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March 24, 2021

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

Re: LC 73 – Portland General Electric Company’s Reply Comments

Dear Filing Center:

Enclosed for filing today in the above-referenced docket is Portland General Electric Company's Reply Comments on its 2019 IRP Update.

Thank you in advance for your assistance.

Sincerely,

A handwritten signature in blue ink, appearing to read "Erin Apperson", with a long horizontal flourish extending to the right.

Erin E. Apperson
Assistant General Counsel

EEA: al

BEFORE THE PUBLIC UTILITY COMMISSION OF

OREGON

Docket LC 73

In the Matter of

PORTLAND GENERAL ELECTRIC
COMPANY

2019 Integrated Resource Plan.

**PORTLAND GENERAL ELECTRIC
COMPANY'S**

REPLY COMMENTS

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1. Introduction

In accordance with the Administrative Law Judge’s (ALJ) March 4, 2021 Ruling, Portland General Electric Company (PGE or the Company) submits these reply comments regarding PGE’s 2019 Integrated Resource Plan (IRP) Update. PGE filed its 2019 IRP Update and request for acknowledgment with the Commission on January 29, 2021.

PGE’s IRP process involved thoughtful, reasoned, and studied analysis and discussions with Staff, participants, consultants, and members of the public. PGE appreciates the continued robust and constructive engagement by Staff and participants around the 2019 IRP and IRP Update. Many of these parties participated in some or all of PGE’s IRP public meetings and workshops conducted during the past three years. Participant feedback helped strengthen PGE’s analysis in this Update which directly improved the information included and provided an enhanced opportunity to serve and align with customers’ long-term interests.

Eight parties submitted comments in this docket.

1. Public Utility Commission of Oregon Staff (Staff),
2. Oregon Citizens’ Utility Board (CUB),
3. NW Energy Coalition (NWECC),
4. Renewable Northwest (RNW),
5. Northwest and Intermountain Power Producers Coalition (NIPPC),
6. Renewable Energy Coalition (REC),
7. NewSun Energy LLC (NewSun), and
8. Swan Lake North Hydro, LLC and Goldendale Energy Storage Project (Swan Lake and Goldendale).

Party comments addressed a wide range of topics, including PGE’s load forecast, resources, and several of the components of PGE’s analysis. These comments are intended to provide PGE’s perspective regarding recommendations from parties, responses to parties’ concerns, and additional information to help facilitate the continued review of PGE’s Update.

PGE’s priority since initiating the 2019 IRP and throughout the IRP Update process has been to develop a plan that increases the opportunity to meet our customers’ needs with least-cost, least-risk, sustainable solutions. This IRP Update retains PGE’s essential focus on safe, reliable, and affordable electricity while reflecting a shared goal with our customers to realize a clean energy future focused on optimizing the electric system for reliability, resiliency, decarbonization, and access for all through a smarter grid. This IRP Update addresses a discrete set of inputs that have changed since the 2019 IRP, incorporating information available at the time of analysis. Accordingly, this IRP Update refreshes the analysis from the 2019 IRP and provides status reports on actions and requirements from the Commission order acknowledging, with additional conditions and directives, the 2019 IRP.

PGE is seeking acknowledgment of this IRP Update so that we may include the updated inputs in the May 1 avoided cost filing. This approach not only enables greater accuracy in the calculations through the use of more current information but is also consistent with acknowledgment of the 2016 IRP Update.¹

Through these refreshed analyses, PGE confirmed that the actions, acknowledged subject to conditions and additional directives, remain in the best long-term interest of balancing cost and risk for customers and providing the best path forward to ensure system reliability and continued progress toward delivering a clean, affordable, and smart energy future for Oregon. With the Governor’s Executive Order No. 20-04 and PGE’s updated climate goals, there is even more momentum toward a clean energy future than at the time the 2019 IRP was acknowledged. We are confident that the action plan creates a solid foundation by which PGE can continue to build in reaching that future on behalf of customers.

2. Request for Acknowledgment

PGE’s Request for Acknowledgment is Legally Appropriate.

NewSun argues that acknowledgment of PGE’s IRP Update is prohibited because PGE is not altering its action plan.² NewSun’s position is neither supported by the Commission’s rules nor by the Commission’s PURPA precedent. Both Staff and Commissioners have encouraged PGE to seek acknowledgment of IRP Updates to update avoided cost prices.³ PGE’s request in this proceeding is consistent with Commission precedent when it acknowledged PGE’s request for acknowledgment of its IRP Update in LC 66 as well as the Commission’s PURPA precedent.

In PGE’s 2016 IRP Update, the Commission adopted Staff’s recommendation to acknowledge the update, which included updates to avoided cost inputs but no changes to the action plan.⁴ Neither Staff nor the Commission raised concerns about the appropriateness of acknowledgment under these circumstances.⁵ NewSun references OAR 860-027-0400(8), which provides that a utility “must” submit an annual update and “may request acknowledgment of changes...to the IRP action plan.”⁶ While this rule describes one situation in which a utility may request acknowledgment, nothing in the rule prohibits a utility from requesting acknowledgment in the absence of action plan

¹ Docket LC 66, Order No. 18-145 (Apr. 17, 2018).

² LC 73 – NewSun’s IRP Update Comments at 3, and at 7.

³ Docket UM 1728, September 12, 2017 Public Meeting of the Commission (available at: https://oregonpuc.granicus.com/MediaPlayer.php?view_id=2&clip_id=232), OPUC Staff Brittany Andrus at mark 37:09, suggesting that PGE should have sought acknowledgment of its 2013 IRP update, which had reduced capital costs; at mark 1:47:20, (Chair Decker agreeing with Staff and suggesting that utilities seek acknowledgment of IRP Updates that change capital costs); at mark 1:53:18, (Commissioner Bloom agreeing with Chair Decker and Staff and stating that if utilities were to get acknowledgment of their updates “it would solve a lot of issues”).

⁴ Docket LC 66, Order No. 18-145, App. A at 3-4 (Apr. 17, 2018).

⁵ Id.

⁶ OAR 860-027-0400(8) [emphasis added]. NewSun also references Order No. 07-002, which originally adopted the guideline that became OAR 860-027-0400. LC 73 – NewSun’s IRP Update Comments at 3, and at 7.

changes. Moreover, the Commission’s PURPA rules contemplate that the Commission may acknowledge “actions or changes” in an IRP update “that are relevant to the calculation of avoided costs.”⁷ PGE’s request for acknowledgment is appropriate under the circumstances.

PGE’s Intention to Update its Avoided Cost Prices on May 1 is Consistent with the Commission’s Rules.

NIPPC and NewSun suggest that the Commission should not acknowledge PGE’s updated avoided cost inputs because PGE is not currently experiencing a high level of QF contracting.⁸ In fact, PGE requests acknowledgment so that it may update its avoided cost prices according to the Commission’s rules and standard timeline. NIPPC and NewSun’s argument appears to be premised on the incorrect assumption that PGE is requesting some manner of extraordinary relief that requires a demonstration of imminent harm. OAR 860-029-0085 requires utilities to file an annual avoided cost update.⁹ That update must reflect any “actions or changes that are acknowledged by the Commission upon review of an IRP Update and that are relevant to the calculation of avoided costs.”¹⁰ The rule does not require the utility to demonstrate that it is experiencing significant QF contracting.¹¹ If, as NIPPC and NewSun appear to suggest, a showing of high contracting levels was required, utilities would be unable to update avoided cost prices until after entering numerous contracts at outdated prices. This would be inconsistent with the Commission’s policy of ensuring that prices remain as accurate as possible and that pricing updates are predictable.

Relatedly, REC argues that PGE’s avoided cost prices should not be reduced until the Commission has resolved Docket UM 2038 regarding treatment of QFs in IRPs and addressed any necessary changes to avoided cost pricing in light of Executive Order No. 20-04 (EO 20-04).¹² Docket UM 2038 has been open for well over a year with little activity to date.¹³ The docket is currently paused and planned to resume in May, 2021.¹⁴ EO 20-04 was issued more than one year ago, and the Commission’s implementation process is ongoing.¹⁵ It is unreasonable and inconsistent with the Commission’s rules to suggest that PGE cannot update its avoided cost prices until these other processes conclude at some uncertain date in the future. This is unreasonable as it would be administratively inefficient to preclude more complete updates to the avoided cost prices until some unknown future date. If these

⁷ OAR 860-029-0085(4)(a)(D) [emphasis added].

⁸ LC 73 – NIPPC’s IRP Update Comments at 7; LC 73 – NewSun’s IRP Update Comments at 7.

⁹ OAR 860-029-0085(4)(a).

¹⁰ OAR 860-029-0085(4)(a)(D).

¹¹ PGE notes, however, that it has hundreds of MW of requested QF contracts in its contracting queue.

¹² LC 73 – REC’s IRP Update Comments at 2.

¹³ See generally, *In the Matter of Public Utility Commission of Oregon, Investigation Into the Treatment of Qualifying Facilities in the Integrated Resource Plan Process*, Docket UM 2038; *In the Matter of Public Utility Commission of Oregon, Request to Adopt a Scope and Process for the Investigation Into PURPA Implementation*, Docket UM 2000, Order No. 19-254 (July 31, 2019), (adopting Staff’s recommendation to open investigation into the treatment of QFs in IRPs).

¹⁴ Docket UM 2038, Staff’s 2021 PURPA Docket Strategy (Jan. 15, 2021), (indicating docket UM 2032 will relaunch with a workshop in May 2021).

