with independent generators, such as Qualifying Facilities.
[9] See LC 73 PGE's 2019 IRP, PGE's Initial Filing, and July 19. 2019, pp. 113 – 114.
[10] Ibid., Table 6-4, p. 162.
[11] Based on Staff's review in LC 73 PGE's 2019 IRP, Staff's Final Comments, December 17, 2019, Table 3, p. 22.

customers in the near-term compares to the future value of deferring the need to add 100 MW of new resources by five years.

During the 2016 IRP, Staff raised concerns about the disconnection between when PGE would seek rate recovery of this resource and when the resource will provide its intended RPS compliance value.[12] PGE's proposal to disregard the only indefinitely banked RECs Wheatridge will generate exacerbates, rather than mitigates this risk.

Q. Given the unique RPS benefits, should PGE retain the near-term RECs from Wheatridge to benefit customers?

A. Yes.

[12] See LC 73 PGE's 2019 IRP, Staff Report for the August 8, 2018 Public Meeting, pp. 21-23.

ISSUE 3, THE SALE OF WHEATRIDGE RECS TO RENEWABLE PORTFOLIO OPTIONS CUSTOMERS

Q. Why does PGE believe its proposal is beneficial to customers participating in the renewable portfolio options programs?

A. PGE states that selling Wheatridge RECs to renewable portfolio options customers is beneficial because it will increase the quality of RECs supplying the program without increasing the portfolio option programs' prices.[13] PGE goes on to specify that Wheatridge RECs are "superior quality" because they are local, support additionality, and are Green-E certified.[14]

Q. Are RECs from Wheatridge of higher quality than RECs that would otherwise be purchased by renewable portfolio options customers?

A. The RECs from Wheatridge meet the requirements for Green-E certified renewable energy—which is currently a baseline requirement for PGE's renewable portfolio options.[15] However, it is inaccurate to claim that these RECs are superior to other options due to their additionality or location.

Q. Do Wheatridge RECs provide superior additionality?

A. No. PGE links the additionality of Wheatridge RECs to an assertion that the facility's, "need was partially predicated on the recognition that the environmental attributes would be sold to a willing counterparty—satisfying PGE customers' preference for additionality."[16] However, in the 2016 IRP, PGE

[13] UE 370, PGE / 100, Armstrong – Batzler/18.
[14] UE 370, PGE / 100, Armstrong – Batzler/20-21.
[15] See UM 1020, Commission Order No. 13-270, July 16, 2013.
[16] UE 370, PGE / 100, Armstrong – Batzler/21.

tied this resource procurement exclusively to its long-term RPS need—along with energy and capacity benefits—and the Commission did not adopt PGE's proposal to monetize the near-term RECs as condition of acknowledgement.[17],[18]

Additionally, the Wheatridge RECs fail to provide the level of additionality with which the Company currently describes the renewable portfolio options products to customers. While PGE provides little in the way of information that helps customers understand the additionality of its renewable portfolio products, the messages that are publicly available suggest that participants in these programs are receiving 'even more' and 'making an impact' beyond the renewable resources the Company procures for its basic service mix.[19] For example, the Company's Renewable Power FAQs state that, "PGE is adding more wind power to our overall mix all the time, but for now customers who want even more renewable energy have the option to pay a little more for that choice."[20] In addition, a recent press release describes the renewable portfolio options as helping, "put more clean, local renewable energy onto the electric grid."[21] Finally, the boilerplate Green-E Price Terms and Conditions language

[17] See LC 73 PGE's 2019 IRP, PGE Final Comments, pp. 12 - 17.
[18] *See* LC 66 PGE 2016 Integrated Resource Plan, Commission Order No. 18-044, February 2, 2018, p. 6.
[19] For example, see PGE's Choose Renewable webpage, accessed March 26, 2020: https://www.portlandgeneral.com/residential/power-choices/renewable-power/choose-renewable,
[20] See Exhibit Staff/202.Portland General Electric Renewable Power FAQs, available at https://www.portlandgeneral.com/-/media/public/shared/documents/renewable-power-faqs.pdf?la=en.
[21] See Exhibit Staff/203.PGE Press Release, Ten years of PGE customers leading the nation in renewable power adoption, September 23, 2019, available at https://www.portlandgeneral.com/our-company/news-room/news-releases/2019/09-23-2019-ten-years-of-pge-customers-leading-the-nation-in-renewable-power.

states that, "RECs increase demand and drive development of more renewable energy sources."[22]

RECs sourced from a facility that is already in customers' basic service mix because the Company and Commission deemed it least cost, least risk does not offer these attributes of additionality.

Q. Are Wheatridge RECs superior in terms of their generation being in closer geographical proximity to customers?

A. No. Wheatridge is located in Morrow County, Oregon, which is not within the Company's retail service area.[23] PGE has previously leveraged the buying power of its renewable portfolio options products to support the development of new renewable energy projects that are located within PGE's service area. For example, PGE's Green Future Solar program sources RECs specifically from an on-system solar project in Willamina, Oregon and the Renewable Development Fund has helped 61 distributed energy projects, totaling more than 14.5 MW, come online in PGE's service area.[24, 25]

Q. Is the price PGE proposes to charge renewable portfolio options customers for Wheatridge-generated RECs reasonable?

A. No. PGE estimates that the market value of RECs with some of the Wheatridge REC's attributes ranges from **[begin confidential]** [redacted]

[22] See Exhibit Staff/204.For example, PGE's Green Future Solar Prospective Product Content Label available at: https://www.portlandgeneral.com/-/media/public/shared/documents/green-e-prospective-green-future-solar-product-content-label.pdf?la=en.
[23] See PGE's Service Area webpage: https://www.portlandgeneral.com/our-company/pge-at-a-glance/service-area.
[24] UE 370, PGE / 100, Armstrong – Batzler/2.
[25] See PGE's Green Future Solar webpage: https://www.portlandgeneral.com/residential/power-choices/renewable-power/green-future-solar.

[redacted] **[end confidential]**.[26],[27] After making "certain adjustments for tenor, locality, and other factors," PGE proposes to charge renewable portfolio options participants the high end of this range at **[begin confidential]** [redacted] **[end confidential]**.[28] This amount is **[begin confidential]** [redacted] **[end confidential]** greater than the estimated market price provided in PGE's testimony. The value of a voluntary REC depends on market dynamics and subjective attributes. Therefore, it is reasonable to assume that certain RECs are worth **[begin confidential]** [redacted] **[end confidential]**. However, it is not a reasonable price for the attributes of the RECs generated by Wheatridge. PGE's portfolio options program customers have paid less for local RECs that have greater additionality. Most notably, the all-in cost of the Green Future Solar program, including marketing and administrative costs, is $5 for the RECs generated from one kW per month, or approximately $5 per REC.

In addition, PGE suggests that this **[begin confidential]** [redacted] **[end confidential]** premium for Wheatridge RECs will not require a price change. In other words, the premium Wheatridge REC price may be absorbed (or offset) by a reduction in other program costs, including marketing, administration, and the price paid for the other RECs procured to meet the programs' total REC demand. This raises the question as to whether the

[26] UE 370, PGE / 100, Armstrong – Batzler/21.
[27] See Exhibit Staff/205. PGE's confidential response to Staff Data Request No. 35, part a.
[28] UE 370, PGE / 100, Armstrong – Batzler/19.

Company could provide more value by reducing the programs' prices or by preserving the Company's ability to secure more local RECs with greater additionality to meet the programs' total REC demand.

Q. Per Commission Order No. 18-044, is Staff planning to recommend at a public meeting that the Commission open a docket to more fully consider potential mechanisms for monetizing RECs generated from the resource acquired as a result of PGE's 2016 IRP Revised Renewable Action Plan?

A. No, Staff has not yet requested to open this docket; nor has PGE requested that Staff recommend opening such a docket.

Q. Is Staff recommending that the Commission open a docket to more fully consider potential mechanisms for monetizing RECs generated from the resource acquired as a result of PGE's 2016 IRP Revised Renewable Action Plan?

A. No. Staff does not find that an investigation specific to Wheatridge is necessary due to Wheatridge REC's unique RPS compliance value. Staff understands that PGE has also proposed to monetize the RECs from its next RPS-eligible procurements in a similar fashion.[29] These later RECs, however, do not have the unique RPS benefit and may be a more appropriate subject for a generic investigation or discussion of mechanisms to return the value to customers. Further, the Commission has opened rulemakings AR 616 and AR 617, which may provide for further consideration of RPS planning and REC banking requirements. Additionally, now that the Commission temporarily suspended

[29] See LC 73 PGE 2019 IRP, PGE's Initial Application, pp. 216 – 217.

the activities of the Portfolio Options Committee, a new venue is needed for stakeholders to discuss the merits of supplying renewable portfolio options customers with resources resulting from an acknowledged IRP Action Plan. [30,31] Finally, the scale of communities and large customers seeking incremental renewables is growing. These efforts may change the contours between compliance and voluntary renewable energy actions. This should be considered in developing a mechanism to return the value of RECs produced prior to their use for RPS compliance.

Q. What are your recommendations regarding PGE's proposal?

A. I recommend:

1. The Commission reject PGE's proposal to sell the RECs associated with Wheatridge generation prior to 2025 and that the Company retain these RECs for RPS compliance;

2. The Commission open a docket to further discuss mechanisms to return the value of RECs from RPS-eligible resources resulting from an acknowledged IRP Action Plan that are produced prior to their use for RPS compliance.

Q. Does this conclude your testimony?

A. Yes.

[30] The Portfolio Options Committee is the stakeholder group tasked with advising the Commission about consumer preferences for the supply of renewable portfolio options. See OAR 860-038-0220 and Docket No. Um 1020.

[31] See UM 1020 Portfolio Options Pursuant to ORS 757.603(2) & OAR 860-038-0220, Commission Order No. 2063, March 3, 2020.

