

## Appendix A. Summary of Current Activities

This appendix includes a summary of activities that are already approved, for which PGE seeks to allocate additional funding to expand or extend our approach.

### A.1 Residential Smart EV Charging

Table 46. Residential Smart EV Charging Reference

Docket Number(s)	ADV 1151 <sup>263</sup>
Docket Name(s)	PGE SCHEDULE 8, ADV. NO. 20-18, RESIDENTIAL ELECTRIC VEHICLE CHARGING PILOT <sup>264</sup>
Filing Date	February 15, 2019
Effective Date	October 23, 2020
Allowed (Approved) Utility Filing Date	October 20, 2020
Allowed (Approved) Utility Filing Name	Advice No. 20-18 <sup>265</sup>
Governing Tariff	Schedule 8 <sup>266</sup>
Deferral Number(s)	UM 2003 <sup>267</sup>
Deferral Date(s)	February 11, 2021 <sup>268</sup> , February 22, 2022 <sup>269</sup>

PGE’s Residential EV Smart Charging Pilot launched in 2020. The current pilot is available to up to 5,000 eligible residential customers. PGE is proposing to extend the pilot through the end of 2025, reduce the charger rebate amount from \$500 to \$300 and eliminate the enrollment cap. PGE is proposing this pilot extension to continue to learn more from the current pilot and to take the

<sup>263</sup> OPUC Docket ADV 1151 available here:

<https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=22516>.

<sup>264</sup> Coinciding with this filing PGE has also filed several tariffs including Schedule 8. The OPUC filing center will grant these tariff filings with an Advice File number. We will update this docket with those file numbers for parties to track.

<sup>265</sup> OPUC Advice No. 20-18 available here:

<https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=22516>.

<sup>266</sup> PGE Schedule 8 available here:

[https://assets.ctfassets.net/416ywc1laqmd/2CrkwfPNPaDoM1tiVX68k0/2be53eec9b97dd32c72b72bc79daa940/Sched\\_008.pdf](https://assets.ctfassets.net/416ywc1laqmd/2CrkwfPNPaDoM1tiVX68k0/2be53eec9b97dd32c72b72bc79daa940/Sched_008.pdf).

<sup>267</sup> OPUC UM 2003 available here: <https://apps.puc.state.or.us/edockets/docket.asp?DocketID=21817>.

<sup>268</sup> February 2021 deferral available here: <https://edocs.puc.state.or.us/efdocs/HAQ/um2003haq91312.pdf>.

<sup>269</sup> February 2022 deferral reauthorization available here:

<https://edocs.puc.state.or.us/efdocs/HAQ/um2003haq145445.pdf>.

learnings from the Smart Grid Testbed EV Charging Study to work towards creating a managed charging program. The Residential Smart Charging pilot rewards participants for shifting or reducing their home EV charging at peak times. Enrolled customers are eligible for a \$25 seasonal reward by participating in flex load events. During these events, PGE sends a signal to automatically pause customers' charging for the duration of the event, either through their qualified charger or through cloud-based vehicle telematics. This pilot is intended to explore how PGE can use flex load from residential EV charging.

Customers have three ways to enroll in the pilot:

- Customers receive a \$500 rebate (\$1,000 for income-eligible customers) for the purchase and installation of a qualified Level 2 charger at their home. PGE is proposing to reduce the charger rebate amount from \$500 down to \$300.
- Customers receive a \$50 rebate if they purchased and installed a qualifying Level 2 charger prior to it being added to the Qualified Products List.
- Customers that drive a qualified vehicle (i.e., Teslas) but have a non-qualified EV charger can enroll through vehicle telematics (evPulse) and receive a \$50 rebate. These customers are then enrolled in the Residential EV Smart Charging Pilot and, like those that receive the charger rebate, have demand response events called.

This pilot has also included dealership incentives to help enroll prospective EV buyers in the Residential EV Smart Charging Pilot. These dealerships have Chargeway Beacons, which are kiosks that provide customers with information on EVSE locations, trip-planning, and also details on how to enroll in the pilot. Based on learnings from the past two years, we are re-assessing the dealership referral program.

In 2022, PGE allocated \$738K of the 2022 Monthly Meter Charge<sup>270</sup> to enhance this pilot. There were no 2023 Monthly Meter Charge dollars allocated to the Residential EV Smart Charge Pilot. The 2022 enhancements provide an additional rebate for customers who require an electric panel upgrade when installing a Level 2 charger in their home. Customers who apply for the Residential EV Smart Charging Pilot can also qualify for the electric panel upgrade rebate. Those customers who apply for the standard rebate can receive up to \$1,000 towards the cost of the panel upgrade. Income-eligible customers can apply to receive up to \$5,000 towards the cost of their panel upgrade. This enhancement was added to break down financial barriers to help support EV adoption and make it easier for income-eligible customers to install a Level 2 charger in their home. The panel upgrade rebate will continue at the same incentive level until 2022 MMC funds are exhausted.

After the first demand response season ended on April 30, 2022, PGE found that over 80 percent of evPulse customers participated in the Smart Charge events and about 70 percent of other customers participated. As of April 28, 2023, there were a total of 2,981 customers enrolled in the pilot: 1,601 in the Standard/Income-eligible/Bring-Your-Own-Charger portion of the pilot, and another 1,297 enrolled via WeaveGrid's evPulse<sup>271</sup>. This brings a potential of about 0.56 MW of flex load. The forecasted MW impact is as follows:

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<sup>270</sup> PGE's 2022 Monthly Meter Charge filing, retrieved from <https://edocs.puc.state.or.us/efdocs/HAH/um2033hah1673.pdf>.

<sup>271</sup> WeaveGrid is a vehicle telematics software company that allows utilities to connect directly to an EV, rather than via the charger. This allows PGE to add Tesla chargers to the pilot, which would otherwise not be accessible to PGE for DR purposes.

Table 47. Load Forecast for Residential EV Smart Charging Pilot

Year	Participants Added	Total Participants	Load Forecast (MW)
2022	1,757	2,396	0.66
2023	1,804	4,200	1.39
2024	3,300 <sup>272</sup>	7,500	2.39
2025	2,399	9,899	3.49

By the end of the current pilot, PGE anticipates 2.14 MW of enrolled flexible load capacity across 5,000 connected vehicles. PGE anticipates an evaluation memo of the first two demand response seasons of the pilot in July 2023 to analyze the capacity and results.

With this TE Plan, PGE proposes extending the timeframe of the pilot and changing the funding from the approved deferral funding source to the monthly meter charge starting with enrollments beyond the 2023 forecast. These two changes are recommended to reduce future customer ratepayer impact from the deferral as well as to incorporate learnings from the Smart Grid Testbed’s managed charging demonstration into a future managed charging program. The changes equate to a budget of \$4.08 million: an increase of \$1.53 million to increase the number of allowed enrollments and the associated incentives and a change in funding for customers enrolled prior to 2024 and the extension of the pilot for those customers through the end of 2025 (approximately \$2.55 million) from deferral funding to MMC funding. The \$4.08 million budget will allow the integration of 4,399 additional vehicles (9,399 total vehicles) and 1.35 MW additional flexible load capacity (for a program total of 4.22 MW).

### A.1.1 Program/Measure Details

#### A.1.1.1 Elements, Objectives, Timeline, Expected Outcomes

##### Program Objectives

This program aims to:

- Enhance PGE’s understanding of how to effectively manage residential EV load by gathering data from the current and proposed activities to inform future rate design for a managed charging program and the need for an EV-specific time of day rate/tariff
- Gain insight into how to best serve underserved communities

##### Program Elements

To participate, customers visit PGE’s website to learn which chargers and vehicles qualify for the program. Enrollment in the managed charging program through vehicle telematics requires customers to have a Level 2 charger and a qualified vehicle. Customers purchase a qualified charger,

<sup>272</sup> Enrollment numbers are dependent on when cap removal is implemented. If this program is approved, Tariff update will be submitted shortly thereafter. Including lower participant amount based on lower upfront rebate.

show proof that the charger is qualified, and connect with an EV charger installer. Customers then enroll on the Residential EV website and receive their rebate check approximately 4-6 weeks after acceptance. To participate in an event, customers must start charging their vehicle prior to an event, not opt out, and resume charging after the event. Requirements include participating in Smart Charge events, charging at home, and keeping chargers connected to the internet. evPulse customers do not need to have a qualified charger as charge events are called through vehicle telematics. Customers receive a \$25 seasonal incentive based on a six-month season (October - March; April - September) for allowing PGE to pause EV charging during peak loads. The current pilot does not call emergency demand response.

Customers learn about the program through PGE's website, direct education and outreach, from the EV Costs & Savings calculator, the dealership referral program, and word of mouth. To join the program, customers go to PGE's website and complete the application. This includes submitting information about their EV, the number of people in the household, and other pertinent details. Customers must also include invoices and other documents relevant to their application.

### **Customer Journey**

- Customer wants to install an at-home Level 2 charger
- Learns of the pilot through targeted education and outreach
- Purchases a qualified Level 2 charger (Tesla drivers apply through telematics (evPulse) and join the Smart Charge Pilot)
- Gets an installation quote through the trade ally network
- Gets their charger installed
- Goes to PortlandGeneral.com and applies for the pilot
- Once enrolled, receives their charger rebate (\$300) within 4-6 weeks
- Participates in Smart Charge events and receives \$25 on-bill credit at the end of the six-month season

### **Education and Outreach**

Given the different elements of the program, education and outreach will be vital for customers to understand how the program works and its benefits. PGE has assessed the current effectiveness of our education and outreach dollars compared to other education and outreach strategies (e.g., dealership incentives) to determine whether the amount of education, outreach, and education and outreach dollars is appropriate. PGE's education and outreach has proven to be 10 times more effective than dealerships in getting enrollments.

Relative to the overall cost of the measure, education and outreach dollars represents approximately 5 percent of the overall measure cost. This ratio has decreased as the program has gained enrollments, as EV adoption is effectively occurring without the need to promote the program, resulting in a relatively low ratio.

### **Program Timeline**

PGE plans to revise the rebate by Q4 2023, following the approach proposed in this application. PGE also intends to move to a managed charging program by Q4 2026.

## Expected Outcomes

- 4.22 MW of flexible load by the end of 2025
- 9,399 participants in Residential EV Smart Charge Pilot
- Established learnings from pilot evaluation and managed charging demonstration

### A.1.1.2 Market Baseline Assumptions

According to the Oregon Department of Environmental Quality, using vehicle registrations from the Oregon Department of Motor Vehicles, as of June 2022, there were 40,426 light duty EVs registered to residential customers in PGE's service area.<sup>273</sup> Using PGE's AdopDER forecasting model, PGE forecasts EV adoption to grow to 146,000 vehicles (including commercial) by the end of 2025 and potentially half a million EVs in PGE's service area by 2030. PGE's vehicle forecast is derived as part of the Company's DSP process.

### A.1.1.3 Major Performance Milestones

Milestones are as follows:

- July 2023 Pilot evaluation memo
- November 2023 Pilot annual evaluation
- 5,000 customers enrolled in Pilot by end of 2023
- November 2024 Pilot annual evaluation
- 7,000 customers enrolled in Pilot by end of 2024
- Smart Grid Testbed EV charging study concludes December 31, 2024
- 9,399 customers enrolled in Pilot by end of 2025

PGE will monitor the impact that the rebate amount will have on customer participation and adjust accordingly relative to projected enrollment. PGE will also provide education and outreach to ensure customers understand the benefit of flexible load events and monitor customer participation in seasonal DR events. If customer participation decreases, PGE will assess the incentive structure to determine its impact on customer participation.

### A.1.1.4 Program/Measure Phases

For the long-term evolution of the program, PGE seeks to utilize findings from the Smart Grid Testbed EV Charging Study to better understand vehicle telematics capabilities, including measuring the effectiveness of telematics managed charging compared to the current smart charging activity. PGE will determine changes needed from the Smart Grid Testbed EV Charging Study to scale managed charging from the demonstration and pilot into a program.

Developing a managed charging program that leverages vehicle telematics to communicate various charging and curtailment events will provide benefits to both the grid and customers. With an effective managed charging program, the customer will be able to get the desired charge when they need it and PGE can use the flexible load to help manage the grid. Managed charging goes beyond

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<sup>273</sup> Oregon DEQ (March 2023). *Oregon Clean Fuels Program: Residential EV Credits for the Second Half of 2023*. Retrieved from <https://www.oregon.gov/deq/ghgp/Documents/cfpResCredits2021p1.pdf>.

stopping the charge of the car during high peak times. It would also allow PGE to determine the right time to charge the car when is beneficial for the customer and the grid.

#### **A.1.1.5 Utilization, Eligibility, Incentive Structures**

This program will continue to be offered to residential customers in PGE's service area. PGE uses a mixture of rebates and incentives to help customers overcome the financial burden to EV adoption and home charging installation.

The installation rebate lowers the total costs involved in installing a qualifying connected EVSE and can increase depending on the participating customer's income level. Customers are eligible to receive an installation rebate of up to \$300 towards the installation of a qualified EV charger installed at the customer's home. Income-eligible customers are eligible to receive an installation rebate of up to \$1,000 toward the installation of a qualified EV charger installed at the customer's premise. During the application process, customers will have the opportunity to opt-into PGE's Schedule 7 TOD rate.

PGE will automatically enroll all applicants into the Smart Charging Program. PGE will utilize the smart charging incentive to encourage customers to keep their EVSE connected to PGE's Demand Response Management System (DRMS), charging their vehicles at home, and participating in flexible load events. Qualifying customers will receive this incentive either annually or at intervals PGE determines is appropriate to incent and maintain customer participation. PGE will pay customers up to \$50 for their successful participation in the Smart Charging Program.

#### **A.1.1.6 Market and Implementation Barriers Addressed**

[Section 4.6](#) details the market barriers to EV adoption. The Residential EV Smart Charging Pilot addresses the specific barriers to EV deployment, including education and awareness, cost, fueling infrastructure and availability, channel/sales processing, incentives and policies, equitable access, and infrastructure reliability.

