

Chapter 7. Transportation Electrification Portfolio

In this chapter, we detail PGE’s current portfolio of activities and our envisioned portfolio over the 2023-2025 timeframe. This portfolio is designed with a focus on addressing the market barriers discussed in [Section 4.6](#), and on meeting the needs of the following underserved communities described in HB 2165: residents of rental or multi-family housing; communities of color; communities experiencing lower incomes; tribal, rural and frontier communities; other communities adversely harmed by environmental and health hazards; and communities in areas with a low density of public charging stations.

Our portfolio also integrates load management, leveraging different approaches as appropriate for different use cases, and ensuring the buildout of networked, flex load-capable charging infrastructure. Our portfolio is intended to support residential customers at and near their homes, in public, at work, and on the go, no matter their form of transportation. The portfolio supports businesses small and large as they adopt EVs and install charging for their customers, employees, residents, and fleets. We have designed our portfolio to support our broad constituencies of urban, suburban, and rural communities. And most importantly, the portfolio is flexible: as we execute this Plan, we plan to continue to evaluate the market and conduct customer insights work to ensure that the portfolio supports all our customers and their varied needs. Additionally, we plan to continue to update activity between TE Plan cycles. PGE will keep stakeholders and Staff abreast of planned or necessary changes before making a filing requesting the activity change.

7.1 Portfolio Management

This section describes PGE’s three primary mechanisms to support EV adoption: rates, infrastructure, and programs. These mechanisms inform PGE’s TE strategy and underpin the activities described in latter parts of this chapter ([Sections 7.2](#) and [7.3](#)).

7.1.1 Rates

Electricity is an EV driver’s “fuel”. Changes to PGE’s pricing structure (i.e., the cost of the “fuel”) can reduce the long-term cost for EV operation and maintenance, encourage grid-supportive charging behaviors through pricing signals, and bring down the TCO of EV ownership across customer classes. An important part of the 2019 TE Plan Strategy which carries to the 2023 TE Plan Strategy is the development and utilization of rates to manage load, charging behavior, customer expectation, customer costs, and system costs. The work outlined in the 2023 TE Plan is designed to acquire data to inform future rate design. At present, PGE has identified the following initial market and customer sectors which may require specific rate design: residential (single and multi-family), business, fleet, public (including municipal and third party EVSE), and heavy duty. PGE’s 2023 TE Plan proposes program activity directly in these areas.

7.1.2 Infrastructure

Charging stations and supporting electrical infrastructure are essential to develop charging reliability, reduce range anxiety, expand equity and access, and, ultimately, to meet the state’s EV adoption targets.

Infrastructure investment will be necessary to support transportation electrification. The necessary infrastructure investment and the role PGE plays in that investment will vary based on the expected size and various load shapes presented by LDV, MDV, and HDV transportation. As the market matures, the level and type of support which PGE provides will also change. In these early years, PGE anticipates using a greater percentage of TE activity funds for make-ready, managed load, and site development coordination. Early work will inform PGE regarding how much cost sharing for make-ready the PGE system will need to carry and how much should be carried by those looking to construct vehicle charging. Presently, PGE foresees utilization of line extension allowances as a way to balance infrastructure costs while including terms for service such as site coordination, site building and development standards, communication network requirement, metering requirements, and public access.

Make-ready infrastructure is a proper role for the utility. Make-ready infrastructure encompasses the electrical equipment, wiring, and conduit from the existing grid to the EV parking area.¹⁸⁰ In typical installations, the utility owns the equipment up to and including the meter and the customer owns the equipment “behind-the-meter”. In some of PGE’s current and proposed programs, PGE owns, or plans to own, some or all of the customer-side make-ready equipment, in some cases including the EVSE (charger) itself. Many of the proposed TE activities in this plan are infrastructure measures as defined by the Commission’s Division 87 Rules and are thus designated accordingly. As proposed in the 2023 Plan, these infrastructure measures are colloquially referred to as programs. This is purposeful, as PGE views many of the infrastructure measures in the 2023 TE Plan as programs which the Company needs in the near term to inform development of more traditional and sustainable electricity service approaches (i.e., TE-specific rates and tariffs). The infrastructure measures to be undertaken in the 2023-2025 timeframe are largely meant to meet an emerging market while collecting data and information to inform evolution from program to rates and tariffs.

Table 22. New and Existing Transportation Electrification Activities by Segment and Approach

Customer Segment	Approach	Activities
Residential	Rates	Time-of-Day Rate (Sch. 7) Public Charging Rates (Sch. 50) Residential EV Rate
	Infrastructure Measures	PGE Public Charging Residential Smart Charging Pilot (Sch. 8) Public Charging – Municipal Charging Collaborations Program
	Programs	EV Costs and Savings Calculator Drive Change Fund

¹⁸⁰ See [Figure 13](#), on page 89 above, for an illustration of make-ready components to connect an EV charger to PGE’s distribution system.

Customer Segment	Approach	Activities
		Oregon' Electric Campaign Education and Outreach
Business and Multi-family	Rates	No-Demand Charge Rate (Sch. 38) Commercial EV Rate
	Infrastructure Measures	Business EV Charging Rebates (Sch. 52) Affordable Housing EV-Ready Funding Business and Multi-family Make-ready Solutions (Sch. 52 and 56)
	Programs	Technical Assistance
Fleet	Rates	No-Demand Charge Rate (Sch. 38) Commercial EV Rate
	Infrastructure Measures	Fleet Partner (Sch. 56) Heavy-Duty Charging Demo Sites (Sch. 53) Business EV Charging Rebates (Sch. 52)
	Programs	Energy Partner (Sch. 26) Fleet TCO Tool Clean Fuels Credit Optimization (Sch. 328) Electric School Bus Fund eFleet Charging Software Solution
Emerging Opportunities		Matching External Funds Emerging Technology Research and Development Micromobility Strategy
Other TE Activity		PGE Workforce Development Statewide Workforce Development PGE Fleet Electrification

7.1.3 Programs

TE programs can address barriers, reduce total cost of ownership, increase awareness, and support the grid whether they are focused on education and outreach, supporting customers in acquiring vehicles, “wrap-around” services to add customer value, flex load to create incremental grid value, or other objectives.

While PGE's current and proposed 2023-2025 program activity includes work the Commission Division 87 rules define as infrastructure measures, as we have outlined above, the programs category of work should evolve to support adoption, education, awareness, etiquette, load management, data collection, discrete small technology demonstration, community development, and low income or underserved community work.

In this portfolio of current and proposed activities, we apply these mechanisms across different customer segments. We also discuss current and planned company-wide activities designed to holistically advance our TE strategy.

7.2 PGE's Current Portfolio

7.2.1 PGE's 2023 -2025 Program Concentration Area Rationale

Oregon ranks overall third in the nation for electric vehicle adoption, just behind Washington (#2) and California (#1).¹⁸¹ The Inflation Reduction Act and other federal and state funding has increased EV adoption which can be seen driving EV adoption in PGE's service area. As outlined and discussed above, this Plan's activity is designed to address current emerging and underserved community needs, but also to collect data, practice, and experience to inform longer-term sustainable practices.

