

**PUBLIC UTILITY COMMISSION OF OREGON  
STAFF REPORT  
PUBLIC MEETING DATE: June 29, 2021**

REGULAR  X  CONSENT \_\_\_\_\_ EFFECTIVE DATE  June 30, 2021

**DATE:** June 24, 2021

**TO:** Public Utility Commission

**FROM:** Michelle Scala and Max St. Brown

**THROUGH:** Bryan Conway and Caroline Moore **SIGNED**

**SUBJECT:** PORTLAND GENERAL ELECTRIC:  
(Docket No. UM 1728)  
Updates to Schedule 201, Qualifying Facility (10 MW or Less) Avoided  
Cost Information.

**STAFF RECOMMENDATION:**

Approve Portland General Electric's (PGE or Company) filing to update Schedule 201, avoided cost payments to Qualifying Facilities (QF), with a modified Effective Load Carrying Capability (ELCC) value for solar resources and require PGE to perform additional analyses related to QF forecasts and solar generation profiles to inform future planning and avoided cost matters, as specified in Attachment A.

**DISCUSSION:**

Issue

Whether the Commission should approve PGE's annual May 1 update to its Schedule 201 standard avoided cost prices, with a modified ELCC value for Solar resources and require PGE to perform additional analyses related to QF forecasts and solar generation profiles.

Applicable Law or Rule

OAR 860-029-0080(7)(a) specifies that on May 1 of each year, a public utility must file with the Commission updates to the avoided cost information filed under section (2) of this rule to be effective within 60 days of filing to reflect:

- (1) Updated natural gas prices;
- (2) On- and off-peak forward-looking electricity market prices;
- (3) Changes to the status of the Production Tax Credit [PTC]; and
- (4) Any other action of change in an acknowledged Integrated Resource Plan (IRP) update relevant to the calculation of avoided costs.

## Analysis

### *Background*

On May 3, 2021, PGE filed its annual May 1 update to its standard PURPA avoided cost prices. The May update, as filed, incorporated changes included in PGE's 2019 IRP update, which was acknowledged on April 20, 2021 and memorialized in Commission Order No. 21-129.<sup>1</sup> In general, the 2019 IRP update incorporated the following changes impacting avoided costs:<sup>2</sup>

- Updated ELCC Values
- Updated Simple-cycle Combustion Turbine (SCCT) Net Energy Value
- Updated Interconnection Costs
- Updated Combined-cycle Combustion Turbine Annual Generation and Starts.

Additionally, in accordance with OAR 860-029-0080(7)(a), PGE's May 1 filing also incorporated the required annual updates to natural gas prices, and on- and off-peak electricity market prices.<sup>3</sup>

PGE hosted a stakeholder workshop on May 25, 2021, focused on its solar ELCC updates. On June 7 and 8, 2021, Community Renewable Energy Association (CREA), Renewable Energy Coalition (REC) and Northwest & Intermountain Power Producers Coalition (NIPPC) together as the "QF Trade Association", NewSun Energy, LLC (NewSun), and Oregon Solar+Storage Industries Association (OSSIA) (referred to collectively as "QF Parties") submitted written comments.

Table 1 provides a high-level summary of parties' positions on the elements impacting PGE's standard avoided cost rates in this update.

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<sup>1</sup> See Docket No. LC 73.

<sup>2</sup> See Docket No. LC 73, Portland General Electric Company's Supplemental Filing, February 5, 2021.

<sup>3</sup> Changes to Production Tax Credits were updated as well, but do not impact avoided cost prices in this filing because the May and December 2020 changes to PTC eligibility fall outside of the years used to calculate avoided cost.

Table 1. Summary of Updates

Updates	PGE proposal (as filed)	QF Parties' comments	Staff recommendation
<b>ELCC Values</b>	Decrease	Reject	Modify + conditions for future analysis
<b>SCCT Net Energy Value</b>	Decrease	No Position	Accept
<b>Interconnection Cost</b>	Housekeeping	No Position	Accept
<b>CCCT Annual Generation Starts</b>	Decrease	No Position	Accept
<b>Natural Gas Prices</b>	Increase	No Position	Accept
<b>Electricity Forward Price Curves</b>	Increase	No Position	Accept