#### **A.1.1.7 Performance Area Categories**

PGE's proposed design addresses relevant Division 87 performance area categories in the following ways:

- **Environmental benefits including greenhouse gas emissions impacts.**
- **Increased access to electricity as a transportation "fuel" will reduce greenhouse gas emissions across PGE's service area.**
- **Electric vehicle adoption:** Enhances the customer value proposition for going electric.
- **Equity of program offerings to meet underserved communities:** The enhanced incentives for income-qualified customers aims to break down financial barriers to help support EV adoption and make it easier for income-eligible customers to install a Level 2 charger in their home
- **Distribution system impacts and grid integration benefits:** PGE does not anticipate significant distribution system impacts stemming from this program. Grid integration benefits are largely represented by the networked and DR-capable requirements in the technical standards that PGE sets.
- **Program participation and adoption:** PGE anticipates a total of 9,399 participants.
- **Infrastructure performance including charging adequacy which considers, but is not limited to reliability, affordability, and accessibility:** PGE tracks charger uptime and utilization rates.

### **A.1.1.8 PGE's Role in the Program**

PGE's role in the program is to support EV adoption and influence the role of EVs as a flexible load resource in the future. With the additional electric load coming onto the grid from customer's fueling their electric vehicles, PGE must engage with and educate customers on the new fueling paradigm and how to benefit customers and the grid.

### **A.1.1.9 Resulting Distribution Upgrades**

PGE does not expect the program to trigger any significant distribution system upgrades. However, as part of our data gathering work, the Company will monitor transformers and substations to proactively identify any needed upgrades.

### **A.1.1.10 Ownership Structure**

PGE will own the make-ready infrastructure and the EVSE. PGE will procure, install, operate, and maintain any EVSE installed under this program.

In discussions with municipalities, many have expressed the need of public charging to help in the transition to electric vehicles. Municipalities also believe that many underserved communities could be left behind that without a program such as this or without PGE's help. In additional discussions, PGE has learned that, while many municipalities want to provide public charging for their constituents, they don't believe they are well suited to own and operate the equipment and look for PGE to help fill this role and their guidance.

This approach addresses the barriers which municipalities without the resources or inclination to own and operate EVSE face when considering public EV charging. ROW charging is particularly well suited to this purpose, as EV charging can be deployed on assets already located in the public right-of-way. The program also allows PGE to offer local and visiting customers in its service area a consistent user experience with equitable, affordable, and easy-to-understand pricing. PGE ownership, operation, and maintenance of EVSE in the ROW in collaboration with municipalities helps ensure that chargers are located strategically, with an eye toward an equitable transition to electric vehicles.

PGE will also explore potential private partnerships around ownership and maintenance of all chargers installed in the program. Potential private partnerships would have to comply with Schedule 50 or another tariff that is specifically tailored for this purpose. There is the risk of a lack of willing market actors to agree to private partnerships and adhere to PGE's Schedule 50. If PGE is unable to create a private partnership, PGE will continue to own, operate, and maintain the chargers unless and until the private market is meeting the needs of underserved communities.

### **A.1.1.11 EVSE Requirements (Equipment Interoperability and National Standards)**

PGE utilizes a single Qualified Products List (QPL) to determine eligible EVSEs for all of PGE's non-residential EV programs. EVSE vendors must submit a Request for Qualification (RFQ) if they want their products added to the QPL. PGE engineers review each RFQ for completeness and against the predefined qualification requirements, listed below. If the vendor receives technical approval, they must also execute a Data Sharing Agreement with PGE before their products will be added to the QPL.

Hardware requirements (Level 2 and DCFC):

- National Electrical Manufacturers Association (NEMA) Type 3R or 4, which certifies that equipment is weatherproof and certified for either indoor or outdoor use.

- Compliant with Federal Communications Commission Part 15, which sets limits on the amount of electromagnetic interference allowed.
- Compliant with National Electric Code, National Fire Protection Association (NFPA) article 625, which covers wires and equipment used to supply electricity for EV charging.
- Compliant with the Americans with Disabilities Act (ADA), which ensures that the EVSE is ADA accessible, if installed according to the manufacturer's instructions.
- EVSE model must have a cellular connectivity option, either 4G LTE or 5G.
- Compliant with Open Charge Point Protocol (OCPP) v1.6 or later, enabling the flexibility to operate with a variety of network service providers. It also must be remotely upgradable to support future versions of OCPP.
- Must include a standard warranty of 1 year or greater
- Must have an operating range of at least -22F to 122F, ensuring it can withstand extreme environments

Level 2-specific requirements:

- Compliant with Society of Automotive Engineering (SAE) J1772, the standard Level 2 connector that is compatible with all road-legal EVs for sale in the United States, including plug-in hybrids (PHEVs), battery electric vehicles (BEVs), and Tesla vehicles using an adaptor.
- Listed by a nationally recognized test lab to the requirements of UL 2251 and 2594, demonstrating that products are tested to UL's recognized safety standards.

DCFC-specific requirements:

- If the EVSE includes a Combined Charging System (CCS) connector, it must be compliant with SAE J1772.
- Listed by a nationally recognized test lab to the requirements of UL 2202, demonstrating that products are tested to UL's recognized safety standards.
- Equipment compliant with recommended practice SAE J2894/1\_201112 or later (power quality requirements for EVSE).
- If the EVSE includes an automated conductive charging mechanism (pantograph), it must meet SAE J3105.
- DCFC EVSE efficiency must be greater than 92 percent

Software requirements:

- Software platform must be responsive to grid services, modifying charger power output levels, using either one of the following methods
  - Certified OpenADR 2.0b Virtual End Node (VEN)
  - Application Programming Interface (API)
  - IEEE 2030.5 (SEP 2.0)
- Software must also be compliant with Open Charge Point Protocol (OCPP) v1.6 or later, enabling the flexibility to operate with a variety of EVSE hardware.



Through the RFQ process, PGE collects additional technical information from vendors that aren't requirements but help inform PGE programs and potential future requirements. This includes items such as:

- Compliance with ISO/IEC 15118
- Payment methods and pricing options
- Compliance with OCPI v2.2 or later
- EVSE metering accuracy
- Bi-directional charging capability
- Lead time and indicative pricing
- Installation manuals
- The vendor's sales point of contact to post on PGE's QPL webpage so customers know who to contact when interested in a specific product

As of 4/28/2023, PGE has qualified 137 EVSE models from 18 different EVSE vendors.

#### **A.1.1.12 Equipment Interoperability**

PGE maintains a list of qualified residential EVSEs to ease the charger selection process, as well as to ensure customer and pilot success. The Qualified Product List (QPL) includes only the Level 2 EVSEs that qualify for the pilot's rebates. PGE makes the list available on the Company's website, and to dealers, trade allies, and community organizations. Selection criteria for PGE's QPL includes:

- EVSE must be a UL-listed, Level 2 EVSE and capable of operating with an input voltage of 208/240VAC, an output amperage of a least 20 amps, and designed for residential use.
- EVSE must be capable of connecting to a customer's local area network via wired or wireless protocols.
- EVSE must be capable of participating in demand response events by reducing the power output of, stopping, and starting active charging sessions.
- EVSE must be capable of integration with a third-party distributed energy resource management platform of PGE's choosing.
- EVSE must provide a satisfactory user experience, including unboxing, installation, set-up, and control via mobile and web-based applications
  - Mobile app must allow user to opt out of demand response events

#### **A.1.2 Program/infrastructure coordination**

##### **A.1.1.1 Stakeholder involvement in development**

For the 2023 TEP, PGE held one stakeholder workshop to discuss the evolution of this pilot. Please refer to [Chapter 5](#) for details on PGE's stakeholder engagement on this and other TE proposals.

##### **A.1.1.2 Coordination with State Programs**

PGE recognizes EV ownership is expensive. There are several federal and state rebates available to help assist with the upfront cost of owning or leasing an EV. PGE offers rebates towards the purchase

and installation of Level 2 chargers, along with a panel upgrade rebate that helps bring down the cost of installing an at-home charger.

#### **A.1.1.3 Coordination with Market Actors and Activities**

Prior to the first demand response season, PGE conducted a soft launch with about 20 participants in August 2021. In that soft launch, we tested different event times, communication strategies and overall customer satisfaction with the experience. This launch informed the timing of demand response events and the communications associated with the events.

PGE consistently scans the utility market to determine program shifts and technology updates to calling flex load events on EVs. PGE tested vehicle telematics technology in PGE's Testbed and achieved positive results that it was introduced into the Residential EV Smart Charging Pilot. We included these vehicle telematics customers into the program in November 2021 and hit the 500 customer cap in February 2022. In Quarter 3 2022, PGE updated the Tariff to add the incentive for vehicle telematics and it remains a pathway into the Pilot.

#### **A.1.3 Fit with Long Term TE Strategy**

The expansion of the current pilot directly aligns with PGE's strategic goal to plan for, serve, and manage residential EV charging load. Expanding and extending the current pilot program provides an opportunity to evaluate the impact of electric vehicle charging on the grid and increasing the number of vehicles enrolled in the Residential EV Smart Charge program can provide also greater flexibility for load management that contributes to PGE's VPP. Flexible load capabilities also benefit non-EV drivers by keeping costs down for all ratepayers, as PGE is less reliant on the wholesale market to buy energy. Furthermore, flex load capability will help PGE manage the grid while still allowing EV drivers to charge their EVs when needed.

In addition, the expansion of the pilot will help PGE better understand rate design, panel capacity, and the electrification process, in addition to understanding where customers are charging their EV's in PGE's service territory.

With an effective managed charging program, customers will be able to get the desired charge when they need it, and PGE can use the flexible load to help manage the grid. Managed charging goes beyond stopping the charge of the car during high peak times. It would also allow PGE to determine the optimal time to charge the car when it is beneficial for the customer and the grid.

Through the Smart Grid Testbed Managed Charging Demonstration, PGE aims to determine whether a managed charging program can help identify optimal times to start charging and when to curtail charging.

#### **A.1.4 Learning Objectives, Evaluation of Effectiveness, and Data Collection Methods**

Evaluation on the current Residential EV Pilot is scheduled to have an interim memo completed by June 2023, and an annual report in November 2023 and November 2024. These reports will be used to determine the success of the current pilot and whether the EVSE portion of the pilot will continue into program, along with a managed charging program. PGE will also assess the amount of flexible load delivered by the pilot. The July evaluation memo will evaluate the first two demand response seasons and the annual report in November will provide further evaluation on flexible load deliverables. PGE seeks to measure the best flexible load capabilities while minimizing customer price impacts.

The Testbed EV Charging Study will also have more conclusive data Q3/Q4 2023 that can be drawn upon when creating a managed charging program, including data on usage and load profiles to determine the impact of this load on the grid.

In addition to informing PGE’s approach for a managed charging program, the pilot’s expansion will evaluate the effectiveness of the incentive and rebate structure by measuring enrollment and customer satisfaction and retention, along with its cost effectiveness.

Through expansion of this pilot, PGE aims to better serve underserved communities based on the findings from the evaluation survey. The evaluation will inform PGE’s understanding of the following learning objectives:

- Can the incentive offered bridge the gap and encourage community electrification?
- Do underserved customers exhibit the same charging behavior as other participants?
- Is there anything unique about the way underserved customers participate in the program?

Additionally, the pilot will investigate:

- Which type of chargers are being purchased and if the proposed rebate amount is sufficient to incentivize customers to purchase a qualified charger.
- Where customers are charging their electric vehicles in the territory, supporting PGE’s efforts to plan effectively for increased TE load.

**A.1.5 Program and Infrastructure Costs**

**A.1.1.4 Estimated Total Costs, Including Incentives, Program Delivery, Evaluation, Marketing, and Program Operations Costs**

Table 48. Residential Smart EV Charging Budget: Forecasted Operating and Capital Expenditures<sup>274</sup>

Approved	2023	2024	2025	2023-2025 Total
OpEx	██████	██████	██████	██████
Incentives	██████	██████	██████	██████
Program Ops	██████	██████	██████	██████
O&M	██████	██████	██████	██████
Evaluation	██████	██████	██████	██████
Education and Outreach	██████	██████	██████	██████
CapEx	██████	██████	██████	██████
<b>Total</b>	<b>\$2,417,000</b>	<b>\$1,945,313</b>	<b>\$2,130,409</b>	<b>\$6,492,722</b>

<sup>274</sup> Budget is based on forecasted enrollment numbers in [Table 45](#). The forecasted enrollment numbers are higher than UM2003 deferral filing in February 2023 due to increased market interest shown since the end of 2022.

**A.1.5.1 Estimated participant costs**

Residential customers are billed on Schedule 7.