One item of focus in our 2023 TE Plan is fleet development. There are several reasons for this work. Oregon followed California's adoption of the Advanced Clean Truck Rules in 2021. Alongside these policy changes, multiple manufacturers rolled out their first electric semi-trucks in 2022.¹⁸² This governmental action is also helping to transition light- and medium- duty vehicle fleets to electric models. Lastly, fleets representing medium- and heavy- duty loads are generally clustered on the system and represent a unique load shape from other more transient or dispersed use cases such as residential or public charging.

The Advanced Clean Cars II rule in Oregon is furthering the availability of EVs, which puts pressure on OEMs to supply affordable passenger vehicles and light-duty fleet vehicles. This highlights the need to coordinate with customers seeking to locate larger charging sites. The ability to connect with customers early (before fleet site design and location has been solidified) is important to managing the costs TE loads may impose on the system.

Other Plan activities such as Public Charging - Municipal Charging Collaboration, Residential Smart EV Charging, PGE Fleet Electrification, and Business and Multi-family Make-ready Solutions inform PGE how to build more sustainable approaches to serve and manage TE load. For example: PGE has seen a large growth in the Residential Smart EV Charging pilot enrollments, from 480 enrollments in 2021 to 2,298 enrollments in 2022. This enrollment tells us two things: new EV owners want level 2 charging and are willing to participate in flex load programs.

We expect to see similar participation in Business and Multi-family Make-ready Solutions, which also includes a managed charging component. It is important to PGE—and necessary to meet the State's

¹⁸¹ Atlas. *EV Hub: State EV Registration Data*. Retrieved from <https://www.atlasevhub.com/materials/state-ev-registration-data/>

¹⁸² Oregon Administrative Rules 340-261: https://secure.sos.state.or.us/oard/displayDivisionRules.action;JSESSIONID_OARD=H3uxiJ2FwQtSqw1U8YCtGxii4B4RyiwOHMjaUp8ikYOv0Kchzmkw!1684782157?selectedDivision=6697

clean energy goals—that we continue to cultivate a structured relationship with customers such that they understand the utility role in transportation electrification.

PGE also proposes to expand our pole charging activity under our Public Charging - Municipal Charging Collaboration program. This will help meet the needs of underserved communities and those residing in either low income housing or housing without access to either garage parking or dedicated parking.

Our ownership of Electric Ave charging sites has illustrated the importance of partnership to manage maintenance and operations of EVSE. These sites have and continue to provide valuable usage data and a place for PGE test new approaches to public charging.

7.2.2 Residential customers

PGE's current portfolio of TE offerings for residential customers spans home and public charging rates; a growing fleet of public charging locations; a connected charger program with the capability to lower EV charging demand during on-peak events; and numerous tools, campaigns, and events for public education.

7.2.2.1 Time of Day Rate (Schedule 7)

While PGE has had TOU rates for residential and commercial customers for many years, in 2021 we introduced a new Time of Day (TOD) rate that gives residential customers more choice and control in how they manage their energy use. The rate uses pricing signals to encourage customers to voluntarily shift energy usage from high demand hours to off-peak periods when demand is lower and renewable resources are more plentiful. This offers customers like EV drivers, who can shift significant portions of their load to overnight hours, potential cost savings on their energy bill, and thereby reduces the TCO of driving an EV. Designed with simplicity in mind, pricing on TOD is less than our Basic Service at all hours and days except for the on-peak timeframe of 5-9 PM Monday-Friday. The following chart provides additional detail regarding PGE's current TOD pricing:

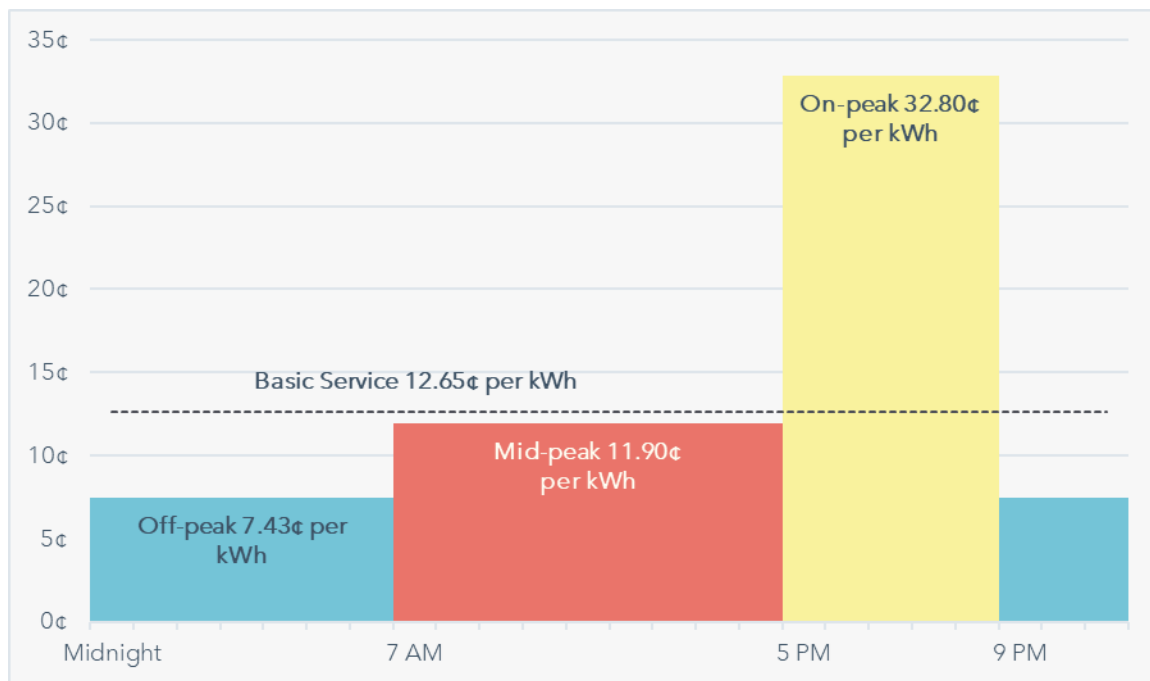


Chart 8. PGE's Time of Day Pricing¹⁸³

Thus far into the deployment, the program team has learned that building awareness and educating EV customers about the value of TOD is foundational to the success of this offering, and lower-than-expected customer response confirms this to be true (8,716 enrollments to date including 1,102 EV owners as of March 31, 2023). To support our ambitious growth goals, PGE is refocusing our efforts on increasing rate awareness and recently introduced an online rate comparison tool that enables customers to compare personalized savings on TOD versus Basic Service. Targeted outreach to EV customers will follow as awareness and customer receptivity increases, and we estimate residential market adoption will reach 100,000 customers by 2030.

Preliminary analyses indicate that approximately half of EV owners in PGE service area could save on their bill via the new rate without any behavioral changes, and a lesser proportion could save given some modification to their usage patterns. It is, however, important to note that TOD is not strictly a TE product: the rate is revenue-neutral, and its design and implementation were budgeted through PGE's Multi-Year Plan¹⁸⁴. These costs are therefore not considered part of PGE's TE portfolio budget.

7.2.2.2 Public Charging Rates (Schedule 50)

PGE's public charging rate, Schedule 50, is the OPUC-approved tariff applied at the company's public EV chargers. Schedule 50 is designed with the following priorities in mind:

- **Simplicity:** Schedule 50 is designed to be easy to understand for EV drivers

¹⁸³ Prices shown reflect energy, transmission, and distribution costs. Over 1,000 kWh there is an extra 0.36¢ charge.