*Summary of Issues*

As shown above, of the updates included in the May 1 filing, only the changes to (and inputs informing) ELCC values effected disagreement among parties. Staff's review of the Company's changes related to the annual updates per OAR 860-029-0080(7)(a) found no errors or cause for concern. Updates impacting avoided cost prices in the 2019 IRP update were also found to be reasonable with the exception of the significant decline in solar ELCC. The QF Parties identified concerns with the following ELCC inputs which they claim are impacting the accuracy of PGE' standard avoided cost update:

- QF assumptions in baseline solar forecast: PGE assumption that 100 percent of executed contracts at the time PGE updated its QF snapshot<sup>4</sup> will be online in 2025.
- Solar generation characteristics: The solar proxy resource characteristics from PGE's 2019 IRP, which PGE uses as the basis for both the QF forecast and the marginal solar resource characteristics in its solar ELCC modeling.

All QF Parties argue that the QF online assumptions in the baseline solar forecast were unreasonable and additional analysis should be performed to more accurately incorporate QF success rates. In other words, PGE moved too far along its ELCC curve in its update.

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<sup>4</sup> The snapshot refers to the point in time that PGE developed its QF assumptions. Snapshot date for the purposes of PGE's QF forecast was June 15, 2020, meaning the snapshot includes executed QF contracts as of that date and does not include terminations or other relevant modifications over the past year.

CREA, NewSun, and OSSIA also argue that PGE's ELCCs curve itself is flawed because the Company's solar generation characteristics underrepresent solar capacity contribution. Specifically, QF parties identified the following concerns with PGE's solar generation characteristics: stale assumptions about solar technology and project design, lack of consideration for geospecific locations and diversity benefits, lack of transparency into PGE's vendor-supplied data, concerns over PGE's solar outage assumptions, and inconsistency with self-reported generation data from NewSun-developed QFs during certain loss of load hours.

The QF Parties parties argue that, but for PGE's QF assumptions in baseline solar forecast and the solar generation characteristics, ELCC values would be much higher, and thus the avoided cost pricing would be higher.<sup>5</sup>

REC and NIPPC argue that the Commission reject PGE's proposed pricing and order PGE to: 1) adopt reasonable assumptions regarding QF contracts; and 2) revise its avoided cost pricing accordingly. CREA, OSSIA, and NewSun recommended the Commission reject PGE's filing until PGE updates the QF forecast and solar generation characteristics for the baseline solar forecast and marginal resource based on additional analyses with stakeholder input—either now or in the next IRP.

Staff points out that these issues were raised in the 2019 IRP Update, Docket No. LC 73 proceedings. There, the Commission declined to find error or bias in the scope of the inputs that PGE refreshed in the IRP update.

However, the Commission also clarified its decision to acknowledge the 2019 IRP update, specific to the impacts it may have on the subsequent avoided cost filing, by including the following language:

Administrative efficiency supports our acknowledgment of the IRP Update because discussion of specific issues among parties in an IRP or IRP Update may be informative or persuasive, but not conclusive, in the avoided cost proceeding. With our acknowledgement of PGE's IRP Update, PGE may file the avoided cost update with the IRP Update inputs, but its initial filing does not necessarily determine the outcome of the avoided cost proceeding.<sup>6</sup>

Staff endeavored to follow this guidance in its review and development of recommendations, engaging in an informed but accessible process where parties

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<sup>5</sup> OSSIA, REC/NIPPC, CREA, and NewSun separate comments filed June 7 and 8, 2021, Docket No. UM 1728.

<sup>6</sup> Order No. 21-129 at p. 2-3

were able to present their positions specific to a determination of PGE's avoided costs.

In the sections below, Staff details these issues in the context of PGE's initial filing, stakeholder positions, and Staff's recommendation.

#### *Staff Analysis of QF Forecast Methodology*

On page 2 of its initial filing, PGE describes that "the primary driver in the decline of the solar ELCC value of the first incremental addition relative to the 2019 IRP is the increase in solar resources in the Baseline Portfolio." The solar ELCC declined from 15.8% to 5.5%. REC and NIPPC recommend a 50 percent QF success rate assumption.<sup>7</sup> Similarly, NewSun calls for more sophisticated QF online assumptions, and stated in comments that solar baseline data assumptions should be grounded in facts known to PGE at the time of the snapshot, thus excluding projects that may still be under contract but possess material information indicating it will terminate.<sup>8</sup> OSSIA and CREA provided similar comments in support of REC/NIPPC and NewSun.