¹⁵ See: Oregon Public Utility Commission’s March 1, 2021 Update to Executive Order 20-04, at 1, available at: <https://www.oregon.gov/puc/utilities/Documents/EO20-04-Update.pdf>.

processes result in a significant change in circumstances, the Commission can always order PGE to perform an out-of-cycle avoided cost update.¹⁶

Acknowledging PGE's IRP Update so that PGE may incorporate updated inputs into its avoided cost prices ensures that future contracts contain the most current and accurate prices. If the Commission alters its avoided cost methodology or related policies in the future, then any necessary changes to avoided cost prices can be considered at that time.

3. Load Forecast

PGE appreciates comments from OPUC Staff and CUB with respect to the load forecast. The events of 2020 and the COVID-19 pandemic have led to unprecedented changes in the way PGE's customers use electricity. The load forecasting methodology must evolve to respond to long-term implications of these changes and PGE looks forward to continued discussions on these issues in the next IRP.

3.1. Accounting for COVID-19

Parties' Comments

Recognizing PGE's description of its approach as temporary, OPUC Staff recommends against the use of manual adjustments outside of the load forecasting model and recommends use of econometric data to account for COVID-19 impacts.¹⁷

PGE's Response

PGE recognizes Staff's general concern with out-of-model adjustments; however, PGE maintains that adjustments were appropriate and necessary at the time and given the unprecedented circumstances. Out-of-model adjustments used in May 2020 to create the June load forecast were informed by extensive analysis of the best information available in the early months of the pandemic, including observed behavioral response from high frequency data, economic outlook, PGE correspondence with customers and review of interval data to understand initial changes in electricity usage. Billing data, the dependent variable in PGE's econometric models, was largely unavailable, with only one full month having passed. This early analysis was discussed with participants at the October 2020 IRP roundtable meeting.

Since June, PGE has been working diligently to develop a more robust modeling solution to integrate the impact of COVID-19 into its regression-based modeling approach and account for new information about the economic outlook and path of the pandemic. PGE looks forward to discussing this approach with participants in more detail in future dockets, including the next IRP cycle.

¹⁶ OAR 860-029-0085(5)(b).

¹⁷ LC 73 – Staff's 2019 IRP Update Comments at 4.

3.2. Long-Term Growth Rates

Parties' Comments

Staff notes the increase in overall load growth from the acknowledged 2019 IRP, stating “this increase is not necessarily in keeping with historical sales trends since 2010”,¹⁸ and encourages further discussion to understand this result between now and the 2022 IRP. CUB discusses PGE’s increased long-term commercial growth rate in the context of current conditions and expected long-term impacts of COVID-19 as well as potential for energy efficiency associated with data center loads.¹⁹

PGE’s Response

PGE looks forward to discussing refinements to its load forecast model and current trends, including recent factors leading to increased growth in energy deliveries, with participants in more detail in the next IRP cycle. PGE maintains that the current treatment of load growth is appropriate given the available information at the time of analysis.

PGE appreciates CUB’s reflection on increased commercial growth rates. It is now widely believed that the COVID-19 pandemic will have long-term impacts on underlying structures of the economy and commercial landscapes, particularly utilization of commercial space. However, these changes are still largely unknown. Continued analysis of the commercial forecast model and input drivers is appropriate as long-term impacts from the pandemic emerge in commerce patterns. PGE looks forward to these discussions in the context of the next IRP.

3.3. Industrial Load Drivers

Parties' Comments

CUB cites appreciation of PGE’s additional analysis on industrial model drivers in response to prior comments on the matter.²⁰ CUB recommends that PGE consider conducting separate risk analysis for industrial class, stating that “industrial energy deliveries (have) become disproportionately dependent on the expansion or downsizing decisions of a single firm”²¹, and inclusion of a comparison of other utility load forecast models in future IRPs.

PGE’s Response

PGE is open to further discussion on appropriate modeling of risk. The 2019 IRP analysis included high and low forecast scenarios which were developed at the customer class level and are intended to address both model uncertainty and scenario inputs for economic drivers. This approach was refined for the 2019 IRP in response to prior participant comments. PGE is open to considering additional scenarios or adjustments to its methodology to incorporate participant feedback should they provide valuable insights to IRP analyses.

¹⁸ LC 73 – Staff’s 2019 IRP Update Comments at 4.

¹⁹ LC 73 – CUB’s 2019 IRP Update Comments at 3-5.

²⁰ Id. at 6.

²¹ Id. at 6-7.

PGE has begun a review of peer electric utility industrial load forecasts and intends to summarize findings in an IRP roundtable participant discussion during the next IRP.

3.4. New Load Direct Access (NLDA)

Parties' Comments

CUB raises concern on the treatment of NLDA stating “CUB does not believe that there is a basis to conclude that no new industrial load included in the regression-based forecast will be served under the NLDA program.”²²

PGE's Response

PGE's treatment of NLDA is consistent with foundational assumptions of the program, where the 'sizable magnitude'²³ which is considered incremental to the regression-based forecast is reflected by the 10 MWA threshold implemented in the program design. CUB's comments suggest that PGE should make an adjustment to anticipate that other industrial load will enroll in NLDA, citing a news story about a customer's interest in the program.²⁴ PGE's NLDA program, offered through Schedule 689, is capped at 119 MWA and has enrollment of 90 MW. In administering the program, PGE is assuming that the cap is the limit on the program and does not support changes to its industrial load forecast that anticipates participation in NLDA beyond the cap.

4. Resources

In the 2019 IRP Update, PGE provided information about ongoing work to inform the next IRP and information about the resources in the Baseline Portfolio that were updated in the IRP Update based on the best information available at the time of the snapshots for analysis to inform our long-term planning. In this section, we summarize comments from parties on these topics and provide PGE's responses.

4.1. Energy Efficiency (EE)

Parties' Comments

Staff noted that PGE aims to work to incorporate methodological changes to encompass the potential to acquire additional non-cost-effective energy efficiency in the next full IRP.²⁵ NWECC expressed appreciation PGE's efforts with the Energy Trust, trade allies, local governments, and communities to continue development of energy efficiency efforts.²⁶

²² LC 73 – CUB's 2019 IRP Update Comments at 7.

²³ Id. at 7, citing Docket UM 1837, PGE's November 22, 2017 Opening Comments at 7.

²⁴ LC 73 – CUB's 2019 IRP Update Comments at 6.

²⁵ LC 73 – Staff's 2019 IRP Update Comments at 3.

²⁶ LC 73 – NWECC's 2019 IRP Update Comments at 1.

PGE's Response

PGE will continue to coordinate with Energy Trust on the development of the next long-term energy efficiency forecast for IRP planning. An updated long-term energy efficiency forecast will be incorporated in the 2022 IRP, and PGE plans to continue to provide the Energy Trust's most recent EE forecast data and a report from Energy Trust about their model.

PGE and Energy Trust have had initial discussions about the Commission's request to hold a workshop on data center energy efficiency opportunities. PGE will work with Energy Trust, Staff, and participants to schedule and hold a workshop before filing the 2022 IRP.

4.2. Distributed Resources

Parties' Comments

NWEC found PGE's updates and progress in its flexible demand pilot programs commendable.²⁷ NewSun noted that PGE did not update its analysis on distributed flexibility.²⁸

PGE's Response

Distributed energy resources (DERs) remain essential to PGE's commitment to its decarbonization goals while ensuring reliability and affordability for all customers. As noted in the 2019 IRP Update, PGE has continued to work on its customer action goals and looks forward to engaging with participants both in terms of our current offerings and in developing additional products. While the 2019 IRP Update did not include an update to its forecast of DERs, PGE's newly formed Distributed Resource Planning (DRP) team has led an engagement with the Cadeo Group, with sub-contracts to the Brattle Group and Lighthouse Energy Consulting, for a full DER and Flexible Load study that will inform the 2022 IRP and PGE's initial filing of its distribution system plan (DSP) under Docket UM 2005. This engagement is underway and will be critical to advancing the integration of DERs into PGE's grid modernization planning efforts. An introduction and description of this study was presented by the DRP team at the IRP's Roundtable 20-8 on December 10, 2020, and PGE plans to continue to communicate study goals, methods and results through both the public process for the next IRP, and the UM 2005 process for distribution system planning. In addition to obtaining a new consultant forecast of DERs for the 2022 IRP, the DRP team is developing modeling tools to facilitate more frequent updates to the DER forecast as technology and policy changes continue to evolve.

4.3. Voluntary Renewable Programs

Parties Comments

NWEC expressed appreciation that the Green Energy Affinity Rider (GEAR) and the Community Solar Program (CSP) was included in the Baseline Portfolio.²⁹ Staff highlights the IRP Update's inclusion of

²⁷ LC 73 – NWEC's 2019 IRP Update Comments at 1 and 2.

²⁸ LC 73 – NewSun's 2019 IRP Update Comments at 6.

²⁹ LC 73 – NWEC's 2019 IRP Update Comments at 3.

93 MW of community solar resources, and the inclusion of a sensitivity for the addition 138 MW of GEAR which was executed subsequent to IRP Update filing.³⁰

REC disagreed with the inclusion of the CSP in the Baseline Portfolio, arguing that the Commission has only made half of this capacity available to-date.³¹ NewSun, in contesting PGE's determination of solar capacity contribution, discusses PGE's inclusion of solar resources in the Baseline Portfolio. It appears NewSun may have mistakenly interpreted PGE's response to REC Data Request 025 in stating "Had [the 93 MW attributed to the Community Solar Program] been excluded from the analysis, PGE says the increase of solar in the portfolio would have been approximately 110 MW rather than 200 MW."³² Neither REC nor NewSun commented on whether they considered the inclusion of the anticipated terminations from the Community Solar Settlement Agreement to be appropriate.

