**BEFORE THE PUBLIC UTILITY COMMISSION**

**OF OREGON**

**UM 2000**

**Phase 0**

| In the Matter of<br><br>Public Utility Commission of Oregon,<br><br>Investigation into PURPA Implementation | COMMUNITY RENEWABLE ENERGY ASSOCIATION, NORTHWEST & INTERMOUNTAIN POWER PRODUCERS COALITION, THE RENEWABLE ENERGY COALITION, AND OREGON SOLAR + STORAGE INDUSTRIES ASSOCIATION'S COMMENTS AND STRAW PROPOSAL ON SOLAR-PLUS-STORAGE RATE |
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The Community Renewable Energy Association ("CREA"), the Northwest & Intermountain Power Producers Coalition ("NIPPC"), the Renewable Energy Coalition (the "Coalition"), and Oregon Solar + Storage Industries Association ("OSSIA") (collectively the "QF Trade Associations") hereby respectfully submit these comments and a straw proposal on a solar-plus-storage rate in response to the Oregon Public Utility Commission ("OPUC" or the "Commission") Staff's Process Proposal and Scope Announcement ("Staff's Proposal"), dated February 24, 2023. The QF Trade Associations recommend the volumetric rate ($/MWh) on an immediate and potentially interim basis but are interested in trying to also develop a fixed rate ($/kW-month) later in this docket.

The QF Trade Associations strongly support Staff's proposal to work to implement a standard solar-plus-storage avoided cost rate to be approved with the utilities' May 1st avoided cost updates.  As demonstrated in prior comments, solar-plus-storage is now an established technology modeled in all three utilities' Integrated Resource Plans ("IRP").  Solar-plus-storage can uniquely provide substantial value from a renewable resource in at least two manners.  First, at a time of regional capacity concerns, solar-plus-storage can provide much needed capacity in critical premium peak times, such as evening hours after solar irradiation diminishes but loads do not diminish. Second, incorporating storage into solar facilities can add that valuable capacity benefit with efficient use of increasingly scarce interconnection and transmission capacity by enabling solar resources to have a higher capacity factor.

Adopting a standard rate will help limit market barriers for small projects which would currently need to individually negotiate a non-standard solar-plus-storage rate, and it will hopefully stimulate development of small-scale solar-plus-storage facilities in Oregon, consistent with Oregon's clean energy targets from House Bill 2021 as well as its small-scale renewable standard and policy goals for the implementation of the Public Utility Regulatory Policies Act of 1978 ("PURPA").  The work towards developing such a rate should also enable adoption of related policies such as policies to encourage existing solar qualifying facilities ("QFs") to retrofit their facilities with storage technologies.

For those reasons and others previously expressed, the QF Trade Associations continue to strongly support the Commission's effort to encourage small solar-plus-storage QFs through implementation of a standard hybrid rate and look forward to working with Staff, the utilities, and other stakeholders to achieve that goal. In doing so, it is important to keep in mind that to encourage development of solar-plus-storage facilities, the rate will need to be designed to meaningfully reward the developer/owner for the added expense of installing and operating the battery energy storage system. The battery will add upfront cost to the facility, and it will also add costs to operate due to the losses of energy cycled through the battery and increased operation and maintenance on the battery itself resulting from the extent of its use. However, a rate specifically designed for solar-plus-storage facilities should encourage development and benefit ratepayers.

In accordance with Staff's Proposal, the QF Trade Associations are attaching a detailed straw proposal addressing the key issues for a solar-plus-storage rate, including eligibility, rate design, and contractual issues. The QF Trade Associations stress that their proposal is just one of the potential alternatives, and the QF Trade Associations look forward to considering and discussing proposals other parties and Staff may put forth for discussion as well.

Dated this 7th day of March 2023.

Respectfully submitted,

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**Attachment A**
**UM 2000 – Phase Zero: Storage Rate Straw Proposal**

**Goal**

The goal is to establish a standard solar-plus-storage rate that incents and appropriately pays for the added value of four-hour battery storage co-located with a solar QF. This rate should reasonably approximate and pay the QF for the significant added capacity value enabled by delivery of energy to the utility in additional hours of high peak needs, such as summer evening hours for a summer peaking utility and/or morning peaking hours for a winter peaking utility.

