



Portland General Electric
121 SW Salmon Street • Portland, OR 97204
portlandgeneral.com

December 12, 2022

Public Utility Commission of Oregon
Attn: Filing Center
201 High Street S.E., Suite 100
P.O. Box 1088
Salem, OR 97308-1088

RE: Advice No. 22-43, Schedule 14 Residential Battery Energy Storage Pilot and Schedule 7 Residential Service, Tariff Updates

Portland General Electric Company (PGE) submits this filing pursuant to Oregon Revised Statutes 757.205 and 757.210, and Oregon Administrative Rule 860-022-0025, for filing proposed tariff sheets associated with Tariff P.U.C. No. 18, with a requested effective date of **February 8, 2023**:

Fifteenth Revision of Sheet No. 7-3
Second Revision of Sheet No. 14-1
Second Revision of Sheet No. 14-2
Second Revision of Sheet No. 14-3
First Revision of Sheet No. 14-4

PGE seeks to revise the incentives and rebates offered to customers and update the Smart Grid Testbed boundaries referenced within the Schedule 14 Residential Battery Energy Storage Pilot tariff. Additionally, PGE seeks to remove Special Condition 5 in PGE's Schedule 7 Residential Tariff that requires the Company to control the interconnected energy storage system if they are enrolling in the Peak Time Rebates Program.

Background

PGE launched its five-year Smart Battery Pilot (the "Pilot") in 2020. This Pilot is one of the pilots in Docket No. UM 1856. The Pilot sought to install and connect 525 residential battery energy storage systems to contribute up to four megawatts of energy to PGE's grid. These batteries would comprise a virtual power plant of distributed assets that could be operated individually or in concert for grid services including flexibility, a grid service necessary to support PGE's transition to a clean energy future. Customer batteries enrolled in the Pilot would further provide customers with electricity resilience.

The current Pilot design offers several incentives:

- Customers can receive \$20 or \$40 per month in exchange for allowing PGE to operate the battery for grid services.
- Customers within the Smart Grid Testbed are eligible for an up-front rebate to encourage the density needed to test locational benefits.
- Income-qualified customers participating in the Energy Trust of Oregon's Solar Within Reach program¹ are eligible for an up-front rebate. This approach gives PGE necessary insights to better understand the needs of a more diverse set of customers.

Pilot uptake has been slower than anticipated due chiefly to macroeconomic factors such as the COVID-19 pandemic and resultant supply chain issues, both of which emerged subsequent to Pilot launch. Original projections were to acquire 175 participants per annum, reaching full enrollment at 525 participants by the end of the third year. As of this filing there are 118 enrolled customers in just over two years. The Pilot is under budget due to this slower-than-planned uptake, with the largest variance in the incentive category. The purpose of these proposed updates is to leverage the remaining budget in a more effective way to meet the Pilot goals, within the time remaining.

Proposed Tariff Changes

PGE is seeking to move to a “Pay-for Performance” program structure for ongoing customer incentives. The requested tariff change is to move the ongoing customer incentive from the current flat rate of \$20 or \$40 per month to a “pay-for-performance” incentive of \$1.70 per kWh per event. Customers will be asked to specify the maximum amount of energy they wish to nominate on an event-by-event basis.

PGE is also seeking to revise the up-front incentives for select customers in the Smart Grid Testbed. Currently customers living in one of the three Smart Grid Testbed substations can receive a tiered rebate depending on availability. The rebates start at \$3,000 for the first 67 customers, \$2,000 for the next 67 customers, and \$1,000 for the next 66 customers (for a total of 200 total customer rebates). Five customers have claimed rebates at the \$3,000 level. The \$3,000 currently offered for customers within the Smart Grid Testbed are not sufficient enough to induce demand, and PGE encourages customers to install energy storage to pursue our goals for density. PGE is proposing to tie the up-front rebate to nominated capacity. PGE will offer customers \$405 per kWh of nominated capacity as an up-front rebate to induce customer adoption.

The boundaries of the Testbed referenced within the current Schedule 14 tariff have been updated and the original three substations are no longer the sole focus of that effort. The first objective of the rebate update was to increase the amount available without increasing the overall budget.

¹ More information on Energy Trust of Oregon's Solar Within Reach incentives can be found here: https://powernw.com/oregon-solar-incentives/?gclid=CjwKCAiA9qKbBhAzEiwAS4yeDZmsk4zRKA4d_BAhZ6-W0qwcgbwnVGF9vnopDny_bUOih5V9id6XR0CFq8QAvD_BwE.