PGE's Response

PGE is committed to the CSP's development and its implementation. To that end, PGE's intention in long-term planning is to align our treatment of CSP with what we expect from the CSP's intent and goals, including the assumption that all capacity for the program will be allocated.

PGE's Initial Program Capacity for the CSP is approximately 93 MW,³³ and the interim tier is 50 percent of that, or approximately 47 MW.³⁴ The purpose of establishing the interim tier was to launch only a portion of the Initial Program Capacity with the bill credit set at the residential retail rate,³⁵ rather than using the resource value of solar as is contemplated in the CSP rules and Oregon statute.³⁶ The remaining 50 percent of the Initial Program Capacity is not, as REC stated, "non-approved."³⁷ Rather, the Initial Program Capacity represents the full, Commission-approved amount of the CSP, and the only distinction between the interim tier and the remainder of the Initial Program Capacity is that the Commission will re-evaluate the bill credit rate prior to enrolling projects beyond the interim tier. In adopting the Initial Program Capacity, the Commission stated its intent to "launch the program at a size large enough to sustain the initial administrative costs," and contemplated the establishment of additional capacity beyond the Initial Program Capacity.³⁸ Because the size of the Initial Program Capacity is not uncertain or speculative, PGE believes it is appropriate to include the full Initial Program Capacity in long-term planning. While PGE does not know the exact date on which the remainder of the Initial Program Capacity will launch, our long-term planning incorporates the expectation that the full size of the Initial Program Capacity will be brought online consistent with the Commission's CSP rules and stated intent. PGE believes that this approach also reasonably meets the

³⁰ LC 73 – Staff's 2019 IRP Update Comments at 3 and at 5.

³¹ LC 73 – REC's 2019 IRP Update Comments at 2.

³² Id.

³³ OAR 860-088-0060(2); Docket UM 1930, Staff's October 4, 2019 Staff Report, Attachment D at 66.

³⁴ Docket UM 1930, Order No. 19-392 at 4 (Nov. 8, 2019).

³⁵ Order No. 19-392 at 2, n.2.

³⁶ OAR 860-088-0170(1)(a); Enrolled SB 1547 (Oregon 78th Legislative Assembly – 2016 Regular Session), § 22(6)(b), (2016).

³⁷ LC 73 – REC's 2019 IRP Update Comments at 7.

³⁸ Docket AR 603, Order No. 17-232 at 7-8.

Commission’s concern about the risk that PGE might over-procure resources if it fails to consider the impact of increasing options for voluntary participation in elective renewable programs like CSP.³⁹

REC relies on section L Requirements in Integrated Resource Planning of Order 17-232 which described requirements in Integrated Resource Planning for the CSP:

1. When calculating generation assets in its integrated resource planning, an electric company must include in its supply mix all energized community solar projects participating in the Community Solar Program.
2. When assessing load-resource balances in its integrated resource planning, an electric company must include forecasts of market potential for community solar projects and analyses comparing historical forecasts and actual community solar project development.⁴⁰

PGE does not read the requirements above as conflicting with PGE’s treatment of CSP. Rather, the first requirement describes the *minimum* amount of the CSP that PGE must include in its long-term planning. The second component requires inclusion of a forecast for CSP. Given that the remainder of the Initial Program Capacity offering is in line to open in the future, there is no better potential forecast for CSP than the remainder of the Initial Program Capacity which is what PGE included in the IRP Update.

Additionally, PGE disagrees with NewSun’s characterization of the impact of including CSP as simply 93 MW of the additional 200 MW of solar resources, as it fails to account for the anticipated terminations associated with the Community Solar Settlement Agreement that were also included.⁴¹ The additional solar resources in the IRP Update snapshot include the initial GEAR Resource (162 MW) and approximately 95 MW of new solar QF contracts in addition to the approximately 93 MW CSP, but the snapshot also captured terminations, including those anticipated based on the Community Solar Settlement Agreement, resulting in a net increase of approximately 200 MW.

4.4. PURPA Qualifying Facilities Contracts

Parties’ Comments

NewSun and REC provided comments regarding PURPA QF contracts and projects in the 2019 IRP Update, including the following.

NewSun and REC asserted that the appropriate view of QF contracts in the IRP should assume that a portion of executed contracts fail to achieve commercial operations.⁴² NewSun and REC also

³⁹ See Docket LC 73, Order No. 20-152 at 8.

⁴⁰ Docket AR 603, Order No. 17-232 at 13.

⁴¹ LC 73 – NewSun’s 2019 IRP Update Comments at 5.

⁴² LC 73 – NewSun’s 2019 IRP Update Comments at 4; REC’s 2019 IRP Update Comments at 2.

disagreed with the assumed Commercial Operation Date (COD) for QFs that had not met their scheduled COD to at the time of the snapshot for the IRP Update.⁴³

NewSun commented that “PGE has not executed any power purchase agreements with new QFs since its post-IRP avoided cost update.”⁴⁴

REC incorrectly asserts that none of the projects actively progressing toward QF contract execution are larger than 10 MW, and describes them as “often developed by less sophisticated companies”.⁴⁵

QF developer comments related to acknowledgment of the IRP Update, the CSP, ELCC values, and avoided cost pricing are addressed in **Sections 2, 4.3, 5.2, and 11.4**.

PGE’s Response

PGE appreciates parties’ comments regarding PURPA QF contracts and the challenge of examining a changing portfolio of QF resources. PGE’s approach to modeling QF contracts in the IRP Update is consistent with its approach in the 2019 IRP. To the extent parties recommend significant changes to this approach, the Commission has opened Docket UM 2038 to comprehensively consider questions regarding the treatment of QFs in the utilities’ IRP processes. PGE appropriately includes all executed PURPA QF contracts in the Baseline Portfolio. This is the most appropriate view for customers when considering long-term resource procurement or when contracting for avoided cost resources. PGE periodically updates the resource snapshot, capturing executions, terminations, and delays.

NewSun and REC both suggest that historical information should provide a reasonable forecast of future QF terminations.⁴⁶ However, while having access to the history of contract executions and terminations, neither REC nor NewSun have provided support for their claims that past terminations are reasonable predictors of future terminations. PGE is concerned that past terminations may not provide a reasonable forecast of future terminations. The nature of the projects and developers of recently executed contracts may differ substantially from contracts executed in 2016 or 2017. Additionally, examples such as the Community Solar Settlement Agreement may bring terminations for specific reasons that are unlikely to recur in the future.

As noted in PGE’s 2019 IRP Reply Comments, while PGE does not advocate for speculating on future termination rates, if it were to do so, then on a similar ‘reasonable’ basis, it would also need to speculate on future executions. This would result in a forecast based on two opposing, highly speculative and unsupported assumptions which would likely conflict.

REC and NewSun argue that there is a high chance that QFs with executed contracts will not achieve commercial operation, and that therefore the IRP snapshot should reflect a lower quantity of QFs.⁴⁷ However, assuming that QFs are unlikely to achieve commercial operation would require

⁴³ LC 73 – NewSun’s 2019 IRP Update Comments at 4-5; REC’s 2019 IRP Update Comments at 4.

⁴⁴ LC 73 – NewSun’s 2019 IRP Update Comments at 7.

⁴⁵ LC 73 – REC’s 2019 IRP Update Comments at 4.

⁴⁶ LC 73 – NewSun’s 2019 IRP Update Comments at 4-5; REC’s 2019 IRP Update Comments at 4.

⁴⁷ LC 73 – NewSun’s 2019 IRP Update Comments at 4-5; REC’s 2019 IRP Update Comments at 4.

corresponding changes to avoided cost calculations and QF contract terms. PGE customers have obligations to these contracts and no guarantee that any of them will be terminated. Additionally, assuming that QFs are unlikely to achieve commercial operation would require corresponding changes to avoided cost calculations and QF contract terms. Currently QFs are compensated for contributing capacity, but if the utility cannot reasonably rely on an executed QF contract in its long-term planning, then avoided cost calculations should likely be adjusted accordingly.

NewSun and REC made several inaccurate or unsupported statements regarding PGE's QF contracting. First, NewSun commented that no additional QF contracts were executed between the avoided cost pricing update for the 2019 IRP and the snapshot for the IRP Update, and suggested this was a reason to not update avoided cost pricing.⁴⁸ While PGE does not consider this to be a relevant metric for consideration in this IRP Update, PGE also notes that NewSun failed to note that there were just 26 days between the effective date of the avoided cost price update following the 2019 IRP and the QF snapshot for the IRP Update, a very small window for any executions to have occurred.⁴⁹ More importantly, PGE's level of contracting has no bearing on whether or not its IRP Update should be acknowledged, as explained in **Section 2**.

In Section 3.7.2 of the IRP Update, PGE included a sensitivity that examined the impact of including projects that were actively progressing toward QF contracts at the time of the snapshot. A list of projects and their sizes was provided in PGE's response to REC Data Request No. 028 in confidential attachment LC 73_REC DR 028_Attach_C_CONF. While the content of specific projects is protected information subject to General Protective Order No. 19-186, of the 406 MW of projects listed, all of the projects are at or greater than 20 MW, contrary to the comment from REC that all are less than 10 MW. PGE disagrees with REC's unsupported characterization of these solar developers as "less sophisticated".⁵⁰ In fact, many QF developers have significant experience negotiating complex bilateral and QF power purchase agreements.

Finally, REC and NewSun expressed concern about the simplifying assumption in the IRP Update for the start date for executed contracts that had not met their currently scheduled COD at the time of the snapshot. PGE agrees that this is a challenging modeling assumption, as it is difficult to plan around contracts that have an extended one-year cure period. In the 2019 IRP Update, for executed contracts with scheduled CODs prior to June 15, 2020 that had not achieved COD at the time of the snapshot, PGE made the simplifying assumption that these resources would achieve COD by July 1, 2020. This is a reasonable modeling simplification for the 2019 IRP Update because delays do not impact capacity need or ELCC calculations in 2025 unless they extend beyond 2024.