**Eligible QFs**

The standard rate should initially be available to small QFs utilizing solar-plus-four-hour-battery-storage that are eligible for standard rates, which would include facilities with a capacity of up to 3 MW AC measured at the point of interconnection under currently proposed Docket No. AR 631 rules.[1] Four-hour batteries are currently the most likely technology to be used, and the capacity value of these systems is already measured in the Idaho Power Company ("Idaho Power") and PacifiCorp's currently acknowledged IRPs.[2] Portland General Electric Company's ("PGE") most recent IRP modeled the capacity contribution of a solar-plus-four-hour-storage facility but the facility it modeled had a grossly undersized battery sized at just 25% of the size of the facility's solar component, which resulted in a limited increase in capacity contribution for the addition of the battery.[3] Thus, PGE should be required to update its modeling to estimate the capacity contribution for a battery system that is the same size as the facility's solar component.

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1 *See In re Rulemaking to Address Procedures, Terms, and Conditions Associated with QF Standard Contracts*, Docket No. AR 631, Notice of Proposed Rulemaking Hearing and Rulemaking Hearing, Proposed OAR 860-029-0010(33) (measuring capacity for purposes of standard rate eligibility as the entire facility's maximum send-out at the point of interconnection) (Nov. 23, 2022); *see also Solar Energy Indus. Ass'n v. FERC*, No. 21-1126, 2023 U.S. App. LEXIS 3492, at *8 (D.C. Cir. Feb. 14, 2023) (affirming FERC's use of the send-out rule to measure capacity of hybrid QFs).

2 Idaho Power calculated that adding four-hour battery storage to a solar facility would increase the capacity value supplied to the utility from 10.2% to 97%. *In re Idaho Power's 2021 IRP*, Docket No. LC 78, 2021 IRP at 53 (Dec. 30, 2021). PacifiCorp calculated that adding four-hour battery storage of to the relevant Oregon-sited solar facility increased its capacity contribution from 13% to 82% in summer and 18% to 93% in winter. *In re PacifiCorp 2021 IRP*, Docket No. LC 77, 2021 IRP, Vol. II, App. K, Table K.2 at 221 & 240 (Sept. 1, 2021).

3 PGE only modeled a 100-MW solar array with an undersized four-hour battery with just 25 MW discharge capacity, and its most recent calculation from the 2019 IRP Update

We propose the OPUC's policy simply require the storage facility be primarily charged by the solar resource and be located behind the point of delivery but allow for use of a solar system connected to the battery on the DC-side of the inverter ("DC-connected") or a solar system connected to the battery on the AC-side of the inverter ("AC-connected"). To qualify as a QF under PURPA, all energy charged to the battery must be supplied by an eligible QF resource, and the battery could not lawfully be charged from the current grid make-up, which includes non-QF fossil generation, except for limited purposes allowed by PURPA (e.g., start-up, emergencies, etc.) and no more than 25%.[4] However, both DC-connected and AC-connected systems should be allowed because each have their unique advantages and disadvantages to the developer or owner of the system. For example, DC-connected systems will enable the facility to capture and store for later delivery certain energy that may otherwise by "clipped" by the inverter in a system where the inverter is sized smaller than the maximum DC production of the solar panels; in contrast, AC-connected systems may make more sense for a system with multiple inverters because a single battery could be located on the AC side as opposed to the need to use multiple batteries (one behind each inverter) to achieve storage for all solar systems. But in either case, the benefits of time shifting of the delivery of energy to the purchasing utility into additional evening or morning hours of peak need is achieved. Thus, either DC-connected or AC-connected systems should be eligible for the rate to encourage the benefits of storage.

**<u>Rate Calculation Proposal</u>**

There appear to be two basic rate options to pay the storage QF for added capacity value. The first option is to pay a volumetric rate ($/MWh) that includes a substantial capacity value for the targeted hours of discharge from the battery. This is the option adopted by the Idaho Public Utilities Commission ("IPUC") for Idaho Power and by North Carolina Public Utilities

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calculates a capacity contribution value of 21.3%, whereas it calculated a capacity contribution value for a standalone four-hour battery of approximately 84%. *In re PGE 2019 IRP*, Docket No. LC 73, 2019 IRP at 137-138, 165, 167-168 (July 19, 2019); PGE's 2019 IRP Update at 47-50, 63 (Jan. 29, 2021). That PGE's calculations for solar-plus-storage are so much lower than those for the other two utilities calls into question the credibility of the assumptions PGE used in its 2019 IRP.