To do this, the number of customers receiving incentives had to be reduced, and thus the overall footprint of the area of locational benefits reduced to account for the smaller realized capacity. The rebates are proposed to be provided to customers living on the PGE SALMON Smart Grid Testbed neighborhood, as well as the South Hillsboro Reeds Crossing neighborhood that will host a Solarize campaign². Project SALMON seeks to achieve a high density of DERs and Flexible Load resources on a discrete section of the grid, with energy storage and solar smart inverters playing a critical role. Successful roll-out of this initiative would allow PGE to leverage resources for multiple purposes, co-optimizing the Smart Battery Pilot and Project SALMON across shared goals. To manage the budget and mitigate risk the rebate will be capped based on at a total nominated capacity of 960 kWh rather than a set number of customers.

Lastly, PGE seeks to remove Special Condition 5 in PGE's Schedule 7 Residential Tariff that requires the Company to control the interconnected energy storage system if they are enrolling in the Peak Time Rebates (PTR) Program. Under this provision, a customer can only participate in PTR with a battery that is directly dispatchable by PGE (effectively limited to devices enrolled in the Smart Battery Pilot). Supply chain constraints and DRMS integration practicalities make a "brand agnostic" approach to enrollment of these devices in PTR something that could benefit customers, also allowing them to participate in PTR with other devices. Additionally, there is a segment of "control keeper" customers unwilling to allow the utility direct load control of their devices, whether or not they are dispatchable by the Pilot.

Attachment A is an overview document of the Smart Battery Pilot Proposed Updates which describes in more detail PGE's proposed updates to Schedule 14 Residential Battery Energy Storage Pilot and Schedule 7 Residential Tariff update.

Workpapers detailing the calculations of the proposed "pay-for performance" customer incentive and revised up-front rebates are attached.

A redline version of Schedules 7 and 14 are also included as a courtesy.

To satisfy the requirements of OARs 860-022-0025(2), PGE provides the following response:

The changes do not increase, decrease, otherwise change existing rates, or impact revenues.

Please direct questions or comments regarding this filing to Chris Pleasant at (503) 464-2555. Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pgn.com

² Because these boundaries are irregular and not clearly defined by substation, feeder, or a city limit PGE will refer to a map to be posted on the Pilot web page for rebate eligibility.

Sincerely,

\s\ Robert Macfarlane

Robert Macfarlane
Manager, Pricing & Tariffs

Enclosures

PGE Advice No. 22-43

Work Papers

Provided in electronic format and password protected

SCHEDULE 7 (Continued)

ENERGY PRICE PLANS: DEFAULT PLAN (Continued)

Special Conditions Related to Peak Time Rebate Options (Continued)

3. The PTR incentive may be provided in an on-bill credit on the Customer's next monthly billing statement or by check at the next billing statement after the event season ends.
4. Customers enrolled in Schedule 5 Direct Load Control are not eligible to participate in PTR on this schedule.
5. The Company will defer and seek recovery of all PTR costs not otherwise included in rates.

(D)
(T)

TIME-OF-USE PORTFOLIO OPTION (WHOLE PREMISES OR ELECTRIC VEHICLE CHARGING) (Enrollment is necessary)

This option provides TOU pricing for transmission and related services, distribution and energy*.

Monthly Rate

| | | |
|-----------------------------------|---------|-----------|
| <u>Basic Charge</u> | | |
| Single-Family Home | \$11.00 | |
| Multi-Family Home | \$8.00 | |
| | | |
| <u>On-Peak Charge</u> | | |
| Transmission and Related Services | 32.800 | ¢ per kWh |
| Distribution | 1.800 | ¢ per kWh |
| Energy | 15.500 | ¢ per kWh |
| | | |
| <u>Mid-Peak Charge</u> | | |
| Transmission and Related Services | 11.900 | ¢ per kWh |
| Distribution | 0.520 | ¢ per kWh |
| Energy | 5.315 | ¢ per kWh |
| | | |
| <u>Off-Peak Charge</u> | | |
| Transmission and Related Services | 7.430 | ¢ per kWh |
| Distribution | 0.280 | ¢ per kWh |
| Energy | 2.700 | ¢ per kWh |
| | | |
| Over 1,000 kWh block adjustment** | 4.450 | ¢ per kWh |
| | 0.360 | ¢ per kWh |

* See Schedule 100 for applicable adjustments.

** Not applicable to separately metered Electric Vehicle (EV) TOU option.

**SCHEDULE 14
RESIDENTIAL BATTERY ENERGY STORAGE PILOT**

PURPOSE

This residential battery energy storage pilot will evaluate the ability of residential batteries to deliver services in support of PGE's electrical system. The battery energy storage pilot offers incentives to allow the Company to manage the charging and discharging of customer batteries with the option for a customer override. The pilot is expected to be conducted from August 1, 2020 through July 31, 2025.