CASE: UE 370
WITNESS: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 201

Witness Qualifications Statement

March 30, 2020

WITNESS QUALIFICATIONS STATEMENT

NAME: Caroline F. Moore

EMPLOYER: Public Utility Commission of Oregon

TITLE: Chief Analyst
Energy Resources and Planning Division

ADDRESS: 201 High Street SE. Suite 100
Salem, OR. 97301

EDUCATION: Virginia Polytechnic Institute and State University (Virginia Tech), Bachelors of Arts in Political Science, 2009

Virginia Polytechnic Institute and State University (Virginia Tech), Bachelors of Arts in History, 2009

University of Oregon, Masters of Public Administration, 2011

EXPERIENCE: 3Degrees Group, Inc.
Utility Partnership Associate, 2012 – 2014

PacifiCorp
Business Analyst, 2015 – 2016

PacifiCorp
Project Manager, 2016 – 2017

Oregon Public Utility Commission
Senior Utility Analyst, Renewables, 2017 – 2018

Oregon Public Utility Commission
Chief Utility Analyst, 2018 – present

CASE: UE 370
WITNESS: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 202

Exhibits in Support
Of Opening Testimony

March 30, 2020

Renewable Power FAQs

What is “new” energy?

New energy is generated by power projects that began operations after January 1, 2001. Because these facilities are recent additions to the electric grid, the electricity they generate offsets older forms of generation that typically generate air pollution. All of the renewable options PGE offers, wind or a combination of renewable energy, qualify as “new”.

Why doesn’t PGE just give 100 percent renewable energy to everyone without charging more?

PGE attempts to keep costs as low as possible for all customers. Currently, renewable power is more expensive than our traditional Basic Service mix. PGE is adding more wind power to our overall mix all the time, but for now customers who want even more renewable energy have the option to pay a little more for that choice.

If I choose a renewable option, where does my money go?

Funds received from participating customers are used to purchase renewable energy certificates from regional renewable energy facilities equal to the customer's purchase and may support the construction of new community-based projects that increase public education and awareness of renewable technologies as well as growing the support for renewable energy through customer education and outreach efforts and to cover the costs of offering the program. We are required

by regulations to allocate the costs associated with PGE's renewable power program to customers who choose to participate, and we do not make a profit by offering renewable options to customers. For every dollar spent, 67% goes to the purchase of renewable energy and 33% towards education, outreach and administration.

What happens after I sign up?

We enter your information into a database. Within a few weeks you will receive a welcome letter. The charge will appear on your bill one to two billing cycles later. You can switch back to traditional power at any time, with no penalty or fee. Simply call us and ask to cancel your renewable power option.

How does renewable energy get to my house or business?

Imagine the electric grid as a giant bathtub that's constantly being filled from many different faucets — each one representing a different energy source such as hydroelectric, coal, natural gas and wind. Turn on a light, and you drain a little water from the tub.

Most of the water entering the tub is from faucets connected to traditional energy sources. But some of the water comes from a growing number of faucets from clean, renewable sources, which contribute pure, clean water. As demand for renewables increases, more clean water goes into the tub — and less of the traditional sources. So the electricity entering the grid on your behalf comes from pollution-free, renewable sources.

What are Renewable Energy Credits?

When a renewable energy facility operates, it creates electricity that is delivered into a vast network of transmission wires, often referred to as "the grid." The grid is segmented into regional power pools; in many cases these pools are not interconnected.

To help facilitate the sale of renewable electricity nationally, a system was established that separates renewable electricity generation into two parts: the electricity or electrical energy produced by a renewable generator and the renewable "attributes" of that generation.

The renewable attributes or "green" attributes are sold separately as renewable energy certificates (RECs). Only one certificate may be issued for each unit of renewable electricity produced. The electricity that was split from the REC is no longer considered "renewable" and cannot be counted as renewable or zero-emissions by whoever buys it.

With the purchase of RECs, you are buying the renewable attributes (i.e. environmental benefits) of a specific amount and type of renewable energy generation. You will continue to receive a separate electricity bill from PGE. Your purchase of renewable certificates helps offset conventional electricity generation in the region where the renewable generator is located. Your

Renewable Power FAQs

purchase also helps build a market for renewable electricity and may have other local and global environmental benefits such as reduced global climate change and regional air pollution.

The renewable certificates in this product are verified and certified by Green-e® Energy. Each supplier of renewable certificates is required to disclose the quantity, type and geographic source of each certificate. Please see the Product Content Label (PDF) for this information. Green-e Energy also verifies that the renewable certificates are not sold more than once or claimed by more than one party. For information on Green-e Energy please visit their website www.green-e.org.

Who is Green Mountain Energy Company?

Green Mountain Energy Co. provides energy to PGE for the Green Source and the Habitat Support options. They are the nation's largest and fastest growing residential provider of cleaner electricity. They are the folks you see staffing tables at storefronts and events, and stopping door to door through our Courtesy Knock program.

What is geothermal energy?

Geothermal energy is generated from the immense amount of heat that is trapped and naturally occurring beneath the earth's crust. Geothermal plants convert this heat into power by piping hot steam and water to the earth's surface and using them to turn electrical turbines. Geothermal energy is most abundant in areas along the edges of tectonic plates where the ground is volcanic.

What is biomass energy?

Biomass energy is a general term referring to the power generated by burning plant and organic matter, gases emitted by decomposing garbage, or municipal solid waste. While the first two sources produce little to no emissions, the third produces questionable emissions, which is why PGE does not purchase this third type.

CASE: UE 370
WITNESS: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
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STAFF EXHIBIT 203

Exhibits in Support
Of Opening Testimony

March 30, 2020

Ten years of PGE customers leading the nation in renewable power adoption

Sept. 23, 2019

Portland, Ore. — Portland General Electric Company (NYSE: POR) and its customers are celebrating a decade of being the nation's leaders in renewable energy during this year's **National Clean Energy Week (https://nationalcleanenergyweek.org/)**. With more than 204,000 customers voluntarily enrolled in its Green Future[SM] program, the U.S. Department of Energy's National Renewable Energy Laboratory recently announced in its **2018 rankings** (https://www.nrel.gov/analysis/assets/pdfs/top-ten-utility-green-pricing-2018.pdf) that PGE has the largest participation in a renewables program of any U.S. electric utility for the tenth year in a row.

PGE received NREL's No. 1 ranking for the highest number of business and residential renewable energy customers, with nearly twice the number of the second ranked electric utility. Over the 20 year life of the program, Green Future customers have chosen low-carbon, renewable energy in support of a clean energy future for all.

"Oregonians are at the forefront of the transition to clean energy," said Maria Pope, president and CEO of PGE. "We're grateful that nearly a quarter of business and residential customers are choosing renewable power to combat the effects of climate change and invest in innovative clean energy solutions."

The Green Future renewable energy program helps put more clean, local renewable energy onto the electric grid. In addition, the program gives back to communities by funding renewable energy projects through the **PGE Renewable Development Fund (/business/power-choices-pricing/renewable-power/install-solar-wind-**

more/renewable-development-fund). To date, the fund has contributed $14 million in grants that support projects benefiting local communities, including a 302-kilowatt solar array that is being installed at the Beaverton Public Safety Center. The solar panels are expected to cover 40% of the building's annual energy usage. The city will apply its cost savings to the center's operations budget, making more funds available to better serve Beaverton residents. Additionally, the solar panels will operate as part of a microgrid which is designed to support uninterrupted emergency services to the community after a major earthquake or disaster.

The customer-funded renewable energy program has helped build more than 8 megawatts of new renewable energy generation in Oregon, with another 3 megawatts currently under construction. PGE also received the No. 1 ranking for the most megawatt hours of renewable energy sold for the seventh consecutive year, with nearly 2 million megawatt hours in green power sales in 2018.

As a fully integrated electric company, PGE can seamlessly integrate and deploy the technologies that enable cleaner, more affordable and equitably distributed energy across the largest system in Oregon. PGE's energy mix is currently 40% carbon-free as the company advances its goal to reduce greenhouse gas emissions 80% system-wide.

For more information, visit **portlandgeneral.com/greenfuture (/residential/power-choices/renewable-power/choose-renewable)**.

About Portland General Electric Company

Portland General Electric (NYSE: POR) is a fully integrated energy company based in Portland, Oregon, with operations across the state. The company serves approximately 892,000 customers in 51 cities, has 16 generation plants in five Oregon counties, and maintains and operates 13 public parks and recreation areas. For 130 years, PGE has delivered safe, affordable and reliable energy to Oregonians. Together with its customers, PGE has the No. 1 voluntary renewable energy program in the U.S. PGE and its 3,000 employees are working with customers to build a clean energy future. PGE, employees, retirees and the PGE Foundation donate more than $4 million annually to support nonprofits and schools. In addition, employees and retirees log more than 45,000 volunteer hours annually. For more information visit **portlandgeneral.com/cleanvision (/our-company/energy-strategy/oregons-clean-energy-future)**.

For more information contact: Paulina Oceguera, PGE, **503-464-8901**, **Paulina.Oceguera@pgn.com (mailto:Paulina.Oceguera@pgn.com)**

CASE: UE 370
WITNESS: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 204

Exhibits in Support
Of Opening Testimony

March 30, 2020

2019 Green Future[SM] Solar Prospective PRODUCT CONTENT LABEL[1]

Green Future Solar is a renewable electricity product. Green Future Solar is sold in blocks of 1 kilowatt. When you purchase a block of Green Future Solar, you purchase the renewable energy certificates (RECs) produced by 1KW of solar panels located at the Steel Bridge Solar Project in Oregon. A REC is created when a megawatt-hour of renewable energy is produced and delivered to the grid. REC increase demand and drive development of more renewable energy sources. Because Green Future Solar mirrors the production of the Oregon facility, the amount of RECs supplied monthly will vary.