4 *See Luz Dev. & Fin. Corp.*, 51 FERC ¶ 61,078, at 61,170-61,171 (Apr. 26, 1990) (stating: "we find that energy storage facilities are subject to the same fuel use limitations as all other small power production facilities" and "[f]ossil fuel used to produce electric energy which is utilized to initiate the storage process, whether it comes from a utility grid or on-site generating facilities, must be counted in determining the total energy input of such a facility"); *see also* 18 CFR § 292.204(b) (allowing small power production QFs to use fossil fuels in minimum amounts needed for limited purposes, including as start-up or emergencies).

Commission ("NCPUC") for Duke Energy.[5] The second option is to pay the QF the added capacity value at a fixed rate ($/kW-month) whether energy is discharged or not, which would likely also require contractual rights for the purchasing utility to direct charging and discharging of the battery. In the second option, the charge/discharge protocol could be standardized as a uniform instruction across the fleet of small storage QFs to enable numerous small facilities to utilize the standard rate.

Our straw proposal below utilizes the first option (volumetric capacity rate), which appears to be the simplest method to implement for standard contracts and rates and has the advantage of having been implemented by Idaho and at least one other state already. However, we remain open to discussing the second option (fixed $/kW-month) if proposed by other parties or Staff. We recommend the volumetric rate ($/MWh) on an interim basis, but we are interested in trying to develop a fixed rate ($/kW-month) later in this docket.

**Volumetric Capacity Rate Straw Proposal**

The basic rate calculation entails two steps that already occur for all other QF resource types, except that the capacity payments would be spread over less hours than all on-peak hours of the year and would instead be designed to incent discharge of the battery during the peak times of need.[6]

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5 *See In re Idaho Power's Petition to Determine the Project Eligibility Cap for Published Avoided Cost Rates and the Appropriate Contract Length for Energy Storage Qualifying Facilities*, IPUC Case No. IPC-E-20-02, Order No. 34913 at 6 (Feb. 5, 2021) (stating the IPUC generally adopted the Duke approach and explaining: "By identifying its Peak Hours and Premium Peak Hours, the utility sends a price signal to energy storage QFs to dispatch energy at the times the utility most needs the energy. Because energy storage QFs can alter their output to respond to price signals, identifying and pricing high-value hours accordingly can encourage QF development and help the utility avoid higher-cost resources, benefiting ratepayers.").

6 In Docket No. UM 1610, the OPUC last revised the current capacity rate method for small QFs, which was explained through Staff's testimony as follows: "Staff proposes to adjust the avoided capacity cost to be included in the total on-peak standard avoided cost rate paid to a renewable QF of a particular resource type on a dollar-per-unit basis (kW or MW of capacity) prior to calculating the on-peak payment rate. The steps are as follows: (1) adjust the [contribution to peak ("CTP")] of the proxy renewable resource to account for the CTP of a solar resource relative to utility's renewable proxy resource (i.e., wind) and then, apply that differential to the value of capacity; (2) the value of the solar capacity would then be spread over the QF's expected on-peak generation by applying the on-peak CF for solar to the total number of on-peak hours per year." *In re OPUC Staff Investigation Into Qualifying Facility Contracting and Pricing*, Docket No. UM 1610, Order No. 16-174 at 8-12 (May 13, 2016).

A. Calculate Avoided Capacity Costs. In this step, the overall "bucket" of targeted total avoided capacity costs to be paid to the solar-plus-storage QF is calculated.

   a. This calculation would follow current methods for other QF types based on values in the utility's acknowledged IRP. It would be based on the capacity contribution value of a solar-plus-four-hour-storage facility to the specific utility as compared to the avoided capacity resource used for calculating the avoided cost rates, e.g., the simple cycle combustion turbine ("SCCT") for non-renewable rates and the avoided wind farm for renewable rates.

      1. Non-Renewable Rates. For example, if the avoided SCCT has a capacity contribution value of 95% and the solar-plus-storage facility has a capacity contribution of 95%, the avoided capacity costs would be the same $/kW-year as for the avoided SCCT. If the solar-plus-storage facility's capacity contribution is just 85.5% (i.e., 90% of the SCCT's capacity contribution), its capacity value is 90% of the SCCT's capacity value in $/kw-year, and so on.

      2. Renewable Rates. The same calculation could be applied to the avoided renewable resource (wind proxy) with the expectation that the solar-plus-storage facility would receive significantly more than 100% of the capacity value of the wind proxy due to its higher capacity contribution value.

   b. The capacity contribution value would be derived from the effective load carrying capability ("ELCC") values or other acknowledged method in the specific utility's IRP, subject to review by stakeholders and approval by the Commission as currently occurs.[7]

   c. This first step should be relatively simple because the utilities already calculate the capacity contribution for solar-plus-storage in their IRPs.

