



Portland General Electric

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May 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. 22-10, Schedule 53 Heavy-Duty Electric Vehicle Charging Program Update

Portland General Electric Company (PGE) submits this filing pursuant to Oregon Revised Statutes 757.205, 757.210, and Oregon Administrative Rule (OARs) 860-022-0025, for filing a proposed tariff sheet associated with Tariff P.U.C. No. 18, with a requested effective date of **July 1, 2022**:

First Revision of Sheet No. 53-3

In accordance with Docket UE 389 Order No. 21-195, enclosed is a recently finalized contract under Schedule 53. Schedule 53 was approved by the Commission on June 7, 2021 and provides infrastructure investment support to nonresidential customers who develop electric vehicle charging sites designed over one MW. Schedule 53 also provides PGE opportunities to understand impacts from heavy duty electric vehicle charging and how complementary grid-edge technology benefits PGE's grid.

PGE and Daimler Truck North America (DTNA) jointly funded Phase 1 of the Electric Island project (Phase 1), which included the installation of eight high-power DC fast chargers (DCFC) (with a total connected load of 1,064 kW), as well as related infrastructure and accompanying utility service upgrades. Phase 2 represents an additional opportunity for PGE to gain new learnings from Electric Island. PGE will work with DTNA to install additional DCFC (there are seven additional charging spaces) including several Megawatt Charging Standard (MCS) chargers each capable of power rates in excess of 500kW, battery storage, and on-site solar generation.

PGE submits the attached contract as Attachment A between PGE and DTNA Phase 2 (Phase 2) for approval by the Commission. If approved, this contract stipulates how both parties would fund deployments of the additional technologies noted above at the Electric Island site.

Additional Charging Infrastructure

Fueling time is an important consideration for heavy-duty fleet vehicle owners and operators. Providing DCFC equipment that enables the charging of large vehicle batteries in a reasonable amount of time is an important use case to establish for heavy-duty transportation. The largest individual charger at Electric Island has a power capacity of 200 kW, and the total connected DCFC load at the site is 1,064 kW. By comparison, the additional seven chargers contemplated for the Phase 2 buildout will have higher individual charging capacities, including MCS chargers capable of 500-1,500 kW, and the total connected load could reach as high as 4,800 kW. These extremely high-powered chargers are currently pre-commercial devices (the MCS standard was just approved in February 2022), but it is anticipated that prototype chargers could be available from vendors before the end of the year. The installation of the additional high-powered chargers will help to reduce the charging time and allow heavy-duty vehicles operators to better manage charging activities.

The installation of newer and higher-powered DCFC will also provide improved usage data to PGE and allow PGE to gain insights into typical charging load profiles for heavy-duty sites featuring these extremely high-powered devices. The development and acquisition of this data will help PGE provide important insights that PGE will use to provide helpful guidance when customers approach PGE about their plan to develop similar heavy-duty charging sites. Such insights include understanding typical usage patterns, capacity factors, and any voltage and/or power quality concerns that may arise at such a site. These insights will also feed into PGE's Distributed Resource Planning, Distribution Planning, and Transmission Planning processes as these groups develop load forecasts for medium/heavy-duty fleet electrification.

Battery Storage

In Phase 1, the site was made ready to host multiple grid edge technologies, such as storage system, on-site solar generation, and demand response capability. In Phase 2, the installation of battery storage will advance PGE's ability to test the collocation of energy storage with DCFC, which has not been deployed previously in PGE service territory. The idea of collocating these resources is gaining interest nationally, given the variety of potential benefits that could be provided. The current Phase 2 project schedule calls for the PGE-owned Battery Energy Storage System (BESS) to be deployed in Q1 2023, with the DTNA-owned BESS being deployed in Q4 2023 (pending any supply chain limitations).

The PGE battery would be operated under multiple control modalities: (1) reduction of loading on the associated PGE distribution feeder during times of peak congestion, and (2) voltage support and power quality improvement on the feeder during times of high on-site EV charging load.

The DTNA battery will be comprised of second-life truck batteries from used vehicles. There has been interest for years in commercializing these assets, and the Electric Island site provides a key opportunity to test the performance of such batteries in a real-world environment. The DTNA battery would also be dispatched by PGE and used under a variety of control modalities, helping to better understand the customer experience in this situation. The DTNA BESS is anticipated to be roughly 0.5 MW / 0.5 MWh in power and energy capacity, respectively.

Solar Deployment

Space is available at the existing Electric Island site to potentially develop up to 30 kW of onsite solar generation. This onsite solar generation, which would be eligible for Schedule 203 Net Metering Service, will provide an opportunity for PGE to study how collocated EV charging, energy storage, and renewable generation can be co-optimized to meet multiple objectives (site load reduction, voltage support, and feeder-level constraints) simultaneously.

In Phase 2, PGE expects to gain the following specific learnings to help future heavy duty Electric Vehicle (EV) charging planning and operation:

- 1) Observe system performance during charging sessions to validate and update previously modeled assumptions and determine how performance might change between peak and off-peak hours, especially when multiple vehicles are charging at the same time,
- 2) Use advanced controls to manage EV charging and offer a low-cost energy supply to customers through services like load shifting, curtailment, and flexing,
- 3) Test advanced controls responsiveness to the grid's needs, including avoiding local distribution system peaks, system-wide peaks, integrating renewables, and voltage management,
- 4) Obtain heavy-duty EV usage data and gain customer load profiles to direct the efficient deployment of the battery storage,
- 5) Evaluate the possibilities to avoid some local distribution system upgrades by the deployment of complementary grid edge technologies, and
- 6) Obtain insightful learning for PGE's technical assistant team to deploy high power EV charging infrastructure and pre-commercial technologies where these learnings are currently absent from the available research organizations.