**A.1.6 How Infrastructure Measure Addresses Oregon Administrative Rule and Oregon Law**

**Table 49. Residential EV Charging Concordance with OAR 860-087-0020(4)**

OAR 860-087-0020(4)	Section of Application Addressing the Rule
A description of the infrastructure measure;	<a href="#">A.1.1</a>
Data used to support the description;	<a href="#">A.1.1</a>
A description of infrastructure measure coordination;	<a href="#">A.1.1.5 - A.1.1.11</a> <a href="#">A.1.2 - A.1.5</a>
A description of how the proposed infrastructure measure fits within the electric company's long-term strategy to support TE;	<a href="#">A.1.3</a>
A description of costs;	<a href="#">A.1.5</a>
A description of learning objectives and how the electric company will evaluate the infrastructure measure; and	<a href="#">A.1.4</a>
For infrastructure measures, a description of how the measure addresses the considerations of ORS 757.357	<a href="#">Table 78</a>

**Table 50. Residential EV Charging Solutions Concordance with ORS 757.357**

ORS 757.357	How Application Addresses the Law
<p>(1) (b) (A) "Infrastructure measures" includes, but is not limited to, investments in, expenses related to or rebates for:</p> <ul style="list-style-type: none"> <li>(i) Distribution system infrastructure that supports transportation electrification;</li> <li>(ii) Communication and control technologies that support transportation electrification; and</li> <li>(iii) Behind-the-meter infrastructure that supports transportation electrification and is owned by an electric company or by a customer.</li> </ul>	<p>The investments proposed in this application meet the description of infrastructure measures in (iii), as they are issued for behind-the-meter infrastructure that supports transportation electrification</p>

ORS 757.357	How Application Addresses the Law
<p>(b) (B) "Infrastructure measures" does not include investments in or expenses related to education and outreach activities related to transportation electrification, or other transportation electrification-related activities determined by the Public Utility Commission to be separate and distinct from the development of infrastructure.</p>	<p>While this infrastructure measure has an associated education and outreach budget, it is for enrollment only, rather than general education and outreach to advance transportation electrification</p>
<p>(5) If undertaken by an electric company, an infrastructure measure to support transportation electrification is a utility service and a benefit to utility customers if the infrastructure measure can be reasonably anticipated to:</p>	
<p>(a) Support reductions of transportation sector greenhouse gas emissions over time; and</p>	<p><a href="#">A.1.1.7</a></p>
<p>(b) Benefit the electric company's customers in ways that may include, but need not be limited to:</p> <p>(A) Distribution or transmission management benefits;</p> <p>(B) Revenues to utilities from electric vehicle charging to offset utilities' fixed costs that may otherwise be charged to customers;</p> <p>(C) System efficiencies or other economic values inuring to the benefit of customers over the long term; or</p> <p>(D) Increased customer choice through greater transportation electrification infrastructure deployment to increase the availability of and access to public and private electric vehicle charging stations.</p>	<p><a href="#">A.1.1.7</a></p> <p><a href="#">A.1.1.3</a></p>

## A.2 Fleet Partner

Table 51. Fleet Partner Reference

Docket Number(s)	ADV No. 21-09
Docket Name(s)	NEW SCHEDULE 56, Fleet Electrification Make-Ready Pilot <sup>275</sup>
Filing Date	April 20, 2021
Effective Date	July 1, 2021
Allowed (Approved) Utility Filing Date	June 1, 2021
Allowed (Approved) Utility Filing Name	<a href="https://edocs.puc.state.or.us/efdocs/UAA/adv1261uaa15156.pdf">https://edocs.puc.state.or.us/efdocs/UAA/adv1261uaa15156.pdf</a>
Governing Tariff	Tariff PUC No. 18
Deferral Number(s)	N/A
Deferral Date(s)	N/A

Approved in June 2021, Fleet Partner is a program that offers non-residential customers no-cost customer planning and technical services. The program also offers make-ready infrastructure installation with custom cost incentives. Eligible customers include non-residential fleets (commercial, municipal, school, non-profit, and transit), that are installing 70kW or more of EV charging. The program objectives are to enable fleet electrification and reduce adoption barriers (e.g., complexity and cost), create demand response-enabled EV charging to support efficient grid integration, identify customer and market barriers, and identify areas for improvement in future evolution of the program.

By participating in the first phase of the program (Fleet Partner Plan), customers receive a Fleet Partner Study where PGE identifies everything a fleet manager might need to know in order to transition their fleet to electricity including vehicle and charger feasibility assessments, preliminary site designs and costs, and a summary of all potential incentives and grants available to the customer.

Following Fleet Partner Plan, participating customers may commit to the Build phase of the program where they receive final designs, and PGE constructs, operates, and owns the make-ready infrastructure for their EV site. As part of the Build phase, PGE also provides custom cost incentives to pay for some or all of the cost, based on the customer's 10-year energy commitment. The customer then purchases and installs their chargers. Lessons learned include:

- Customer understanding of fleet electrification is extremely variable, and PGE needs to respond to customer needs with appropriate solutions regardless of their level of knowledge.

<sup>275</sup> Coinciding with this filing PGE has also filed several tariffs including Schedule 56. The OPUC filing center will grant these tariff filings with an Advice File number. We will update this docket with those file numbers for parties to track.

- Customer demand for this program is higher than anticipated, especially among municipalities, but the sales cycle is long (on average 14 months from application to start construction).
- Materials and construction costs have increased significantly since the initial budget was created and supply chain issues are slowing construction timelines.
- Fleet sites and designs are not a one-size-fits all, customer sites are very unique.
- Data acquisition is complex and requires dedicated resources.

The current approved pilot budget is \$9 million. As of April 2023, the program has received 90 site applications from 59 customers. Estimates indicate these sites could enable 1,268 ports and 1,280 fleet vehicles and could deploy \$22 million in capital (exceeding the program's allotted budget). These sites have a load potential of 44 MW.

In order to meet customer demand PGE is proposing to decrease incentives by 50 percent and add an additional \$9.5 million to cover costs of additional sites, meet the demand, and right-size the incentives. While the original pilot estimates we will complete 24 sites at \$9 million, current forecasts point to completing 56 additional sites with a budget of \$9.5 million. In addition to demand outstripping the approved budget, program costs have also been higher than forecast due to inflation and supply chain issues. Specifically, we have seen rising costs of construction (up to 20 percent), professional services (up to 15 percent), and most significantly, cost of equipment (up to 50 percent). The proposed additional budget and extended timeframe will enable PGE to stretch a similar dollar amount across more sites. We are trying to find the right balance of utility incentives to augment available state and federal dollars that have since become available since the launch of Fleet Partner Phase 1. The additional funds for Fleet Partner Phase 2 will increase the overall numbers of light, medium, and heavy-duty electric fleet vehicles in PGE territory. This expansion would also allow PGE to find enhanced efficiencies for grid planning to serve TE loads and ultimately reduce greenhouse gas emissions and air pollutants in our service territory.

In this TE Plan, PGE proposes a budget increase of \$9.5 million to this program to accommodate a total of 56 sites over the next two years.

## **A.2.1 Program/Measure Details**

### **A.2.1.1 Elements, objectives, timeline, and expected outcomes**

#### **Program Objectives**

The Fleet Partner pilot aims to:

- Support fleet customers by reducing the cost and complexity associated with transitioning to electric "fuel"
- Create a network of DR-enabled EV charging that can support both efficient grid operations and future renewables integration
- Better understand the customer and market barriers and opportunities in the fleet electrification space, including the best ways to engage and increase participation of customers in underserved communities
- Identify areas for utility process improvement with respect to fleet electrification
- Generate an empirical data set for electric fleets that:
  - Supports PGE and fleet customers in managing electric fleet load, thereby increasing grid utilization and mitigating increases to system peak loads

- Informs existing utility analyses and helps PGE develop future products and programs

Additionally, the pilot will investigate:

- How to implement fleet electrification for companies where employees take their vehicles home overnight
- Software charging optimization for managed charging, fleet management, and grid management
- Commercial EV Rates, including customer options such as TOU, Tiered Rates, and Subscription Rates
- Managed Charging, including options to bundle Fleet Partner Customers in Energy Partner (Sch. 26) to manage load
- The benefits of this work are not limited to Fleet Partner; the pilot complements other TE work by providing information, lessons learned, and data for other PGE make-ready infrastructure programs.

### **Program Elements**

Customers apply for Fleet Partner by submitting an application through our website. This kicks off the Planning Phase of the program, and the customer provides data on their fleets such as number of vehicles, hours of operation, and miles driven. PGE then provides the customer with a Fleet Partner study that provides all the information needed for a customer to electrify their fleet. Next, the customer approves preliminary designs, and officially enrolls in the program by signing the Participation Agreement that includes their 10-year energy commitment. Next, construction is completed, and the customer installs at least one charger within 6 months of construction completion. The customer then has flexibility in installing their subsequent chargers as long as they meet their 10-year energy commitment. Throughout the 10-year term, the customers are required to keep their chargers operational, and all charging session data is shared with PGE. PGE is aware of the risk that participants are unable to fulfill their 10-year energy commitment, leading to the need to repay PGE for a portion of the installed make-ready infrastructure. To mitigate this risk, PGE collaborates with customers during the planning phase to ensure a reasonable and achievable energy commitment. Annual reports are also sent to each customer on their energy consumption and goal status. Lastly, there is risk that a participating fleet goes out of business or that customers abandon chargers, resulting in stranded assets. To mitigate this risk, during the enrolment process, PGE assesses the credit worthiness of the customer to try to ensure that the customer is of sound financial standing. Additionally, we have built some of this risk into our financial modeling and forecast.

### **Customer Journey**

The customer journey is as follows:

- Customer is interested in fleet electrification and learns of program through PGE's Business Outreach, emails, LinkedIn, or web search
- Customer applies via website application
- PGE sets up kick-off meeting, gives customers a thorough program overview
- Customer confirms number of vehicles and chargers they are interested in
- PGE provides free Fleet Partner Study that includes all the information a customer needs to electrify their fleet
- Customer commits to Build phase of program and submits Reservation Form
- PGE completes final design



- Customer approves final designs, signs Enrollment Package, includes 10-year energy commitment
- PGE completes construction of make-ready infrastructure
- Customer installs charger(s), EV drivers take service
- PGE receives charging session data that will help inform future grid planning

**Education and Outreach**

The transition from gasoline to electric “fuel” can be a complex and challenging process for fleet managers. Thus, effective education and outreach are crucial to achieve success with fleet electrification. PGE recognizes the importance of educating fleet managers about how fleet electrification can support their sustainability goals and while providing cost savings to encourage enrollment. This outreach supports PGE establishing our role in the market and clarifies the roles and scopes of both PGE and the customer.

Primary outreach strategies include direct customer outreach by PGE’s Key Customer Managers and the Business Outreach Team, targeted LinkedIn ads, and presence at various events. PGE measures the success of its education and outreach efforts by the number of interested customers in the pipeline, quick allocation of incentive dollars, and overall adoption of fleet electrification. PGE anticipates low outreach costs due to the significant number of customers in the pipeline waiting to participate. Thus, PGE has allocated 1.2 percent of the Phase 2 budget towards education and outreach.

**Program Timeline**

PGE expects the Fleet Partner pilot to continue through to the 2025 TE Plan. We have seen very high demand, as well as higher than anticipated costs and incentives in the first year of the program. This growth is expected through 2025.

**Table 52. Fleet Partner Historical and Forecasted Site Applications and Sites Completed**

Year	2021	2022	2023	2024	2025	Total
Est. Site Applications	24	56	25	50	55	210
Est. Sites Completed	–	1	19	21	39	80

**Table 53. Fleet Partner Historical and Forecasted Incentives**

Year	2021	2022	2023	2024	2025	Total
Est. CapEx Incentives	██████	██████	██████	██████	██████	██████

**Expected Outcomes**

- Better enable PGE to plan for, serve, and effectively manage fleet load to create grid benefits. As of April 2023, the program has received 90 site applications from 59 customers. Estimates indicate these sites could have a load potential of 44 MW
- Increased numbers of electric light-, medium-, and heavy-duty fleet vehicles in PGE's service territory
- Increased levels of EV awareness among both fleet and residential customers, by providing and excellent customer experience, gaining understanding about the right types of education and levels of planning support
- Support for future adoption of EV rates or flexible load programs, creating positive grid impacts
- Enhanced efficiency of existing planning, engineering, and operations services to serve new TE loads
- Enhanced workforce readiness in TE infrastructure design, engineering, construction, operation, and maintenance
- Reduced greenhouse gas emissions, criteria air pollutant emissions, and water pollution in PGE's service territory and beyond
- Increased equitable access to electric mobility through electric transit, shuttle, and/or school buses
- Better understanding of the right incentive level for customers and the right investment in ownership from PGE
- Enhanced program implementation efficiencies, documenting more streamlined processes and procedures

#### **A.2.1.2 Market Baseline Assumptions**

The fleet market is poised to electrify—and quickly—as evidenced by the public commitments of players such as FedEx, UPS, PepsiCo, and Amazon to electrify their fleets. PGE anticipates that several dozen plug-in medium- and heavy-duty vehicle models will arrive in the market over the next decade. PGE projects that by 2030, over 415,000 EVs will be located in its service territory. This includes nearly 6,000 heavy-duty vehicles and over 8,500 medium-duty vehicles—both presumed to be operated by fleets—as well as a portion of the remaining roughly 400,000 light-duty vehicles. See [Section 4.4](#) for additional details.

#### **A.2.1.3 Major Performance Milestones**

The expansion of this pilot allows PGE to test different incentive levels and analyze the similarities and differences to Phase 1 when it comes to timelines, customer uptake, successes, and lessons learned.

Performance milestones are as follows:

- Phase 1 Successful outreach & education: 50 applications received in year 1
- Phase 1 Customer education and demand: all incentive funding reserved; (18 months, 24 customer sites)
- Phase 1 First site complete September 2022
- Phase 1 All original pilot funding was reserved by 24 sites, enabling 366 L2 charging ports and 82 DCFC ports (~448 ports) December 2022
- Phase 1 Half of sites complete 12 sites expected by Sept 2023
- Phase 1 All sites complete 24 total sites expected complete by August 2024
- Phase 2 Successful relaunch of education and outreach upon TEP approval
- Phase 2 Customer education and demand: all incentive funding reserved

- Phase 2 Half of sites complete
- Phase 2 All sites complete, stellar customer satisfaction and feedback
- Phase 2 Pilot complete December 2025

These milestones are contingent on achieving projected enrollment. Low enrollment creates risk for PGE's ability to influence charger procurement or installation, leading to consequences for future interconnection, flexible load goals, and data necessary for planning. If PGE experiences low enrollment due to inadequate incentives, PGE intends to adjust incentives to market needs as it gathers data on the number of applications and enrollment timelines, uptake and withdrawal trends, and direct customer feedback.

#### **A.2.1.4 Program/Measure Phases**

The Fleet Partner (Phase 1) Pilot experienced high uptake by customers. Given such, PGE may be able to lower incentives to reach a higher number of customers. PGE is proposing to lower incentives by 50 percent and reduce the maximum incentives per customer to \$400,000 in Phase 2. PGE will then proceed to a more typical utility tariff and/or rate, and also implement a flex load/managed charging pilot or program after determining the proper level of utility investment in Phase 2.

The long-term evolution of the Fleet Partner (Phase 2) Pilot will inform the development of a future rate of tariff by providing data to inform the development of future rate structures. The first phase of the pilot built out foundational components for customers to electrify their fleets, including education, an online TCO tool, planning, right sizing, and construction fleet depots. Over time, PGE anticipates this pilot to continue to evolve into a flex load program and a more traditional tariff and rate for make-ready infrastructure. The gradual and phased long-term evolution of the Fleet Partner pilot will involve the implementation of time-of-use rates or payment of incentives to encourage customers to charge during off-peak times as the likely first step. In addition, Automated Load Management is expected to become a key aspect of the pilot, enabling customers to add chargers to sites without incurring additional expensive infrastructure upgrades. Future flexible load programs will aim to integrate demand response with our VPP, utilizing either the charger, the vehicle's telematics, or both. Research and development are currently underway to gain a better understanding of how this load modification will be visible and dispatchable. Ultimately, PGE's goal is to achieve a future stable make-ready approach through a more traditional utility mechanism to meet the loads of fleet electrification.