⁴⁸ LC 73 – NewSun's 2019 IRP Update Comments at 2.

⁴⁹ Per Order No. 20-171, in Docket UM 1728, the avoided cost price update that included the 2019 IRP inputs was effective on May 20, 2020. The QF snapshot for the IRP Update was June 15, 2020.

⁵⁰ LC 73 – REC's 2019 IRP Update Comments at 4.

PGE continues to support its modeling of executed QF contracts as the most appropriate view for customers for long-term planning purposes.

4.5. Colstrip

In the 2019 IRP Update, PGE provided additional information summarizing the results from the Colstrip Enabling Study and the recommended two-part regulatory solution required to enable the flexibility for early removal of Colstrip from PGE’s portfolio.

Parties’ Comments

Staff and RNW noted PGE’s inclusion of updated information related to the Colstrip Enabling Study.⁵¹ Staff indicated further examination of the recommended depreciation of Colstrip by the end of 2027 in the next IRP.⁵² NWEAC expressed concern about potential Colstrip developments and urged other participants to be prepared to respond rapidly to any unexpected developments regarding Colstrip, including “the potential for accelerating new clean resource acquisition”.⁵³

PGE’s Response

Colstrip continues to be subject to a range of policy, contractual and operating costs. As additional information becomes available, PGE will continue to examine options related to the plant and its future in PGE’s portfolio. PGE will continue to prioritize safety, compliance, cost impacts and risks to customers in addition to reliability and our climate goals while ensuring a supportive transition for the Colstrip community in considering options related to Colstrip. Finally, as warranted by changing circumstances, PGE may approach the Commission with alternative regulatory policy and rate-making constructs to reduce our customers’ Colstrip-related risks and costs including not only future IRPs but also other Commission proceedings as appropriate.

5. Capacity Assessment

In this section, PGE addresses comments from participants regarding the assessment of capacity need and capacity contribution (ELCC) in the IRP Update. To improve the treatment of energy-limited resources and improve modeling efficiency, PGE introduced the new capacity model Sequoia. The improved model along with updates to forecasts of load and existing and contracted resources continue to suggest that PGE has significant and growing capacity needs.

5.1. Capacity Modeling

Parties’ Comments

Parties were largely supportive of the Sequoia model. Staff agreed with PGE’s reasons to develop a new capacity model, and stated its verification is a top priority for the next IRP.⁵⁴ Both NWEAC, Swan

⁵¹ LC 73 – Staff’s 2019 IRP Update Comments at 3; RNW’s 2019 IRP Update Comments at 5.

⁵² LC 73 – Staff’s 2019 IRP Update Comments at 3.

⁵³ LC 73 – NWEAC’s 2019 IRP Update Comments at 4.

⁵⁴ LC 73 – Staff’s 2019 IRP Update Comments at 7.

Lake, and Goldendale’s evaluations of the model were positive.⁵⁵ NWECC also stated its appreciation of PGE’s treatment of capacity need.⁵⁶

PGE’s Response

PGE appreciates parties’ investigations into its improved capacity modeling capabilities. Sequoia is an important tool to help us effectively plan for a reliably decarbonized system and we look forward to collaborating with Staff and participants as we develop additional model functionality and process improvements for the next IRP.

5.2. ELCC Values

The capacity contribution (or effective load carrying capability, ELCC) values for candidate resources were updated based on the same capacity assessment model used for the capacity need model for the 2019 IRP Update. These results were provided in Section 5.3 of the 2019 IRP Update.⁵⁷

Parties’ Comments

NewSun expressed several concerns about the ELCC values for solar based on concerns about the performance characteristics of the proxy solar resource and the inclusion of the Community Solar Program in the Baseline Portfolio.⁵⁸

NWECC noted both its appreciation of PGE’s capacity contribution methodology and the growing importance of methodologies to examine hybrid and composite resources.⁵⁹

Staff expressed an interest in better understanding the ELCC value of solar in the context of the updated market capacity assumptions, the loss-of-load expectation heatmap from the IRP Update (Figure 8 in the IRP Update), and the E3 regional capacity study seasonal solar ELCC values.⁶⁰ Staff also noted that they would like “to explore further whether PGE’s capacity contribution values are dependent on its choice of the reference year 2025 for its modeling.”⁶¹

PGE’s Response

PGE appreciates Staff and parties’ review of the ELCC study for the 2019 IRP Update. As with the 2016 IRP, the 2016 IRP Update, and the 2019 IRP, the ELCC study for the 2019 IRP Update was appropriately conducted with the same Baseline Portfolio and model as used for the capacity need assessment. The IRP Update ELCC Study examined the same test year (2025) as the 2019 IRP, aligning with the capacity action. The candidate resources examined were based on the same information as the 2019 IRP.

⁵⁵ LC 73 – Swan Lake’s 2019 IRP Update Comments at 2; NWECC’s 2019 IRP Update Comments at 3.

⁵⁶ LC 73 – NWECC’s 2019 IRP Update Comments at 3.

⁵⁷ See PGE’s IRP Update, Section 5.3 at 47-50.

⁵⁸ LC 73 – NewSun’s 2019 IRP Update Comments at 5-6.

⁵⁹ LC 73 – NWECC’s 2019 IRP Update Comments at 4.

⁶⁰ LC 73 – Staff’s 2019 IRP Update Comments at 7-9.

⁶¹ Id. at 10.

In comments, REC and NewSun questioned the solar ELCC values based on the inclusion of the CSP in the Baseline Portfolio and the inclusion of all executed QF contracts.⁶² Their suggested treatment would reduce the quantity of solar resources in the Baseline Portfolio, potentially leading to a higher ELCC value for the first increment of additional solar resources, and consequently, likely lead to higher avoided cost prices for solar QF developers than those based on the IRP Update. PGE disagrees with their comments and responds to them in **Sections 4.3** and **4.4**.

NewSun expressed concern about the ELCC value for solar resources due to the characteristics of the proxy solar resource.⁶³ PGE welcomes input from resource developers in the IRP public process, whether they are representing wind, solar, pumped storage, or battery storage resources. However, PGE appropriately uses other sources of data to model candidate new resources for IRP analysis and disagrees with NewSun's suggestion that certain aspects of the proxy solar resource should be updated in isolation at this time. The resources in the 2019 IRP Update, including the solar resource, are based on the same data used in the 2019 IRP. The operating and cost characteristics of these resources were prepared by consulting firms and reviewed by Staff and participants in the 2019 IRP public process and the docket.⁶⁴ In order to maintain a comprehensive and logically coherent set of data, PGE updates cost and performance characteristics together across the set of candidate resources, rather than selectively changing a limited set of parameters for a particular resource. When PGE updates solar performance characteristics, it will do so following a comprehensive study that will also update solar costs and the costs and characteristics of other resources such as wind resources. As discussed in **Section 11.4**, draft information for the next IRP indicates a decline in costs for wind and solar resources compared to the 2019 IRP.

In the Section 5.3 of the 2019 IRP Update, PGE noted that the ELCC value for the first increment of additional solar resources decreased relative to the first increment of additional resources in the 2019 IRP ELCC study primarily because of a material increase to the quantity of solar resources in the Baseline Portfolio (approximately 200 MW). The approximately 200 MW of increased solar resources is the net change to the portfolio due to both resource additions and terminations since the 2019 IRP. The resource additions included the first GEAR offering (162 MW), the CSP (approximately 93 MW) and solar QF contracts (approximately 95 MW).⁶⁵ These were partially offset by solar QF terminations, including anticipated terminations associated with the Community Solar Settlement Agreement.⁶⁶

⁶² LC 73 – REC's 2019 IRP Update Comments at 5-6; NewSun's 2019 IRP Update Comments at 5.

⁶³ LC 73 – NewSun's 2019 IRP Update Comments at 2. PGE notes that NewSun's comments made during the November 2020 Roundtable for the IRP Update regarding solar resource performance characteristics were made after the resource cost and performance characteristics were finalized in the 2019 IRP.

⁶⁴ The supply-side resource reports for the 2019 IRP were provided in External Study D of the 2019 IRP. A list of public meeting agendas from the 2019 IRP is provided in Appendix C of the 2019 IRP.

⁶⁵ Information about the additional solar resources was provided in PGE's Response to OPUC Data Request No. 235.

⁶⁶ Information about the terminations was provided in PGE's Response to REC Data Request No. 017 and PGE's Third Supplemental Response to REC Data Request No. 001, including anticipated terminations associated with the Community Solar Settlement Agreement.

The ELCC studies in the 2016 IRP, 2016 IRP Update, and 2019 IRP all found that the ELCC value of solar resources declined as more solar resources were added to the portfolio. This is consistent with the finding of the IRP Update. As expected from the 2019 IRP ELCC study, the first increment of solar resources for the IRP Update has a lower ELCC value than the first increment of resources in the study for the 2019 IRP (5.5 percent compared to 15.8 percent). A more appropriate comparison, however, is between the first increment of the IRP Update and the third increment of the 2019 IRP (5.5 percent and 7.2 percent) because these have approximately the same quantity of solar resources in the portfolios. For the 100 MW increments examined, this is a difference of less than 2 MW.⁶⁷ **Table 1** compares the ELCC values from the IRP Update with those values from the 2019 IRP that were based on a similar quantity of solar resources.