¹⁸⁴ PGE (2021). *PGE's 2021 Multi-Year Plan*. Filed under OPUC Docket 2141 on November 3, 2021. Retrieved from <https://edocs.puc.state.or.us/efdocs/HAD/um2141had16243.pdf>.

- **Grid-Efficient:** Schedule 50 contains an on-peak surcharge to encourage drivers to charge during off-peak times
- **Equity:** Schedule 50 is designed to result in a price per kWh (relatively similar to residential rates) as it is implemented at sites designed and located to meet the needs of drivers who lack the ability to charge their EV at home

Schedule 50 pricing for EV charging is as follows:

- A flat \$3 per charging session fee for L2 chargers
- A flat \$5 per charging session fee for DCFC
- As an alternative to the flat fee, drivers may elect to pay a \$25 per month subscription fee (applicable only at Electric Avenue sites)
- Regardless of whether the driver pays the flat fee or uses the subscription, a surcharge of \$0.19 per kWh is applied during peak hours (3-8 PM on weekdays, excluding holidays)

Schedule 50 revision for TE Plan

- PGE is exploring a revision of its public charging rate, Schedule 50. Based on current market trends, PGE is looking to transition to a per kWh fee for both L2 and DCFC charging. This new rate will look to follow the below guiding principles:
 - A L2 rate that is equitable and aligned with PGE’s Schedule 7 residential charging rate.
 - A DCFC rate that:
 - Is grid friendly and encourages charging during off-peak hours and
 - Falls into mid-market rate based off our charger’s max output.
 - Adding an idle fee to both our L2 and DCFC rate, to encourage drivers to move their vehicles and allow others to use the chargers.
- PGE will continue to explore the right structure of a subscription rate to align with the above principles and find an equitable rate for customers who cannot charge at their home residence. PGE will also explore an equitable rate or solution to support income qualified customers at PGE’s DCFC Charging.

The 2023 TE Plan activity is designed to gather load profile data for residential (single and multi-family), business, fleet, public, and heavy-duty to inform further development of Schedule 50 or other time of use rate structures. This work is a major component of PGE's 2023-2025 TE strategy.

The load profile data for PGE L2 and DCFC public charging will also help identify a public charging rate outside of Schedule 38 to help encourage charging at optimal times and mitigate demand charges, which can be hard for public charging and workplace charging customers to plan for and manage.

7.2.2.3 PGE Public Charging

PGE offers public charging within its service area via the Electric Avenue Network, Oregon Electric Byways, and our Pole Charging pilot, described below:

Electric Avenue Network: PGE built, owns, and operates a network of seven public charging locations with four 50 kW DC fast charging ports and two 7.2 kW Level 2 charging ports per site (exception: Salem Electric Avenue has two 50 kW DC fast charging ports and two 7.2 kW Level 2 charging ports). Six of these sites were built as part of PGE’s 2016 Transportation Electrification Plan, while the seventh site at WTC is a legacy utility investment. Sites are located in Downtown Portland, East Portland, Milwaukie, Beaverton, Hillsboro, Wilsonville, and Salem. The network delivered approximately 487,695 kWh in energy to drivers via 28,734 charging sessions in 2021, powering an estimated 1.5 million miles of electric travel. Lessons learned include:

- Public DCFC infrastructure is still an evolving technology and requires a comprehensive maintenance strategy to ensure high equipment uptime.
- Drivers are highly responsive to peak-time pricing, providing PGE an effective tool to shape utilization patterns.
- Location matters to utilization, which can vary by a factor of four based on location.

Oregon Electric Byways: PGE took ownership of eleven public charging locations developed as part of Oregon Electric Byway in the mid-2010s. PGE worked with vendors and site hosts to keep aging equipment functional and to retire locations that were no longer appropriate for charging infrastructure. Since 2021, PGE has worked with site hosts to replace equipment at end-of-life with new, more reliable, and higher-powered charging infrastructure. This work has been funded by proceeds from PGE’s Clean Fuels program. Sites that are not upgraded will be retired. Lessons learned from this work include:

- Charging technology has dramatically changed since the manufacture and installation of the equipment of these sites nearly a decade ago. Much of the equipment is now at end-of-life and may not even be supported by the manufacturer. PGE is addressing this issue by replacing or retiring equipment.
- Location matters. Sites that originally seemed promising may become difficult for drivers to utilize as property owners change and/or adjacent facilities are modified.
- Multiple fast charging ports make locations more attractive to drivers. Oregon Electric Byway locations have only a single DCFC port, resulting in potentially long wait times for drivers who arrive while others are already charging.
- Site host engagement was a particular challenge with upgrade projects. These sites needed updated agreements and negotiating that process proved difficult, with some properties having gone out of business or changed ownership since the original installations.

PGE has found great value in our work with the Electric Avenue Network and the Oregon Electric Byways. Learnings include how to serve this market, the challenges of developing charging sites, the many partnerships necessary to develop a site, and how to manage the charging infrastructure. While there are advantages to a utility owning chargers, PGE envisions that the private market is better positioned to own and maintain public chargers, and that the utility role is to support that private market charger ownership. However, PGE may need to own chargers in limited capacity such as:

- where the private market is slow to act
- where ownership would inform PGE of best practices to address the needs of a market

- new TE load type
- where utility charger ownership supports equitable access to transportation electrification
- where customer experience necessitates

Even in the above cases, PGE will seek charger ownership partnerships to lower costs.

Pole Charging Pilot: PGE owns and operates two Level 2 charging ports mounted on utility poles through a demonstration project in the City of Portland. The neighborhood where the chargers are located is residential, with a high proportion of multi-family dwellings, rentals, and single-family homes that lack off-street parking. It is also within walking distance of a popular commercial district. PGE's pole chargers remain popular with drivers, delivering 32,750 kWh, which outperformed all other PGE-owned public Level 2 chargers in 2021. Lessons learned from the demonstration include:

- Charging ports that serve on-street parking are popular with drivers.
- Installing L2 charging equipment on utility poles is more cost efficient than installing L2 charging in a parking lot.
- Working with municipalities in the right-of-way allows PGE to have one site host agreement governing multiple sites, which makes the installation process faster and more affordable.
- Installing charging equipment on utility poles requires that hardware and installation be compliant with National Electric Code (NEC), National Electric Safety Code (NESC), PGE Electric Service Requirements, and PGE standards. These requirements significantly limit the selection of hardware for these sites. To date, PGE has found only a single equipment provider that can meet all these codes and standards.

PGE's work on pole mounted chargers, including our outreach and work with the municipalities, has illustrated that pole-mounted chargers may be the best, least cost approach for PGE to provide underserved communities, multi-family, and rentals with equitable access to EV charging. PGE will also be seeking charger ownership partnership to meet this market.

7.2.2.4 Residential Smart EV Charging Pilot (Schedule 8)¹⁸⁵

PGE's Residential Smart EV Charging pilot launched in 2020, and, at the close of April 2023, had 2,982 enrollees. The current pilot is available to up to 5,000 eligible residential customers. PGE proposes to extend the pilot through the end of 2025, reduce the charger rebate amount from \$500 to \$300, and eliminate the enrollment cap. PGE proposes this pilot extension to continue to learn more from the current pilot and to leverage learnings from the Smart Grid Testbed's EV Charging Study towards the creation of a managed charging program. The Residential Smart EV 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.