#### **A.2.1.5 Utilization, Eligibility, Incentive Structures**

Eligible customers are non-residential customers that use or operate fleets (including, but not limited to, commercial, non-profit, public, school, or transit fleets) in PGE's service area and also plan to install a minimum of 70kW (total) of EV charging. Eligible rate schedules include 32, 38, 83, 85, and 89; note that this list may be expanded to include new rates, including EV rates, in the future.

Customers may participate in the Pilot along with other PGE products and programs as appropriate. Major product dependencies include the standard Line Extension Allowance (LEA) and the Schedule 52 Business EV Charging Rebate Pilot. Customers may participate in the Pilot and take the standard LEA. Likewise, Pilot customers may also participate in the Business EV Charging Rebate Pilot.

PGE applies a custom incentive calculation to offset the costs customers would otherwise bear to install make-ready infrastructure to support EV charging. The incentive is designed to help cover the following Make-Ready Costs:

- Customer share of Line Extension Costs following the application of the LEA (as defined in Schedule 300) and Rule 17)
- Permitting, trenching, and pathway on the utility side of the meter
- All work—including design, engineering, permitting, construction, and installation—on the customer side of the meter up to, but not including, the EVSE
- Project management for site construction

On average, the Fleet Partner Pilot (Phase 1) covered 74 percent of the costs of make-ready infrastructure. The substantial number of applicants and the rapid depletion of Phase 1 incentives suggests that the original pilot incentive may be lowered to meet the current market demand. Current data also shows that fleet electrification is increasing at a faster rate than originally forecasted in the 2019 TE Plan. Additionally, PGE anticipates that fleet electrification will only accelerate further with the passage of ACT and ACF. Given these factors, the Fleet Partner Pilot (Phase 2) expansion proposes to cover an average of 38 percent of the cost of the make-ready infrastructure. In this expansion, PGE seeks to learn the right incentive cost and ownership coverage that will meet market demand and incent fleet owners to partner with PGE.

**A.2.1.1 Market and Implementation Barriers Addressed**

Section 6.7 (Market Barriers) details the market barriers to EV adoption. By combining fleet planning and technical services with cost offsets for charging infrastructure—and ensuring that charging sites are primed to take advantage of future EV rates or flexible load offerings, thereby lowering TCO—this Pilot will effectively address each of these barriers. Reducing the cost and complexity of fleet electrification through the proposed Pilot lowers the barriers to fleet electrification and provides long term environmental and local business benefits to PGE customers and the State. The Pilot will lower the fueling infrastructure cost to the customer and allow PGE to play an integral, upfront role in the integration of new electric fleets with the grid.

**Implementation Barriers**

PGE anticipates several implementation barriers for this program and has applied lessons learned from Fleet Partner (Phase 1), along with lessons from similar utility programs, in considering how to mitigate these. Key barriers and mitigation plans include:

**Table 54. Fleet Partner Implementation Barriers and Mitigants**

Barrier	How Addressed
Rising costs resulting from macroeconomic conditions, including the COVID-19 pandemic, supply chain constraints, and rising interest rates	PGE will keep continue to assess and evaluate these changing factors, as well as the availability of infrastructure and charging equipment, and commercial lending rates. Our goal is to ensure that our incentives are not overcompensating for the costs and perceived benefits of adding EV charging to these properties. PGE will monitor the situation to ensure we are making informed decisions.

Barrier	How Addressed
Long sales cycle inherent to projects of this scale.	PGE expects—and PGE staff will be prepared to support—a six-month cycle time from customer application to commissioning of the charger.

### A.2.1.2 Performance Area Categories

PGE’s proposed design addresses relevant Division 87 performance area categories in the following ways:

- **Environmental benefits including greenhouse gas emissions impacts**
- **Increased access to electricity as a transportation “fuel” will reduce greenhouse gas emissions across PGE’s service area**
- **Electric vehicle adoption:** Supporting fleet customers by reducing the cost and complexity associated with transitioning to electric “fuel” will support EV fleet adoption across PGE’s service area.
- **Equity of program offerings to meet underserved communities:** PGE is tracking and gathering how many fleet make-ready ports are being installed in underserved communities to understand their correlation.
- **Distribution system impacts and grid integration benefits:** As noted, PGE does not anticipate distribution system impacts stemming from this program. Grid integration benefits are largely represented by the networked and DR-capable requirements in the technical standards that PGE sets.
- **Program participation and adoption:** PGE anticipates completing an additional 56 sites.
- **Infrastructure performance including charging adequacy which considers, but is not limited to reliability, affordability, and accessibility:** PGE tracks charger uptime and cost-to-charge across its fleet of utility-supported chargers and will include this data in future TE Plan Reports.

### A.2.1.3 PGE’s Role in the Program

- Supporting fleet customers with fleet planning services
- Qualification of EVSE products for inclusion in the pilot
- Ownership, operation, and maintenance of make-ready assets behind-the-meter up to, but not including, the EVSE
- Design and installation of electrical infrastructure from the existing distribution grid through the meter to the charger pad(s)
- Calculation of custom cost offsets (i.e., applying the incentive to the customer costs)
- Other technical assistance, as appropriate

### A.2.1.4 Resulting Distribution Upgrades

All 24 sites with initial pilot funding have not triggered any significant distribution system upgrades to date. In the unlikely case that a future site would require significant distribution system upgrades,

these costs would be part of the make-ready costs and would fall to the customer, less the incentive. PGE will work closely with customers to ensure that all options including right-sized EVSE, managed charging, and planful siting are considered in order to control distribution system costs and minimize potential impacts, including cost impacts, on participating and non-participating customers.

#### **A.2.1.5 Ownership Structure**

PGE owns the make-ready infrastructure behind-the-meter up to, but not including the EVSE on behalf of the customer.

#### **A.2.1.6 EVSE Requirements (Equipment Interoperability and National Standards)**

PGE utilizes a single Qualified Products List (QPL) to determine eligible EVSEs for all of PGE's non-residential EV programs. EVSE vendors must submit a Request for Qualification (RFQ) if they want their products added to the QPL. PGE engineers review each RFQ for completeness and against the predefined qualification requirements, listed below. If the vendor receives technical approval, they must also execute a Data Sharing Agreement with PGE before their products will be added to the QPL.

Hardware requirements (Level 2 and DCFC):

- National Electrical Manufacturers Association (NEMA) Type 3R or 4, which certifies that equipment is weatherproof and certified for either indoor or outdoor use.
- Compliant with Federal Communications Commission Part 15, which sets limits on the amount of electromagnetic interference allowed.
- Compliant with National Electric Code, National Fire Protection Association (NFPA) article 625, which covers wires and equipment used to supply electricity for EV charging.
- Compliant with the Americans with Disabilities Act (ADA), which ensures that the EVSE is ADA accessible, if installed according to the manufacturer's instructions.
- EVSE model must have a cellular connectivity option, either 4G LTE or 5G.
- Compliant with Open Charge Point Protocol (OCPP) v1.6 or later, enabling the flexibility to operate with a variety of network service providers. It also must be remotely upgradable to support future versions of OCPP.
- Must include a standard warranty of 1 year or greater
  - Must have an operating range of at least -22F to 122F, ensuring it can withstand extreme environments

Level 2-specific requirements:

- Compliant with Society of Automotive Engineering (SAE) J1772, the standard Level 2 connector that is compatible with all road-legal EVs for sale in the United States, including plug-in hybrids (PHEVs), battery electric vehicles (BEVs), and Tesla vehicles using an adaptor.
- Listed by a nationally recognized test lab to the requirements of UL 2251 and 2594, demonstrating that products are tested to UL's recognized safety standards.
- DCFC-specific requirements:
- If the EVSE includes a Combined Charging System (CCS) connector, it must be compliant with SAE J1772.

- Listed by a nationally recognized test lab to the requirements of UL 2202, demonstrating that products are tested to UL's recognized safety standards.
- Equipment compliant with recommended practice SAE J2894/1\_201112 or later (power quality requirements for EVSE).
- If the EVSE includes an automated conductive charging mechanism (pantograph), it must meet SAE J3105.
  - DCFC EVSE efficiency must be greater than 92 percent

Software requirements:

- Software platform must be responsive to grid services, modifying charger power output levels, using either one of the following methods
  - Certified OpenADR 2.0b Virtual End Node (VEN)
  - Application Programming Interface (API)
  - IEEE 2030.5 (SEP 2.0)
- Software must also be compliant with Open Charge Point Protocol (OCPP) v1.6 or later, enabling the flexibility to operate with a variety of EVSE hardware.

Through the RFQ process, PGE collects additional technical information from vendors that aren't requirements but help inform PGE programs and potential future requirements. This includes items such as:

- Compliance with ISO/IEC 15118
- Payment methods and pricing options
- Compliance with OCPI v2.2 or later
- EVSE metering accuracy
- Bi-directional charging capability
- Lead time and indicative pricing
- Installation manuals
- The vendor's sales point of contact to post on PGE's QPL webpage so customers know who to contact when interested in a specific product

As of 4/28/2023, PGE has qualified 137 EVSE models from 18 different EVSE vendors.

## **A.2.2 Program/infrastructure coordination**

### **A.2.2.1 Stakeholder involvement in development**

PGE has engaged stakeholders in discussion about this Pilot in a series of workshops under the UE 368 and has consulted with several stakeholders offline as well. Workshops were held on February 3, 24, and March 22, 2021.

### **A.2.2.2 Coordination with State Programs**

PGE seeks to determine the ideal balance between federal and state grant dollars and utility incentives. Based on the number of applicants and speed at which the incentives were reserved, PGE

is interested to identify the proper level of utility incentives to support transportation electrification while leveraging available federal or state dollars. PGE will stay abreast of incoming and changing legislature to promote awareness of the different types of incentives available.

PGE will make customers aware of, and support customers in relaying information regarding, the Oregon Clean Vehicle Rebate, the Diesel Emissions Reduction Grants Program, the Oregon Clean Fuels Program, and other relevant state programs, as appropriate.

PGE anticipates that some customers may elect to stack this program with ODOT's deployment of federal, state and/or local funding sources such as grants. PGE welcomes this type of coordination and will work as necessary with federal, state, and/or local entities to ensure a smooth incentive delivery for customers.

### **A.2.2.3 Coordination with Market Actors and Activities**

For the initial pilot, PGE issued an RFI seeking to better understand the market for Level 2 and Direct Current Quick Charging (DCQC) hardware and software for fleet charging. While PGE does not plan to issue a qualified product list for this pilot, we will share fleet EVSE options with customers and work directly with customers' selected vendors to qualify the EVSE to ensure that PGE and the vendor are able to provide the most efficient customer experience. PGE will also coordinate with vehicle original equipment manufacturers, dealers, trade groups—as well as energy storage system, energy generation, and other vendors—as appropriate to best serve the customer.

### **A.2.3 Fit with Long Term TE Strategy**

This pilot allows PGE to plan for, serve, and manage TE load. PGE affirms its position as the optimal market player to provide make-ready infrastructure for EV expansion, allowing for faster and easier EV expansion at separately metered sites by engaging customers early in the planning process to plan for future load ramping. PGE's involvement ensures that chargers meet qualifications, are capable of demand response, are ready for an EV rate, and that PGE has access to charging session data with a 10-year committed cost of service energy use to better plan for TE load, as well as effectively manage TE load by informing the development of TE rates/tariffs to incent beneficial charging behavior. Specifically, the data collected from the pilots will provide direct feedback on load curves, the willingness of fleets to drop load, dwell time at chargers, the types of vehicles, battery size, charger size, as well as the costs and timelines for construction. This information is crucial for optimizing electric fleet charging and planning for future growth in a way that is efficient, cost-effective, and sustainable.

PGE's involvement also gives customers peace of mind that they have a trustworthy partner managing the design, construction, and maintenance of EVSEs, while also providing cost-sharing to enable more fleets to justify electrification. Furthermore, PGE assists customers in optimizing the charger size and educates them on grid-friendly charging practices, thereby avoiding the need for distribution system upgrades. Thus, this pilot provides broader benefits to the PGE grid system and limits non-participating customer costs by influencing the size and charging behaviors of the additional fleet load, thus mitigating additional infrastructure upgrade costs.

In summary, the Fleet Partner pilots' understanding of managing electric fleet loads is beneficial in influencing charger type and model choices, promoting efficient charging, creating future flex load programs, and providing insights into fleet characteristics. The insights gained through the pilots will enable more efficient and sustainable growth of electric fleets.



**A.2.4 Learning Objectives, Evaluation of Effectiveness and Data Collection Methods**

The expansion of the Fleet Partner Pilot (Phase 2) will provide learnings on how to construct electric fleet sites long-term and how these sites will participate in managed load programs. This will inform PGE’s approach to further drive the efficiency of internal processes and procedures to serve both customer and grid needs.

PGE also anticipates that the expansion of the pilot will benefit our understanding of underserved communities’ transportation electrification needs. PGE is tracking how many fleet make-ready ports are being installed in underserved communities to understand their correlation. Greener fleets improve air and noise quality in these areas.

The following high-level metrics have been identified as indicators of success:

- Total make-ready ports installed & successful transfer of session data from EVSE to PGE
- Relationships with customers, as measured by customer engagement, satisfaction, and experience
- Analysis of incentive level data

To assess these indicators, PGE plans to engage third-party evaluators to evaluate and report on the pilots in 2023, 2025, and 2026. The results of these reports will assist PGE in better understanding and meeting the needs of customers and establishing optimal processes for building and maintaining make-ready infrastructure. Data on charging sessions will also help PGE assess fleet loads, peak loads, and the impacts on the grid to inform future rate designs and flexible load programs. PGE anticipates acquiring and utilizing charging session data for evaluation on a monthly basis. This data will be used to understand fleet loads and impacts to the grid, peak loads, future TOU, rates, and flex load programs, and make-ready infrastructure longevity and performance.