AVAILABLE

In all territory served by the Company.

APPLICABLE

This program is applicable to Residential (Schedule 7) Customers that own a qualifying battery¹ and elect to enroll and participate in the pilot. Customers will remain on Schedule 7 and will be eligible for the incentives described in this schedule. The pilot is optional and limited to a total of 9,480 kWh enrolled energy storage.

(C)
(C)

ELIGIBILITY

Customers must submit an interconnection application which must be approved by PGE, purchase or already own a qualifying battery, proceed with installation, and apply for acceptance into the pilot.

ENROLLMENT

Customers will be allowed to enroll in this pilot until the pilot reaches its maximum enrollment of 9,480 kWh of enrolled energy storage. Unless this pilot is otherwise terminated, participating Customers will be enrolled for the entire pilot term.

(C)

INCENTIVES

Basic Offering

Available to customers who have a qualifying battery and allow PGE to manage the charging and discharging of such equipment for the benefit of PGE's electric system. A customer shall receive \$1.70 per kWh that is dispatched by PGE. A customer shall inform PGE when they enroll in the program the maximum kWh PGE may dispatch from their device during an event. A customer may change their maximum nomination by contacting PGE in writing, allowing a minimum of three business days for the change to take effect.

(C)
|
(C)

1. A list of approved qualifying battery storage systems for this pilot is available on PortlandGeneral.com

SCHEDULE 14 (Continued)

INCENTIVES (Continued)

Test Bed Rebate

1. Available only to customers who are participating in PGE's SALMON initiative or the Reeds Crossing Solarize campaign, both as defined on PGE's website regarding the "Smart Battery Pilot"; who purchase a new qualifying battery, and allow PGE to manage the charging and discharging of such equipment for the benefit of PGE's electric system. (C)
2. PGE shall provide a rebate for the new purchase and installation of a qualifying battery storage system. The new purchase rebate is limited to 960 kWh of nominated energy storage. The rebate amount shall be \$405 per kWh of energy storage nominated to PGE to be directly dispatchable by PGE. (C)
3. The rebate level will be reserved for a customer for nine months from when the pilot application is approved to when the battery storage system is operable by PGE and enrolled in this pilot. If the battery storage system does not begin communications with PGE within nine months of pilot application approval, the customer's reserved rebate will be released. When communications are established the customer may receive the incentive, if still available. (C)
4. A customer receiving a Test Bed Rebate is not eligible to also receive the Basic Offering. (N)
5. The Test Bed Rebate is based on the maximum kWh a customer elects to make available to PGE during a peak event dispatch (referred to as the "nomination.") The nomination may not exceed 80% of the customer's gross energy storage capacity. (N)
6. A customer may change their maximum nomination by contacting PGE in writing, allowing a minimum of three business days for the change to take effect. However, reducing the nomination may result in customer partial repayment of the rebate. (N)
7. A developer or builder is eligible to receive the rebate if purchase and installation of a qualified battery storage system occurred prior to occupancy by a residential customer and enroll the battery in the Pilot. (T)

(D)

(C)

(C)

(C)

(C)

(T)

(C)

(N)

(N)

(T)

(M)

SCHEDULE 14 (Concluded)

SPECIAL CONDITIONS (Continued)

- | | |
|---|--|
| | (D) |
| 8. PGE will never discharge the battery storage system below 20% of capacity or below the manufacturer's warranty recommendation, whichever is higher. | (T)(M) (M) |
| 9. The participant may override PGE's control up to ten times per calendar year for a period of 24 hours per time. | (T) |
| 10. During times of severe weather, defined as any time PGE has placed emergency operators on Standby status, PGE will allow the battery storage system to fully charge. | (T) |
| 11. In the event of a power outage, the customer will have full use of the battery storage system until grid service is restored. Power outages are not considered a customer override. | (T) |
| 12. Customers enrolled in Solar Payment Option may not participate in this Pilot offering. | (T) |
| 13. A customer may not participate in both Peak Time Rebates as outlined in Schedule 7 and this Pilot offering. | (N) (N) (D) |

TERM

This pilot began on August 1, 2020 and ends on July 31, 2025

PGE Advice No. 22-43
Attachment A

Portland General Electric

Smart Battery Pilot Proposed Updates

December 2022



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1. Procedural Background

The 2015 Oregon legislative session enacted House Bill (HB) 2193¹, requiring Oregon electric companies (PGE and PacifiCorp) to submit proposals by January 1, 2018, to procure qualifying energy storage systems with capacity to store at least five megawatt hours of energy. The Commission opened Docket No. UM 1751 in September 2015 to implement HB 2193, and, in Commission Order No. 16-504², adopted guidelines and requirements for energy storage proposals and a framework for the Energy Storage Potential Evaluations. The order encouraged PGE to “submit multiple, differentiated projects that test varying technologies or applications.”