In 2019, each block of Green Future Solar will be made up of the following renewable resources.

Green-e Energy Certified New[2] Renewable Energy in Green Future Solar 2019		Generation Location
Solar	100%	Oregon
TOTAL	100%	

1. These figures reflect the renewables that we have contracted to provide. Actual figures may vary according to resource availability. We will annually report to you before August 1 of next year in the form of a Historic Product Content Label the actual resource mix of the electricity you purchased.

2. New Renewables come from generation facilities that first began commercial operation within the past 15 years.

3. Eligible hydroelectric facilities are defined in the Green-e Energy National Standard (www.green-e.org/getcert_re_stan.shtml) and include facilities certified by the Low Impact Hydropower Institute (LIHI) (www.lowimpacthydro.org) or EcoLogo (www.ecologo.org); and facilities comprised of a turbine in a pipeline or a turbine in an irrigation canal.

For comparison, the current average mix of resources supplying the PGE Basic Service Mix included: 6.24% Wind, 21.69% Coal, 0.81% Nuclear, 0.01% Waste, 39.21% Natural Gas, 30.62% Hydroelectric, 0.70% Biomass, 0.01% Solar and 0.71% Other. This resource mix was prepared in accordance with Oregon Administrative Rule 860-038-0300.

The average home in the United States uses 897 kWh per month. [Source: U.S. EIA, 2016]

For specific information about this electricity product, please contact Portland General Electric by phone at 1-800-542-8818, email renewables@pgn.com, visit www.portlandgeneral.com/renewables, or write to Portland General Electric, PO Box 4404, Portland, OR, 97024.

Green-e Energy CERTIFIED

Green Future[SM] Solar is Green-e Energy certified, and meets the environmental and consumer-protection standards set forth by the nonprofit Center for Resource Solutions. Learn more at www.green-e.org.

CASE: UE 370
WITNESS: CAROLINE MOORE

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 205

Exhibits in Support
Of Opening Testimony

March 30, 2020

Staff Exhibit 205 is confidential

Subject to

Protective Order No. 19-416

CASE: UE 370
WITNESS: MOYA ENRIGHT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 300

Opening Testimony

March 30, 2020

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

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

Q. Please describe your educational background and work experience.

A. My witness qualification statement is found in Exhibit Staff/301.

Q. What is the purpose of your testimony?

A. My testimony addresses Portland General Electric's (PGE or Company) request to recover the costs of two microgrid pilots through Schedule 122 rates, also known as its Renewable Resource Automatic Adjustment Clause (RAC).

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

- Exhibit Staff/301, witness qualification statement.
- Exhibit Staff/302, confidential DR responses from PGE.
- Exhibit Staff/303, non-confidential DR responses from PGE.
- Exhibit Staff/304, Staff's confidential workpapers (also provided as an electronic exhibit).

ISSUE 1, MICROGRID PILOTS

Summary of Issue

Q. Please provide an overview of PGE's filing in UE 372.

A. On December 10, 2019, the Company filed to update its Schedule 122 rates, to incorporate requested recovery of costs associated with the Beaverton Public Safety Center (BPSC) and Anderson Readiness Center (ARC) energy storage microgrid pilots. These pilots were part of the Company's energy storage pilots, which were approved by the Commission in August 2018.[1]

Q. Please provide a summary of Staff's recommendations regarding cost recovery of the ARC and BPSC energy storage microgrid pilots.

A. Staff has provided a primary recommendation regarding cost recovery of the ARC and BPSC pilots. Should the Commission choose not to accept Staff's primary recommendation, a secondary recommendation has also been provided.

1. Primary recommendation:

Staff recommends that the Commission:

a) Reject the current filing as ineligible for cost recovery under the RAC, without prejudice, and allow the Company to refile for cost recovery in

[1] Commission Order No. 18-290 in Docket No. UM 1856 approved the Company's development of between two and five microgrid storage pilots. This Commission order resulted from House Bill 2193, which required the Company to submit to the Commission a proposal to develop energy storage systems and procure any authorized pilots by January 1, 2020.

its next general rate case proceeding or, if appropriate, following the conclusion of Docket No. AR 616.[2]

2. Secondary recommendation:

If the Commission allows recovery of these energy storage pilots through the existing RAC, Staff recommends that the Commission:

a) Enforce the $2 million cap on overnight capital costs for microgrid pilots, in accordance with Docket No. UM 1856, Order No. 18-290.

b) Find the Company's costs associated with the BPSC microgrid to be prudent, subject to Staff review of final cost reports, and the following disallowance:

i. Disallowance of **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** in capital costs, which represents an avoidable payment card surcharge paid by PGE to its BPSC microgrid vendor.

c) Find the Company's costs associated with the ARC microgrid to be prudent, subject to Staff review of final cost reports, but impose the following management disallowance:

i. Due to management imprudence for missing the statutory deadline for procurement, the Commission should assess a

[2] As detailed later in this text, Docket No. AR 616 involves a collaborative effort between Staff, the Investor Owned Utilities (IOUs), and other stakeholders to define the term "associated energy storage". The conclusion of this docket has direct implications on the eligibility of PGE to recover its microgrid pilot costs under the RAC.

one-time 10 percent management disallowance on costs for the ARC microgrid project, equivalent to $97,580.[3]

d) Require PGE to file an updated in-service date for each microgrid pilot, if this should change from the current dates of May 5, 2020, for the BPSC pilot, and December 31, 2020, for the ARC pilot.[4]

e) Require PGE to file an attestation by its chief executive officer that both microgrid pilots are operating, prior to the rate effective date resulting from this proceeding.

f) Require PGE to include the microgrid projects' anticipated Net Variable Power Cost (NVPC) impacts through updating its Schedule 125 rates coincident with the rate-effective date for Schedule 122, and remove all NVPC impacts from PGE's proposed RAC rates that result from this proceeding.[5]

Q. Please provide an overview of Staff's analysis of the microgrid pilots.

A. Staff researched the history of the microgrid pilots, which includes review of HB 2193; the framework set out by the Commission for the implementation of HB 2193 in Docket No. UM 1751, Order Nos. 16-504 and 17-118; and testimony presented in Docket No. UM 1856, which resulted in the Commission adopting an all parties stipulation approving the pilots in Docket No. UM 1856, Order No. 18-290 on May 22, 2018.

[3] Value based on current forecasted costs for the ARC pilot, as shown in Figure 2.
[4] Updated dates in accordance with the Company's response to Staff data request 84. See Exhibit Staff/302 page 1, PGE's response to Staff data request 84.
[5] This is consistent with Staff's proposed treatment of NVPC impacts for the Wheatridge Renewable Energy Facility. See Staff/100, Storm/5.

Staff investigated PGE's process for shortlisting and scoring its potential microgrid partners and investigated the competitive bidding process used by the Company to score responses to its Request For Proposals (RFP).

Staff investigated the cost of the microgrid pilots, including ensuring the Company's adherence to limits set out in Order No. 18-290. Staff also investigated payment methods and Operating and Maintenance (O&M) costs.

Staff assessed the expected capabilities of the microgrid pilots (which have not yet been energized), against those the microgrids were purported to achieve when approved by the Commission, to ensure that the expected learnings and objectives of the pilots would be met.

Staff investigated the expected learnings, which were laid out by the Company when the pilots were initially proposed and conducted discovery to ensure that the Company was benefitting from learnings as intended.

Q. What discovery did Staff conduct?

A. Staff issued 64 data requests to inform its analysis of the microgrid pilots.

Q. Please provide an overview of Staff's testimony.

A. Staff's analysis is presented as follows:

1. Background.
2. Overview of microgrid pilots.
3. Proposed mechanism for cost recovery.
4. Compliance.
5. Pilot costs.
6. Pilot Objectives and learnings.

Background

Q. Please provide the background surrounding the microgrid pilots.

A. In 2015, the Oregon legislature passed HB 2193,[6] which required PGE and PacifiCorp to procure by January 1, 2020,[7] one or more energy storage systems, with any energy storage proposal to be accompanied by the utility's evaluation of storage potential in its system.[8] The goal of these pilots was to test how storage systems perform and to determine the value storage provides to the electrical system.[9]

[6] HB 2193 (2) (1): https://olis.leg.state.or.us/liz/2015R1/Downloads/MeasureDocument/HB2193.
[7] The Commission interprets the requirement to procure by 2020 "*to mean that contracts are in place to engineer, procure and construct or implement the selected energy storage projects*". See Docket No. UM 1751, Order No. 17-118, page 2.
[8] The Storage Potential Evaluation includes an analysis of operations and system data, examination of how storage would complement the electric company's existing action plans, and identification of areas with opportunity to incentivize energy storage.
[9] See: https://www.oregon.gov/puc/utilities/Pages/Energy-Grid-Modernization.aspx.

A framework for the utilities' Storage Potential Evaluations was established in Docket No. UM 1751. In that proceeding's Order No. 17-118, the Commission also clarified that the requirement to procure the energy storage systems by January 1, 2020, should be interpreted as "*contracts .. in place to engineer, procure and construct or implement the selected energy storage projects.*"[10]

In 2017, PGE filed its evaluation of storage potential with the Commission in Docket No. UM 1856, which ultimately resulted in the Commission approving five energy storage pilots,[11] including the microgrid pilots dealt with in this proceeding.

Q. Please provide an outline of the Commission's ruling and requirements in Order No. 18-290, as it relates to the microgrid pilots.