**A.2.5 Program and Infrastructure Costs**

**A.2.5.1 Estimated Total Costs, Including Incentives, Program Delivery, Evaluation, Marketing, and Program Operational Costs**

PGE is on track to spend all capital funds for Phase 1 sites by mid-2024 and plans to continue to track and report on budgets and spend via annual reports. All Phase 1 funds have been reserved and will be disbursed gradually until site construction is complete by mid-2024. The rate of spend in Phase 2 is likely to mirror those in Phase 1, with inflationary costs potentially raising costs for equipment and construction in both 2024 and 2025. PGE plans to provide annual reports and acknowledges the potential for further adjustments. The following table reflects to costs for both Phase 1 and Phase 2:

**Table 55. Fleet Partner Budget: Forecast of Operating and Capital Expenditures (2023-2025)**

Total	2023	2024	2025	2023-2025 Total
OpEx				
Incentives				
Program Operations				
O&M on Investments				
Evaluation				
Education and Outreach				

Total	2023	2024	2025	2023-2025 Total
CapEx				
Total	\$5,258,760	\$6,415,740	\$6,442,773	\$18,117,273

**A.2.5.2 Estimated participant costs**

Estimated participation costs vary significantly across customer segments and site configurations. PGE proposes to recover the cost of these activities through subsequent general rate cases.

**A.2.6 How Infrastructure Measure Addresses Oregon Administrative Rule and Oregon Law**

Table 56. Fleet Partner Concordance with OAR 860-087-0020(4)

OAR 860-087-0020(4)	Section of Application Addressing the Rule
A description of the infrastructure measure;	<a href="#">A.2.1</a>
Data used to support the description;	<a href="#">A.2.1</a>
A description of infrastructure measure coordination;	<a href="#">A.2.2</a>
A description of how the proposed infrastructure measure fits within the electric company's long-term strategy to support TE;	<a href="#">A.2.3</a>
A description of costs;	<a href="#">A.2.5</a>
A description of learning objectives and how the electric company will evaluate the infrastructure measure; and	<a href="#">A.2.4</a>
For infrastructure measures, a description of how the measure addresses the considerations of ORS 757.357	<a href="#">Table 57</a>

Table 57. Fleet Partner Concordance with ORS 757.357

ORS 757.357	How Application Addresses the Law
(1) (b) (A) "Infrastructure measures" includes, but is not limited to, investments in, expenses related to or rebates for:	The investments proposed in this application meet the description of infrastructure measures in (iii), as they are issued for behind-the-meter infrastructure that supports transportation electrification.

ORS 757.357	How Application Addresses the Law
<p>(i) Distribution system infrastructure that supports transportation electrification;</p> <p>(ii) Communication and control technologies that support transportation electrification; and</p> <p>(iii) Behind-the-meter infrastructure that supports transportation electrification and is owned by an electric company or by a customer.</p>	
<p>(b) (B) "Infrastructure measures" does not include investments in or expenses related to education and outreach activities related to transportation electrification, or other transportation electrification-related activities determined by the Public Utility Commission to be separate and distinct from the development of infrastructure.</p>	<p>While this infrastructure measure has an associated education and outreach budget, it is for enrollment only, not more general education and outreach to advance transportation electrification.</p>
<p>(5) If undertaken by an electric company, an infrastructure measure to support transportation electrification is a utility service and a benefit to utility customers if the infrastructure measure can be reasonably anticipated to:</p>	
<p>(a) Support reductions of transportation sector greenhouse gas emissions over time; and</p>	<p><a href="#">A.2.1.2</a></p>
<p>(b) Benefit the electric company's customers in ways that may include, but need not be limited to:</p> <p>(A) Distribution or transmission management benefits;</p> <p>(B) Revenues to utilities from electric vehicle charging to offset utilities' fixed costs that may otherwise be charged to customers;</p> <p>(C) System efficiencies or other economic values inuring to the benefit of customers over the long term; or</p> <p>(D) Increased customer choice through greater transportation electrification infrastructure deployment to increase the availability of and access to public and private electric vehicle charging stations.</p>	<p><a href="#">A.2.1.2</a></p> <p><a href="#">A.2.2.3</a></p>

### A.3 Heavy Duty Charging

Table 58. Heavy Duty Charging Reference

Docket Number(s)	UE 389 <sup>276</sup>
Docket Name(s)	PGE ADVICE NO. 21-03 SCHEDULE 53
Filing Date	February 10, 2021
Effective Date	June 16, 2021
Allowed (Approved) Utility Filing Date	June 15, 2021
Allowed (Approved) Utility Filing Name	New Schedule 53 Heavy-Duty Electric Vehicle Charging Program, Advice No. 21-03 <sup>277</sup>
Governing Tariff	Schedule 53 <sup>278</sup>
Deferral Number(s)	n/a
Deferral Date(s)	n/a

#### A.3.1 Overview

##### A.3.1.1 Description of Program Activity

The goal of this program is to plan, design, and build out heavy-duty charging site(s) that allows PGE and a partner to test and gather learnings for the feasibility of non-wires solutions, gather fleet load data for future forecasting, and to test and understand battery solutions, solar solutions, and megawatt charging. PGE seeks to learn how to proactively engage on the siting of these projects to manage potential grid impact, which, if unplanned, could prove expensive for projects of this magnitude.

Each site will have on-site battery storage to provide demand response services back to the grid. The batteries at the MHD charging sites will serve multiple use cases: reducing grid demand during peak events, providing charging resiliency to users when outages occur, and adding additional capacity back into the grid through demand response. Charge management, energy storage, and on-site generation will help to alleviate the impact of heavy duty charging and prevent or defer potential distribution feeder upgrades.

Schedule 53 is an existing tariff under which PGE built the Electric Island site with Daimler Truck North America. It was originally funded at \$10 million, with approximately \$5 million forecasted costs over

<sup>276</sup> Oregon Public Utility Commission Docket UE 389, retrieved from <https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=22782>.

<sup>277</sup> Oregon Public Utility Commission Advice No. 21-03 under protective order.

<sup>278</sup> PGE Schedule 53, retrieved from [https://assets.ctfassets.net/416ywc1laqmd/43HMjSSNNhOCBEiSpedGmV/61301b872ca75a6f5971413a55cb317a/Sched\\_053.pdf](https://assets.ctfassets.net/416ywc1laqmd/43HMjSSNNhOCBEiSpedGmV/61301b872ca75a6f5971413a55cb317a/Sched_053.pdf).

the ten-year period. That leaves the remaining \$5 million available for possible future projects. Under this model, PGE works with a site partner who matches PGE's share of spending on a MHD charging project. The goal is a partnership structure with the site owner/operator. PGE may own the infrastructure (both sides of the meter) and the EVSE hardware and will manage and maintain the EVSE for the site operator. Currently, Electric Island is available for MHD and LDV charging. PGE and Daimler are forecasting to have one battery installed in 2023, and another second-life truck battery installed in 2024. Planning is also underway for installing megawatt charging and solar.

Schedule 53 pairs well with the vision of the West Coast Clean Transit Corridor (WCCTC)<sup>1</sup>. The WCCTC is a consortium of 16 utilities that are working towards enabling freight mobility & electric charging needs along the I-5 freeway from San Diego to Vancouver BC. This model recommends a charging site every 50 miles and calls for three possible sites in PGE service area. As part of this effort, and to ensure heavy duty charging is available in our service areas as the fleet electrify, PGE is reviewing a site in the Salem area in addition to the Electric Island site near Interstate 5.

The planned MHD charging locations will benefit communities adversely affected by environmental and health hazards by reducing their exposure to environmental pollutants such as diesel particulate matter (DPM). Health effects from DPM include "cardiovascular and respiratory hospitalizations, and premature death."<sup>279</sup> Since most DPM "derives from combustion, such as use of gasoline and diesel fuels by motor vehicles"<sup>280</sup>, and traditional ICE trucking has been specifically identified as a major source of DPM<sup>281</sup>, it follows that providing MHD EV infrastructure to support the transition from ICE trucking in these locations will reduce these communities' exposure to these harmful pollutants. [Figure 21](#), below, shows the overlap of the current/planned MHD Charging locations and the public's exposure to DPM. [Figure 22](#), below, shows the overlap of current/planned MHD Charging locations and a demographic index of low-income and minority populations<sup>282</sup>.

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<sup>279</sup> California Air Resources Board. *Overview: Diesel Exhaust & Health*. Retrieved from <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

<sup>280</sup> Ibid.

<sup>281</sup> Ibid.

<sup>282</sup> [Figure 21](#) and [Figure 22](#) generated on September 20, 2022 using the Environmental Protection Agency's *Environmental Justice Screening and Mapping Tool (Version 2.0)*, retrieved from <https://ejscreen.epa.gov/mapper/>.

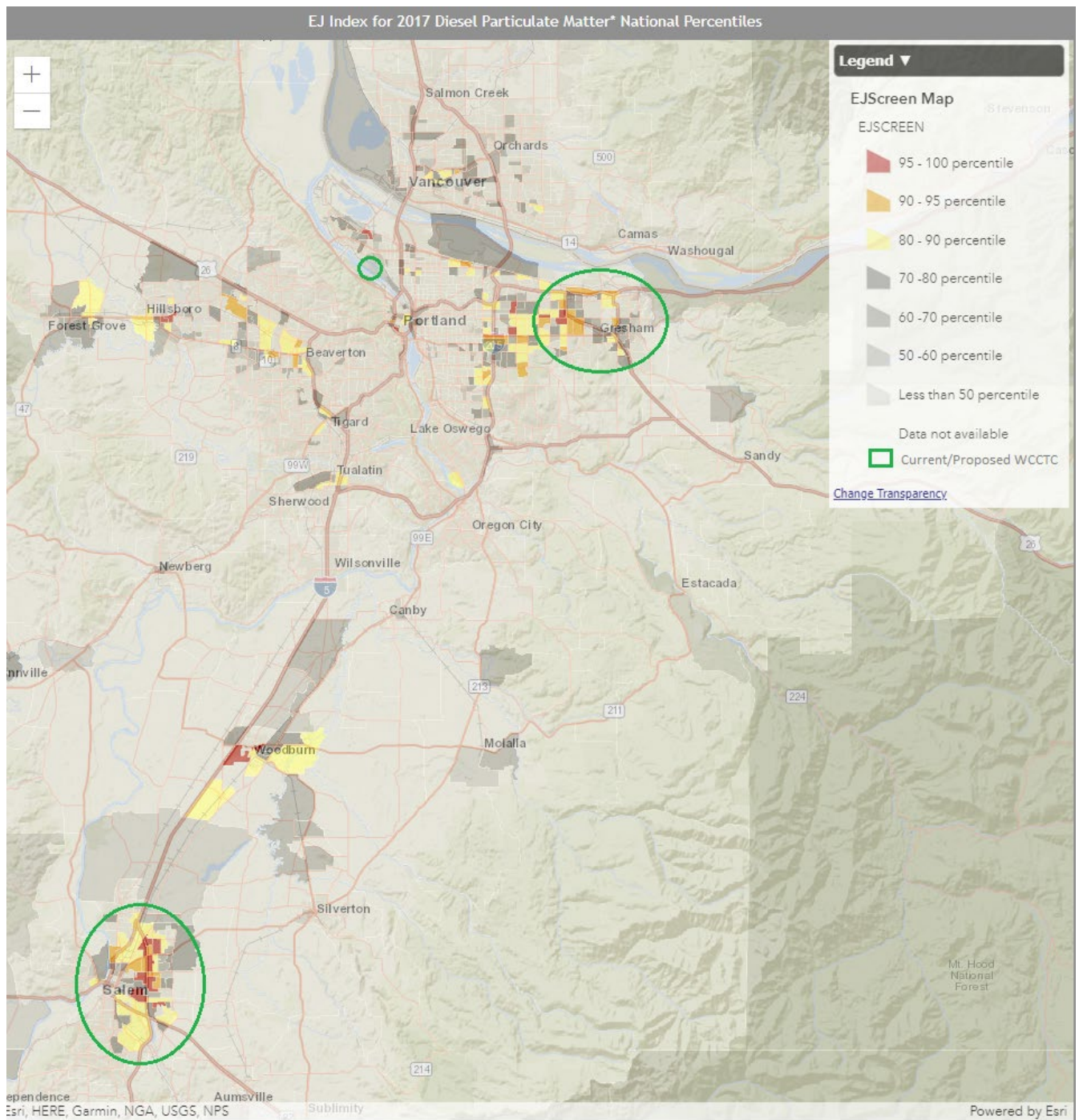


Figure 21. Heavy Duty Charging Locations and Diesel Particulate Matter

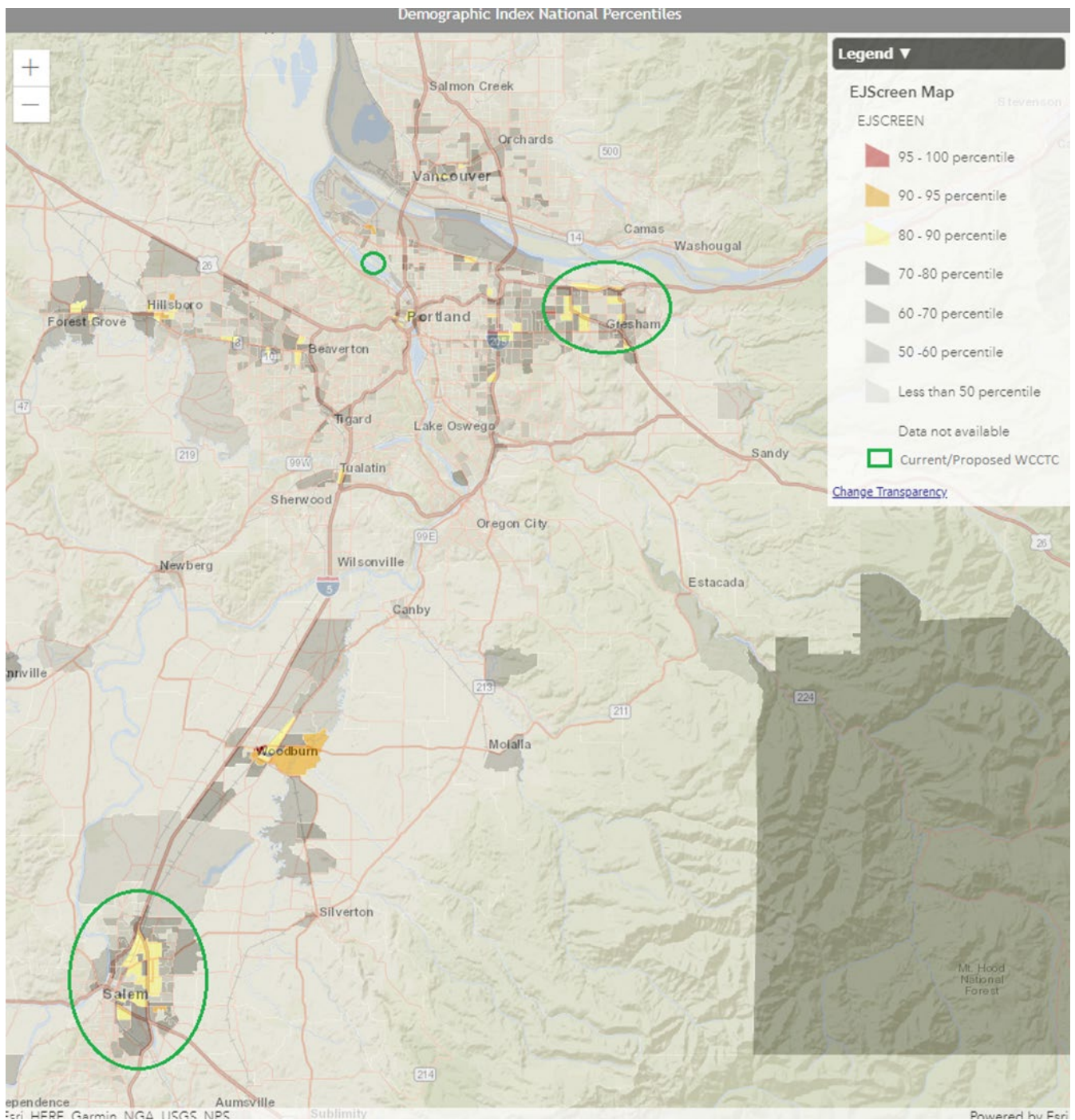


Figure 22. Heavy Duty Charging Locations and Low-Income and Minority Populations

As illustrated in the above figures, the proposed MHD charging locations in Gresham/Troutdale and Salem are situated where low-income and minority populations reside and where populations are exposed to relatively high DPM. Providing infrastructure that supports HD EV charging is expected to help reduce pollution in these areas and therefore benefit the underserved communities residing there.