PGE filed its energy storage proposal and final Energy Storage Potential Evaluation on November 1, 2017, in Docket No. UM 1856. Commission Order No. 18-290³ partially approved and modified a stipulation filed by PGE and provided conditional approval for the Residential Storage Pilot. The Commission required PGE to submit an addendum to OPUC Staff (Staff) that detailed how PGE will optimize learnings and mitigate risks. Staff would then evaluate and determine whether PGE provided adequate evidence to allow the Company to move forward with the proposed pilot. PGE submitted Advice No. 20-08/Docket No. ADV 1111⁴ to establish a new Schedule 14 Residential Battery Storage Pilot in April 2020. Staff’s memo recommending the Commission approve PGE’s Schedule 14 Residential Energy Storage Pilot was adopted by the Commission at the Public Meeting on June 30, 2020 with an effective date of August 1, 2020.

2. Overview

PGE launched its five-year Smart Battery Pilot (the “Pilot”) in 2020. The Pilot sought to install and connect 525 residential battery energy storage systems to contribute up to four megawatts of energy to PGE’s grid. These batteries would comprise a virtual power plant of distributed assets that could be operated individually or in concert for grid services including flexibility, a grid service necessary to support PGE’s transition to a clean energy future. Customer batteries enrolled in the Pilot would further provide customers with electricity resilience.

The current Pilot design offers several incentives:

- Customers can receive \$20 or \$40 per month in exchange for allowing PGE to operate the battery for grid services.
- Customers within the Smart Grid Testbed are eligible for an up-front rebate to encourage the density needed to test locational benefits.

¹ OR HB 2193 <https://olis.oregonlegislature.gov/liz/2015R1/Downloads/MeasureDocument/HB2193>

² UM 1751, OPUC Order No. 16-504 <https://apps.puc.state.or.us/orders/2016ords/16-504.pdf>

³ UM 1856, OPUC Order No. 18-290 <https://apps.puc.state.or.us/orders/2018ords/18-290.pdf>

⁴ ADV 1111, Schedule 14 Pilot <https://edocs.puc.state.or.us/efdocs/UBF/adv1111ubf10631.pdf>

- Income-qualified customers participating in the Energy Trust of Oregon’s Solar Within Reach program⁵ are eligible for an up-front rebate. This approach gives PGE necessary insights to better understand the needs of a more diverse set of customers.

The goal of the Pilot is to optimize learnings about PGE’s aggregation and dispatch of distributed residential energy storage devices. To that end, the Pilot was structured with three primary areas of study: assess grid value, optimize program operations, and gain insights into the unique customer experience challenges residential batteries pose. Table 1, below, outlines the key learning objectives under each of these areas of study, as contemplated in the original Pilot application.

Table 1. Smart Battery Key Learning Objectives

| Grid Value | Optimize Program Operations | Insight into Customer Experience |
|--|---|---|
| Study and model the value to the grid Primary use cases include: <ul style="list-style-type: none"> Autonomous volt/var support Autonomous frequency response Contingency reserve, bulk generation capacity Customer power reliability Locational benefits studied through Testbed density | Determine the optimal design for a future scalable, cost-effective program, including: <ul style="list-style-type: none"> Incentive levels Optimal dispatch strategies Integration with Power Operations Communications and controls technologies | Conduct interviews and surveys to understand customer resiliency needs and hurdles to adopting storage Balance expectations of battery performance with PGE management of battery operations |

Additional detail on Pilot activities can be found in UM 1856 updates.⁶

3. Current Status

Pilot uptake has been slower than anticipated due chiefly to macroeconomic factors such as the COVID-19 pandemic and resultant supply chain issues, both of which emerged subsequent to Pilot launch. Original projections were to acquire 175 participants per annum, reaching full enrollment at 525 participants by the end of the third year. As of this filing there are 118 enrolled customers in just over two years. The Pilot is under budget due to this slower-than-planned uptake, with the largest

⁵ More information on Energy Trust of Oregon’s Solar Within Reach incentives can be found here: https://powernw.com/oregon-solar-incentives/?gclid=CjwKCAiA9gKbBhAzEiwAS4yeDZmsk4zRKA4d_BAhZ6-W0qwcgbwnVGfF9vnopDny_bUOih5V9id6XR0CFg8QAvD_BwE.