Table 1. Solar ELCC Study comparison based on approximate solar in the portfolio relative to the 2019 IRP

Incremental 100 MW Additions	2019 IRP Solar	IRP Update Solar
100	15.8%	-
200	10.2%	-
300	7.2%	5.5%
400	4.8%	5.0%
500	3.6%	4.5%
600	2.6%	4.0%
700	2.1%	4.0%
800	2.0%	2.7%

There are multiple factors that contributed to the remaining change to the solar ELCC values between the two studies, including: the updated econometric load forecast; the resource updates (e.g., the Douglas PPA, the QF snapshot, market capacity, and the characteristics of the solar resources);⁶⁸ and the Sequoia model (e.g., the improved modeling of contingency reserve obligations, the improved modeling of dispatchable resources, the statistical consideration of probabilistic weeks instead of independent hourly probability distributions, and the perfect capacity reporting convention).⁶⁹ As discussed on page 33 of the IRP Update, the change to reporting in terms of perfect capacity, all

⁶⁷ As discussed in Section 5.3 of the IRP Update, an ELCC value is a ratio of the capacity contribution of a resource to its project size.

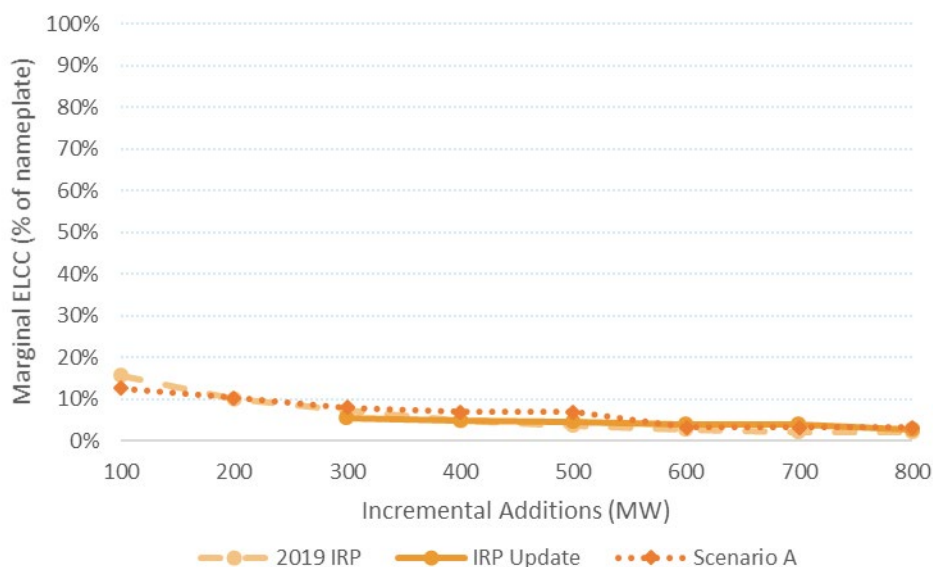
⁶⁸ The solar resources added to the portfolio are not identical to the proxy solar resource. This impacts incremental ELCC values relative to analysis based on additions of the proxy resource.

⁶⁹ PGE provided this overview to REC in response to REC DR 026.

else held constant, results in a small decrease to all ELCC values. However, this is offset by a corresponding increase to the cost of capacity.⁷⁰

In order to provide additional insight into the impact of the increase in solar resources in the Baseline Portfolio, PGE conducted new analysis for a scenario that examined the impact on ELCC values if 200 MW of solar resources were removed from the Baseline Portfolio. **Figure 1** compares the ELCC values for solar from the 2019 IRP, the IRP Update, and the scenario (labeled Scenario A in the figure). The figure aligns the ELCC values based on the approximate quantity of solar resources in each study. Scenario A showed a similar pattern to the 2019 IRP, with a higher initial ELCC value for solar than the IRP Update (as expected due to the reduction of solar in the portfolio compared to the IRP Update), and a declining value for the next increments.

Figure 1. Solar ELCC Comparison⁷¹



There was little change to the ELCC values for Gorge Wind and the SCCT in Scenario A compared to the IRP Update (26 percent and 95.2 percent in Scenario A compared to 25 percent and 95.5 percent in the IRP Update).

In comments, Staff expressed an interest in better understanding the change to the ELCC value for the first increment of solar resources relative to the 2019 IRP when considering the change to the market capacity assumption.⁷² While PGE has not conducted analysis to estimate the market capacity impact on the ELCC study in isolation from the other updates, we note that the market capacity change in 2025 was relatively minor—a decrease to the availability of summer on-peak market capacity of 26 MW. All else held constant, if the market capacity values had remained at the values

⁷⁰ The cost of capacity is discussed in the IRP Update, Section 5.4 at 50, and Appendix F (Table 21) at 66.

⁷¹ The capacity need reporting convention for the 2019 IRP differs from the IRP Update and Scenario A. See PGE’s 2019 IRP Update, Section 3.4.1 at 32.

⁷² LC 73 – Staff’s 2019 IRP Update Comments at 7.

in the 2019 IRP, the ELCC values for solar resources may have been slightly lower than in the IRP Update.

Staff also expressed an interest in better understanding the change to the ELCC value for solar when considering the loss-of-load expectation heatmap provided in Figure 8 of the 2019 IRP Update, which shows high probability of loss-of-load hours in some summer months. While a LOLE heatmap can be useful for understanding the hourly and seasonal nature of the probability of loss-of-load events, a heatmap is limited in the information it provides. The color shading in the heatmaps from the 2019 IRP and the IRP Update are based on percentiles of the specific data represented in each figure. Additionally, the shading does not indicate information about the quantity of capacity needed—for example, two hours with equal probability of loss of load may have different distributions for the probability of the quantity of unserved energy.

While the full complexity of the capacity need and ELCC analyses can be challenging to reflect in figures, PGE looks forward to collaborating with Staff and participants as we continue to develop additional ways to examine the results of the analyses. Sequoia provides some additional opportunities that were not available with the RECAP model. By examining the loss-of-load events from the capacity need assessment from 2025 for the Reference Case, as shown in **Figure 2**, we can see that hours with the greatest need are predominately in the winter months—specifically, in December and January (approximately 65 percent).⁷³

Figure 2. Percentage of hours with greatest need by month

1	2	3	4	5	6	7	8	9	10	11	12
31%	7%	0%	0%	0%	0%	2%	23%	2%	0%	2%	34%

Additionally, we can see that in the summer, the hours with greatest need are predominately after 6 p.m., as shown in **Figure 3**. **Figure 3** shows the count of hours with greatest need for the months of June through September (columns) by the hour of the day (hour-ending, rows).

⁷³ For this exercise, hours with greatest need were those with unserved energy greater than or equal to 511 MW.

Figure 3. Count of summer hours with greatest need by month/hour

	6	7	8	9
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	3	0
15	0	0	42	0
16	0	2	4	7
17	0	4	12	3
18	0	4	41	11
19	0	9	116	18
20	1	14	77	7
21	0	6	205	2
22	0	1	39	1
23	0	0	0	0
24	0	0	0	0

ELCC values reflect the characteristics of both the candidate resource and the system being examined. For PGE’s system, the hours of greatest need are most likely to occur in hours that are not well aligned with generation from solar resources.

In comments, Staff expressed concern about the difference in solar ELCC values between the IRP Update and the seasonal ELCC values from E3’s regional capacity study for the 2019 IRP.^{74,75} E3’s study used the winter and summer Associated System Capacity Contribution (ASCC) values from the Northwest Power and Conservation Council’s (Council) 7th Power Plan. We note that the analysis was based on a regional assessment, not an assessment of PGE’s system. Additionally, the 7th Power Plan was released in 2016 and reflects the Council’s understanding of resources and load at that time.

PGE agrees with NWECC’s comments regarding the growing importance of modeling hybrid and composite resources.⁷⁶ As discussed in Section 3.4.1. of the IRP Update, one of the motivations for developing the Sequoia model was to improve the examination of energy-limited resources, including resources such as solar paired with storage. Sequoia allows the capacity need and ELCC studies to better optimize the performance of hybrid resources and to better optimize the dispatch of all

⁷⁴ LC 73 – Staff’s 2019 IRP Update Comments at 9.
⁷⁵ See PGE’s 2019 IRP, External Study E, Figure 3 at 630.
⁷⁶ LC 73 – NWECC’s 2019 IRP Update Comments at 4.

resources in the system. PGE looks forward to collaborating with Staff and participants as we continue to improve and refine our modeling.

PGE appreciates Staff's interest in exploring additional questions about ELCC values, including the impact of different resource mixes in the Baseline Portfolio and in ELCC values across the planning horizon. PGE looks forward to collaborating with Staff to explore some of these questions in the next IRP. However, PGE finds that the current view of evaluating ELCC values based on the test year aligned with capacity procurement to be the appropriate view for long-term planning. Some considerations on this topic are included below.

The analysis of capacity need across need futures shows a large and growing uncertainty about the quantity of capacity that will be needed. In 2030, the difference between the high and low need futures was 895 MW. While the IRP process considers the magnitude of these uncertainties and works to develop a plan that is robust across the range of possible futures, the focus of the IRP is on developing an action plan for a two- to four-year period that best balances cost and risk for customers. In considering this, PGE finds that having a robust ELCC study that examines estimated marginal capacity contribution values for candidate resources for a test year is the most appropriate tool for comparing the capacity contribution of candidate resources, given that there is uncertainty both in the quantity of need and characteristics of the system over time.

PGE also notes that due to the need to simplify processes and models, some of the inputs to the capacity assessment model are based on the test year. For example, in the 2019 IRP, the profiles for distributed resources were developed based on the year 2025 and scaled by annual values to other years. For the econometric load forecast, the hourly profile is developed based on recent load behavior to weather and scaled to each year. While these types of simplifications are reasonable for getting a general sense of the quantity of capacity needed in the outer years without adding large amounts of additional analysis, it may not be as suited for an exercise attributing value to capacity contribution.