Truck manufacturers are beginning to roll out production models of EV MHD trucks. The early adopters for this technology are short trip operations like drayage (delivering shipping containers

from the docks to train depots) and local delivery, which can be depot charged nightly and operated during the day. Use cases are evolving where vehicle range is a limiting factor, for which enroute charging is needed.

Building MHD charging sites is heavily dependent on a site location/operator/partner. With the complexity of an appropriate geographic location, these projects have a narrow set of ideal parameters that need to line up for a site to move forward. PGE began this project by determining potential locations and then entered into conversations with potential site partners in those areas. PGE is now engaging with multiple site operators to begin working through these challenges. It is important to note that not every potential site partners approaches investments in MHD charging in the same way. An MHD EV manufacturer or transit agency may be more inclined to invest in MHD infrastructure as it supports their existing priorities (e.g., selling MHD EVs or electrifying their fleet). Conversely, a truck stop operator may be more reticent to invest in MHD infrastructure regardless of co-investment by the utility as they focus on existing fuel sales.

Any construction of MHD truck charging sites will likely require upgrades to the PGE distribution network. Power requirements for each site are estimated to begin at 1.5 MW, with five-year growth to 20 MW. This may require feeder upgrades or a transformer replacement, and in some locations, a new substation. If PGE prepares for this demand appropriately, we can construct these sites in areas with better distribution available, and better manage the process and costs as well as reduce the potential for further, significant distribution system upgrades. Conversely, if an independent operator brings these projects to PGE, the Company would not be able to manage the grid impact as well because we would have less control over project location or timing, which could result in unplanned, more expensive distribution upgrades.

#### **A.3.1.2 Strategic Context**

The Heavy-Duty Charging program aligns with the following components of PGE's 2024-2025 TE strategy:

1. **Lead through Planning and Siting.** This program will enable efficient deployment of MHD charging sites within PGE's service territory and help build future rates and tariffs which influence the siting of larger loads at feeders and substations with available capacity.
2. **State, Local, and Regional Planning.** This program will enable efficient deployment of MHD charging sites within PGE's service territory, and with the broader WCCTC, enable electric trucks to operate seamlessly along the West Coast.
3. **Build Distribution and Grid Infrastructure to Serve Customers.** PGE will leverage grid and customer insights to deploy HD charging in the locations and in such a manner that they can be integrated into our system as efficiently as possible. PGE make-ready requires DR capable charger installation to help manage the future load and PGE will also explore the use of battery and solar installations within future rate designs to help serve the load at a distribution level.

#### **A.3.1.3 Timeline**

The first and largest hurdle is to find site owners/operators to collaborate with PGE. Once a site can be secured, evaluation of the grid requirements to supply the necessary power needs to be completed (1.5 MW to begin, growth to 20 MW in five years). Construction of the grid upgrades (line extension) can run parallel to the site make-ready construction for the behind-the-meter work



required for the power supply to the chargers. Estimated overall delivery timelines for these sites range from two to five years.

### A.3.2 Budget

The Heavy-Duty overall spend was approved in 2021 and below shows the continued spend of this program within 2023-2025 for the first site. There may be a future site identified which would require an update to the plan of the forecasted spend depending on the site, site agreement reached, and timeline of implementation.

Table 59. Heavy Duty Charging Budget: Existing/Approved Operating and Capital Expenditures (2023-2025)<sup>283</sup>

Costs	2023	2024	2025	2023-2025 Total
OpEx				
Evaluation				
Incentives				
Education and Outreach				
O&M on Investments				
Program Operations				
CapEx				
<b>Total</b>	<b>\$1,997,290</b>	<b>\$1,186,441</b>	<b>\$436,723</b>	<b>\$3,620,453</b>

### A.3.3 Additional Scope/Scale

PGE’s first foray into MHD charging was a partnership with Daimler Truck North America. PGE operates the site and manages the power billings for this project. PGE has learned many lessons around charging patterns, power usage, and site layouts. Key learnings follow:

- **Grid Impacts:** MHD vehicles can impart substantial electrical loading at a charging site. Over the four-month sample period, there were 28 charging session with a recorded energy delivery greater than 100 kWh. These instances made up only 1.5 percent of the total number of sessions but accounted for 18.4 percent of the total energy delivered to the site during this time period.

<sup>283</sup> The figures shown in this budget have been approved previously by the Commission through docketed proceedings, detailed in [Appendix I](#).

- **Significant Customer Site Usage:** There were 1,812 separate charging sessions recorded during the four-month data sample.
- **General Public Charging Applications:** While the site is envisioned as a location for heavy-duty charging customers, it also hosts residential customers simply looking to charge their vehicles. Conversations with these customers have revealed a paucity of available chargers in the Swan Island area and appreciation for the Electric Island facility. The DCFC are equipped with both CCS1 and CHAdeMO ports, which allows all non-Tesla passenger vehicles to charge.

This partnership has been beneficial to both companies and their customers, and PGE is scanning the education and outreach market for other partners like this to continue under our approved Schedule 53 program. Unfortunately, not all our potential partners have similar economic drivers as the commercial and research and development operations of a truck manufacturer. The economics and rationale are different for a site like a truck stop. In these instances, PGE will need to take a more active role in the development of these locations. PGE would manage the project during all construction phases (line extension and make-ready). Under the current language of Schedule 53, participants are required to match PGE funds dollar-for-dollar. This may not be a model within which all participants are willing to work. This program works best with a partner that has an economic interest in the development of the site. PGE's goal will be to engage site owners who have that economic interest, or work to help develop it.

MHD vehicles draw a large amount of load. The timing of that demand, the length of time of the charging session, and the impact on the specific feeder are all relative unknowns at this point. It is challenging to plan and model these demand spikes on load without actual historical data. Additionally, as PGE adds onsite storage, we want to learn about the demand mitigation approaches and how to shape these loads. PGE's planning for storage is underway at our Electric Island site to inform future deployments of MHD sites.

The following figure provides an overview of Daimler Truck North America telematics showing where their trucks drive and depot. Daimler supplies more than 30 percent of the trucking market, and we therefore assume their traffic patterns are valid across other manufacturers.

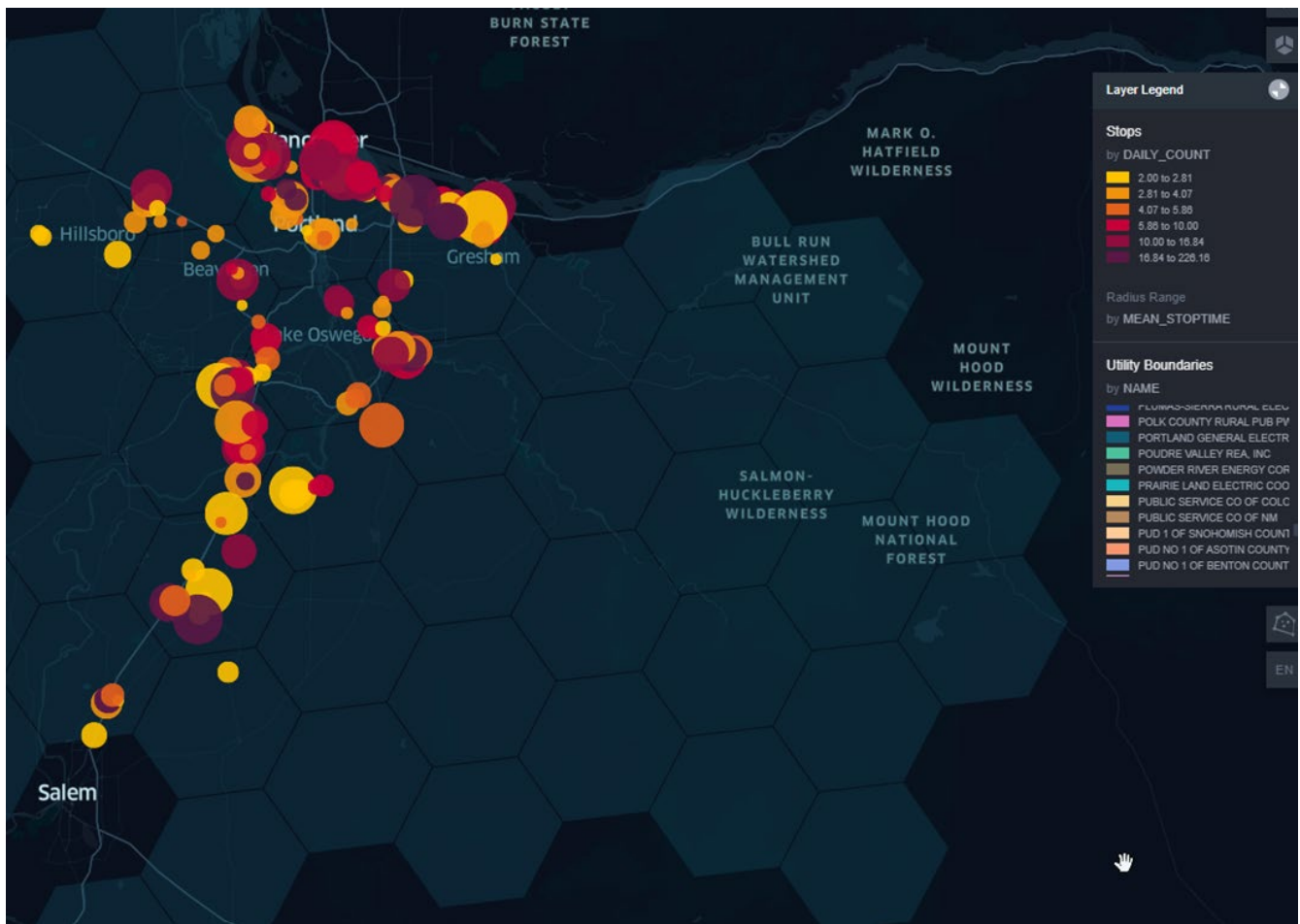


Figure 23. Daimler Truck Telematics

PGE has worked closely with Daimler and TriMet to develop and deploy MHD charging infrastructure (Electric Island and HD transit charging infrastructure, respectively). TriMet is also considering other PGE programs to extend charging into other areas such as maintenance and traffic monitoring vehicles.

PGE is relatively agnostic on EVSE hardware and will coordinate with other market actors as we select charging equipment for the Heavy-Duty Charging program. The goal of the program is to deliver MHD charging in locations identified as necessary to the overall network for a specific use case (WCCTC for example). PGE will also coordinate with existing trucking site operators, as we do not plan to build charging sites from the ground up.

#### A.3.4 Original Proposal

To maintain readability of this document, the original product proposal is linked here rather than embedded in its entirety:

[https://assets.ctfassets.net/416ywc1laqmd/43HMjSSNNhOCBEiSpedGmV/4bcaf51ba30634fc114c18c63d99d2cc/Sched\\_053.pdf](https://assets.ctfassets.net/416ywc1laqmd/43HMjSSNNhOCBEiSpedGmV/4bcaf51ba30634fc114c18c63d99d2cc/Sched_053.pdf).

## A.4 The Oregon Clean Fuels Program

Table 60. Clean Fuels Reference

Docket Number(s)	UM 1826
Docket Name(s)	STAFF INVESTIGATION INTO ELECTRIC UTILITY PARTICIPATION IN CLEAN FUEL PROGRAMS
Filing Date (s)	March 29, 2019, July 29, 2019, November 22, 2019, August 7, 2020, November 20, 2020, December 1, 2021, April 22, 2022, March 8, 2023
Effective Date	October 10, 2018
Allowed (Approved) Utility Filing Date	Order No. 18-376 <sup>284</sup>
Allowed (Approved) Utility Filing Name	Revised principles and process for utility use of revenue from Clean Fuels Program
Governing Tariff	The Orders that govern utility participation relating to the Clean Fuels Program are: <ul style="list-style-type: none"> <li>• Order No. 17-250 Directing PGE and PacifiCorp to register as Credit Generators in the CFP<sup>285</sup></li> <li>• Order No. 17-512 Credit Monetization Principles for utility monetization of residential CFP credits<sup>286</sup></li> <li>• Order No. 18- 376 Revised principles and process for utility use of revenue from the Clean Fuels Program<sup>287</sup></li> </ul>
Deferral Number(s)	n/a
Deferral Date(s)	n/a

### A.4.1 Overview

#### A.4.1.1 Description of Program Activity

PGE's residential Clean Fuels Program supports equitable deployment of transportation electrification in Oregon to benefit residential customers. The program is funded through the sale of residential credits generated by PGE through the Oregon Clean Fuels Program and is therefore not included in this TE Plan's funding request or cost effectiveness tests. PGE is a registered credit

<sup>284</sup> Oregon Public Utility Commission Order No. 18-376, retrieved from <https://apps.puc.state.or.us/orders/2018ords/18-376.pdf>.