Contract Details

The Phase 2 contract specifies a cost-sharing structure for Phase 2 of the Electric Island project. The cost split of 50/50 for both parties reflect the same cost breakdown that was used in Phase 1. The contract defines what technologies are considered in-scope ("Eligible Expenses") for investment at the site.

PGE estimates that its total expense and capital investment will be approximately \$3.4 million (additional chargers: \$1.9 million, energy storage system \$1.1 million, on-site solar generation \$0.2 million, and miscellaneous \$0.2 million). The total of Phase 1 and Phase 2 is estimated to be approximately \$5 million which is consistent with the cost limitations in Schedule 53.

The contract additionally specifies terms of payment, the length of the engagement, insurance, indemnification, and liability. These terms are similar to those that appeared in the Phase 1 agreement. Notably, this contract, like the Phase 1 contract, stipulates that PGE shall have access to all data generated by the site, and that this data shall be made publicly available. It also stipulates, like the Phase 1 contract, that DTNA shall provide public access to all chargers installed at the site, and that DTNA shall maintain the chargers in good working order during the term of the agreement.

Compliance with Schedule 53

The services contemplated in the Phase 2 contract are limited to PGE's service territory. The Phase 2 contract cost aligns with the cost limitations in Schedule 53 which limits each customer participating in the program to \$5 million total. The following eligibility requirements, outlined in Schedule 53, are satisfied:

- 1) Under the Phase 2 agreement, the customer agrees to co-develop the large public charging site for medium and heavy duty electric commercial vehicles,
- 2) This site is designated to support customer's vehicle charging activities and give access to the public to charge heavy-duty vehicles,
- 3) The site is made ready to host grid edge technologies (these include higher-power chargers, energy storage, and on-site solar generation),
- 4) The customer has signed up for Oregon Clean Fuels Program,
- 5) The Customer will provide electric usage data and operational data to the Company upon request, and
- 6) The Customer has not been granted any transportation line extension allowance associated with the subject project.

Tariff Term Extension

The current Schedule 53 term is effective from March 15, 2021, through March 14, 2023. PGE proposes to extend this tariff to December 31, 2027. PGE seeks to enter into a contract with DTNA for Phase 2 with a five-year term. The extension of the tariff term will give PGE more time and opportunity to provide customers benefits in heavy-duty charging with the fast-paced evolution of heavy-duty charging technology. Recently, a new MCS technical standard was approved by the CharIn organization in February 2022. This MCS standard provides for chargers up to 3MW in capacity. However, the high capacity MCS chargers are not expected to be available before 2023. The Electric Island site was designed to test this specific equipment. It would be beneficial to allow for investment in MCS in 2023 and beyond.

In Schedule 53, special conditions 3 stated that “Customer receiving service under this schedule will agree to a multi-year term for the agreement.” This special condition indicates that a “multi-year term” is necessary for this program. As part of the program goals; the utility-scale storage system procurements and installation, operation and management of heavy-duty charging sites, and gaining knowledge on how pre-commercial technology impact the electricity grid need time to materialize. PGE is seeking to extend the term of Schedule 53 to align with these goals.

Extending the tariff term also provides PGE the chance to work with other customers that may be interested in developing similar heavy-duty charging sites. The upcoming federal infrastructure funding, in combination with an increased interest in providing ubiquitous electric vehicle charging along major travel corridors, may lead to additional projects in PGE service territory. The proposed change to Schedule 53 will allow PGE to contribute funding to these projects and employ the lessons learned at Electric Island to additional heavy duty charging sites.

Attachment A is considered confidential and provided under Protective Order No. 21-143. A separate email with the password to open the file will be emailed separately.

To satisfy the requirements of OAR 860-022-0025(2), PGE responds as follows:

Schedules 53 does not increase, decrease, or otherwise change existing retail rates or have anything other than a de minimis impact on revenues.

Please direct any questions regarding this filing to Teresa Tang at teresa.tang@pgn.com. Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pgn.com

Sincerely,

\s\ Robert Macfarlane

Robert Macfarlane
Manager, Pricing & Tariffs

Enclosures

SCHEDULE 53 (Concluded)

SPECIAL CONDITIONS

1. The Customer's charges for Electricity Service under any of the Company's Standard Service or Direct Access Service schedules are not changed or affected in any way by service under this schedule and are due and payable as specified in those schedules.
2. Prior to receiving service on this schedule, the Customer and the Company must enter into a written agreement, signed by the Customer.
3. Customers receiving service under this schedule will agree to a multi-year term for the agreement. Should the Customer terminate the agreement before the end of the term, the Customer will reimburse the Company for a portion of the capital investment as specified in the service agreement.

TERM

Effective March 15, 2021 through December 31, 2027.

(C)

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused the Documents in UE 389 to be served by electronic mail to those parties whose e-mail addresses appear on the attached service list for OPUC Docket UE 389.

Dated at Portland, Oregon, this 12th day of May, 2022.

/s/ Robert Macfarlane

Robert Macfarlane
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JILL D GOATCHER (C) PUC STAFF--DEPARTMENT OF JUSTICE	BUSINESS ACTIVITIES SECTION 1162 COURT ST NE SALEM OR 97301-4096 jill.d.goatcher@doj.state.or.us
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