¹⁸⁵ PGE Schedule 8, retrieved from https://assets.ctfassets.net/416ywc1laqmd/2CrkwfPNPaDoM1tiVX68k0/ebaf7236dbbcf7a85c04197310f530ee/Sched_008.pdf.

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 proposes to reduce the charger rebate amount from \$500 to \$300.
- If customers purchase and install a Level 2 charger prior to it being added to PGE's Qualified Products List, they can still receive a \$50 rebate.
- Customers that drive a qualified vehicle 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 Smart EV Charging pilot and, like those that receive the charger rebate, have flex load events called.

This pilot has also included dealership incentives to help enroll prospective EV buyers in the Residential Smart EV 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 Charge¹⁸⁶ to enhance this pilot. There were no 2023 Monthly Meter Charge dollars allocated to the Residential Smart EV Charging pilot. These enhancements from 2022 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 Smart EV 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 home¹⁸⁷.

As of October 2022, there are 1,491 customers enrolled in the pilot. 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. By the end of the current pilot, PGE anticipates the pilot will have 2.25 MW of enrolled 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.

¹⁸⁶ PGE's 2022 Monthly Meter Charge filing, retrieved from <https://edocs.puc.state.or.us/efdocs/HAH/um2033hah1673.pdf>.

¹⁸⁷ Requirements to qualify for the Panel Upgrade Rebate: For those who require an electric panel upgrade, PGE offers a Standard Panel Installation Rebate of up to \$1,000 and an Income-Eligible Panel Installation Rebate of up to \$5,000 for income-eligible customers. The panel upgrade must be done by a licensed electrician and the Level 2 charger must be hardwired. Participant must include a copy of receipt or invoice in the exact dollar amount of the cost of the panel upgrade work with their installation rebate application. The panel must be upgraded to at least 200 Amp service. Participant must meet all eligibility requirements and be accepted into the Residential Smart EV Charging pilot to qualify for the panel upgrade rebate. This is not a stand-alone rebate. The panel upgrade must occur on or after November 16, 2022. Any panel upgrades performed prior to November 16, 2022 are not eligible for this rebate. In order to claim the electric panel upgrade rebate, customers must replace an existing main electric breaker panel with a 200 Amp (or higher) main breaker panel with a minimum of 30 slots and 40 circuits (equivalent or better). The rebate can be applied to cover the following costs, among others (at PGE's sole discretion): Replacing the main electric panel and breakers; Replacing or relocating the electric meter main panel and associated conduit; Wiring from the meter base to the panel; Wiring from the meter base to the weatherhead; Code required wiring upgrades.

With this TE Plan, PGE proposes a budget change of \$4.2 million to extend the pilot by one year (through the end of 2025) and allow more than 5,500 participants in the pilot. The budget change is funding the pilot extension and changes through MMC funding instead of deferral funding.

The budget increase will allow the integration of 2,000 additional vehicles (9,899 total) and 0.90 MW additional flexible load capacity (for a program total of 3.15 MW) as well as cover the on-going seasonal incentives current pilot participants can earn. Please see [Appendix A.1](#) for additional details.

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.

7.2.2.5 EV Costs and Savings Calculator

PGE launched its Electric Vehicle Costs and Savings Calculator in June 2022. This online, interactive calculator enables the public to better understand the TCO of acquiring an EV. Customers can enter basic information about their future vehicle purchase desires and quickly receive results that show the economic and environmental costs and savings of switching to electric. The tool also allows customers to explore the rebates and cost offsets they are eligible for, view information about vehicle charging, and see suggestions of other PGE programs they may be interested in, such as Time of Day or Green Future Choice (PGE's renewable program for residential customers). Since launch, there have been about 19,000 visitors to the calculator, with about 95 percent reporting that they are more likely or just as likely to purchase an EV after using the calculator. Customer satisfaction with the tool has been high. We have learned to promote the calculator through education and outreach. This includes having the calculator available at the February 2022 Portland Auto Show and Ride-and-Drive events.

7.2.2.6 Drive Change Fund

The Drive Change Fund is focused on electrifying transportation in Oregon and in support of underserved communities. PGE uses revenue from the sale of residential credits from the Oregon Clean Fuels Program to provide grants for projects that include acquiring EVs, installing charging infrastructure, education or outreach campaigns, and innovative projects accelerating the adoption of transportation electrification. Nonprofit, private, and public organizations are invited to apply for this competitive grant fund as long as they demonstrate a community benefit, with a further focus on environmental justice communities. Projects are eligible to receive up to 100 percent funding for a project, with single awards capped at \$750,000. The DCF has been available for four years and has funded \$8.92 million to 52 organizations in Oregon. The 2023 budget for DCF is \$4.5 million and will be the fifth year DCF.

In this TE Plan, PGE is proposing to continue the Drive Change Fund through 2025, with forecasted annual budgets of approximately \$4.5 million in 2023, \$3.9 million in 2024, and \$5.6 million in 2025.

7.2.2.7 Oregon' Electric Campaign

PGE continues to work with PacifiCorp to deliver Oregon' Electric, a brand-neutral statewide transportation electrification campaign launched as part of the 2020 PGE Clean Fuels program

portfolio. The goals of the campaign are to engage and educate all Oregonians on transportation electrification and accelerate transportation electrification in the state.

The 2021 messaging campaign focused on reaching underserved communities, including non-English speaking, rural, and also black, indigenous, and people of color (BIPOC) communities. It highlighted real stories, quotes, and members of the community sharing their reasons for choosing electric transportation. The campaign had over 8 million views and was successful within key demographics such as Oregon's Hispanic population, which represented around 10 percent of total views.

In 2022, PGE Clean Fuels program funds covered the creation of a statewide website meant to serve as a central hub for TE in Oregon¹⁸⁸. This website launched in Q4 2022. Additional funds from PGE's 2022 Monthly Meter Charge Budget will cover purchased media, earned media outreach, narrative development, storytelling, creative assets, social media management, and dealership engagement. The campaign will continue to deliver the following messages:

- Electric transportation is available today for everyone in multi-modal applications that meet a variety of transportation needs including rural, urban, on-road, off-road, micromobility, and public transit applications
- Transportation electrification is a critical piece of meeting the state's environmental and climate goals

Where possible, PGE will continue to work with industry, dealerships, advocacy groups, state agencies, and other utilities to add to the overall budget and extend the reach of the campaign.

7.2.2.8 Education and Outreach

Oregon ranks overall third in the nation for electric vehicle adoption, just behind Washington (#2) and California (#1).¹⁸⁹ With more and more drivers considering EVs, there is a significant education and awareness need to help drivers understand electricity as the new "fuel" for their vehicles. This paradigm shift is substantial and requires customers to consider a new relationship with PGE. Customers will no longer fill up at the corner gas station in five minutes or less, but will instead need to plan ahead to charge their cars at home and on the go.

Reaching PGE's clean electricity targets relies on managing new charging and electrification load such as EV smart charging and time of day. As such, we are launching a multi-year "Path to 2030" strategic brand education and outreach campaign to build awareness, help customers understand the mission, reinforcing that it will take all of us working together, and the role(s) they play. As part of this campaign, EV adoption, charging, and energy management will be at the forefront of how customers can make a difference. To achieve this, we need customers to become co-creators of our shared clean energy future we'll need consumers to actively participate in energy management.