A. Order No. 18-290 approved PGE's plan to develop between two and five microgrid pilots in its service territory. The pilots could serve either single customers or a subset of customers and were expected to have a 10-year asset life.[12]

Parties to the settlement stipulation adopted in Order No. 18-290 also agreed on a number of requirements for the microgrid pilots, which included guidelines on microgrid partner selection, costs, and evaluation of the pilots.[13]

[10] Docket No. UM 1751, Order No. 17-118, page 2.
[11] Docket No. UM 1856, Order No. 18-290 approved the following five energy storage pilots: Residential Pilot, Microgrid Pilot, Coffee Creek Pilot, Baldock Pilot, and Port Westward Pilot.
[12] Docket No. UM 1751, Order No. 17-118, Appendix A, page 4.
[13] Docket No. UM 1856, Order No. 18-290, Appendix A, page 6, lines 16 - 20.

Overview of microgrid pilots

Q. Please describe how a microgrid functions.

A. A microgrid is a local energy grid which generally operates while connected to the electrical grid, but is capable of being disconnected from the traditional grid and operated autonomously.

When operating autonomously, the microgrid uses local energy generation including distributed generators, batteries, and/or renewable resources like solar panels. This capability provides value locally in situations such as storms or power outages, and provides a backup for the grid in emergencies.

A microgrid connects to the grid at a point of common coupling that maintains voltage at the same level as the main grid, unless there is a problem on the grid or some other reason to disconnect. If the main grid fails, a microgrid can operate independently and isolate its generation nodes and power loads from any disturbance. Having the ability to change between islanded mode and grid-connected mode provides resiliency solutions to the grid and to communities.[14]

Q. Please describe PGE's microgrid pilots, which are the subject of this proceeding.

A. The Company has requested cost recovery for two microgrid pilots in this proceeding:

[14] See: https://www.energy.gov/articles/how-microgrids-work.

- The BPSC facility is currently under construction, and once complete, will serve the Beaverton community as a police station, with other functions such as providing a radio communications hub for local law enforcement and emergency services. The BPSC microgrid includes a Battery Energy Storage System (BESS), 0.32 MW of photovoltaic (PV) solar, and a 1,000 kW synchronous diesel generator.
- The ARC is located in Salem at a National Guard base, which is used as a location for storing vehicles and other resources necessary for emergency response. The ARC microgrid includes a BESS, 320kW of PV solar, and a 1 MW synchronous diesel generator.

Figure 1 below shows the ownership of the major assets of each microgrid.[15]

[BEGIN CONFIDENTIAL]

[redacted]

[END CONFIDENTIAL]

[15] See Exhibit Staff/303 page 1, PGE's confidential response to Staff data request 90, Attachment F; and Exhibit Staff/302 pages 2 - 3, PGE's response to Staff data request 18.

Mechanism for cost recovery

Q. Was cost recovery addressed in Docket No. UM 1856, Order No. 18-290?

A. No. Cost recovery was not addressed either by the parties to the settlement stipulation preceding Order No. 18-290, or within the Order. The issue was left for future determination. The stipulation specifically stated:

> *The method of/mechanism for cost recovery for PGE's five energy storage pilot projects is not decided in this Stipulation and will not be determined in the current proceeding in this docket. As the pilot projects get closer to being in service, PGE will file for its preferred method of cost recovery. At that time, all Parties to this Stipulation, and any new parties granted intervenor status, will have an opportunity to litigate their position on the appropriate method of/mechanism for cost recovery. This Stipulation does not limit any Party in their argument on cost recovery, including whether cost recovery should occur through a general rate case only, PGE's Renewable Resource Automatic Adjustment Clause (RAC), a new automatic adjustment clause, or other method.*[16]

Q. How has the Company proposed to recover its costs for the microgrid pilots?

A. The Company has requested cost recovery for the microgrid pilots through Schedule 122, also known as the RAC, pursuant to Oregon Revised Statutes (ORS) 757.210 and 469A.120. ORS 469A.120 (2) (a):

[16] Docket No. UM 1856, Order No. 18-290, page 4.

The Public Utility Commission shall establish an automatic adjustment clause as defined in ORS 757.210 or another method that allows timely recovery of costs prudently incurred by an electric company to construct or otherwise acquire facilities that generate electricity from renewable energy sources, costs related to associated electricity transmission and costs related to associated energy storage.

Q. Why is PGE seeking cost recovery pursuant to its Renewable Adjustment Clause?

A. PGE argues that cost recovery for the two microgrid pilots is appropriate pursuant to its RAC because the energy storage is "associated" with renewables in that "both the BPSC and ARC energy storage microgrids will enhance PGE's resource portfolio flexibility and support renewable resources integration," making these pilots eligible as "associated energy storage" under ORS 469A.120.[17]

Q. Has the term "associated energy storage" been defined?

A. No. The term "associated energy storage" is not defined in ORS 469A.120, and has not yet been defined by the Commission. Staff will address this issue further in briefing. The Commission looking into the definition of this term in RPS Planning Process and Reports (Docket No. AR 616). [18]

[17] PGE/100, Murtaugh_Cristea/7, lines 19 – 21.
[18] See AR 616 in which Staff stated: "*Section 11(2)(a) of SB 1547 amends ORS 469A.120(2)(a), which authorizes cost recovery through the renewable adjustment clause, to include "costs related to associated energy storage." Staff finds, that associated energy storage requires a definition In OAR 860-083-0010".*

Q. What progress has been made to date on Docket No. AR 616?

A. Staff issued a request for comment from interested parties in February 2019, asking interested parties to take a position on how "*associated energy storage as it is used in ORS 469A.120 should be defined.*" Staff received six responses to its request for comment, including responses from stakeholders and utilities.[19]

Most recently, Staff hosted a workshop in February 2020 regarding this matter. Staff's expectation is that this rulemaking will move to the formal rulemaking phase in August 2020.

Cost recovery mechanism

Q. Is it appropriate for cost recovery of the microgrid pilots to take place under the RAC?

A. No. Staff does not consider the microgrid pilots to be eligible for cost recovery under the RAC, because Staff does not find that the energy storage components, as a component in each of these pilots, are sufficiently associated with RPS-compliant resources. Neither pilot is associated with Company-owned renewable generation.

Furthermore, the Company has no claim to Renewable Energy Credits (RECs) which would contribute to meeting its Renewable Portfolio Standard (RPS). As stated above, Staff will address these issues further in briefing.

[19] Responses were received from PGE, PacifiCorp, the Alliance of Western Energy Consumers ("AWEC"), the Oregon Citizen's Utility Board (CUB), Renewable Northwest, and the NW Energy Coalition.

Q. What consequences would Commission approval of cost recovery for the microgrid pilots under the RAC have in this case?

A. If the Commission authorized cost recovery for the microgrid pilots through the RAC, it would establish Commission precedent regarding the definition of "associated energy storage," which could impact all of Oregon's investor-owned electric utilities, as a result of a proceeding involving only one Oregon utility. This is particularly concerning when PGE's proposed definition of "associated energy storage" is tenuous at best as it relates to RPS cost recovery.

Furthermore, Commission approval of PGE's filing would circumvent the rulemaking which is taking place in AR 616, and serve to undermine the efforts of Staff, the Investor Owned Utilities (IOUs), and other stakeholders.

Compliance

Q. What issues did Staff consider when reviewing the Company's compliance with Order Nos. 18-290 and 17-118, and HB 2193?

A. Staff investigated the Company's compliance with the following issues:

a. January 1, 2020, deadline for procurement.

b. Microgrid pilot site and partner selection.

c. Microgrid equipment vendor selection.

d. Completion of required reporting.

January 1, 2020, deadline for procurement

Q. Were the microgrid pilots procured by January 1, 2020?

A. No. Although the procurement of the BPSC pilot complies with this deadline, PGE's procurement of the ARC pilot is non-compliant.

Q. Please describe how Staff determined that the ARC microgrid was not procured by the deadline.

Staff determined compliance with HB 2193 by first reviewing the definition of "procure" in the context of this case.

HB 2193 defined "procure" as "acquire by ownership a qualifying energy storage system or to acquire by contract the right to use the capacity of or the energy from a qualifying energy storage system".[20]

Commission Order No. 17-118 clarified that "procure" should be interpreted as "contracts…in place to engineer, procure and construct or implement the selected energy storage pilots".[21]

Staff conducted discovery to verify the date on which each pilot was procured. Based on PGE's responses, Staff has concluded that PGE did not procure the ARC pilot prior to the deadline, and in fact the pilot had not yet been procured as of March 2020. Staff's conclusion regarding the ARC pilot is based on several observations:

[20] See https://olis.leg.state.or.us/liz/2015R1/Downloads/MeasureDocument/HB2193.
[21] Docket No. UM 1751, Order No. 17-118, page 2.

1. No contract executed with a microgrid partner.

Staff observed that no contract has yet been signed with the microgrid partner, in fact, negotiations were still underway in March 2020.[22, 23]

2. No contracts in place with vendors.

Staff requested copies of all contracts and purchase orders related to the procurement of both microgrids in March 2020. The only contracts or purchase orders available (in March 2020) relate to the BPSC pilot.[24]

3. No request for proposals (RFP) issued.

HB 2193 required the utilities to provide the Commission and stakeholders an opportunity to review the RFP design. Staff requested a copy of the RFP PGE issued for ARC, and was informed that:

> *PGE issued one RFP … to be used on both of the microgrid projects ... due to the similarity of the BESS equipment for both the BPSC and ARC projects, PGE plans to use the same supplier for both projects to avoid additional time and costs in conducting an additional RFP that would result in the same vendor selection.*[25]

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[22] In Exhibit Staff/302 page 1, PGE's response to Staff data request 84, the Company states: "*PGE's negotiations with the Anderson Readiness Center have been delayed due to the emerging situation with the COVID-19 pandemic*."

[23] See Exhibit Staff 302 page 4, PGE's response to Staff data request 93, which states: *"The contract for the Anderson Readiness Center is still under negotiation and not yet available, but it follows the same form as the BPSC agreement."*

[24] See Exhibit Staff/302 page 5, PGE's response to Staff data request 87.