<sup>285</sup> Oregon Public Utility Commission Order No. 17-250, retrieved from <https://apps.puc.state.or.us/orders/2017ords/17-250.pdf>.

<sup>286</sup> Oregon Public Utility Commission Order No. 17-512, retrieved from <https://apps.puc.state.or.us/orders/2017ords/17-512.pdf>.

<sup>287</sup> See footnote 284, above.

generator for credits generated by residential EVs registered in the Company's service area. The Oregon Clean Fuels Program is administered by the Oregon DEQ. The DEQ assigns credits to PGE for the number of residential EVs registered in the Company's service area (based on DMV vehicle registrations) on a biannual basis. PGE monetizes these credits throughout the year in the Oregon Clean Fuels Program marketplace and plans for the yearly programs based on actual revenue from credit sales. There is a two-year delay between when credits are generated and when programs are implemented (e.g., the 2023 PGE Clean Fuels program budget is based on 2021 EV counts).

PGE also generates credits through the charging stations we own, operate, and/or maintain. Revenue from those credits is used to offset the cost of operating and maintaining that infrastructure. This section covers PGE activities funded by those residential CFP credits.

To date, PGE has planned CFP-funded programs through an iterative approach with stakeholders, in consultation with DEQ and OPUC staff, and guided by principles delineated in Commission Order No. 18-376, Docket No. UM 1826. As part of Docket No. UM 2165, Order No. 22-314<sup>288</sup> amended the principles in Order No. 18-376 to allow closer coordination of CFP-funded programs with other TE Portfolio initiatives, and the annual review process for residential CFP funded programs is now incorporated into utility TE Plans.

The six program design principles the Commission established under Order No. 18-376 for CFP-funded programs were:

- Support the goal of electrifying Oregon's transportation sectors
- Provide the majority of benefits to residential customers
- Provide benefits to traditionally underserved communities
- Programs are designed to be independent from ratepayer support<sup>289</sup>
- Programs are developed collaboratively and transparently
- Maximize use of funds for implementation of programs

Order No. 22-314 eliminated the fourth principle regarding ratepayer support but retained the remaining principles to guide PGE's CFP-funded programming going forward, with continued stakeholder consultation, as part of the company's broader TE portfolio.

Starting with the 2021 CFP program portfolio, PGE worked with stakeholders to design a portfolio approach to the spending of proceeds from the sale of residential Clean Fuels credits, including what types of programs to support through this approach. Based on that input, market research, and CFP participation, PGE developed a portfolio method to plan for the CFP. These resulting programs are organized in the following categories:

- **Infrastructure and grants** to enable deployment of vehicles and charging across Oregon.
- **Education and outreach** to increase awareness of and dispel existing misconceptions regarding TE and also help create an ecosystem of support roles (e.g., EV/Charger

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<sup>288</sup> Oregon Public Utility Commission Order No. 22-314, retrieved from <https://apps.puc.state.or.us/edockets/orders.asp?OrderNumber=22-314>.

<sup>289</sup> In 2022, the Commission amended Order No. 18-376 to remove the fourth principle: "Programs are designed to be independent from ratepayer support" as part of Order No. 22-336, retrieved from <https://apps.puc.state.or.us/edockets/orders.asp?OrderNumber=22-336>.

maintenance job training and EV service re-training) that promote a dependable customer experience.

- **Emerging technology** to test new concepts that have both an EV nexus and the ability to scale to larger utility programs.

Additionally, administrative costs are tracked and expected to remain below 10 percent of total annual expenditures. While funding amounts vary from year-to-year based on residential CFP Revenue, PGE estimates the following approximate budget breakdown and percentages for programs funded by residential CFP credit revenue:

**Table 61. Categories of Clean Fuels Program Funding**

<i>Category</i>	<i>% Portfolio per Year</i>
Infrastructure and Grants	70%-80%
Education and Outreach	5%-15%
Emerging Technology	5%-15%
Estimated Administrative Costs	5%-10%

**Table 62. Clean Fuels Program Forecasts by Spending Category<sup>290</sup>**

<b>Category</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2023-2025</b>
Infrastructure and Grants	\$9,054,289	\$10,560,073	\$15,253,276	\$34,867,638
Education and Outreach	\$1,175,882	\$1,371,438	\$1,980,945	\$4,528,265
Emerging Technology	\$587,941	\$685,719	\$990,472	\$2,264,132
Administration	\$940,705	\$1,097,150	\$1,584,756	\$3,622,612
<b>Total Funds Forecasted</b>	<b>\$11,758,817</b>	<b>\$13,714,381</b>	<b>\$19,809,449</b>	<b>\$45,282,647</b>

<sup>290</sup> Includes forecasted funds that could be applied to the TE portfolio while meeting the requirements of Order No. 18-376, amended by Order No. 22-314.

The Clean Fuels Program’s areas of focus are enumerated below:

**Table 63. Areas of Focus for the PGE Clean Fuels programs**

Area of Focus	Programs to date	Major milestones and progress to date
Grants and Infrastructure Programs that increase access to transportation electrification	Drive Change Fund Electric School Bus fund External matching funds Public infrastructure updates	Drive Change Fund awarded 52 organizations \$8.92 million to fund 110+ new EVs and 155+ ports  Electric School Bus fund awarded 19 school buses in 11 school districts
Education and Outreach Increase awareness of transportation electrification options across the state	Oregon’ Electric Statewide campaign EV Costs and Savings Calculator Ride-and-Drives Workforce development	Oregon’ Electric had 10 million or more views in 2021 Oregon’ Electric had a 15 percent engagement rate Ride-and-Drives EV Costs and Savings Calculator launch
Emerging Technology Test and demonstrate emerging technologies that have an EV nexus and could scale to larger utility programs	V2G charging Pole charging Residential smart charging	First V2G charging in Oregon
Portfolio Administration	Credit sales REC purchases for incremental credits Portfolio administration	2022 and on includes REC purchases for incremental credits

## GRANTS AND INFRASTRUCTURE

These funds support programs that increase access to electric transportation. Funding awards grants for programs that apply a strong equity lens, like the Drive Change Fund and Electric School Bus Fund, which both prioritize traditionally underserved communities. Starting in 2022, PGE set aside matching funds for grants from other sources that support CFP goals. This effort will utilize PGE Clean Fuels funding in an effort to bring external grant opportunities to Oregon. Infrastructure investments will include support for initiatives like charging site upgrades that improve user experience, give customers’ peace of mind, and make EV ownership easier for Oregonians. In all cases, funding will target underserved communities and efforts that provide access to infrastructure in those communities. Details on these efforts follows:

- **Drive Change Fund** is a competitive grant fund available to non-residential customers for TE projects that prioritize underserved communities, advance transportation electrification, and benefit residential customers. Since 2019, DCF has awarded \$8.9 million in grant funding to 52 organizations. PGE ran the fourth cycle of DCF in 2022, awarding \$2.25 million to community TE projects. PGE is in the review cycle for 2023 DCF applications.

Table 64. 2022 Drive Change Awardees

Organization Name	Org Type	Project Type	# of Vehicles	# of Ports	Total Awarded
Working Theory Farm	Nonprofit	EV	1	-	\$40,125.00
APANO Communities United Fund	Nonprofit	Chargers	-	12	\$168,376.00
Chemeketa Community College	Community College	Chargers, EV, Education	2	2	\$183,458.00
Volunteers of America Oregon	Nonprofit	Chargers, EV	6	6	\$251,384.00
Tualatin Hills Parks & Rec	Government	EV	2	-	\$126,378.00
Raphael House	Nonprofit	Chargers, EV	2	2	\$88,910.00
NW Pilot Project	Nonprofit	EV	1	-	\$76,957.00
Immigrant and Refugee Community Organization	Nonprofit	Chargers, EV	3	3	\$482,770.00
Outgrowing Hunger	Nonprofit	EV	1	-	\$43,664.00
City of Tigard	Government	EV, Education	<sup>291</sup>	-	\$105,800.00
Ecumenical Ministries of Oregon	Nonprofit	Chargers, EV	3	3	\$431,425.00
Hacienda CDC	Nonprofit	EV	1	-	\$66,000.00
Central City Concern	Nonprofit	Chargers	-	11	\$84,478.00
Linfield University	Nonprofit	Chargers	-	4	\$57,845.56
Community Cycling Center	Nonprofit	EV	1	-	\$65,000.00
<b>TOTAL</b>			<b>23</b>	<b>43</b>	<b>\$2,272,570.56</b>

<sup>291</sup> The City of Tigard’s projects fund six electric cargo bikes.



- **Electric School Bus Fund** is a competitive grant that help school districts and/or school bus fleet operators acquire electric buses and supporting charging infrastructure. Grant evaluation and selection prioritizes school districts serving underserved communities. Since 2020, ESB has awarded 19 school buses to 11 school districts. To date, 10 of these buses are currently on the road. PGE ran the third cycle of ESB in 2022, awarding five districts the purchase of six buses and charging infrastructure. The fourth cycle of ESB opened in April 2023.

Table 65. 2022 Electric School Bus Fund Awardees

School District	Project County	# of Buses	Amount awarded for electric school bus <sup>292</sup>
Beaverton School District	Washington	1	\$272,509
Gresham-Barlow School District	Multnomah	1	\$273,750
Tigard-Tualatin School District	Washington	2	\$466,024
Portland Public Schools	Multnomah	1	\$162,335
Salem-Keizer Public School District	Marion/ Polk	1	\$280,842
<b>Total</b>	-	<b>6</b>	<b>\$1,455,460</b>

- **Matching External Funds** Starting in 2022, PGE reserved up to \$400,000 to provide matching funds to public agencies, community-based organizations, nonprofits, educational institutions, and other partnerships applying to external funding opportunities. PGE identified the need for reserving matching external funds through receipt of community feedback and from the increased federal funding opportunities for electric transportation. When matching funds are not awarded they revert to the DCF funding pool for that year.
- **Public Charging Infrastructure:** The project of upgrading outdated public charging infrastructure continued as part of the Infrastructure and Grant portfolio in 2022. To date, this project focused on updating legacy charging equipment that had been previously installed and operated by other entities dating back to 2012 often referred to as the Oregon Electric Byway (OEB). Upgrading and updating these sites has proven to be a greater challenge than originally anticipated.

After a year of engagement with site hosts, signed site host agreements were not progressing by mid-2022 which was impacting the ability to upgrade and update the sites. PGE evaluated what locations were most likely to result in improved EV driver experience and updated infrastructure. PGE provided a deadline to site hosts and offered the option for site hosts to either sign new agreements and easements with PGE to update the sites or take over ownership

<sup>292</sup> Final total award amount varies based on actual infrastructure costs.

of the existing make-ready without further PGE engagement. Due to the potential for poor driver experience, PGE did not want to leave unreliable or non-functional equipment in place.

As work at the sites that can be upgraded nears completion and some unspent funds from the original budgets remain allocated to this purpose, PGE will propose to use the remaining infrastructure budget to update other legacy chargers that are not fully functioning and providing a poor charging experience for drivers that rely on public charging. PGE will seek feedback in 2023 from stakeholders on this use of funds to replace other not fully functioning legacy public charging PGE owns that were funded through budget-limited pilot projects.

## EDUCATION AND OUTREACH

Education and outreach funds support programs that help dispel TE myths and educate all Oregonians that TE is here today and works for everyone. This effort will encourage and support an equitable transformation of the transportation sector. Details on these efforts follows:

- **Statewide Campaign, Oregon' Electric:** Based on research conducted in 2019, PGE determined additional awareness was needed around TE to equitably transform Oregon's transportation sector for all Oregonians. Once people are aware of the savings, incentives, and benefits of electric transportation, they are significantly more likely to consider purchasing an EV. Through research and focus groups with customers, PGE learned that there are significant barriers to EV adoption for underserved communities, including misconceptions around product availability, EV infrastructure, and the association of EVs with privilege.

In coordination with State partners and stakeholders, PGE completely redesigned the Oregon' Electric campaign website<sup>6</sup> in 2022 with an emphasis on updated content, a more user-friendly user interface, and updated images. PGE once again worked with For Good & Co. to produce the new website and content. Reaching underserved communities has been a key aim of the campaign so the entire website is available in both Spanish and English. This new website is more reflective of the broad variety of content available to customers, with the most meaningful content found in sections on Charging, Driving, Costs & Savings, Explore EVs, and News & Events.

- **Long-Term Engagement with Underserved Communities:** PGE is implementing a long-term engagement strategy to directly engage underserved communities as defined by HB 2165. These parties have historically lacked the resources to intervene in the regulatory process. This work will allow PGE to better understand the specific needs of these demographics. PGE's goal is to integrate underserved community wants and needs into the design, build, implementation, and modifications of TE programs. Funds will be used for participant compensation, facilitation services, among other expenses related to long-term community engagement and capacity building. These stakeholder engagement efforts are detailed in [Section 5.1](#), above.
- **Ride and Drives:** In 2022 PGE hosted the company's first ride and drive event since 2019. Held at Portland Community College Sylvania campus August 12 and 13, the event was successful in increasing awareness of the wide variety of EVs currently available and addressing barriers to EV adoption. In addition to driving, attendees were able to ask questions of EV owners and ask PGE subject matter experts about charging at home or on the go.

Highlights and learnings from the ride and drive included:

- The most popular cars to test drive were Ford Mustang Mach-E and Kia EV-6.