A major workstream of this campaign will be specific to EV/TE education and awareness and its connection to our larger decarbonization commitments. We will come back mid-cycle with specifics on scope, schedule, and budget.

¹⁸⁸ Oregon' Electric, see: <https://oregoinelectric.com/>

¹⁸⁹ EVHub data from Atlas EV Hub. *State EV Registration Data*. Retrieved from <https://www.atlasevhub.com/materials/state-ev-registration-data/>.

PGE also conducts regular and ongoing education and outreach work to customers and community members about TE. PGE was the primary sponsor of the Electric Avenue showcase (no relation to PGE's Electric Avenue network) at the 2022 Portland International Auto Show. PGE collaborated with PacifiCorp, Clark Public Utility District, Forth, Chargeway, and the Oregon Auto Dealers Association to host an expanded EV showcase featuring several available EV models, residential and commercial charger displays, and a comprehensive exhibit of available EVs, all staffed by volunteers from the above-mentioned companies. PGE directly engaged with more than 100,000 attendees on the benefits of EVs, including many in-depth conversations related to ownership, charging, rebates, and incentives.

In another example, PGE once again partnered with Electric Car Insider to host a two-day Ride-and-Drive called the Electric Car Guest Drive (ECGD). This was the first PGE Ride-and-Drive event since the beginning of the COVID-19 pandemic. The ECGD allows prospective EV buyers the opportunity to learn about operating and acquiring (purchasing or leasing) an EV. The 2022 ECGD featured an educational EVSE exhibit highlighting six residential and six commercial grade EVSE, with accompanying information and literature. PGE joined with Portland Community College to host the ECGD at the Sylvania campus on August 12-13, 2022. The first day focused on commercial customers, while the second day was designated for residential customers. Customers took 460 test drives during the event, and 89 percent of attendees reported that they were "very likely" to purchase an EV for their next vehicle. PGE plans to hold three more Ride-and-Drive events in 2023.

7.2.3 Business and Multi-family Customers

PGE's current portfolio of offerings for business and multi-family customers now contains offerings for make-ready and charger rebates. This is funded by the 2023 MMC, which targets 100 ports at multi-family, commercial, and workplace locations. Over one-third (40 percent) of those ports will specifically be targeted to multi-family locations. PGE views these investments as ultimately supporting residential customers' charging equity (particularly in the multi-family segment) and we therefore focus a substantive portion of our portfolio expansion in this area. Amongst other benefits, these offerings will improve charging adequacy for the multi-family segment.

7.2.3.1 No Demand Charge Rate (Schedule 38)

While not designated solely for TE load, PGE's Schedule 38 tariff is used by owners and operators of EV charging because it does not apply demand charges. Customers may use Schedule 38 for up to 200 kW of load. We have seen fleet customers select Schedule 38 to help mitigate their demand charges while knowing that their charging can adhere to the time of use rate. Since this rate design predates TE, we will explore how to better structure a Schedule 38-like rate to manage the load for public, workplace, and other charging scenarios, as well as determine other rate options for demand in excess of 200 kW.

7.2.3.2 Business EV Charging Rebates (Schedule 52)¹⁹⁰

PGE's Business EV Charging Rebates pilot launched in December of 2020. This pilot is available to all non-residential customers who install qualified Level 2 EVSE at their premises. The pilot launched with

¹⁹⁰ PGE Schedule 52, retrieved from https://assets.ctfassets.net/416ywc1laqmd/4kQwkhxFjQiA3zg1zFbWGI/70b713aa73ffae5f60127e93d64a0de/Sched_052.pdf.

a standard rebate of \$500 per port (increased to \$1,000 per port in July 2021) and an income-qualified multi-family rebate of \$2,300 per port (extended to all multi-family sites in November 2022). In exchange for the rebate, customers agree to keep the EVSE operational and on a PGE cost-of-service rate for 10 years, as well as release the charger data to PGE for analysis and reporting purposes. Rebates may be paired with programs such as Fleet Partner, Drive Change Fund, and Electric School Bus Fund and are newly reservable in order to offer customer certainty even in the face of uncertain construction timelines.

The pilot launched with three software providers and 10 EVSE hardware models on the qualified product list. PGE continues to add products as we engage vendors and sign data sharing agreements. As of April 2023, the list contains 13 software providers and 39 EVSE hardware models.

The budget for this program was set at \$1 million of nominal O&M in an amended stipulation among parties in Docket UM 1811. PGE projects the budget will support the issuance of 500 rebates and will last through the end of 2023, or until funding is exhausted.

As of June 1, 2022 (halfway through the pilot's projected timeline), PGE had issued 58 rebates through this program, or slightly less than 10 percent of the total number of projected rebates. The slow adoption of this program led to PGE proposing the below pilot expansion through MMC 2022 budget filing, which was approved in October 2022.

PGE anticipates program funding will be fully reserved in 2024 with charger installations lasting in 2025. PGE does not propose a further expansion of the program as we transition to supporting infrastructure. In addition, PGE will be studying the load profiles of the installed chargers to determine where managed charging or updated rates and tariffs can be used to better manage the load for workplace, public, and multi-family locations.

Coinciding with this filing PGE has also filed several tariffs including Schedule 50. 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.

7.2.3.3 Business EV Charging Rebates Pilot Expansion (Schedule 52)

In 2022, PGE proposed allocating \$2 million of the 2022 Monthly Meter Charge to additional business rebate categories in an expansion of Schedule 52. The expanded rebates include:

- **Addition of rebates for make-ready infrastructure and EVSE installation:** These make-ready rebates would cover 80 percent of the customer's make-ready and installation costs, up to a maximum of \$6,000 per L2 port and \$36,000 per site. This rebate structure removes additional barriers to adoption, while still incentivizing the customer to be cost-conscious in their site design, as they remain responsible for a portion of the installation costs. The rebates are also designed to be most generous for small sites (six or fewer ports), which are unlikely to be good candidates for other current or envisioned PGE programs that that might offer utility-owned make-ready infrastructure (e.g., Fleet Partner). Customers who enroll in those programs would not be eligible for the make-ready rebates, but would remain eligible for the EVSE rebates, as they are today.
- **Removal of income qualification for multi-family rebates:** PGE proposed to drop the income qualification requirement for the higher multi-family rebates, and instead offer the higher \$2,300 rebate to all multi-family sites located within underserved communities (geographically defined). This both removes a disincentive to participation on the part of multi-family sites, and better aligns the program with HB 2165's definition of underserved communities.

- **Addition of DCFC rebates:** PGE proposed to add DCFC rebates of \$350 per kW (e.g., a \$10,500 rebate for a 30 kW DCFC, or a \$17,500 rebate for a 50 kW DCFC), up to a maximum of \$25,000 per DCFC port. DCFC rebates would have the same requirements as L2 EVSE rebates do today: the customer would select from a Qualified Product List, keep the charger operational and on a PGE cost-of-service rate for 10 years, and authorize the software provided to release charging session data to PGE. DCFC would not be eligible for make-ready rebates unless the customer paired DCFC with L2 chargers.

PGE anticipates the pilot expansion funding will be fully reserved in 2023 with charger installations extending into late 2024. The installation rebates have been a helpful addition to the charger rebate and have supported PGE's transition to helping install infrastructure and ensure that line extensions support the various charging scenarios.