⁶ Most recent 2022 report can be found here: <https://edocs.puc.state.or.us/efdocs/HAD/um1856had133540.pdf>

variance in the incentive category, as detailed in Table 3, below. The purpose of these proposed updates within this report is to leverage the remaining budget in a more effective way to meet the Pilot goals, within the time remaining.

Table 2. Comparison of Pilot Budget and Actual Spend

| | Budget (Years 1 - 2) | Actuals (9/20 - 11/22) |
|------------------------|-------------------------|---------------------------|
| Incentives | \$600,000 | \$75,178 |
| Program | \$540,000 | \$282,172 |
| Aggregation & Dispatch | \$150,000 | \$320,215 |
| Total | \$1,290,000 | \$677,565 |

The resources participating in the Pilot have 0.95 MWh dispatchable capacity for Demand Response (DR), and 2.3 MWh nameplate capacity.

4. Proposed Tariff Updates

PGE continues to learn from the Pilot and requests a tariff update to adapt to macroeconomic changes and help achieve the remaining learning objectives. No increase to the Pilot funding is requested, and PGE will continue to abide by the stipulated requirements of UM 1856.

Move to “Pay-for-Performance”

Over the course of fielding the Pilot and receiving feedback from customers and internal operations PGE observed several findings that informed our recommendation to move to a pay-for-performance structure. Namely:

- **Customers want more say in how PGE uses their battery.** Some customers indicated PGE used *too much* of their battery capacity, while others stated that we *should have used more* capacity during peak events. PGE recognizes that customers have different use cases and levels of comfort with their devices. We believe that allowing customers to tailor their nominations will improve event participation.
- **Additional nameplate capacity is available.** PGE’s demand response management software (DRMS) shows that the Pilot has 2 MWh of available capacity but dispatched events have never exceeded 0.5 MWh. This is an unintended consequence of the current Pilot design, where customers are paid the same monthly incentive regardless of their actual capacity. While actual capacity can vary widely, the current design assumes that the smallest customer device is a single Tesla Powerwall (5 kW or 13.5 kWh). To address this, PGE would like to allow customers to nominate more capacity and receive higher compensation will have the effect of allowing PGE to access a greater proportion of overall nameplate capacity for customers with multiple or larger energy storage devices.
- **Economic signals will spur participation and focus Pilot resources.** The Pilot focus is to learn from and understand customer behavior and the technical performance of the participating

batteries. PGE has learned through our current efforts that the current program structure has unintended consequences that can be improved upon to better harness Pilot learnings. Foremost among these limitations is the allowance to allow enrollees to not respond to event signals or who have insufficient battery capacity to respond to an entire event.

To address the aforementioned issues PGE seeks to explore a "pay-for-performance" program structure. The requested tariff change is to move the ongoing customer incentive from the current flat rate of \$20 or \$40 per month⁷ to a "pay-for-performance" incentive of \$1.70 per kWh per event. Customers will also be able to specify a maximum amount of energy to nominate on an event-by-event basis. This hope is to evaluate this incentive structure as a pathway to a scalable cost-effective program structure.

Revise Up-Front Rebates

PGE currently offers up-front incentives for select customers in the Smart Grid Testbed and for income qualified customers that qualify for the Energy Trust's Solar Within Reach program. The income qualified rebates were for \$5,000 off the initial purchase price, and are fully subscribed, no adjustments to those rebates are proposed. The other rebate category was for customers living in one of the three Smart Grid Testbed substations, and start at \$3,000 for the first 67 customers, \$2,000 for the next 67 customers, and \$1,000 for the next 66 customers (for a total of 200 total customer rebates). Five customers have claimed rebates at the \$3,000 level.

In addition to the learnings outlined above, PGE believes that the \$3,000 currently offered for customers within the Smart Grid Testbed are not sufficient enough to induce demand, and encourage customers to install energy storage to pursue our goals for density.

In order to spur Pilot enrollment within a dedicated geographic area to study locational benefits, we propose to adjust the Smart Grid Testbed rebate in a few ways:

- **Tie the rebate to nominated capacity.** Offer customers \$405 per kWh of nominated capacity as an up-front rebate. Similar to the ongoing incentives, PGE wishes to allow customers to choose the maximum capacity they wish to nominate and to compensate customers with a higher rebate who bring more to the program. To maximize the up-front funding to induce customer adoption, the ongoing event payments have been estimated and included in the upfront rebate. It is worth noting that the proposed rebate changes will also encourage the enrollment of higher capacity, often more expensive batteries.
- **Refocus on two project areas.** The boundaries of the Testbed referenced within the current Schedule 14 tariff have been updated and the original three substations are no longer the sole focus of that effort. The first objective of the rebate update was to increase the amount available without increasing the overall budget. To do this the number of customers receiving incentives had to be reduced, and thus the overall footprint of the area of locational benefits reduced to account for the smaller realized capacity. The rebates are proposed to be provided to customers