6. Wholesale Market Electricity Prices

In this section, PGE addresses the comments from participants regarding updates to the natural gas price forecast, carbon price forecast and corresponding wholesale electricity market price forecasts.

Parties' Comments

Staff described concerns from PacifiCorp's RFP process regarding assumptions of steady growth in wholesale electricity prices.⁷⁷ Staff indicated interest in exploring wholesale electricity prices with greater granularity and provided analytical suggestions.⁷⁸ NWECC notes that natural gas prices in the Northwest are increasingly prone to price volatility and suggests inclusion of greater consideration of

⁷⁷ LC 73 – Staff's 2019 IRP Update Comments at 7.

⁷⁸ Id.

gas supply and price risk.⁷⁹ NWECC also states that the next IRP should consider the potential of a significant update to the federal social cost of greenhouse gas.⁸⁰

PGE's Response

Forecasts of future wholesale market prices for electricity are an important driver of resource performance within PGE's portfolio, and PGE agrees that uncertainty in input factors such as natural gas prices and carbon prices, among numerous other factors, can drive a wide range of uncertainty in forecast wholesale electricity prices. PGE is interested in modeling a range of potential drivers of uncertainty in price forecasts to continue to improve our understanding of the impact that the range of prices could have on resource economics and portfolio analysis.

We continue to look forward to the opportunity to discuss the types of uncertainty that are important to capture within price modeling in the public roundtable process. PGE introduced the price forecasting framework for the next full IRP for discussion, questions, and feedback in Roundtable 21-1 on February 17, 2021, and plans to continue the price forecasting discussion in upcoming roundtable meetings.

7. Portfolio Analysis

In this section, PGE addresses the comments from Parties regarding its refreshed portfolio analysis conducted in the IRP Update.

7.1. Portfolio Analysis in the IRP Update

Parties' Comments

Both Staff and RNW are concerned the preferred portfolio's resource additions between 2023-2025 included fewer capacity resources.⁸¹ Swan Lake and Goldendale disagreed with PGE's decision to allow the option of a Capacity Fill resource in the quantity of expiring bilateral contracts.⁸² Staff also inquired about the capacity contribution per MW added and the sensitivity of resource additions to PTC changes and signaled a desire to discuss further the energy burden impacts of investment decisions.⁸³

PGE Response

PGE appreciates parties' thoughtful comments on its refreshed portfolio analysis in the IRP Update. In the IRP Update, PGE refreshed its portfolio analysis with updated estimates for forecasted load, capacity need, market and natural gas price forecasts, and resource economics. Results for this updated portfolio analysis reinforced the finding that near-term renewable additions consistently lead to lower long-term cost and risk. However, the changing near-term capacity position, driven in large

⁷⁹ LC 73 – NWECC's 2019 IRP Update Comments at 3-4.

⁸⁰ Id. at 4.

⁸¹ LC 73 – RNW's 2019 IRP Update Comments at 3; Staff's 2019 IRP Update Comments at 10.

⁸² LC 73 – Swan Lake and Goldendale 's 2019 IRP Update Comments at 8.

⁸³ LC 73 – Staff's 2019 IRP Update Comments at 10-11.

part by the signing of the Douglas PPA, led to fewer capacity resources being selected in the preferred portfolio between the IRP Update and filed IRP. This is not a replacement of capacity resources for renewables, as Staff suggests. Rather, ROSE-E's cost minimization determined the least-cost and least-risk manner to meet the reduced capacity needs was to reduce capacity additions before renewable additions.

In Docket LC 73, portfolio analysis has been conducted three times—the filed IRP, PGE's Final Comments, and the IRP Update. In each of these iterations, PGE ran a set of energy-unconstrained optimized portfolios to demonstrate portfolio analysis with no portfolio constraints. These portfolios in the near-term consistently selected large additions of renewables and the Capacity Fill resource⁸⁴ with minimal additional capacity resources, highlighting renewables as the most cost-effective method of meeting near-term capacity needs. However, the use of energy constraints in the preferred portfolio to restrict near-term renewable additions leaves a larger portion of capacity needs unmet. The filed IRP and PGE's Final Comments addressed these needs with a combination of longer-duration storage and the Capacity Fill resource. The IRP Update follows the same pattern; however, after adding the total amount of renewables possible as well as the Capacity Fill resource, the remaining capacity need is lower. Accordingly, having fewer longer-duration storage resources added in the near-term is both logical given changes in inputs and consistent with earlier results from portfolio analysis.

The Capacity Fill resource in the Reference Case is limited in the near-term to the size of expiring bilateral contracts. PGE disagrees with Swan Lake and Goldendale's assertion that removing this quantity of Capacity Fill in the near-term would be appropriate. Its inclusion in PGE's portfolio analysis is a reasonable method to preserve the option of extending existing bilateral contracts and/or acquiring a similar quantity of capacity. Further, PGE's action plan is structured to ensure reliability in the event the Company cannot acquire this capacity; the Company plans to follow the actions described in the 2019 IRP, subject to the Commission's conditions, to meet its identified capacity needs in 2025:

1. Pursue cost-competitive agreements for existing capacity in the region.
2. Conduct an RFP for non-emitting dispatchable resources that contribute to meeting PGE's capacity needs.
3. Conduct a Renewables RFP seeking up to approximately 150 MWa of new RPS-eligible resources that contribute to meeting PGE's capacity needs by the end of 2024.

PTC changes have been a challenge throughout Docket LC 73. ROSE-E's search for the lowest long-term system costs is influenced by PTC availability, and there have been three extensions since filing the 2019 IRP.⁸⁵ PGE acknowledges that there is uncertainty regarding whether another extension will occur. This does highlight Staff's concern about whether a future PTC extension would make the near-term renewable additions suboptimal. There is good evidence to suggest otherwise.

⁸⁴ The Capacity Fill resource in the Reference Case is limited in the near-term to the size of expiring bilateral contracts.

⁸⁵ See IRP Update Section 2.4.2 at 24, and Appendix G at 67 for more detail.

Throughout Docket LC 73, the preferred portfolio has never added renewables solely in the final year of PTC eligibility. While the PTCs do influence optimal size and timing of resource additions, the ability to provide capacity, as described above, has in every portfolio analysis iteration influenced ROSE-E to select renewables before the last year of PTC availability.⁸⁶ As shown below in Table 2, the IRP Update provides the longest time between the initial year in which renewables are added and the final year PTCs are available, providing greater evidence that a near-term renewable addition will remain a cost-effective way to lower long-term costs even if PTC eligibility is extended again.

Table 2. Initial Renewable Addition Year in the Preferred Portfolio

Portfolio Analysis Iteration	Initial Renewable Addition Year	Final PTC Eligibility Year
Filed 2019 IRP	2023	2024
LC 73 Final Comments	2024	2025
IRP Update	2023	2026

Finally, while PGE does not believe that the IRP is the appropriate forum to estimate the specific rate impacts of potential investment decisions, it does agree with both Staff and the Commission that there is room to explore avenues to mitigate customer risks associated with portfolio analysis.

8. Greenhouse Gas Emissions

In this section, PGE addresses the comments from participants regarding both greenhouse gas emissions and emission reduction policies and goals.

Parties' Comments

Several parties included comments regarding PGE's greenhouse gas emissions. Staff stated that it is looking for additional information in the next IRP, including more granular emission data, a Climate Change Risk Report, and a list of potential items.⁸⁷ Additionally, Staff is interested in GHG emissions pathways and reduction targets.⁸⁸ RNW supports PGE's work to continue to include policy developments such as EO 20-04 and PGE's climate goals.⁸⁹

PGE Response

PGE appreciates these comments as we work to identify ways to describe, assess, and include climate-related risks across our operations, including considerations beyond the IRP process.

⁸⁶ The IRP uses the first year in which a resource generates, but PTC eligibility is determined by having a commercial operation date (COD) on or before the last day of the year. Currently the eligibility of the 60% PTC requires having a COD on or before 12/31/2025, which the IRP treats as a 2026 resource.

⁸⁷ LC 73 – Staff's 2019 IRP Update Comments at 11-12.

⁸⁸ Id. at 12.

⁸⁹ LC 73 – RNW's 2019 IRP Update Comments at 3.

Decarbonization will be a main theme of the next IRP and participant input will be critical as we develop our planning.

PGE was proud to debut its new climate goals in November 2020, committing to reducing the emissions associated with the power we serve to customers by 80% by 2030 and aspiring to net zero emissions across the Company by 2040. The Company is working to determine the most appropriate way to plan to meet these goals in its next IRP. This work is being conducted in the context of an evolving regulatory and policy environment, which also will be incorporated in the next plan. PGE also appreciates the input it has received describing outputs from its analysis that could be of interest for participants. The Company looks forward to work with its participants to determine the set of information that could provide the most value from the IRP.

9. Acknowledged Action Plan

In the 2019 IRP Update, PGE’s refreshed analysis provided further support to the composition of the action plan acknowledged, subject to certain conditions and additional directives, in the 2019 IRP. In this section, PGE addresses the comments participants made about the action plan.

Parties’ Comments

Both NIPPC and RNW reaffirmed their support for the resource solicitation envisioned in PGE’s Action Plan.⁹⁰ NWECC encouraged PGE to make progress in 2021 towards its combined energy and capacity RFP.⁹¹

PGE’s Response

PGE appreciates the support that parties gave to the action plan. While PGE is not seeking acknowledgment related to the action plan in this IRP Update, PGE believes the updated analysis included in this IRP Update continue to demonstrate the action plan is in the long-term interest of our customers.