B. Calculate Volumetric Rate: In this step, the annual avoided capacity costs calculated in step one would be spread across the specific hours of the year that the QF would be paid for delivering energy that carries with it the capacity value unique to a solar-plus-storage system. This step would deviate from the current method for other resource types where the capacity dollars are currently spread across *all annual* on-peak hours, and instead spread at least most of the capacity payment across a more limited set of premium peak

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[7] The inputs and assumptions acknowledged in an IRP used to calculate standard avoided cost rates are subject to review and can be challenged. *See* OAR 860-029-0085(3).

hours to incent operation of the battery to deliver energy during times of high value to the utility.

a. Note that the less hours during which the capacity dollars are paid out, the higher the rate per MWh delivered, and thus the rate design can encourage the QF to use the battery to discharge energy during times of greatest need.

b. For example, in the case of IPUC-approved standard storage rates for Idaho Power, the hours are limited to just the summer months because Idaho Power is primarily a summer peaking utility – 1:00 pm to 10:00 pm in July and 3:00 pm to 8:00 pm in August. Storage QFs only get capacity payments for energy delivered in those hours, and the capacity rate is relatively high, currently $409.51/MWh in 2023 and escalating to $572.86/MWh in 2046.[8] The rest of the year, the storage QF would be paid the energy rates only. Unlike, for example, the OPUC's currently effective baseload QF rates that generally spread capacity dollars across all annual on-peak hours, the storage rate is designed to pay all capacity dollars in those premium peak times for solar plus storage, and it strongly incents delivery during those true peak hours with a relatively high rate.

c. The OPUC could also elect to create different tiers of capacity rates for a utility that has peak periods of different varying significance. For example, the if the winter morning peak were a concern but not as much of a concern as the summer afternoon and evening peak, a winter capacity tier could allocate some capacity dollars to the winter peak and a larger amount to the summer peak hours. Or the OPUC could determine that a certain limited amount of capacity dollars should also be spread more generally over all on-peak hours for hybrid QFs. Duke Energy Progress's currently effective rates appear to take this general approach by including multiple levels of energy and capacity payment rates in various months, with the highest rates available during premium peak energy and capacity periods.[9]

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8 IPUC-approved avoided cost rates for Idaho Power are available at: https://puc.idaho.gov/Page/Standard/15.

9 While it does not create a standalone storage-specific rate like Idaho, Duke Energy Progress's current avoided cost tariff establishes a significant capacity credit paid only during Winter mornings, defined as 4:00 a.m. to 9:00 a.m. in December through March, which is a period that solar facilities could only deliver significant generation with the addition of storage. The 10-year levelized capacity payment during winter mornings is currently set at $79/MWh, which is paid in addition to the peak or premium peak energy payment of $47.00/MWh or $61.90/MWh (depending on the hour), for a total rate of $126.00/MWh or $140.90/MWh (depending on the hour). *See* Duke Energy Progress, LLC (North Carolina), *Purchase Power Schedule PP-9* at 3-5, n.1, 3, 5, available at

d. In any case, the rate spread should be designed to incent delivery from discharge of the battery during those hours of highest need to the extent possible.

e. We would expect that the capacity needs of each specific utility might be different and do not necessarily take the position that all three utilities should use the same premium peak capacity hours for purposes of payment to solar-plus-storage QFs, but this element should be approved by the OPUC and subject to review and comment on the data used by each specific utility's proposal.

**Contractual Provisions**

Aside from rates, there may be additional contractual provisions that could be addressed through a contract addendum to the standard contract or the utility's avoided cost schedule. The eligibility criteria described above could be included in the utility's avoided cost schedule with the solar-plus-storage rates. If the volumetric rate option above is implemented, the need for, and contents of, such a contractual addendum would be limited because our proposal does not include a discharge protocol that the QF and the utility must implement. Additionally, performance guarantees that would apply in a PPA where the utility pays a fixed rate ($/kW-month), such as roundtrip efficiency requirements, should be unnecessary under the straw proposed here because if the QF fails to deliver energy during times of highest need due to poor efficiency (or any other reason) it fails to be paid all of the capacity dollars that would otherwise be paid to the properly functioning facility under the rate design. However, to the extent additional operational requirements are necessary in the standard contract itself, the addendum could deal with certain technical issues the utilities may identify, such as allowable ramp rates, to the extent such issues would not already be addressed in an interconnection agreement.

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