⁷ The payment level is dependent on the physical configuration of the battery installation with regards to solar. Many devices are structured so that they may only passively charge from the customer's rooftop solar, and do not receive a

living on the PGE SALMON Smart Grid Testbed neighborhood, as well as the South Hillsboro Reeds Crossing neighborhood that will host a Solarize campaign⁸. Project SALMON seeks to achieve a high density of DERs and Flexible Load resources on a discrete section of the grid, with energy storage and solar smart inverters playing a critical role. Successful roll-out of this initiative would allow PGE to leverage resources for multiple purposes, co-optimizing the Smart Battery Pilot and Project SALMON across shared goals.

- **Change Rebate Cap.** To manage the budget and mitigate risk the rebate will be capped based on at a total nominated capacity of 960 kWh rather than a set number of customers.

Examples of the impact of the proposed rebate update is illustrated in Table 5, below:

Table 3: Overview of Proposed Rebate Changes

| | Current Tariff | Proposed Tariff |
|---|--|-------------------------|
| Example: One Tesla Powerwall ⁹ | \$3,000 up-front rebate + \$240 / year | \$4,374 up-front rebate |
| Example: for Two Powerwalls ¹⁰ | \$3,000 up-front rebate + \$240 / year | \$8,748 up-front rebate |
| Total Rebate Costs | \$401,000 | \$388,800 ¹¹ |
| Rebate Cap | 200 customers | 960 kWh |
| Total Area | 3 substations | 2 feeders |

Impact on Existing Participants

Current customers participating in the Pilot will be asked to provide a nomination of their participation level, and will all be moved over to the Pay for Performance paradigm, including those who have already received an up-front rebate. PGE will honor existing Smart Grid Testbed rebate reservations for devices not yet installed unless the customer would prefer to switch to the new structure.

5. Peak Time Rebates

In parallel to the above Smart Battery updates, PGE would also like to make a tariff adjustment to Schedule 7 with regards to Peak Time Rebates (PTR). PGE would like to delete the Special Condition Related to Peak Time Rebate Options number five, excerpted below:

⁸ Because these boundaries are irregular and not clearly defined by substation, feeder, or a city limit PGE will refer to a map to be posted on the Pilot web page for rebate eligibility.

⁹ PGE uses the capacity of a Tesla Powerwall (13.5 kWh) for illustrative purposes only, the actual capacity varies by brand.

¹⁰ Ibid.

¹¹ Customers have reserved five rebates at \$3,000 apiece.

Customers with interconnected energy storage are only eligible for this schedule if the energy storage system is controlled by the Company and not the Customer.

Under this provision, a customer can only participate in PTR with a battery that is directly dispatchable by PGE (effectively limited to devices enrolled in the Smart Battery Pilot). Supply chain constraints and DRMS integration practicalities make a “brand agnostic” approach to enrollment of these devices in PTR something PGE believes could benefit customers, also allowing them to participate in PTR with other devices as they choose.

Additionally, there is a segment of “control keeper” customers unwilling to allow the utility direct load control of their devices, whether or not they are dispatchable by the Pilot. Customer research indicates that these “control keepers” are generally willing to participate in decarbonization and Flexible Load programs *if they retain the control of their device*. PTR is a means by which this segment can participate in Demand Response activities with their battery energy storage.

The proposed “pay-for-performance” structure of Schedule 14 complements that of PTR. With the above changes, eligible customers will have the option to receive \$1.70 per kWh for direct load control via the Pilot, or earn \$1.00 per kWh when they provide Demand Response via PTR.

6. Conclusion

The Smart Battery Pilot has a sunset date of fall of 2025, and with these changes PGE seeks to continue to improve upon the first effort to understand and dispatch customer batteries and move into a structure that can support a scalable and cost-effective design while continuing to deliver upon learning objectives. PGE expects to continue to learn from our customers generously participating in this pilot how we can continue to improve upon the program design and customer experience as energy storage resources become more widely adopted and increasingly critical to meeting the State’s decarbonization goals.



PGE Corporate Headquarters
121 S.W. Salmon Street | Portland, Oregon 97204
portlandgeneral.com

PGE Advice No. 22-43
Courtesy Redline of Schedules 7 and 14

SCHEDULE 7 (Continued)

ENERGY PRICE PLANS: DEFAULT PLAN (Continued)

Special Conditions Related to Peak Time Rebate Options (Continued)

3. The PTR incentive may be provided in an on-bill credit on the Customer's next monthly billing statement or by check at the next billing statement after the event season ends.
4. Customers enrolled in Schedule 5 Direct Load Control are not eligible to participate in PTR on this schedule.
- ~~5. Customers with interconnected energy storage are only eligible for this schedule if the energy storage system is controlled by the Company and not the Customer.~~
- 6-5. The Company will defer and seek recovery of all PTR costs not otherwise included in rates.