In addition, PGE will be studying the load profiles of the installed chargers to determine where managed charging or updated rates and tariffs can be used to better manage the load for DCFC workplace and public charging locations.

Coinciding with this filing PGE has also filed several tariffs including Schedule 52. 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.

7.2.3.4 Affordable Housing EV-Ready Funding

In this program, PGE offers affordable housing projects funding of \$2,500 per parking stall that the developer makes "EV-ready," up to 50 percent of the project's parking stalls. This program was implemented in response to the passage of HB 2180, which requires that all new multi-family buildings (five units or more) and new commercial buildings be made EV-ready. EV readiness is defined by the installation of service capacity (or space to provide additional future service capacity) as well as installed conduit for Level 2 EVSE at 20 percent of the building's parking stalls.

Stakeholders alerted PGE to the prospect of affordable housing projects in the pipeline today that may have secured fixed funding, but have not yet submitted permit applications, and will face the need to meet the new building code by the time they do so. This may add costs to the project and impact timelines of deploying this critical community resource.

Funding for this program is on a first-come first-serve basis. Presuming an administrative allocation, this program will provide funding for at least 360 EV-ready parking stalls at affordable housing developments in PGE's service area. This work was budgeted for in PGE's 2022 Monthly Meter Charge Budget, approved in October 2022.

This work was budgeted based on an anticipated policy change in the City of Portland and will thus sunset when funding is reserved. The policy change went into effect in March 2023 and PGE has started receiving requests from affordable housing projects in the pipeline prior to the policy change. PGE will continue to work with CBOs until the need is fulfilled or funding is completely reserved and used.

7.2.3.5 Technical Assistance

Since 2018, PGE has offered technical assistance to commercial customers interested in installing EV charging at their property and/or electrifying their fleet. Services include collateral and information,

phone consultations, and on-site visits. In the most recent evaluation of this program (2020), evaluators reported that non-residential customers gave positive feedback about the technical assistance consultations they received, which were characterized as effective and influential, and resulted in 53 percent of surveyed customers installing chargers and 41 percent electrifying some portion of their fleet.

Since the launch of Fleet Partner in 2021, technical assistance for fleet sites has been conducted through that program. Technical assistance for other business sites such as workplaces, multi-family dwellings, and public sites has continued as standalone service, often in coordination with the Business EV Charging Rebates pilot.

7.2.3.6 Clean Fuels Credit Optimization (Schedule 328)

This recently approved offer will be available to business and multi-family customers, but PGE intends to first gauge market interest and viability with the changing rules of Clean Fuels monetization and determine next steps for the program; see [Section 7.2.4.6](#) for details.

7.2.4 Fleet Customers

PGE's portfolio of offerings for fleet customers spans rates, infrastructure, and programs. In this TE Plan period, PGE will look to continue this suite of successful programs to meet customer needs. Details on fleet offerings follows:

7.2.4.1 No-Demand Charge Rate (Schedule 38)

PGE's Schedule 38 (discussed in more detail in [Section 7.2.3.1](#)) is available to fleet customers.

7.2.4.2 Fleet Partner (Schedule 56)

Approved in June 2021, Fleet Partner is a program that offers non-residential customers no-cost customer planning and technical services, as well as make-ready infrastructure installation with custom cost incentives. Eligible customers include non-residential fleets (commercial, municipal, school, non-profit, and transit) installing 70 kW or more of EV charging. The program's objectives are to enable fleet electrification and reduce adoption barriers (e.g., complexity and cost), create DR-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 electric "fuel" 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 thus far 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
- 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 “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, which exceeds 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 estimated we would complete 24 sites at \$9 million; current forecasts indicate 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. PGE is working to find the right balance of utility incentives to augment available state and federal dollars that have since become available since the initial launch of Fleet Partner. These additional funds 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 GHG 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. Please see [Appendix A.2](#) for additional detail.

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.

7.2.4.3 Heavy-Duty Charging Demonstration Sites (Schedule 53)

Heavy-Duty Charging Demonstration Sites is an approved program that allows PGE to work with a site host to construct a site to provide Medium and Heavy Duty (MHD) EV charging. The program requires both PGE and the site owner to contribute capital to develop a charging site that meets the specific needs of MHD vehicles. These needs include proximity to MHD corridors, high power charging, and pull-through access (as opposed to head-in) to the chargers.

Each site will also have on-site battery storage to provide DR 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 DR.

The program allows PGE to invest up to \$5 million per site for development. To date, PGE has partnered with Daimler Truck North American to construct one site: Electric Island, located on Portland's Swan Island. Electric Island has been operational since late spring 2021. PGE learnings include the unique timing, duration, power usage, and impacts to the feeder and broader grid posed by heavy-duty charging, detailed as follows:

- Heavy-duty vehicle charging load profiles differ greatly from light-duty vehicles. Heavy-duty vehicles have much larger batteries and sustain higher charger rates for much longer periods of time.
- Heavy-duty vehicles require much different public site layouts to allow long-chassis vehicles and semi-trucks to successfully maneuver to charging infrastructure.
- Heavy-duty vehicle charging technology is rapidly evolving to accommodate charging rates of 1 MW or more.¹⁹¹
- Information on the integration of storage, controls, and on-site solar.
- More granular details from charging data supplied by Daimler Truck North America.

The addition of megawatt charging and battery storage at Electric Island in 2023 will bring additional lessons regarding DR, grid integration, peak/buffering, and grid services.

Charge management, energy storage, and on-site generation can help to alleviate the impact of heavy-duty charging and may avoid or defer potential distribution feeder upgrades. Proper identification and sizing of these non-wires solutions should be considered early in the planning process for heavy-duty charging sites.

OEMs are beginning to produce electric MHD vehicles at greater scale, and PGE is aware of plans and partnerships for heavy-duty charging sites on major freight corridors. For example, PGE participated in the West Coast Clean Transit Corridor Initiative study with 15 other utilities, which provided a framework by which to develop heavy-duty EV charging along the I-5 freeway. That study concluded that locating MHD charging sites every 50 miles along I-5 was a requirement to enable EV trucking to be conducted along that corridor.

7.2.4.4 Energy Partner (Schedule 26)

Energy Partner Schedule 26 is a custom flex load program designed to provide customers with significant financial incentives for reducing load without significant impact to their operations. This program is focused on custom load curtailment plans for large customers and provides monthly incentive payments during Winter and Summer seasons, as well as event-based incentives for shifting energy consumption during seasonal peak time events.

Commercial operators of EVSE, including Fleet Partner customers, can enroll in the Energy Partner program and earn incentives by decreasing charging load during peak time events. For the load to be successfully lowered, the EVSE would need to be in operation (i.e., plugged in and charging) at the start of the event. Within Energy Partner, customers have options as to how they stop or decrease

¹⁹¹ Details on CharIN's Megawatt Charging System: <https://www.charin.global/technology/mcs/>.

charging during peak time events including unplugging chargers, deployment of technical hardware for site control, or use of site management software to manage charging.

7.2.4.5 Fleet Total Cost of Ownership Tool

The Fleet Total Cost of Ownership tool is part of the Fleet Partner program that helps customers calculate the difference in TCO of a fleet of electric-fueled vehicles versus that of a fleet of gasoline-fueled vehicles. The tool also helps customers quantify the environmental impact of electrifying that fleet. One of the barriers to fleet electrification is a lack of understanding of the costs to electrify and operate a fleet, and how these costs differ from that of more typical gas-powered fleets. The primary objective of the tool is to overcome this barrier by helping customers understand these costs, allowing customers to model various inputs for vehicles, chargers, and mileage driven.