[25] See Exhibit Staff/302 page 6, PGE's response to Staff data request 88.

Staff found this response to be misleading for three reasons:

a. When submitting its RFP for the BPSC pilot, the Company clearly stated that the RFP related to the BPSC pilot only.

*"Enclosed is the draft RFP for **one** of the energy storage systems that will be used in the Microgrid pilot".*[26] (emphasis added)

b. The RFP submitted to the Commission described the BPSC microgrid in detail but did not address the second ARC microgrid.[27]

c. Furthermore, the Company's intention to use the same vendor for the ARC pilot may not be compliant with the requirements of HB 2193, specifically:

An electric company may award a contract for a project without competition if it determines and presents justification that only a single vendor or contractor is capable of meeting the requirements of the project.

Six vendors responded to the Company's request for proposal for BPSC. Staff reviewed each of the six bids, along with PGE's scoring of the bids, and notes that all of the responding vendors would have been capable of meeting the ARC pilot's requirements, which the Company states is nearly identical to the BPSC pilot in size and scope.[28]

The three facts listed above support Staff's conclusion that PGE did not procure the ARC pilot before the deadline.

[26] Docket No. UM 1856, PGE's submission to the Commission on May 2, 2019, page 2.
[27] Docket No. UM 1856, PGE's submission to the Commission on May 2, 2019, pages 3 - 27.
[28] See Exhibit Staff 302 pages 7 - 9, PGE's response to Staff data request 89, including Attachment B.

Q. Please describe how Staff determined that the BPSC microgrid was procured prior to the statutory deadline.

A. In contrast to the ARC pilot, PGE had the following agreements and framework for the BPSC pilot in place prior to the deadline.

1. Contract executed with microgrid partner.

[BEGIN CONFIDENTIAL] [redacted] **[END CONFIDENTIAL].** [29]

2. Contracts executed with vendors.

PGE signed contracts with two different vendors, one in October and the other in November 2019. These included a BESS equipment purchase agreement, and an equipment installation agreement.[30]

3. Request for proposals (RFP) issued.

PGE drafted its RFP for the BPSC pilot in May 2019 and completed its scoring of the RFP's responses prior to signing contracts with the vendor in late 2019.

Q. What is Staff's alternative recommendation for cost recovery for the microgrid pilots, if the Commission allows cost recovery through the RAC?

A. Staff recommends that the Commission:

Allow PGE to recover the costs of the microgrid pilots, subject to the $2 million cap on total microgrid overnight capital costs, in accordance with Order No. 18-290

[29] See Staff/Exhibit 303 page 2, PGE's confidential response to Staff data request 93-A, page 1.
[30] See Staff/Exhibit 302 page 5, PGE's response to Staff data request 87.

Impose a one-time 10 percent management disallowance on the ARC microgrid pilots' overnight capital cost cap, equivalent to $97,580,[31] due to management imprudence for missing the statutory deadline for procurement.

Microgrid pilot site and partner selection

Q. What criteria did the Company consider when selecting customers to partner with for the microgrid pilots?

A. The Company first performed a site-suitability analysis to identify potential locations for an energy storage pilot within its service territory. This included scoring locations according to the following criteria: population density, landslide susceptibility, income density (a proxy for identifying underserved communities), flood zone, proximity to distributed energy resources, and proximity to a critical facility.

PGE then evaluated potential microgrid partners in the top scoring areas based on the customer's willingness to invest in equipment, take responsibility for upgrading equipment when necessary, and provide land on which to locate the BESS.

PGE required each potential microgrid partner to commit to having both PV Solar and backup generation installed on-site, and to agree to PGE's dispatching the BESS for Utility Grid Services, and to reserving no more than the bottom 10 percent of its capacity for backup generation.

[31] Value based on current forecasted costs for the ARC pilot, as shown in Figure 2.

Q. Is Staff satisfied that the Company acted prudently when choosing customers to partner with for the microgrid pilots?

A. Yes. The Company shortlisted and scored **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** of the six Oregon counties that PGE serves. Based on the observable information, Staff believes that PGE carried out the evaluation, scoring, and choosing of potential partners prudently.

Staff also confirmed that the Company considered customer willingness to pay while selecting its partners, as required by Order No. 18-290.

Microgrid equipment vendor selection

Q. Did PGE carry out a competitive bidding process?

A. Yes and no. Staff's discovery showed that a competitive bidding process was indeed carried out for the BPSC microgrid pilot. In contrast, no bidding process was carried out for the ARC microgrid pilot, because the Company plans to use the same vendor.

PGE's planned approach for the ARC microgrid pilot does not comply with the Competitive Bidding Requirements set out in Order No. 16-504,[32]

[32] The Commission's Competitive Bidding Requirements were established in Docket No. UM 1751, Order No. 16-504, page 10, and require the following:

1. *An electric company may award a contract for a project without competition if it determines and presents justification that only a single vendor or contractor is capable of meeting the requirements of the project.*
2. *Where the requirements for sole source procurement are unmet, electric companies must use a competitive process to award contracts.*
   a. *The electric companies will bear the burden of demonstrating that they followed a fair, competitive solicitation process to identify all vendors with the requisite expertise, experience, and capability to install viable projects.*

which requires a competitive process to award contracts where requirements for sole source procurement are not met.

Q. Please outline the steps taken by PGE to comply with the Commission's competitive bidding requirements set out in Order No. 16-504.

A. PGE filed its RFP for the BPSC microgrid pilot, inviting Commission review, in May 2019. The Company appears to have scored the responses to the BPSC pilot RFP in a comprehensive and transparent manner.

The Company did not prepare a RFP for the ARC microgrid pilot, contrary to the competitive bidding requirements.

PGE has not yet provided a summary report to the Commission regarding its solicitation process and scoring approach for either microgrid pilot. Staff would consider it prudent if this were completed prior to any costs for the microgrid pilots going into rates.

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b. *The electric companies must give the Commission and stakeholders the opportunity to review the electric companies' RFP design and offer nonbinding input (emphasis added).*

c. *The electric companies must summarize and report to the Commission their solicitation process and scoring approach. The report should be included with the formal project proposal submitted to the Commission, or, if bidding occurs after Commission authorization, at a special public meeting to follow.*

Completion of required reporting

Q. Please summarize any other reporting requirements to which the Company's microgrid pilots are subject.

A. Commission Order No. 18-290 set out reporting requirements for PGE relating to the five approved pilots. This included:

> *A detailed plan, including incremental next steps to advance its energy storage modeling capability, and credibly estimate all benefits associated with the proposed energy storage systems*.[33]

PGE complied with this condition when it submitted its Plan to Advance Energy Storage Modeling Capability to the Commission on October 25, 2018. Order No. 18-290 also required PGE's plan to:

> *Set clear milestones with explanations regarding the analysis or tool development necessary to advance its methodologies*.[34]

PGE's Plan to Advance Energy Storage Modeling Capability detailed the timeline and milestones towards achieving this. Finally, the Commission required PGE to:

> *Implement those methodologies for future ESS proposals made outside of the IRP process … (and) … work with the Commission to develop best practices for the integration of energy storage modeling into its IRP process*.[35]

[33] Docket No. UM 1856, Order No. 18-290, Appendix A page 8.
[34] Docket No. UM 1856, Order No. 18-290, Appendix A page 8.
[35] Docket No. UM 1856, Order No. 18-290, Appendix A page 8.

PGE is due to finalize its valuation methodology in December 2020, at which time Staff expects it will fulfill this final requirement.

Q. Does Staff have any additional concerns regarding the Company's compliance with the framework of procedures and guidelines for microgrid pilots?

A. Not at this time.

Pilot costs

Q. Please provide a summary of Staff's analysis of the ARC and BPSC pilot costs.

A. Staff tested to ensure PGE had complied with the requirements regarding costs agreed in Docket No. UM 1856, amongst other measures.[36] The scope of Staff's analysis included:

a. Cap on overnight capital costs of $2 million.

b. Treatment of O&M, administration and evaluation costs.

c. Review of itemized costs and purchase orders.

[36] Staff notes that the BPSC pilot costs are not yet final, and the ARC pilot costs are forecasted, as terms have not yet been negotiated with either the microgrid partner or a microgrid equipment vendor.

Cap on overnight capital costs of $2 million[37]

Q. Do PGE's overnight capital costs[38] **comply with the cap?**

A. No. Based on the Company's most recent estimate of costs, PGE's microgrid pilots exceeded the cap by approximately $120,000. This is shown in Figure 2 below.[39] Staff notes that the Company's estimate of costs may change prior to completion of the BPSC pilot, and that all costs are forecasted costs for the ARC pilot.

Figure 2 - Calculation of Overnight Capital Costs

Description	BPSC Overnight Capital Costs	ARC Overnight Capital Costs	Total Overnight Capital Cost
Labor	$ 18,682.41	$ 17,000.00	$ 35,682.41
Material	$ 930,736.84	$ 738,023.00	$ 1,668,759.84
Services	$ 118,538.30	$ 135,000.00	$ 253,538.30
Loadings and Allocations	$ 76,188	$ 85,776	$ 161,963.90
Total	**$ 1,144,146**	**$ 975,799**	**$ 2,119,944**

[37] The $2 million cap on overnight capital costs for the microgrid pilots was agreed in an all-parties stipulation, and adopted by the Commission in Docket No. UM 1856, Order No. 18-290.
[38] Overnight capital cost represent the estimated cost of building a plant. This measure excludes interest expenses during plant construction and development such as Allowance for Used Funds During Construction (AFUDC), and includes project contingency to account for undefined project scope, pricing uncertainty, and owners' cost components.
[39] See Exhibit Staff/304 page 1 (or tab "Overnight Capital Costs"), Staff's calculation of overnight capital costs, based on the Company's most recent estimate of costs, and calculation methodology applied by the U.S Energy Information Administration. Also see Exhibit Staff/302 page 10, PGE's response to Staff data request 70 Attachment A, which summarizes PGE's most recent estimate of costs; and "U.S. EIA Cost and Performance Characteristics of New Generating Technologies, Annual Energy Outlook 2020" https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf.