This issue was also considered in PGE's LC 73 IRP Update. There the Commission found that "we acknowledge PGE's addition of 200 MW of solar resources to its baseline. We recognize uncertainty with the different inputs and found the assumptions were balanced enough for IRP planning purposes, noting the offsetting impacts from QF success rate assumptions, the Community Solar Settlement Agreement, and the level of GEAR."<sup>9</sup>

Since the approximately 200 MW of solar resources additions are driving the solar ELCC decline, Staff looked at scenarios to consider if the QF success rate assumptions and CSP might not perfectly offset the GEAR addition. Staff examined two alternative baseline solar addition assumptions. The low end scenario considered a 50 percent QF success rate assumption, as REC and NIPPC suggest, and a smaller CSP by 2025. The high scenario considers a 75 percent QF success rate and the maximum CSP by 2025. Through this analysis Staff found that that PGE's addition of 200 MW of additional solar in its baseline should be adjusted down by roughly 83 MW. Staff imputed an ELCC value of 8.5 based on this adjustment.

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<sup>7</sup> UM 1728, REC and NIPCC June 8, 2021 Comments.

<sup>9</sup> Order No. 21-129 p. 5.

Table 2. Baseline Solar Resource Addition Scenario Analysis

Baseline Generator Type	PGE proposed	50% QF rate + low CSP	75% QF rate + high CSP
GEAR MW	162	300	300
Community solar MW	93	47	93
QFs MW	528	264	396
Sum MW	783	611	789
Difference from PGE Update MW		172	-6
		Median	83

*Staff recommendation: Staff finds it important to consider whether a conservative planning assumption is also the most reasonable reflection of the Company’s avoided costs. Until there is a more rigorous investigation through Dockets No. UM 2000 or UM 2038, Staff agrees with the QF parties that a 50-75% QF success rate is a more reasonable reflection of reality for the purposes of identifying the appropriate compensation of marginal capacity value of future solar QFs. Staff recommends that the Commission modify PGE’s avoided cost update to reflect an 8.5% solar ELCC. Staff notes that imputing the ELCC under these assumptions is appropriate for a compensation framework and should not be interpreted as conclusive for planning purposes.*

For the purposes of reaching consensus among parties, PGE has agreed to incorporate Staff’s recommended 8.5 percent ELCC into its avoided cost pricing. PGE indicated that an 8.5 percent ELCC would be effected by removing approximately 85 MW of solar resource additions from its baseline. The Table 3 depicts the shift to 8.5 percent solar ELCC as the starting point for QFs entering into non-standard contracts with the proposed prices and the declining value for incremental additions thereafter. REC/NIPPC agreed to support an 8.5 percent ELCC conditioned on PGE’s agreement to perform a QF forecast sensitivity analyses in advance of the 2022 IRP. PGE agreed to perform the recommended QF sensitivities analyses as described in Staff’s recommendation. Parties to the settlement, PGE, REC and NIPCC, also agree the 8.5 percent solar ELCC will be the starting point for developing Schedule 202 pricing. As such, PGE will reduce the 2019 IRP Update Baseline Portfolio by 85 MW for the purposes of this settlement.