10. RFP Information

In this section, PGE addresses the comments from participants regarding the upcoming RFP. PGE appreciates RNW, Staff, and NWECC’s comments in support of the 2021 RFP.

After the 2019 IRP, PGE created time and space for bilateral capacity acquisitions tied to the acknowledged action plan. PGE executed its transaction with Douglas PUD in 2020 and has continued to explore the acquisition and renewal of bilateral capacity options into 2021. PGE looks forward to sharing updates regarding that work with the Commission, and to working with the Commission and participants on the upcoming RFP.

Below PGE addresses parties’ comments on the RFP start date, compliance with the competitive bidding rules, RFP design, and accommodations for long-lead-time resources. Staff made additional

⁹⁰ LC 73 – RNW’s 2019 IRP Update Comments at 1; LC 73 – NIPPC’s 2019 IRP Update Comments at 2.

⁹¹ LC 73 – NWECC’s 2019 IRP Update Comments at 2.

comments regarding energy storage and wind costs, market capacity assumptions, and wholesale electricity prices that we look forward to addressing in the IE and RFP dockets.

10.1. RFP Timing

Parties' Comments

Staff, RNW, and NIPPC commented on the timing of the RFP. Staff would like to know when the RFP will start.⁹² RNW encouraged PGE to start the RFP concurrently with the 2019 IRP Update, which is in alignment with PGE's statements in the 2019 IRP Update.⁹³ NIPPC suggests that the Commission should allow PGE to proceed rapidly with its RFP stating that PGE has a substantial capacity need and limited time to acquire resources.⁹⁴

PGE's Response

PGE intends to initiate the RFP proceeding through the commencement of the IE Docket in April 2021 and looks forward to engaging with participants to ensure it results in procurement activities that are the best combination of cost and risk for customers.

10.2. PGE's Compliance with the Competitive Bidding Rules

Parties' Comments

NIPPC commented that it would like to see the correct implementation of the competitive bidding rules in the next RFP, especially pertaining to the selection of the independent evaluator and the process timeline.⁹⁵ NIPPC expresses desire to have an involved role in the IE selection process as well as concerns that PGE will "fast track" the RFP process.⁹⁶

PGE's Response

PGE intends to allow for appropriate RFP design review and RFP approval process as required in rules. PGE will propose RFP design elements not included in the 2019 IRP within the IE docket prior to the RFP approval process. Per the competitive bidding rules, PGE will notify parties to PGE's most recent general rate case, RFP, and IRP dockets of PGE's need for an IE and will solicit input.⁹⁷

In terms of RFP process timeline, PGE reiterates that it plans for the RFP to proceed at a measured pace that allows for in-depth analysis and review while acting quickly enough to address resource needs.

⁹² LC 73 – Staff's 2019 IRP Update Comments at 3.

⁹³ LC 73 – 2019 IRP Update Comments at 3; RNW's 2019 IRP Update Comments at 2-3.

⁹⁴ LC 73 – NIPPC's 2019 IRP Update Comments at 3.

⁹⁵ Id. at 2.

⁹⁶ Id. at 3-4, and at 5-6.

⁹⁷ See OAR 860-089-0200(1).

10.3. RFP Design

Parties' Comments

RNW's comments expressed a desire for additional clarity on how PGE will design the 2021 RFP to meet its capacity need. In particular, RNW requests to know if in addition to accepting bids for the 150 MWh of renewable resources, PGE will accept bids to meet capacity needs beyond the contribution of renewable resources.⁹⁸

PGE's Response

PGE plans to have a single RFP that involves concurrent procurement of both renewable and non-emitting capacity resources. PGE intends to meet its identified 2025 capacity need through this procurement process and bilateral negotiations, subject to the conditions of the acknowledged action plan. PGE looks forward to discussing additional advantages for capacity resources and scoring constructs in the RFP docket.

10.4. Accommodation for Long Lead Time Resources

Parties' Comments

NIPPC requests additional context on what accommodations PGE will make for long-lead-time resources in the 2021 RFP.⁹⁹ Given that PGE's RFP will be occurring in 2021 instead of 2020, and that it is unclear to NIPPC whether or not PGE will seek a waiver of the competitive bidding rules, NIPPC suggests that the Commission could allow for later CODs to be included as part of a procurement process or for there to be a longer time in between agreement execution and the online date of the resource.¹⁰⁰

Swan Lake and Goldendale also requested that PGE make accommodations for resources that have long lead times, like pumped hydro.¹⁰¹ Specifically, they ask that PGE allow for sufficient lead time and timing parameters for pumped hydro resources to compete in the RFP.¹⁰²

PGE's Response

PGE appreciates parties' comments regarding long-lead-time resources in the RFP. In accordance with the acknowledged 2019 IRP action plan, PGE still plans to make accommodations for long-lead-time resources. Consistent with PGE's statements in the 2019 IRP proceeding, long-lead-time resources will be permitted to participate without necessitating a 2024 COD if the Company can pair them with short-term contracts to meet PGE's interim capacity needs.¹⁰³ Additional considerations regarding

⁹⁸ LC 73 – RNW's 2019 IRP Update Comments at 3.

⁹⁹ LC 73 – NIPPC's 2019 IRP Update Comments at 4-5.

¹⁰⁰ Id.

¹⁰¹ LC 73 – Swan Lake's and Goldendale's 2019 IRP Update Comments at 7.

¹⁰² Id.

¹⁰³ LC 73 – PGE's 2019 IRP Final Comments at 9.

how long-lead-time resources will be evaluated in the RFP will be presented and considered in the RFP docket.

11. Additional Items

11.1. Community Engagement

Parties' Comments

NWEC noted:

PGE's support and actions in addressing historic, deeply embedded racial inequality in our community and strongly encourage PGE to redouble its efforts to address community needs and bring forward community voices and viewpoints into its planning and program efforts. In addition to being the right thing to do, this will yield positive results for the efforts by PGE and our community to accelerate the transition to a 100% clean, safe, reliable and equitable electric system.¹⁰⁴

PGE's Response

PGE appreciates NWEC addressing this issue directly and agrees that PGE's efforts must grow, expand, and become more sophisticated. PGE approaches the IRP process as a practice of continuous learning but still progress to include community-based voices has been slow. In 2020, PGE embraced the work of identifying and acknowledging systemic racism. We formalized and resourced the Diversity Equity and Inclusion (DEI) team at the Vice President level. With leadership from the DEI team, the Strategy, Regulation, and Energy Supply group, of which IRP is a part, has been implementing and evaluating increased efforts to hear and learn from the community we serve who have lived experience with racial, social, and environmental inequalities stemming from systemic racism.¹⁰⁵ Additionally, PGE recently created the role of Native American Liaison within the PGE Government Affairs team; specifically, to provide connection with the Native American community at the intersection of their diverse interests with PGE work. It is the goal of PGE's IRP team to thoughtfully create space within our processes and analysis to consider community voices and viewpoints not historically heard in planning processes. Our public meeting process, partnerships with Staff and participants, and relationships from across the Company with community groups are assisting with these efforts.

¹⁰⁴ LC 73 – NWEC's 2019 IRP Update Comments at 1.

¹⁰⁵ PGE communicated with the following groups in 2020 regarding the IRP and IRP related public meetings: Asian Pacific American Network of Oregon (APANO), Community Action Partnership of Oregon (CAPO), Community Energy Project (CEP), Energy Trust of Oregon, NAACP – Portland, Native American Youth and Family Center (NAYA), Organizing People Activating Leaders (OPAL), and Verde.

11.2. Net Market Energy Position

Parties' Comments

NWEC recommended that “PGE reassess its market position and provide further details on recent changes in market structure and depth, both at Mid-C and for other market transactions.”¹⁰⁶

PGE's Response

PGE appreciates these comments. PGE will continue discussions with Staff and participants about energy position and RPS position for the next IRP.

11.3. Economic Life

Parties' Comments

Swan Lake and Goldendale noted that they consider a shorter economic life of battery storage to be more appropriate.¹⁰⁷

PGE's Response

The resources costs developed for the 2019 IRP (and included in the IRP Update) reflected the economic life assumptions for each resource type. In order to maintain a comprehensive and logically coherent set of data, PGE updates cost and performance characteristics together across the set of candidate resources, rather than selectively changing a limited set of parameters for a particular resource. Battery characteristics and costs will be updated as part of a comprehensive study for the next IRP.

11.4. PURPA Avoided Cost Prices

In the 2019 IRP Update, PGE stated the information from the IRP Update that it intends to include in the May 1 PURPA avoided cost price update. With the exception of the CCCT annual start and generation values, the updates were shared in Roundtable meetings prior to the IRP Update filing.¹⁰⁸

On February 5, 2021, PGE provided a supplemental filing that itemized the updates from the IRP Update for the May 1 filing and provided an initial estimate of the impact of these updates on avoided cost prices by technology for renewable and non-renewable pricing. PGE also noted that the May 1 filing will also include the required annual updates to natural gas prices, on- and off-peak electricity market prices, and changes to PTCs.

Below, PGE addresses the comments made regarding the IRP Update analyses and assumptions as they relate to the May 1 PURPA avoided cost price update.

¹⁰⁶ LC 73 – NWEC's 2019 IRP Update Comments at 3.

¹⁰⁷ LC 73 – Swan Lake and Goldendale's 2019 IRP Update Comments at 12.

¹⁰⁸ As noted in PGE's February 5, 2021 Supplemental Filing, Section 1.4, the updated values for CCCT annual generation and starts have a minimal impact on avoided cost prices and only impact the non-renewable prices.