Q. What is Staff's recommendation with regard to the cap on overnight capital costs?

A. Staff finds PGE's capital spending above the cost cap to be in violation of with the UM 1856 Stipulation, and recommends that the Commission enforce the $2 million cap on overnight capital costs, in accordance with Order No. 18-290.

Treatment of O&M, administration and evaluation costs

Q. Is Staff satisfied by the treatment of O&M costs in this filing?

A. Yes. Staff is satisfied that O&M costs have not been capitalized. This treatment complies with Commission Order No. 18-290.

Q. Is Staff satisfied by the treatment of administration and evaluation costs in this filing?

A. Yes. PGE did not include administration or evaluation costs in the energy storage microgrids' revenue requirement. This treatment complies with Commission Order No. 18-290.

Review of itemized costs and purchase orders

Q. Did Staff have any issues relating to the pilot costs?

A. Yes. Staff identified a payment card surcharge of **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL],** representing an avoidable payment card surcharge, which was paid by PGE to its microgrid vendor.

Q. Please explain Staff's concerns regarding the payment card surcharge paid to PGE's microgrid vendor?

A. Staff identified an invoice showing that PGE had paid for microgrid equipment valued at **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**, "Virtual Credit Card Charge".[40] Accounting for the costs of a minor change order,[41] Staff calculated the total virtual credit card chard incurred by PGE to be **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**

Staff queried this fee with the Company over concerns with prudence, requesting specific details of the description of the Company's efforts to use an alternative payment method. The Company responded as follows:

[BEGIN CONFIDENTIAL] [redacted] ***[END CONFIDENTIAL]***

[40] See Exhibit Staff/303 page 3, PGE's confidential response to Staff data request 24, Attachment A, page 18.
[41] See Exhibit Staff/303 pages 7 – 8, PGE's confidential response to Staff data request 85, Attachment A.
[42] "Net 45" and "Net 15" are forms of trade credit which specify that the net amount is expected to be paid in full by the buyer within 45, or 15 days.
[43] See Exhibit 303 page 4, PGE's confidential response to Staff data request 99, Attachment A.

Q. Was Staff persuaded by the Company's response?

A. No.

Q. Please explain.

A. Staff believes that this payment was imprudent for the following reasons:

- Lack of foresight

PGE was aware of the approximate value of the payment, having gone through a comprehensive RFP process. Prudent actions by the Company, pre-empting this payment and making arrangements in advance of the last minute, would have avoided this cost.

- Failure to negotiate payment terms effectively

In the vendor's response to the RFP, it provided details of its standard payment schedule, which is shown in Figure 3 below.

Based on this information, at the very least, the Company could have foreseen that it would be required to pay no more than **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** of the total cost to commence manufacturing. **[BEGIN CONFIDENTIAL]**

[redacted]

[END CONFIDENTIAL]

[44] See Exhibit Staff/303 page 5, Microgrid proposal from Powin Energy, dated June 7, 2019. See: PGE's response to Staff data request 89, confidential Attachment A, filename: "PGE Microgrid_Powin_PXiSE_Proposal_20190607", page 39.

- Failure of process

The purchase order prepared by PGE shows that the Company **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**

Staff's view, based on the observations above, is that the Company did not act prudently by using a virtual credit card for this payment. Consequently, Staff recommends that the Commission disallow a cost of **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**, which is the total payment card surcharge relating to the BPSC pilot.[46]

[45] See Exhibit Staff/303 page 6, BESS equipment procurement agreement with Powin Energy, dated October 7, 2019. See: PGE's response to Staff data request 87, confidential Attachment A, page 21.
[46] See Exhibit Staff/304 confidential page 2 (or tab name "Payment Card Surcharge"), for Staff's calculation of the total payment card surcharge.

Q. Did any other concerns arise as a result of Staff's analysis of this issue?

A. Yes. Staff discovered that the Company receives financial incentives[47] from its credit card provider, based on the annual net purchase volume of its virtual credit card.[48] This is similar to how personal credit cards, offer usage incentives such as miles, rewards, or cashback.

Payment card surcharges are not ideal for ratepayers, as they increase costs. Staff is concerned that such incentives may encourage the use of credit card payments, and specifically in contexts where payment card surcharges exist and the Company requests that rates reflect the costs of such surcharges.

Furthermore, Staff is concerned about whether, and how, revenue shares are passed back to ratepayers.

Q. Were any other payment card surcharges incurred in relation to the microgrid pilots?

A. No. PGE has verified that it incurred no other payment card surcharges in relation to the microgrid pilots.[49]

[47] Financial incentives from credit card providers are also known as "revenue sharing" or "rebate".
[48] See Exhibit Staff/302 pages 11 - 12, PGE's response to Staff data request 72.
[49] See Exhibit Staff/302 page 13, PGE's response to Staff data request 99.

Q. Please summarize Staff's recommendations regarding pilot costs.

A. Staff recommends that the Commission enforce the $2 million cap on overnight capital costs, in accordance with Order No. 18-290.

Staff recommends that the Commission disallow **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** of the capital cost of the BPSC pilot.

Staff also recommends that Staff investigate the prevalence of payment card surcharges, and the pass-through of credit card revenue shares or other rewards, in the Company's next General Rate Case.

Objectives and learnings

Q. Please summarize the objectives of the microgrid pilots at the time the pilots were approved in Docket No. UM 1856.

A. The Commission approved the microgrid pilots along with four other energy storage pilots in 2018. The goal of these pilots was to test how storage systems perform and to determine the value storage provides to the electrical system.

This would be achieved through data collection, information gathering, and other learnings,[50] and guided by the list of areas to be studied and learnings to be gained which was provided by PGE in the stipulation.[51]

[50] Docket No. UM 1856, Order No. 18-290, page 5.
[51] Docket No. UM 1856, Appendix A to Partial Stipulation filed on May 22, 2018, pages 6 – 7.

Q. How did Staff determine if the anticipated learnings were being achieved by the Company?

A. Many of the anticipated learnings are gradual and emerge after the pilots have been in place for a number of years. Consequently, Staff asked PGE a series of DRs regarding the learnings that have been achieved to date.

Q. Please expand on the learnings that have been achieved to date.

A. PGE learnings to date include the following topics:[52]

1. Procurement, Learnings included:

Observing a need to allow additional time for research prior to writing specifications, due to the nascent nature of the technology.

Observing a need to allow additional time for RFPs, as many BESS suppliers do not use common terminology.

That many BESS suppliers have difficulty predicting the life of their batteries and other components, or the cost of O&M, due to the lack of historical operating results of the technology.

That many BESS suppliers are new to the market themselves, leading to complications such as a lack financial strength to partner with PGE, or lack of standard contracts which delays negotiation.

That some BESS suppliers do not manufacture energy storage equipment, but instead subcontract from various well-known suppliers, and then broker energy storage products. Such suppliers cannot offer their own warranties.

[52] See Exhibit Staff/302 page 14 - 15, PGE's response to Staff data request 17.

2. Customer engagement. Learnings included:

The need to manage customer expectations by clearly communicating the level of customer participation and direct costs required of its potential microgrid partners.

Experience engaging with and delivering value to customers, along with strengthening relationships with customers.

3. Infrastructural and operational readiness learnings:

The Company cited its selection of sites that minimized the need for infrastructural updates as a barrier to learning about infrastructural readiness.

PGE has also not developed learnings related to operational readiness to date, as neither pilot is in service yet.

4. Learnings relating to the cost sharing structure.

The Company has not yet developed learnings with regard to a cost sharing structure that could be applied to future microgrids. It intends to assess the results of the current pilots before coming to a conclusion.

Q. Please identify the microgrid pilots' capability regarding energy storage use cases and applications.

A. Neither microgrid has yet been energized, however Staff was able to gather information on the use cases that the microgrid pilots will be capable of delivering.

Staff's discovery included researching the actual capabilities of the microgrid pilots and how the microgrid is expected to perform in different

situations, such as in normal grid operating conditions, peak load periods, and outage conditions.

Staff's discovery also included gathering information on the various use cases for the BPSC and ARC microgrids. These use cases include the provision of frequency response, spinning reserves, generation capacity, Voltage and Volt-ampere reactive power (VAr) support, demand response, black start capacity to the main grid, along with the ability to intentionally island the microgrid, and the potential to defer distribution system upgrades.

The manufacturer of the microgrid system has provided ample information on the capability of the BESS to perform the above-mentioned use cases as part of a microgrid. Further, the BESS performance guarantee covers the battery's energy capacity and performance of the associated software for a period of 10 years.

Q. What future learnings does Staff expect, and how will PGE communicate these to the Commission?

A. Once the microgrids in service, PGE will be in a position to test their efficacy in each use case. This information will flow back to the Commission and other stakeholders though the Company's filing of its comprehensive evaluation of the pilots, which are due after three, six, and ten years of operation.[53]

Q. Does this conclude your testimony?

A. Yes.

[53] Docket No. UM 1856, Order No. 18-290, page 4.

CASE: UE 370
WITNESS: MOYA ENRIGHT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 301

Witness Qualifications Statement

March 30, 2020

WITNESS QUALIFICATIONS STATEMENT

NAME: Moya Enright

EMPLOYER: Public Utility Commission of Oregon

TITLE: Senior Economist
Energy Rates, Finance and Planning Division

ADDRESS: 201 High Street SE. Suite 100
Salem, OR. 97301

EDUCATION: Energy Risk Professional Certification (part-qualified).
Global Association of Risk Professionals.

M.Sc. Political Science, 2015.
University of Amsterdam.

M.Sc. Investment, Treasury and Banking, 2011.
Dublin City University.