PGE customers can use the tool on PGE's website. As of April 2023, PGE has received significant positive feedback from customers, who stated that the tool was extremely useful for education and also for informing business cases for fleet electrification. To date, the tool has seen over 2,200 unique visitors and we anticipate it will continue to be highly utilized, helping fleet owners and operators make the transition to fleet electrification.

7.2.4.6 Clean Fuels Credit Monetization (Schedule 328)

PGE's Clean Fuels Credit Monetization program allows PGE to become an aggregator and seller of Oregon Clean Fuels Credits on behalf of our non-residential customers. PGE is in the process of evaluating this program for cost-effectiveness, and to ensure that the program is of the highest value to our customers. As the Clean Fuels Program has advanced, the data required to demonstrate ownership and activation of chargers has changed and increased over time. As the program has prepared for launch and implementation, the amount of manual work and labor hours have risen, which may inhibit the execution of a low-cost option to customers as was originally the intention. Currently, PGE is only able to monetize credits that are for qualified chargers, which over time, will likely not be a holistic offering for customers that have a mixed fleet. PGE is continuing to investigate the program to either find efficiencies to create a more scalable program or determine if the program is better left to the private market.

7.2.4.7 Electric School Bus Fund

The Electric School Bus Fund (ESB) is focused on promoting public school districts' transition to electric school buses. PGE uses revenue from the sale of residential credits from the Oregon Clean Fuels Program to pay for the incremental cost of an electric school bus and to partially fund charging infrastructure. Public school districts wholly or partially located in PGE's service area are eligible to apply. ESB will cover both the incremental cost of electric school buses and also the cost of charging infrastructure. Since 2020, PGE has awarded over \$4.9 million in grant funding to purchase 19 electric school buses. With this TE Plan, PGE proposes to continue the ESB Fund through 2025, with a forecasted annual budget of approximately \$3.6 million in 2023, \$3.0 million in 2024, and \$4.3 million in 2025. For more information on the ESB please see [Appendix A.4](#).

7.2.5 Emerging Opportunities

In addition to programs intended to meet the needs of specific customer segments and address the barriers they face, PGE is also engaged in several TE activities to support customers in capturing emerging opportunities and exploring emerging technologies.

7.2.5.1 Matching External Funds

As part of the 2022 PGE Clean Fuels program budget, PGE reserved up to \$400,000 to provide matching funds to public agencies, CBOs, non-profits, educational institutions, and other partners applying for TE grant funding opportunities external to PGE. Many federal grant programs require secured matching funds with timelines that do not align with the annual DCF grant cycle. The need for grant matching was identified from feedback from communities and from the increase in federal funding opportunities for electric transportation. If a project to which PGE awards matching funds does not receive the external funds on which the project depends, these CFP funds will revert to the overall DCF funding pool for that year.

7.2.5.2 Emerging Technology Research and Development

PGE funds research and development work on emerging TE technology through Oregon Clean Fuels Program credits. To date, this work has focused on managed charging and V2G technologies in the residential and fleet spaces. V2G technology, which allows chargers to take power from vehicle batteries and backfeed to the grid, has reached the early stages of commercialization. With several V2G products on the market and many more announced from EVSE vendors and vehicle OEMs, PGE has started deploying this technology in residential and commercial demonstration projects in order to better understand its capabilities and limitations.

PGE deployed two V2G demonstration projects in 2021-22. The first is a +/- 6.2 kW Quasar Wallbox Level 2 charger designed to operate with a passenger vehicle with a CHAdeMO charging connector. PGE energized this charger in October 2021 and successfully demonstrated V2G capabilities by drawing power from the connected Nissan LEAF's battery. Further detail can be found in a whitepaper on V2G regulatory and technology challenges enclosed as [Appendix G](#).

PGE is conducting a second V2G demonstration project with First Student, a school bus transportation contractor. This project uses a +/- 60 kW Nuvve DCFC charging a Bluebird Type C bus with a 155 kWh battery. The charger was first installed at a bus yard in Newberg in March 2022 and V2G capabilities were demonstrated in June 2022. The charger was relocated to Sherwood in September 2022, and PGE is working towards testing V2G communications via the IEEE 2030.5 standard.

PGE will test grid support capabilities, network communication efficiency, system response functionalities, and V2G benefits and impacts on the local distribution system. Testing remains in the early exploration phases, but PGE is excited by the potential of V2G to support community resiliency.

PGE is evaluating the next steps required to better prepare for mass adoption of V2G technology. The Smart Grid Testbed program has available funding for continued managed charging. To date, V2G testing has been funded by CFP and we expect it to foster additional V2G deployments within PGE service territory.

7.2.5.3 Micromobility Approach

In 2023 and 2024, PGE intends to undertake work to better understand the micromobility market. PGE will evaluate customer needs and barriers to adoption in addition to the role a utility has in this market. We will then work to define a micromobility strategy for the company's activities which aligns with the utility's role to determine if a future program would be needed. As in all PGE programs, safety is a foundational value. The market assessment and strategy will include evaluation of risks and safety concerns.

This work is funded by revenue from residential credits from the Oregon Clean Fuels Program.

7.2.6 Other TE Activity

In addition to programs designed to meet customer needs, PGE is engaged in several other activities critical to preparing for the future that TE promises. Since these activities are conducted as part of PGE's base business, their budgets are not included in this TE Plan's budget.

7.2.6.1 PGE Workforce Development

PGE believes the clean energy transition must be equitable and inclusive. PGE has committed to attract and retain employees from underrepresented populations and to increase our purchase of goods and services from small businesses including those that are minority-, women-, and veteran-owned.¹⁹² This commitment is increasingly important with new technologies such as TE since we will want to provide access and opportunities for underrepresented populations to be a part of the workforce supporting this growing industry. PGE has committed to the utilization of union employees and contractors on all TE infrastructure; this includes a focus on providing family wages, healthcare, and apprenticeship opportunities to continue to build the needed workforce pipeline of the future.¹⁹³

To meet the growing demand within the TE space, PGE has begun to establish some TE specialty within our Utility Operations organization. We have worked with IBEW Local 125 and Local 48 to ensure we have the appropriate agreements, training, and safety measures in place to conduct operations and maintenance activities on all PGE-owned and customer (where appropriate) charging infrastructure. Today this team manages approximately 175 public, workplace, and transit charging ports across 38 locations including remote monitoring, testing, inspection, and repair services. PGE expects this team will be critical in ensuring the reliability of charging for customers as deployed programs and infrastructure continue to grow.

To date, lessons learned include:

- Public DC fast charging technology is still evolving and requires a high level of support to provide reliable performance. Technology continues to improve, but robust maintenance strategies and OEM service agreements are required.

¹⁹² For additional detail on PGE's Workforce Development efforts, see PGE's *Diversity, Equity & Inclusion* webpage: <https://portlandgeneral.com/about/who-we-are/diversity-equity-and-inclusion>.