TIME-OF-USE PORTFOLIO OPTION (WHOLE PREMISES OR ELECTRIC VEHICLE CHARGING) (Enrollment is necessary)

This option provides TOU pricing for transmission and related services, distribution and energy*.

Monthly Rate

| | | |
|-----------------------------------|---------|-----------|
| <u>Basic Charge</u> | | |
| Single-Family Home | \$11.00 | |
| Multi-Family Home | \$8.00 | |
| | | |
| <u>On-Peak Charge</u> | | |
| Transmission and Related Services | 32.800 | ¢ per kWh |
| Distribution | 1.800 | ¢ per kWh |
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| | 15.500 | ¢ per kWh |
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| <u>Mid-Peak Charge</u> | | |
| Transmission and Related Services | 11.900 | ¢ per kWh |
| Distribution | 0.520 | ¢ per kWh |
| Energy | 5.315 | ¢ per kWh |
| | 6.080 | ¢ per kWh |
| | | |
| <u>Off-Peak Charge</u> | | |
| Transmission and Related Services | 7.430 | ¢ per kWh |
| Distribution | 0.280 | ¢ per kWh |
| Energy | 2.700 | ¢ per kWh |
| | 4.450 | ¢ per kWh |
| | | |
| Over 1,000 kWh block adjustment** | 0.360 | ¢ per kWh |

* See Schedule 100 for applicable adjustments.

** Not applicable to separately metered Electric Vehicle (EV) TOU option.

SCHEDULE 14 RESIDENTIAL BATTERY ENERGY STORAGE PILOT

PURPOSE

This residential battery energy storage pilot will evaluate the ability of residential batteries to deliver services in support of PGE's electrical system. The battery energy storage pilot offers incentives to allow the Company to manage the charging and discharging of customer batteries with the option for a customer override. The pilot is expected to be conducted from August 1, 2020 through July 31, 2025.

AVAILABLE

In all territory served by the Company.

APPLICABLE

This program is applicable to Residential (Schedule 7) Customers that own a qualifying battery¹ and elect to enroll and participate in the pilot. Customers will remain on Schedule 7 and will be eligible for the incentives described in this schedule. The pilot is optional and limited to ~~525 a total of 9,480 kWh enrolled energy storage residential customers.~~

ELIGIBILITY

Customers must submit an interconnection application which must be approved by PGE, purchase or already own a qualifying battery, proceed with installation, and apply for acceptance into the pilot.

ENROLLMENT

Customers will be allowed to enroll in this pilot until the pilot reaches its maximum enrollment of ~~525 9,480 kWh of enrolled energy storage residential customers.~~ Unless this pilot is otherwise terminated, participating Customers will be enrolled for the entire pilot term.

INCENTIVES

Basic Offering

- ~~1. Available to customers who have a qualifying battery and allow PGE to manage the charging and discharging of such equipment for the benefit of PGE's electric system.~~
- ~~2. For customers with a battery that is able to charge from the electrical grid, PGE will pay the customer \$40 monthly for the duration of the pilot or until the customer disenrolls, whichever is earlier.~~

Available to customers who have a qualifying battery and allow PGE to manage the charging and discharging of such equipment for the benefit of PGE's electric system. A customer shall receive \$1.70 per kWh that is dispatched by PGE. A customer shall inform PGE when they enroll in the program the maximum kWh PGE may dispatch from their device during an event. A customer may change their maximum nomination by contacting PGE in writing, allowing a minimum of three business days for the change to take effect.

1. A list of approved qualifying battery storage systems for this pilot is available on PortlandGeneral.com

Advice No. 22-43
Issued December 12, 2022
Brett Sims, Vice President

Effective for service
on and after February 8, 2023

SCHEDULE 14 (Continued)

INCENTIVES (Continued)

~~3. For customers with a battery that is unable to charge from the electrical grid (restricted to charging with onsite solar only), PGE will pay the customer \$20 monthly for the duration of the pilot or until the customer disenrolls, whichever is earlier.~~

Test Bed Rebate

1. Available only to customers who are ~~served by the Delaware, Island, or Roseway substations~~ participating in PGE's SALMON initiative or the Reeds Crossing Solarize campaign, both as defined on PGE's website regarding the "Smart Battery Pilot"; who purchase a new qualifying battery, and allow PGE to manage the charging and discharging of such equipment for the benefit of PGE's electric system.