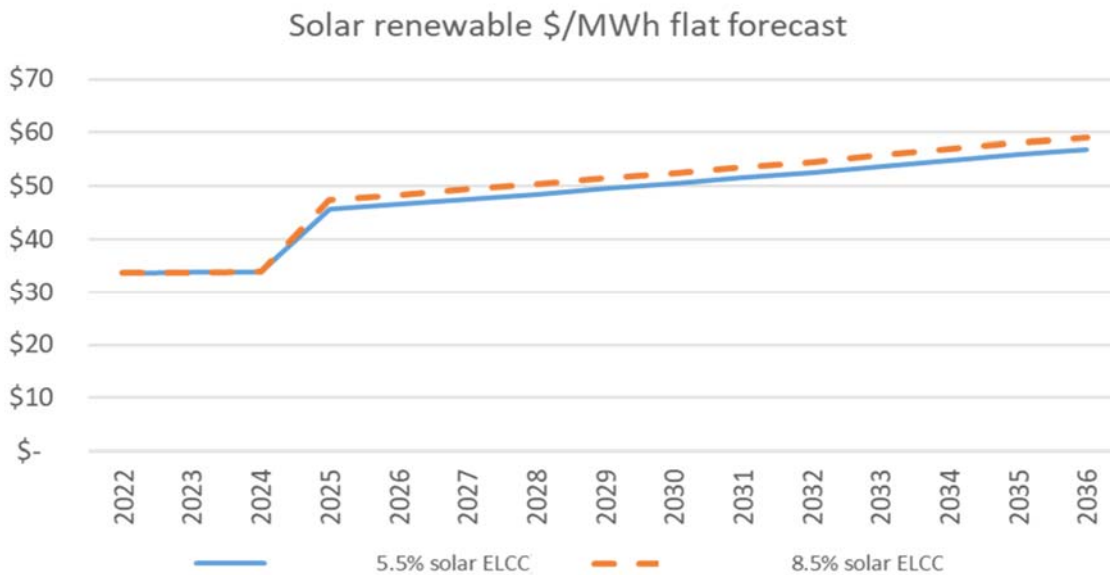
Table 3. PGE’s solar ELCC schedule at the proposed 8.5 percent starting point

<b>Proposed Solar ELCC for Settlement</b>			
MW			Marginal ELCC
0	-	100	8.50%
101	-	185	5.50%
186	-	285	5.00%
286	-	385	4.50%
386	-	485	4.00%
486	-	585	4.00%
586	-	685	2.67%
686	-	785	2.67%
786	-	885	2.67%

*Impact of the Schedule 201 Price Changes*

Replacing PGE’s as filed 5.5 percent solar ELCC with the recommended value of an 8.5 percent solar ELCC increases solar capacity payments and raises the total solar payments after the resource deficiency year of 2025 as shown in Figure 1.

Figure 1: Solar renewable \$/MWh flat forecast



In the resource sufficiency period, the Schedule 201 prices include forward-looking electricity market prices, which have increased. For wind 15 year levelized prices, this increase is offset by decreases in other the factors. The largest change in prices is due to the decreased solar ELCC.

Table 4. Current and Proposed Levelized Avoided Costs (2022 - 2036) with flat forecast

<u>Nonrenewable \$/MWh</u>			
	Baseload	Wind	Solar
Current	\$32.37	\$28.80	\$27.58
PGE Proposed	\$32.42	\$27.83	\$23.14
Staff Proposed	\$32.42	\$27.83	\$24.33
<u>Renewable \$/MWh</u>			
	Baseload	Wind	Solar
Current	\$46.03	\$42.46	\$43.64
PGE Proposed	\$46.85	\$42.26	\$39.67
Staff Proposed	\$46.85	\$42.26	\$40.85

*Staff Analysis of Solar Generation Characteristics*

As referenced earlier, in Order No. 21-129, the Commission spoke to QF concerns regarding PGE’s solar generation profile for baseline and incremental solar resources and agreed with Staff and PGE to maintain the 2019 IRP proxy resource characteristics for the 2019 IRP Update. There, PGE explained that all candidate resources' costs and characteristics are being reviewed for the 2022 IRP and draft information indicates a decline in costs for wind and solar resources compared to the 2019 IRP. At that time, the Commission determined it reasonable for PGE to complete its supply side resource study that is currently underway and update costs and operating characteristics of generation resources in the next IRP. Staff was not persuaded by the parties’ June 8, 2021 filed comments to change this approach.

CREA, OSSIA, and NewSun recommended the Commission reject PGE’s filing until PGE updates the solar generation characteristics for the baseline solar forecast and marginal resource based on additional analyses with stakeholder input. The parties argue that it is unreasonable to update the amount of solar in the baseline without updating the solar resource characteristics attached to it.