B.A. International Business and Languages, 2008.
Dublin City University through a joint curriculum with École Supérieure de Commerce de Montpellier.

EXPERIENCE: Senior Utility and Energy Analyst at OPUC since January 2019.

Energy Trader for Meridian Energy from 2015 to 2019. Meridian Energy is a power generator and retailer operating both in New Zealand and Australia.

Trading and Operations Analyst at Tynagh Energy from 2011 to 2013. Tynagh Energy is an independent power producer operating in the Republic of Ireland.

Senior Electricity Market Controller at EirGrid from 2008 to 2011. EirGrid is the Irish electricity Transmission System Operator. It operates the Single Electricity Market for the Republic of Ireland and Northern Ireland.

Accounts Assistant roles from 2004 to 2008, including Audit Intern at KPMG in Northern Ireland.

CASE: UE 370
WITNESS: MOYA ENRIGHT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 302

Exhibits in Support
Of Opening Testimony

March 30, 2020

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 084

Dated March 6, 2020

Request:

Please provide PGE's current estimate of the in-service date(s) of the ARC and BPSC facilities. Please provide an update to this request following any future changes to the estimated in-service date, indicating the reason for the change. This is an ongoing request.

Response:

The current estimate for the BPSC project in-service date is May 5, 2020.

The current estimate for the ARC project in-service date is December 31, 2020. PGE's negotiations with the Anderson Readiness Center have been delayed due to the emerging situation with the COVID-19 pandemic. PGE will provide updates if the in-service dates will change.

January 31, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 018
Dated January 17, 2020

Request:

Please provide a narrative explanation for each of the following topics:

a. The process followed when selecting the microgrid sites.

b. The factors which were evaluated when selecting the microgrid sites, including weightings given to each factor and the results of this assessment.

c. How the issue of participant willingness to pay was incorporated into site selection.

d. How solar generation potential was accounted for in selecting the microgrid sites.

Response:

a. PGE performed a site-suitability analysis to identify potential locations for energy storage microgrids within PGE's service territory. This site suitability analysis involved: (1) identifying criteria which would make a location highly suitable to build; and (2) performing a geographic information systems (GIS) weighted-overlay analysis on those criteria. This included distance to a critical facility, distance to a distributed energy resource, low potential for landslide, low potential for flooding, located within an underserved community, and located in a densely populated area. This analysis resulted in a short list of potential areas. Next, PGE evaluated potential customers in the top scoring areas for locating a microgrid based on the items detailed in part (c), below.

b. The following table lists the factors that were evaluated as part of the GIS weighted-overlay analysis.

Factors	Weighting	Metric	Score
Critical Facility	26%	Within 1,000' of an identified critical facility:	
		Hospitals	4
		Emergency Operations Center	4
		Law Enforcement	3
		Fire Station	3

		Wastewater Treatment Plants	3
		Public Schools	2
		Area Outside 1,000' buffer	1
Distributed Energy Resources	26%	Within 1,000 feet of a generator greater than or equal to 50 kilowatts or within 3,000 feet of a generator greater than or equal to 1 megawatt	4
		Any area outside of these buffers	1
Flood Zone	12%	The location for the microgrid must not fall within a special flood hazard area	4
Landslide Susceptibility	12%	DOGAMI[1] landslide susceptibility score:	
		Very Low	4
		Low	4
		Moderate	2
		High	1
		Very High	1
Population Density	12%	Population density:	
		Top 50th percentile	4
		Bottom 25th to 50th percentile	2
		Bottom 25th percentile	1
Underserved Communities	12%	Median income density:	
		Bottom 25th percentile	4
		Bottom 25th to 50th percentile	3
		Top 50th to 75th percentile	2
		Top 25th percentile	1

c. Customer willingness to pay was evaluated with respect to the following criteria:

   i. Investment in paralleling switchgear and a breaker for the battery energy storage system (BESS) interconnection;

   ii. Responsibility for any resultant upgrades to equipment which the customer owns/operates due to the addition of the energy storage microgrid;

   iii. Providing property/land to locate the BESS;

   iv. Commitment to having their own PV Solar and Backup Generation;

   v. Agreement to let PGE dispatch the BESS for Utility Grid Services, reserving no more than the bottom 10% of kWh capacity for backup generation purposes.

d. In order to be considered for siting a microgrid, the customer must commit to having their own PV Solar installed on-site.

[1] Department of Geology and Mineral Industries

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 093

Dated March 6, 2020

Request:

For any agreement the Company has entered into with either the ARC and BPSC microgrid partner, please provide a copy of the agreement. Please include a summary document, explaining the purpose of each exhibit.

Response:

Attachment 093-A provides the agreement with the City of Beaverton for the BPSC project. Attachment 093-B provides a summary of the agreement, explaining the purpose of each exhibit.

The contract for the Anderson Readiness Center is still under negotiation and not yet available, but it follows the same form as the BPSC agreement.

Attachments 093-A and 093-B are protected information subject to Protective Order No. 19-416.

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 087

Dated March 6, 2020

Request:

Please provide copies of all contracts and purchase orders related to the procurement of the microgrids, including but not limited to engineering, construction and materials procurement. Include a summary document listing each document, clearly indicating the date on which the contract or purchase order was entered into.

Response:

PGE executed two agreements with two counterparties for the BPSC energy storage microgrid project.

Attachment 087-A provides the battery energy storage system equipment procurement agreement with an October 7, 2019 effective date.

Attachment 087-B provides the equipment installation agreement with an October 1, 2019 effective date.

Attachment 087-C provides a purchase order with the equipment installation vendor dated November 8, 2019.

Attachments 087-A, 087-B, and 087-C are protected information subject to Protective Order No. 19-416.

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 088

Dated March 6, 2020

Request:

Please provide a copy of the Company's request for proposals for the ARC facility, indicating whether, and on what date and in which proceeding, this document was previously provided to the Commission.

Response:

PGE issued one RFP for the Battery Energy Storage System (BESS) equipment to be used on both of the microgrid projects. The RFP was filed to Docket No. UM 1856 on May 2, 2019 and provided in PGE's response to Staff DR 021, Attachment 021-A. Due to the similarity of the BESS equipment for both the BPSC and ARC projects, PGE plans to use the same supplier for both projects to avoid additional time and costs in conducting an additional RFP that would result in the same vendor selection.

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 089

Dated March 6, 2020

Request:

With regard to the ARC and BPSC requests for proposals issued by the Company:

a. Please provide copies of each proposal received for the ARC project.

b. Please provide the Company's assessment of each proposal received in response to the ARC request for proposals, including the scoring methodology and the scores given to each proposal.

c. Please provide copies of each proposal received for the BPSC project.

d. Please provide the Company's assessment of each proposal received in response to the BPSC request for proposals, including the scoring methodology and the scores given to each respondent.

Response:

a. The ARC project is nearly identical to the BPSC project in size and scope and PGE intends to use the BPSC RFP process to select the major suppliers for both projects. Copies of the proposals PGE received for the energy storage microgrids projects are provided in part c). Performing one RFP process for both energy storage microgrids provides the following benefits:

    1. Reduces costs and time associated with duplicating the RFP effort.

    2. Selecting the same supplier for both projects allows PGE to reduce engineering and design costs associated with using two different vendors and:

        i. Reduces spare parts costs.

        ii. Allows economies for software costs.

        iii. Reduces warranty costs.

iv. Reduces training costs.

v. Streamlines the permitting process.

vi. Reduces the ongoing operational costs.

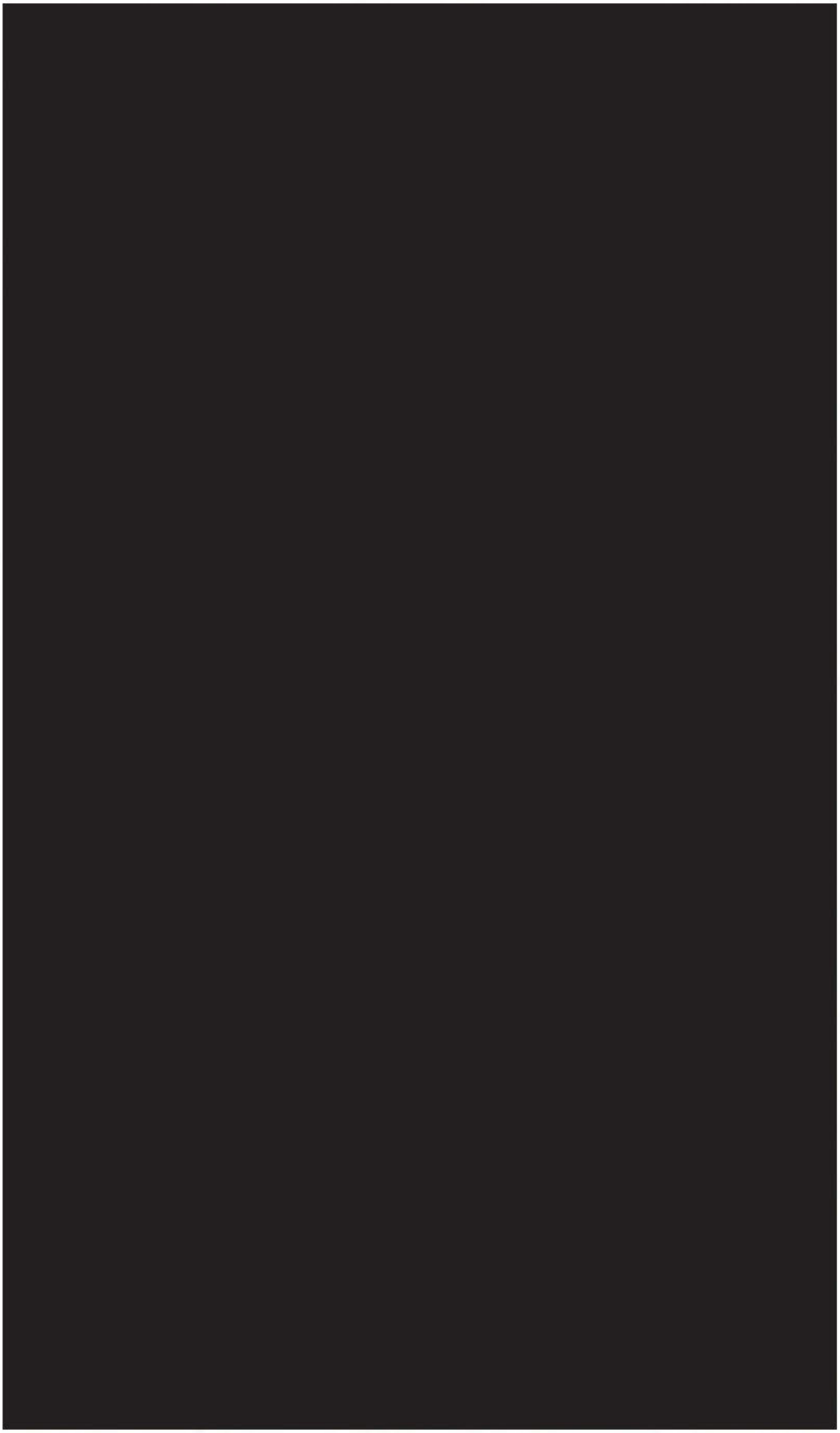
b. See PGE's response to part d)