2. ~~In addition to the Basic Offering, PGE shall provide a rebate for the new purchase and installation of a qualifying battery storage system. PGE shall provide a rebate for the new purchase and installation of a qualifying battery storage system. The new purchase rebate is limited to 200 customers 960 kWh of nominated energy storage. The rebate amount shall be \$3,000 \$405 per kWh of energy storage nominated to PGE to be directly dispatchable by PGE, for the first 67 customers that have a pilot application approved by PGE, \$2,000 for customers 68 through 134, and \$1,000 for customers 135 through 200.~~

3. The rebate level will be reserved for a customer for nine months from when the pilot application is approved to when the battery storage system is operable by PGE and enrolled in this pilot. If the battery storage system does not begin communications with PGE within nine months of pilot application approval, the customer's reserved rebate will be released. When communications are established the customer may receive the incentive ~~at the currently available level~~, if still available.

4. A customer receiving a Test Bed Rebate is not eligible to also receive the Basic Offering.

5. The Test Bed Rebate is based on the maximum kWh a customer elects to make available to PGE during a peak event dispatch (referred to as the "nomination.") The nomination may not exceed 80% of the customer's gross energy storage capacity.

~~3.6. A customer may change their maximum nomination by contacting PGE in writing, allowing a minimum of three business days for the change to take effect. However, reducing the nomination may result in customer partial repayment of the rebate.~~

~~4.7. A developer or builder is eligible to receive the rebate if purchase and installation of a qualified battery storage system occurred prior to occupancy by a residential customer and enroll the battery in the Pilot.~~

SCHEDULE 14 (Continued)

Income Qualified Rebate

1. Available to customers receiving incentives from the Energy Trust of Oregon's Solar Within Reach program that purchase a new qualifying battery storage system and allow PGE to operate such equipment for the benefit of PGE's electric system.
2. In addition to the Basic Offering, PGE shall provide a rebate of \$5,000 for the new purchase and installation of a qualified battery storage system. The rebate is limited to the first 25 customers.

SPECIAL CONDITIONS

1. Participants are responsible for any equipment, installation, and associated costs of the battery storage system, including any upgrades identified in the PGE interconnection process and ensuring all installation complies with all applicable building code requirements.
2. The participant will retain ownership of the battery storage system and is responsible for all maintenance, replacement, and disposal costs.
3. In the event of non-payment of electricity bill charges or disconnection for non-payment, for Electricity Service rendered, PGE will discontinue credit payments and battery storage system operation until the participant is current on all past-due balances. The participant will be removed from the pilot if basic service electricity charges are not current after two consecutive months.
4. The participant is required to maintain reliable communications with the battery storage system. If communications to the battery storage system are not restored in a timely manner PGE may discontinue paying the monthly incentive until communications are reestablished, or PGE may remove the customer from the pilot.
5. A participant that only receives the Basic Offering and did not receive a Test Bed or Income Qualified rebate may disenroll from the pilot at any time, upon which PGE will cease ~~monthly~~ payments.
6. If the participant has received a ~~Test Bed or Income Qualified rR~~ rebate, the customer may be required to repay the unamortized portion of the rebate in the event that the customer voluntarily disenrolls prior to the end of the pilot, reduces their dispatch nomination, or if the battery storage system is removed from the pilot due to lapses in communications. This is defined as the proportion of the months left until the end of the pilot divided by the months the customer has participated in the pilot.
7. Participants must agree to the contractual terms laid out in the Residential Battery Energy Storage Pilot contract agreement.

SCHEDULE 14 (Concluded)

SPECIAL CONDITIONS (Continued)

~~8. PGE will have full control of the battery storage system for grid services that override any manufacturer programming.~~

~~9.8.~~ PGE will never discharge the battery storage system below 20% of capacity or below the manufacturer's warranty recommendation, whichever is higher.

~~10.9.~~ The participant may override PGE's control up to ten times per calendar year for a period of 24 hours per time.

~~11.10.~~ During times of severe weather, defined as any time PGE has placed emergency operators on Standby status, PGE will allow the battery storage system to fully charge.

~~12.11.~~ In the event of a power outage, the customer will have full use of the battery storage system until grid service is restored. Power outages are not considered a customer override.

~~12.~~ Customers enrolled in Solar Payment Option may not participate in this Pilot offering.

~~13. A customer may not participate in both Peak Time Rebates as outlined in Schedule 7 and this Pilot offering.~~

~~14. A customer may only receive one rebate or bill credit per service meter.~~

TERM

This pilot began on August 1, 2020 and ends on July 31, 2025