In terms of other updates to the 2019 IRP solar ELCC curve itself, the parties argue that PGE's use of the 2019 solar proxy generation characteristics has several flaws. First, parties argue that using a single resource east of the Cascades to determine the



baseline solar stack fails to consider the number of PGE's actual QF resource acquisitions in the Willamette Valley (West of the Cascades).<sup>10</sup> To this end, QF parties argue that stacking a single resource profile is overestimating the contribution of baseline solar resources to its loss of load expectation, therefore underestimating the marginal contribution of new resources.<sup>11</sup> The QF parties also attest that the technical specification 1.3 DC/AC ratio utilized in the forecast is outdated and does not accurately capture a modern facility that will take advantage of low panel costs to oversize its nameplate capacity to inverter ratio to maximize generation in lower solar potential hours. The parties argue that a current industry standard DC/AC ration would allow the forecast to capture solar generation in shoulder hours that the current forecast does not support.

REC/NIPPC declined to take a position on the issue of "cherry picking" the portions of the ELCC that were updated, but indicated support for increased transparency and analysis in the IRP process related to improving ELCC calculations.

*Staff recommendation: Some of the QF Parties' arguments amount to substantial methodological shifts that Staff cannot recommend adopting in this limited type of proceeding without the opportunity for further evaluation, data analysis, and broad stakeholder input. Further, parties have not provided sufficient evidence to understand the extent to which their proposed changes, such as ensuring reasonable solar outage rate assumptions, would impact PGE's avoided cost rates.<sup>12</sup> However, Staff is compelled by QF Parties' arguments that these are issue that warrant proper consideration before future IRP and avoided cost updates. Therefore, Staff recommends the Commission direct PGE to engage interested UM 1728 and 2022 IRP roundtable participants in a transparent evaluation of the QF Parties' proposed methodological changes and present ELCC modeling scenarios that take into account sensitivities informed by stakeholder input including but not limited to geographic locations, modern technical specifications, independent, public sources of solar generation characteristic data, reasonable outage assumptions, and alignment with data from actual PGE projects (e.g. QF and GEAR resources).*

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<sup>10</sup> June 8, 2021 NewSun comments in Docket No. UM 1728.

<sup>11</sup> *Id.*

<sup>12</sup> Given that PGE's solar + storage ELCC value is just 21.3 percent on page 63 of its IRP Update, Staff finds it unlikely that stakeholders' proposed changes would maintain the current solar ELCC value of 15.8 percent.

For the purposes of reaching a consensus among parties, PGE has agreed to perform the additional analyses related to the reference project solar generation profile and proxy resource characteristics as described in Staff's recommendation.

### *Contextual Comments*

#### **Policy and Docket Interactions**

Staff offers the following discussion as additional context for its recommendations. This annual avoided cost update is occurring alongside several policy dockets that are likely to impact PGE's ELCC and avoided cost calculations, and against the backdrop significant change, opportunity, and uncertainty in Oregon's energy landscape. The annual avoided cost update is designed to provide a focused review of a limited set of inputs determined by the Commission. Participants in this docket have proposed a range of additional policy changes related to ELCC modeling standards, avoided cost methodology, and IRP analysis, transparency, and procedures. Staff does not find that these policy issues have been developed enough to conclude that rejecting PGE's ELCC update will provide the best reflection the Company's avoided cost at this time; however, parties have raised several issues that warrant further exploration in the PGE IRP and additional policy dockets.

Staff is committed to pursuing stakeholders' questions about the appropriate granularity, geographic specificity, data sources, and other ELCC modeling practices for use in avoided cost calculations in several policy dockets, including Docket Nos. UM 2011 (ELCC modeling standards), UM 2000 (avoided cost methodology standards), UM 2038 (investigation into the treatment of QFs in the IRP process), and PGE's future resource planning efforts.

Staff's recommendations in this Staff Report are specific to the approval of PGE's annual standard avoided cost update. Staff looks forward to further investigating opportunities for improvement with stakeholders.

### *Hybrid Resources*

In PGE's LC 73 IRP Update, the Company demonstrated that its hours with the highest probability of lost load shifted later into the evening. This movement towards hours after solar stops generating causes the solar ELCC to decline. Hybrid solar plus storage resources can better meet the late evening hours and Staff is committed to focusing on modeling the capacity contribution of hybrid solar plus storage resources, which Staff's sees as an increasingly important resource to accurately model and compensate.