c. Attachment 089-A provides the proposals that PGE received for the energy storage microgrid project.

d. Attachment 089-B provides PGE's scoring methodology and scores given to each proposal.

Attachments 089-A and 089-B are protected information subject to Protective Order No. 19-416.

[BEGIN CONFIDENTIAL]



[END CONFIDENTIAL]

UE 370 PGE Response to OPUC DR 089
Attachment 089-B
Tab name: "Results Summary"

UE 370 PGE Response to OPUC DR 070
Attachment 070-A
Tab name: "Sheet 1"

Description	BPSC Unloaded Costs	ARC Unloaded Costs	Total Projects Costs
Labor	$ 18,682	$ 17,000	$ 35,682
Material	$ 930,737	$ 738,023	$ 1,668,760
Services	$ 118,538	$ 135,000	$ 253,538
AFDC Debt	$ 11,679	$ 10,792	$ 22,471
AFDC Equity	$ 21,699	$ 19,797	$ 41,496
Total	**$ 1,079,637**	**$ 900,815**	**$ 1,980,451**

Description	BPSC Loaded Costs	ARC Loaded Costs	Total Projects Costs
Labor	$ 18,682.41	$ 17,000.00	$ 35,682.41
Material	$ 930,736.84	$ 738,023.00	$ 1,668,759.84
Services	$ 118,538.30	$ 135,000.00	$ 253,538.30
AFDC Debt	$ 11,679.05	$ 10,791.71	$ 22,470.76
AFDC Equity	$ 21,698.97	$ 19,796.87	$ 41,495.84
Loadings and Allocations	$ 76,188	$ 85,776	$ 161,963.90
Total	**$ 1,177,524**	**$ 1,006,387**	**$ 2,183,911**

	BPSC	ARC	Total FTEs
Labor Hours	266	229	495
FTE	**0.13**	**0.11**	**0.24**

Staff/302
Enright/10

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 072
Dated March 6, 2020

Request:

Please list any rewards, rebates or other benefits received as a result of credit card payments made in relation to the ARC and BPSC microgrid projects. The data should be presented in electronic spreadsheet format, and clearly show:

a. The value of the payment.

b. The name of the vendor to which the payment was made.

c. The specific credit card used for payment.

d. The credit card holder of the credit card used for payment.

e. An explanation of each reward, rebate or other benefit received.

f. The dollar value of the reward, rebate or other benefit received.

g. The value of the reward, rebate or other benefit received, if this cannot be expressed in dollars.

Response:

a. The value of the payment is provided in PGE's response to OPUC Data Request No. 087, Attachment 087-A, Exhibit C.

b. The payment was made to Powin Corporation.

c. PGE objects to this request on the basis that it is vague and not relevant to the decisions to be made in this proceeding. Without waiving and notwithstanding this objection PGE responds as follows: PGE used a virtual credit card with Wells Fargo.

d. PGE is the cardholder for the virtual credit card used for payments that are made to vendors and PGE receives a revenue share for annual net purchase volume. There is no revenue share paid on individual supplier payments such as the Powin payment for BPSC.

e. Other than the revenue share described above, PGE does not receive other rewards, rebates, or other benefits.

f. See part (e).

g. See part (e).

No credit card payments have been made related to the ARC project.

March 20, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 099

Dated March 6, 2020

Request:

[redacted]

a. [redacted]

b. [redacted]

c. [redacted]

Response:

a. Attachment 099-A provides the information requested by Staff.

b. These charges were not accounted for in the bid evaluation but were evaluated during contract negotiations against the total project budget.

c. The referenced payment card surcharge for the BPSC project is the only one that PGE paid. PGE does not anticipate that this will be required for the ARC project.

Attachment 099-A is protected information subject to Protective Order No. 19-416.

[1] See Company's response to Staff DR 24, Attachment A, page 18.
[2] Staff uses to the term "payment card surcharge" as its defined by Visa Inc. "A payment card surcharge, also known as a checkout fee, is an additional fee that a merchant adds to a consumer's bill when he or she uses a card for payment".

January 31, 2020

TO: Moya Enright
Public Utility Commission of Oregon

FROM: Jaki Ferchland
Manager, Revenue Requirement

PORTLAND GENERAL ELECTRIC
UE 370 / UE 372
PGE Response to OPUC Data Request No. 017
Dated January 17, 2020

Request:

Please detail the learnings that PGE has derived from each project to date with regard to:

a. Procurement.

b. Infrastructural readiness.

c. Operational readiness.

d. Customer engagement.

Response:

a. To date, PGE derived the following learnings related to Procurement:

   i. Amount of time required for procurement – PGE has learned that because of the nascent nature of battery storage technology, much more time must be allowed for writing specifications prior to the release of a Request for Proposal (RFP). Writing specifications requires research that would not be needed for procuring traditional equipment familiar to an electric utility. Similarly, the review of RFPs requires more time because the battery storage suppliers do not have common terminology or common equipment. Energy storage suppliers, by the nature of the industry, are new to their own business. This means that they lack standard contracts, so the negotiation of all aspects of the contract takes longer.

   ii. Lack of historical operating experience – Most energy storage suppliers have installed systems in the US and other countries that have been in operation for less than ten years (sometimes much less than ten years). As a result, suppliers have a difficult time predicting the life of their batteries and other components. In addition, they have not developed a solid understanding of the costs involved in maintaining their own equipment. As a result, suppliers are very cautious when making performance guaranties and warranties against failures and such caution always translates into cost.

iii. Financially unviable suppliers – Again, due to the nascency of the energy storage industry, there are many early entrants who lack the financial strength for PGE to rely upon as a viable business partner.

iv. Piecemeal suppliers – some suppliers do not manufacture any energy storage equipment at all, but they want to enter the sector anyway. Their strategy is to subcontract from various well-known suppliers and then package (or broker) an energy storage scope of supply. These suppliers, therefore, cannot offer their own warranties. They can only pass through the warranties of the Original Equipment Manufacturer to PGE with no fiduciary obligation on their part.

b. PGE selected the microgrid sites such that the need for infrastructural upgrades would be minimized. Consequently, PGE has not developed learnings related to infrastructure readiness.

c. The Beaverton Public Service Center and the Anderson Readiness Center energy storage microgrids have not been placed in service. Therefore, PGE has not yet developed learnings related to operational readiness. PGE expects to develop these learnings after the two energy storage microgrids are placed in service and operational.

d. To date, PGE derived the following learnings related to Customer Engagement:

i. Managing expectations – Customers who were approached regarding energy storage projects were all initially enthusiastic. Their first impression was that PGE was going to provide some highly valuable reliability service with very little cost, involvement or effort on the customer's part. PGE forthrightly explained that such a project involves a lot of customer participation in the design, siting, and operation of such projects. Furthermore, there are direct costs for electrical interconnection, equipment foundations, conductor raceways, and project coordination. These projects require a large commitment on the customer's part, both financial and project involvement. Consequently, the universe of potential customers willing to participate was substantially reduced due to the expected investments from their part. Only those customers who were willing and able to invest their resources into the energy storage microgrids project ended up being participants.

ii. Building Customer Relationships - For the two customers who we have engaged, it has been a tremendous opportunity for PGE to deliver value. We have strengthened our relationship with these customers as a result of these projects.

CASE: UE 370
WITNESS: MOYA ENRIGHT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 303

Exhibits in Support
Of Opening Testimony

March 30, 2020

Staff Exhibit 303 is confidential

Subject to

Protective Order No. 19-416

CASE: UE 370
WITNESS: MOYA ENRIGHT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 304

Exhibits in Support
Of Opening Testimony

March 30, 2020

Description	BPSC Overnight Capital Costs	ARC Overnight Capital Costs	Total Overnight Capital Cost
Labor	$ 18,682.41	$ 17,000.00	$ 35,682.41
Material	$ 930,736.84	$ 738,023.00	$ 1,668,759.84
Services	$ 118,538.30	$ 135,000.00	$ 253,538.30
Loadings and Allocations	$ 76,188	$ 85,776	$ 161,963.90
Total	**$ 1,144,146**	**$ 975,799**	**$ 2,119,944**

Note: This calculation reflects the latest cost estimates provided by PGE, dated March 6, 2020.
See Exhibit Staff/302 page 10, PGE's response to Staff data request 70 Attachment A.

[redacted]