Parties' Comments

NewSun asserted that PGE inappropriately updated only assumptions that would decrease PURPA avoided cost prices.¹⁰⁹ NewSun further asserts that a full IRP “is necessary to account for other updates or trends that would have a positive effect on prices...”¹¹⁰ NewSun further asserts that a full IRP “is necessary to account for other updates or trends that would have a positive effect on prices...”¹¹¹

NewSun stated that it “...concurs with PGE that steps need to be taken in the near term to address climate change but also in a manner that benefits Oregonians who experience economic hardship and the destructive effects of wildfires.”¹¹² NewSun also asserted that avoided cost payments should be increased to include estimated costs from outage events and climate risk.

Referring to docket UM 2038 and Executive Order No. 20-04, REC asserts that “[i]t would be inappropriate to substantially reduce prices for QFs before the Commission resolves these issues.”¹¹³ NIPPC expressed concern that EO-04 and the Company’s decarbonization goals may increase avoided cost prices.¹¹⁴

Additionally, NIPPC finds that there is “no pressing need” to update avoided cost pricing given its assertion that PGE hasn’t executed additional QF contracts since the avoided cost price update after the 2019 IRP.¹¹⁵

Staff commented about the updated CCCT inputs, noting that they “likely increase avoided cost prices slightly.”¹¹⁶

NewSun requested that PGE provide draft Schedule 201 prices and the pricing workbook in the IRP process.¹¹⁷

Other comments raised by QF developers regarding acknowledgment, the Community Solar Program, PURPA Qualifying Facility contracts, and ELCC values are addressed in **Sections 2, 4.3, 4.4, and 5.2**.

PGE’s Response

PGE appreciates the engagement from Staff and parties in multiple dockets as we work to address PURPA QF issues and better align pricing with customer avoided costs.

PGE strongly disagrees with the unsupported assertions made by NewSun about inputs to the IRP Update being selected only to reduce avoided cost prices. While PGE is requesting acknowledgment

¹⁰⁹ LC 73 – NewSun’s 2019 IRP Update Comments at 1.

¹¹⁰ Id. at 4.

¹¹¹ Id. at 4.

¹¹² Id. at 2.

¹¹³ LC 73 – REC’s 2019 IRP Update Comments at 2.

¹¹⁴ LC 73 – NIPPC’s 2019 IRP Update Comments at 7.

¹¹⁵ Id.

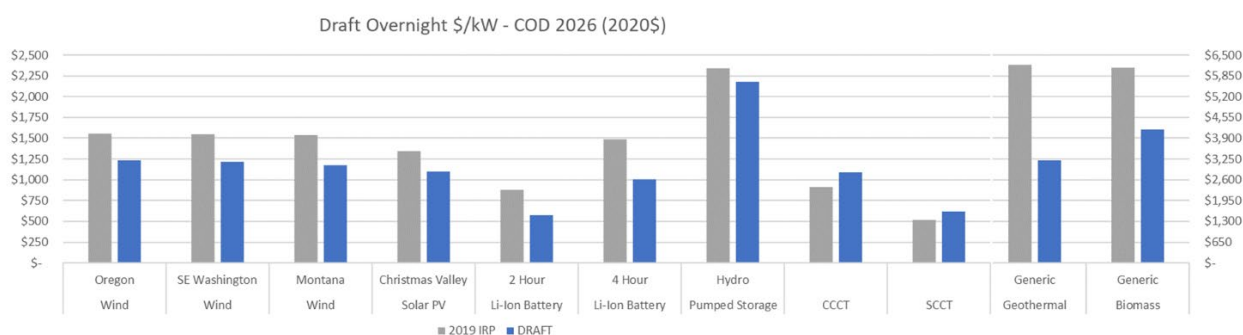
¹¹⁶ LC 73 – Staff’s 2019 IRP Update Comments at 13.

¹¹⁷ LC 73 – New Sun’s 2019 IRP Update Comments at 8.

of the IRP Update to include inputs in the May 1 filing, PGE did not select which items to include in the IRP Update based on their impact on avoided cost pricing. As in previous cycles, PGE incorporated the most relevant information for long-term planning that was available at the time of the snapshot, regardless of the potential impact on avoided cost pricing.

PGE further notes that as shared during Roundtable 21-1 (and included in **Figure 4**), draft resource cost information for the 2022 IRP indicates a material decline of the forecasted overnight capital costs for wind and solar resources compared to the 2019 IRP, with a slight increase to the cost of a simple-cycle combustion turbine. This indicates that even if the inputs from this IRP Update are included in the May 1 price update, PGE customers may continue to pay inflated prices to QF developers for resources PGE could likely procure at lower costs. However, given that the work on these draft resource cost and performance reports have not been finalized, PGE did not include it in this IRP Update.¹¹⁸

Figure 4. Draft 2022 IRP Overnight Capital Costs from Roundtable 21-1¹¹⁹



PGE shares NewSun’s concerns of the economic hardships experienced by many customers.¹²⁰ However, PGE notes that its customers’ hardships will be exacerbated if they pay QF prices that are above avoided costs due to outdated information. PGE strongly disagrees with NewSun’s recommendation to *increase* payments to QF developers for potential risk protections from outages and climate change, given that the same protections would also be provided by the avoided resources at no incremental cost to customers.

PGE disagrees with NIPPC and NewSun’s unsupported assumptions that the Company’s and the state’s decarbonization goals are likely to result in increased avoided cost prices and the conclusion that this is a reason to not update avoided cost pricing. Decarbonization is a very important priority of customers, the Company, and the state, but decarbonization at unnecessarily high costs is not an effective path to achieving these goals. Current avoided cost pricing during the deficiency period is based on the cost of avoided resources, not the level of decarbonization goals. While increased

¹¹⁸ PGE notes that the 2016 IRP Update included updates from finalized supply-side resource cost reports and these costs were reflected in the May 1 update to avoided cost prices following acknowledgment.

¹¹⁹ In Roundtable 21-1, PGE shared draft resource cost information for the 2022 IRP based on a 2026 commercial operation date.

¹²⁰ LC 73 – NewSun’s 2019 IRP Update Comments at 2.

decarbonization goals in Oregon and across the country will likely lead to the construction of more renewable resources, this does not automatically mean that the cost of those resources will increase. In fact, in many cases, volumetric increases have led to production efficiencies and price declines. If QF developers believe that the avoided cost of renewable resources will materially increase in future years, they have the option to wait to execute contracts. Customers, however, are obligated to pay the prices for executed QF contracts and should not be required to pay prices based on known outdated information that does not reflect their avoided costs.

The arguments that waiting to update avoided cost pricing better adheres to appropriate regulatory procedure and policy or that it would likely lead to higher avoided cost pricing are incorrect, unsupported, and not in the interest of customers. As noted in **Section 2**, the request for acknowledgment of the IRP Update in order to include these updates in the May 1 filing is both legally appropriate and consistent with Commission rules. Customers will have to pay for contracts executed based on outdated avoided cost pricing if these updates are not incorporated in the May 1 filing.

PGE disagrees with NewSun's recommendation that the pricing workbook from Docket UM 1728 be provided in the IRP process. As noted above, PGE provided substantial information to parties prior to filing the IRP Update, in the IRP Update itself, and in the February 5th Supplemental Filing. Additionally, PGE responded to extensive data requests, including providing additional analysis that provided a "step log" view of the estimated impact to avoided cost pricing for each update item.

To the extent NewSun seeks to simply review the workbook, parties to Docket UM 1728, including NewSun, already have access to the workbook. To the extent NewSun advocates that the updated avoided cost prices that will be included in PGE's May 1 update should be vetted in Docket LC 73, PGE disagrees. The purpose of the IRP Update process is to evaluate the updated inputs to avoided cost prices, among other things. The avoided cost prices themselves, incorporating any acknowledged inputs, will then be vetted in Docket UM 1728. Because the avoided cost update has not been finalized or filed and will be addressed in a different docket, it would be premature and outside the scope of Docket LC 73 to provide the avoided cost workbook here.

PGE welcomes questions and feedback about IRP analysis and process from all parties. However, PGE notes that its IRP analysis seeks to use the most relevant information available at the time for the purposes of long-term planning to develop near-term actions that provide customers with the best balance of cost and risk. An IRP process that is driven instead by QF developers seeking to accept or reject inputs based on their impact to avoided cost pricing does not serve that purpose.

12. Conclusion

The 2019 IRP Update provides a refreshed set of analyses to evaluate PGE's conclusions from the 2019 IRP. With these updated inputs, we continue to believe that the 2019 IRP action plan represents the best path for PGE as we optimize the system to achieve a clean energy future for the benefit of customers. Though there are significant steps yet to plan for in pursuit of those goals, the set of low-cost, clean technology and risk-mitigating actions ensure we make meaningful progress while maintaining affordability and reliability.

PGE appreciates the efforts that participants made to provide feedback on these approaches in the public roundtable process and to provide for a thorough review of PGE's approach within the IRP proceeding. Parties' comments on the IRP Update encompassed a wide range of substantive topics. In these reply comments, PGE aimed to provide additional information and responses, to describe PGE's perspective on topics where it may differ from parties' comments, and to provide assurances that actions will be aligned with customers' best interests.

PGE continues to approach the central questions of the 2019 IRP Update with a focus on rigorous analysis, consideration of market realities, and input from the Commission and participants to achieve the best balance of cost and risk. As described in the IRP Update and these comments, the 2019 IRP Update satisfies the procedural and substantive requirements of Oregon's IRP guidelines. As such, PGE respectfully requests that the Commission acknowledge its 2019 IRP Update at its April 20, 2021 public meeting.

Dated this 24th day of March, 2021.

Respectfully submitted,



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