### Conclusion

In its analysis, Staff found most of the inputs included in PGE's avoided cost filing without issue. The steep decline in the solar ELCC value caused the largest change to

PGE's avoided cost prices and brought about significant disagreement from QF parties. Staff endeavored to review the QF concerns based on the most up to date available data and identified a modified ELCC value that Staff felt reflected the uncertainty in the quantity of solar resources due to the QF online assumptions, Community Solar, and GEAR. The recommended solar ELCC of 8.5 percent, is higher than the 5.5 percent value included in PGE's initial filing while lower than the current solar ELCC of 15.8 percent, acknowledging the effect of solar resource additions in PGE's baseline portfolio. Staff found no errors in PGE's avoided cost pricing workpapers and those workpapers can be used by PGE to generate the stipulated Schedule 201 prices in a compliance filing. As a condition of approving PGE's filing, Staff recommends information sharing requirements for PGE that will help all parties determine the appropriate solar ELCC value in future filings. These include sensitivity analyses related to QF online assumptions and solar ELCC values based on alternative proxy resource characteristics. Staff finds additional transparency and analyses will improve and inform future avoided cost proceedings for all parties.

Staff's recommendations, as stated in Attachment A, were agreed to by PGE, REC and NIPPC.

**PROPOSED COMMISSION MOTION:**

Approve Portland General Electric's filing to update Schedule 201, avoided cost payments to QFs, with a modified ELCC value for solar resources and require PGE to perform additional analyses related to QF forecasts and solar generation profiles to inform future planning and avoided cost matters, as specified in Attachment A.

Attachment A - UM 1728 PGE’s PURPA avoided cost update agreement

- Solar ELCC increased to 8.5%, which is equivalent to removing approximately 85 MW from the 2019 IRP Update Solar Baseline Portfolio. Parties agree this is the starting point for developing Schedule 202 pricing, which means that PGE will reduce the 2019 IRP Update Baseline Portfolio by 85 MW for the purposes of this settlement. This settlement will result in a shift to the marginal solar ELCC values for incremental additions as submitted in LC 73 to the following:

IRP Update				Proposed in Settlement			
MWs			Marginal ELCC	MWs			Marginal ELCC
0	-	100	5.50%	0	-	100	8.50%
101	-	200	5.00%	101	-	185	5.50%
201	-	300	4.50%	186	-	285	5.00%
301	-	400	4.00%	286	-	385	4.50%
401	-	500	4.00%	386	-	485	4.00%
501	-	600	2.67%	486	-	585	4.00%
601	-	700	2.67%	586	-	685	2.67%
701	-	800	2.67%	686	-	785	2.67%
				786	-	885	2.67%

- To be presented in an IRP roundtable as part of its next IRP, with meeting materials (which will include non-confidential materials only) provided to UM 1728 stakeholders at least two weeks in advance:
  - PGE will develop QF online and renewal sensitivity analyses. For QFs with contracts that are executed but that are not yet operational at the time of the snapshot, PGE will examine factors including but not be limited to: the historic percentage of PGE’s QFs having reached commercial operations, the opportunities to sell power to other utilities, sophistication and experience of project developers, contractual provisions, technology, and interconnection risks. At least one analysis will start with PGE’s historic percentage of PGE’s QFs that have reached commercial operations. For QF renewals, PGE will examine factors including but not limited to: the historic percentage of PGE’s QFs that have renewed their contracts, the sophistication and experience of project developers, contractual provisions, technology, the opportunity to sell power to other utilities, and interconnection risks. At least one analysis will start with PGE’s historic percentage of PGE’s QFs that have renewed their contracts. PGE will also review the historic percentage of QFs reaching completion and renewals for other utilities.
  - PGE will provide ELCC values for multiple proxy solar resources based on geographic locations and other relevant technical specifications. PGE will provide detailed information about the proxy resource characteristics, including outage assumptions. PGE will consider feedback from IRP participants regarding solar resource characteristics. There will be at least one ELCC sensitivity model using location specific forecasts for all QF and GEAR solar resources in the baseline. Location specific will, at a minimum, include delineation between east-side and west-side solar resources.

- By entering into this settlement, no party approves, admits, or consents to the principles, methods, or theories employed by any other party in arriving at the terms the settlement, other than as specifically identified in this settlement. The parties agree that this settlement represents a compromise among competing interests and a resolution of certain contested issues in related to PGE's May 3, 2021 Application to Update Schedule 201 Qualifying Facility Information. All parties reserve the right to take a different position in subsequent proceedings on the matters about which they have compromised in this settlement.