- 12 attendees already drove an EV.
- 100 of the 117 attendees asked said they are “very likely” to purchase an EV for their next car and 14 said they are “probably likely”. 293
- Respondents attended the event primarily to test drive EVs. Many attendees reported being at least somewhat knowledgeable about EVs, with some having experience driving EVs or already owning an EV of their own.
- Attendees reported high satisfaction with all aspects of the Ride-and-Drive, although some would have liked to see more vehicles available to test drive. Most indicated that the event increased their likelihood to buy or lease an EV.294
- The primary concern of attendees for purchasing or leasing an EV is the vehicle cost.
- **EV Costs and Savings Calculator:** PGE published an EV Costs & Savings Calculator in June 2022 on the Company’s website<sup>295</sup> which uses data from PGE’s rates and available state and federal financial incentives to help inform a customer on what owning an EV could look like for their budget and charging accessibility. This interactive tool has a comprehensive, updated inventory of all currently available electric vehicles, and their respective available financial incentives. The search page allows users to filter for their vehicle needs, including vehicle type, minimum range, price, etc. After a user selects their vehicle, they see all the vehicle details on one page. Users can change settings based on their vehicle usage, including average miles driven, years of ownership, eligibility for financial incentives, and charging strategy. After toggling to their usage, users can see their estimated total net savings, fuel savings, and greenhouse gas emissions reduced. The tool also includes details such as: electric vehicle specifications, cost by category, home charging options, EV dealerships, and a public charging map.

## EMERGING TECHNOLOGY

Emerging Technology funds support small scale testing of new TE technologies with the potential to provide customer and grid benefits. To-date these funds have been used to test and demonstrate emerging TE technologies that could scale to larger programs.

- **Vehicle-to-Grid:** PGE operated two separate vehicle-to-grid (V2G) projects in 2022, comprised of one passenger vehicle charger and one electric school bus charger.

The first V2G project was a +/- 6.2 kW Wallbox Quasar Level 2 charger designed to operate with a passenger vehicle (Nissan LEAF) through a CHAdeMO charging connector. PGE energized the charger in late 2021 and in 2022 successfully demonstrated V2G capabilities by drawing power from the connected EV’s battery. PGE plans to continue testing this V2G charger and may test additional chargers at this site as they become commercially available.

PGE is conducting the second V2G demonstration project in partnership with First Student, a school bus transportation contractor. The project uses a +/- 60 kW Nuve DCFC unit installed

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<sup>293</sup> Electric Car Insider (2022). *Electric Car Guest Drive After-Action Report*.

<sup>294</sup> Opinion Dynamics (2022). *PGE Transportation Electrification Pilot Program – 2022 Electric Car Guest Drive and EV Charger Exhibit Intercept Survey Results*.

<sup>295</sup> PGE. *Electric Vehicle Costs and Savings Calculator*. Retrieved from <https://portlandgeneral.com/energy-choices/electric-vehicles-charging/ready-to-buy-an-ev/electric-vehicle-costs-and-savings-calculator>.

at the First Student bus yard. This unit charges a Bluebird Type-C bus with a 155 kWh battery. The charger was energized in March 2022 and V2G capabilities were demonstrated in June 2022 before the charger was relocated. In 2022 Q3 the original school district selected a new transportation contractor who declined to continue testing at the original site.

The V2G charger has been relocated to the Wilsonville-West Linn School District and will resume testing in 2023. At the new site, testing will focus on the best time interval to control and collect data, communication latency, and overall charging/discharge efficiency. PGE looks forward to moving beyond the early exploration phase of testing towards the potential for V2G to support community resiliency.

- **Pole Charging:** In 2022, PGE evolved the initial CFP-funded pole charging demonstration to a broader utility pilot. Funding for this emerging technology enabled critical learnings that will result in more equitable charging infrastructure available across the region. These learnings include:
  - Following a new method of mounting chargers to poles to satisfy National Electric Code (NEC) and National Electric Safety Code (NESC) safety guidelines. The new mounting method puts chargers higher on the pole, with a QR code down below to activate a charging session. By mounting chargers higher up on the pole, PGE has been able to reduce safety concerns around climbing hazards and cable management that were brought up with the original demonstration chargers.
  - Developing an engineering standard design for the new chargers influenced by the original pole mounted chargers.
  - Efficiently deploying equitable charging accessibility. PGE’s experience with pole-mounted chargers and their lower relative cost when compared to pedestal chargers informed PGE’s planning for a larger scale program.

Beyond the initial chargers PGE plans to use learning from the pole-charging demonstration to implement a new utility pilot funded by the Monthly Meter Charge (MMC). This larger and broader municipal charging pilot offering will work in collaboration with municipalities and offer pole charging with other right-of-way chargers on a much larger scale, focusing on equitable access for underserved communities. PGE plans to install 60 utility pole mounted chargers using 2022 MMC funds and to install 100 utility pole mounted chargers with 2023 MMC funds.

- **Smart Charging:** Launched in late 2020, this three-year smart charging pilot program used vehicle telematics tools to track EV driver habits in the PGE Smart Grid Testbed areas to understand the impacts of EV charging behavior on overall grid load.<sup>296</sup> All participants received a \$150 enrollment incentive, and a \$25 seasonal participation bonus twice a year. The pilot was scoped for up to 500 EVs but due to geographical restriction of the Testbed only 177 vehicles could participate. PGE collected driving and charging data (e.g., charging time,

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<sup>296</sup> PGE’s Smart Grid Testbed is a first-of-its-kind-project that integrates smart grid technology at scale. The Testbed spans three distinct neighborhoods within PGE’s service area, in Hillsboro, Milwaukie and North Portland. Through the Testbed, the company works with 20,000 customers to take advantage of special demand-response signals as well as incentives for using smart-home technologies, giving them greater control over their energy use and carbon footprint.

location, consumption and travel distances and times) through integration between the vehicle and telematics software.

This initial testbed pilot resulted in the following key learnings that influenced PGE's ongoing residential EV programing:

- Driving and Charging
  - Longer-range EVs (battery capacity greater than 50kWh) tend to drive longer distances and have a higher energy demand than short range EVs and plug-in hybrid vehicles
  - EV Drivers typically start charging with a state of charge (SOC) of ~65 percent and end with an SOC of 90 percent. Longer range EV drivers end with a lower SOC of ~80 percent
  - Most charging sessions took place using a Level 2 charger and there is some dependency on fast charging with approximately 2 percent of charges occurring at this charging level. Most charging sessions took place using a Level 2 charger and there is some dependency on fast charging with approximately 2 percent of charges occurring at this charging level
  - Summer and winter charging demand was similar but weekend charging was more sporadic than weekday charging
- Charging Incentives learnings
  - The Testbed groups exhibited different behavior from the control group and demonstrate willingness to charge off-peak, particularly where incentives were offered.
  - Daytime off-peak times were not highly utilized by EV drivers.
  - The small sample sizes of the groups may allow for individual vehicles to become overly influential when analyzing load curves.
- **Electric Micromobility:** Feedback from underserved communities has indicated that EVs are too costly to be viable for low-income individuals and that EVs are not an option for those who are non-drivers. Using a minimal amount of CFP funding PGE will explore an electric micromobility program as a potential solution to these barriers. There are many different incentive types for electric micromobility, including rebates, free e-bikes, lending libraries, and charging hubs. These will be explored more using market insights.

The need for micromobility came from CFP stakeholder input and feedback from underserved communities via the rapid needs assessment. The first step in approaching micromobility will be to perform a market assessment and develop a strategy. As in all PGE programs, safety is a foundational value. The market assessment and strategy will include evaluation of risks and safety concerns.

## PORTFOLIO ADMINISTRATION

PGE tracks the cost to report, monetize credits, purchase RECs, transact in the market, and administer the CFP portfolio.

### A.4.1.2 Strategic Context

PGE plans to continue the portfolio administration and program categories agreed to with stakeholders. The portfolio approach with percentage targets for programs allows spending to flex

up or down based on actual revenues from CFP sales. With the removal of the requirement to keep CFP funds and ratepayer programs separate, PGE will coordinate CFP funds within the overall TE portfolio of programs where appropriate.

Within the 2023-2025 period, PGE will continue to fund current CFP programs like the Drive Change Fund and Electric School Bus grants at the current percentage levels (~30 and 20 percent, respectfully), leveraging additional revenue beyond today's programmatic levels to bring down the cost of TE programing to ratepayers. Dollars not currently slated for a TE program in the portfolio category nor above the forecasted revenue will be used primarily to serve the need for underserved community programs, or to fund demonstrations which look promising to meet the equity needs identified by stakeholders before the next TE plan. Using CFP dollars within the broader portfolio will need to be aligned with the remaining program principles:

- Support the goal of electrifying Oregon's transportation sectors
- Provide the majority of benefits to residential customers
- Provide benefits to traditionally underserved communities
- Programs are developed collaboratively and transparently
- Maximize use of funds for implementation of programs

#### **A.4.1.3 Timeline**

PGE plans to continue participating in the Oregon Clean Fuels Program through 2035 as required by Order No. 18-376.

#### **A.4.2 Budget**

The program is funded via revenue from the sale of residential CFP credits and is therefore not included in either the Transportation Electrification Plan's funding request or its cost effectiveness tests.

This is the first time the company has published a forward-looking estimate of CFP revenue. It is important to note that PGE is a participant in the CFP marketplace, and that marketplace is subject to market fluctuations. As this forecast is based on multiple forward-looking estimates, readers should assume actual credit revenue will vary. PGE will continue to report actual credit revenue to both the PUC and DEQ on an annual basis.

Using the assumptions for the cost estimate of the CFP ([Table 38, page 158](#)), PGE developed estimated program expenditures through 2025 illustrated in [Table 66](#), below. Note that actual expenditures will vary based on CFP revenue.

Table 66. Forecasted Clean Fuels Funds (2023-2025)<sup>297</sup>

Category	2023	2024	2025	2023-2025
<b>Infrastructure and Grants<sup>298</sup></b>	<b>\$9,054,290</b>	<b>\$10,560,073</b>	<b>\$15,253,276</b>	<b>\$34,867,639</b>
DCF	\$4,527,145	\$3,907,227	\$5,643,712	\$14,078,084
ESB	\$3,621,716	\$2,956,820	\$4,270,917	\$10,849,453
Matching Funds	\$543,257	\$528,004	\$762,664	\$1,833,925
TE Portfolio	-	\$2,745,619	\$3,965,852	\$6,711,471
Education and Outreach	\$90,543	\$105,601	\$152,533	\$348,677
Admin	\$271,629	\$316,802	\$457,598	\$1,046,029
<b>Education and Outreach</b>	<b>\$1,175,881</b>	<b>\$1,371,438</b>	<b>\$1,980,945</b>	<b>\$4,528,264</b>
Statewide Campaign	\$446,835	\$521,146	\$752,759	\$1,720,740
Ride-and-Drives	\$176,382	\$205,716	\$297,142	\$679,240
Long-term US engagement	\$211,659	\$246,859	\$356,570	\$815,088
PGE Education and Awareness	\$235,176	\$274,288	\$396,189	\$905,653
Administration	\$105,829	\$123,429	\$178,285	\$407,543
<b>Emerging Technology</b>	<b>\$587,940</b>	<b>\$685,720</b>	<b>\$990,472</b>	<b>\$2,264,132</b>
Micromobility	\$264,573	\$308,574	\$445,713	\$1,018,860
Vehicle-to-Grid	\$146,985	\$171,430	\$247,618	\$566,033
Research and Development	\$117,588	\$137,144	\$198,094	\$452,826
Admin	\$58,794	\$68,572	\$99,047	\$226,413
<b>Administration Total</b>	<b>\$940,706</b>	<b>\$1,097,150</b>	<b>\$1,584,756</b>	<b>\$3,622,612</b>
Staff Time	\$352,765	\$411,431	\$594,283	\$1,358,479
REC Purchases	\$470,353	\$548,575	\$792,379	\$1,811,307
Evaluation	\$117,588	\$137,144	\$198,094	\$452,826
<b>Total Funds Forecasted<sup>299</sup></b>	<b>\$11,758,817</b>	<b>\$13,714,381</b>	<b>\$19,809,449</b>	<b>\$45,282,647</b>

<sup>297</sup> Includes all forecasted CFP revenue, including planned funding for use.

<sup>298</sup> Includes forecasted funds that could be applied to the TE portfolio while meeting the requirements of Order No. 18-376, amended by Order No. 22-314.

<sup>299</sup> Ibid.

### A.4.3 Additional Scope/Scale

PGE plans to continue the portfolio administration and program categories agreed to with stakeholders. The agreed upon portfolio approach—with percentage targets for programs—allows for spending to flex up or down with actual revenues from CFP sales. PGE will coordinate CFP funds within the overall TE portfolio of programs where appropriate.

Table 67. Breakdown of Cost Categories Across the Portfolio

Category	% Portfolio per Year
Infrastructure and Grants	70%–80%
Education and Outreach	5%–15%
Emerging Technology	5%–15%
Estimated Administrative Costs	5%–10%

#### A.4.3.1 Incremental Credits

DEQ’s 2021 CFP rulemaking introduced the concept of base and incremental credits. Base credits are generated through use of a fuel with carbon intensity lower than that of gasoline or diesel. Incremental credits are generated when a registered entity claims a lower carbon intensity of electricity by retiring RECs alongside EV charging. Incremental credits are otherwise functionally the same, as there is no distinction in selling or trading either type of credit.

Incremental credits were first available in 2021. Since there is a two-year delay between when credits are earned and when they are used to fund a program (e.g., CFP credits from the EV count in 2020 funded 2022 CFP program year) the first year incremental credits will fund program activity is 2023. Once incremental credits are claimed and deposited into a utility account by DEQ, they appear as credits in the account balance and there is no way to distinguish them from a base credit. In order to track the revenue earned via base versus incremental credits, PGE applies the yearly average CFP credit price to the percentage of base versus incremental credits. Incremental credit revenue expenditures will need to meet the same standards as base CFP revenue, with a particular focus on the underserved communities, as defined in HB 2165.

#### A.4.4 Original Proposal

To maintain readability of this document, the original CFP proposals are linked here rather than embedded in their entirety:

- PGE’s 2022 Clean Fuels Program Report to DEQ:  
<https://www.oregon.gov/deq/ghgp/cfp/Pages/utility.aspx>
- PGE’s 2023 Clean Fuels Program Plan:  
<https://edocs.puc.state.or.us/efdocs/HAH/um2033hah162744.pdf>
- PGE’s 2022 Clean Fuels Program Plan:  
<https://apps.puc.state.or.us/edockets/edocs.asp?FileType=HAH&FileName=um1826hah112934.pdf&DocketID=20725&numSequence=74>.



- Prior plans can be found under OPUC Docket UM 1826:  
<https://apps.puc.state.or.us/edockets/docket.asp?DocketID=20725>.