¹⁹³ PGE's commitment to utilize union employees and contractors for TE infrastructure is detailed in the *PGE Responsible Contractor Policy: Energy Generation and Storage*, retrieved from: https://assets.ctfassets.net/416ywc1laqmd/2ldhklbGJkNwtpmNr2GVgf/76b6ca32adfb989565cf95ecd8c1d00c/Responsible_Contractor_Policy.pdf.

- Industry-wide safety practices are continuing to evolve. Some third-party technicians may have varying levels of experience with industrial electrical equipment. In response, PGE is developing our own safety plan and practices specific to charging infrastructure for all internal and third-party staff to follow when servicing PGE-owned equipment.
- An industry-wide shortage of trained service technicians can impact equipment uptime as known issues wait for repair.

7.2.6.2 Statewide Workforce Development

In 2022, PGE convened the Oregon Clean Energy Workforce Coalition, a statewide coalition of a diverse group of stakeholders whose mission is to build equitable and inclusive workforce pathways that adapt to meet the needs of the changing clean energy electric sector. This broad coalition represents utilities, pre-apprenticeship programs, building trades, education, CBOs, renewable energy developers, environmental justice organizations, workforce investment boards, state agencies, environmental organizations, local governments, and policy makers. The coalition includes an Electric Transportation subcommittee to identify the necessary skills and pipelines to ensure a robust workforce to support the deployment of EVs throughout the state. The coalition will seek to secure grants and other funding streams to support the long-term objectives identified in the Oregon Clean Energy Workforce Coalition's strategic plan.

7.2.6.3 PGE Fleet Electrification

Though PGE's own fleet electrification is not part of the 2023 TE Plan decision request of the Commission, we share the following:

PGE has set goals to electrify 100 percent of its forklifts and Class 1 light-duty vehicles by 2025, and also a 2030 goal to electrify over 60 percent of its fleet. To help achieve those goals, PGE is deploying EV make-ready infrastructure at its facilities to support the installation of EV chargers as electric fleet vehicles are purchased. Make-ready infrastructure is already complete at five facilities, with five more sites currently being designed. PGE has selected the charging hardware provider (Level 2 and DCFC) for its light-duty fleet chargers. PGE plans to install over 100 Level 2 ports and 8 DC fast charging ports by the end of 2023 to support its fleet electrification efforts. PGE is currently in the process of evaluation and selection for a charging hardware provider (Level 2 and DCFC) for its fleet chargers. PGE estimates approximately 300 Level 2 ports and 50 DC fast charging ports will be needed by the end of 2025 to support its fleet electrification efforts.

Learnings from this project include that it is critical to engage a knowledgeable and experienced technical consultant or engineering firm on make-ready infrastructure design. There are many advantages to a future-proof infrastructure design accounting for future EV demand¹⁹⁴, but it also comes with challenges in creating flexibility and accommodating changing charging technology. Through this process, PGE has found a reasonable balance which has been incorporated into our EV charging programs.

¹⁹⁴ Examples of future-proofing electrical infrastructure design for future EVs include a standard design for concrete EV pads that can accommodate any type of L2 charger, sizing electrical capacity for future EV power needs, or preparing conduit for later connection in areas where power will be needed for future EVs.

Supply chain delays have affected construction scheduled and cost which have also created logistical challenges (e.g., construction at an active line center). PGE's experience with electrifying our fleet has provided insights which are passed along to our customers electrifying their fleets.

7.3 Portfolio Expansion, 2023 2025

This section describes proposed activities to address needs in the residential, commercial, and fleet sectors, and concludes with an assessment of the impact on the competitive EVSE market.

7.3.1 Residential Customers

7.3.1.1 Residential EV Rate

A residential EV rate is one method to support grid management by using price signals to encourage off-peak charging for customer home charging. PGE is analyzing whether an EV-specific Time of Use rate is warranted, or if our Time of Day rate is the best approach to direct residential customers to charge their EVs during off-peak hours. Customers would need to demonstrate that they own an EV in order to sign up for the Residential EV Rate and would also have the option of enrolling in Residential Smart EV Charging.

PGE is in the early phases of considering a Residential EV Rate and is not proposing a tariff within this TE Plan. See [Section 8.7.2](#) for comparison of residential rates to those that multi-family property owners could charge their tenants.

7.3.1.2 Infrastructure Measure: Public Charging - Municipal Charging Collaboration

Public Charging - Municipal Charging Collaboration is an approach wherein PGE designs, owns, operates, and maintains EV chargers in the ROW and on public property. PGE deploys this infrastructure in collaboration with public entities such as municipalities, regional governments, school districts, counties, and state government. The pilot version of this program was approved by the OPUC in October 2022 as part of PGE's 2022 Monthly Meter Charge Budget and included funding for 60 Level 2 Pole Chargers.¹⁹⁵ PGE's 2023 Monthly Meter Charge Budget, approved in April 2023, included funding for an additional 100 Level 2 Pole Chargers.

In addition to the currently approved pole charging installations, PGE will install 20 new utility pole-mounted Level 2 chargers and provide make-ready for 160 L2 curbside dual-port chargers for a total of 340 L2 Public Charging Ports under this program. PGE will collaborate with public entities and communities in its service territory to identify the best locations to install chargers. Our priority is to install chargers within underserved communities as they are least served by the existing market and would benefit the most from the switch to electric transportation. During the 2023-2025 funding cycle PGE will also attempt to find a market partner interested in owning these chargers or assisting PGE with our charger development as part of this program activity.

The overall budget for this three-year program is \$15.6 million, and the infrastructure measure application is found in [Appendix C.1](#).

¹⁹⁵ Decision approving 2022 MMC Budget: <https://apps.puc.state.or.us/edockets/orders.asp?OrderNumber=23-147>. Oregon Public Utility Commission, Order No. 22-381, Oct. 18, 2022. Retrieved from <https://apps.puc.state.or.us/orders/2022ords/22-381.pdf>.

7.3.2 Commercial Customers

7.3.2.1 Commercial EV Rate

PGE is contemplating a Commercial EV Rate to encourage grid-friendly EV charging among commercial customers including multi-family, public charging sites, and fleet sites. Demand charges are often a deterrent to commercial customer adoption of EV charging due to the low overall utilization of EV chargers combined with the significant power draw when used simultaneously. While customers with loads of less than 200 kW can use PGE's Schedule 38 to avoid demand charges, no comparable rate exists for customers with more than 200 kW of load.

PGE envisions a Commercial EV Rate for non-residential customers with separately metered on-site EV charging greater than 200 kW. These non-residential customers could include fleets, heavy-duty charging stations, retail, multi-family dwellings, and workplaces. The vision is to develop a rate to support TE by lowering TCO and offering lower rates for charging during off-peak hours. PGE will explore options such as TOU Rates, tiered rates, and subscription rates. PGE's intention is to offer this rate on a cost-of-service basis, with no resultant cost shift between customer classes.

PGE is still in the early phases of developing the Commercial EV Rate and does not propose an associated tariff with this TE Plan.

7.3.2.2 Infrastructure Measure: Business and Multi-family Make-ready Solutions

PGE's proposed Business and Multi-family Make-ready Solutions expand charging access for current and future EV drivers by supporting commercial installation of public or "semi-public" EV charging including multi-family locations, workplaces, retail locations, destination centers, schools, and houses of worship. "Semi-public" EV charging is defined as charging that may be restricted to certain groups as allowable by law (e.g., employees or multi-family residents) but is not intended to support vehicles owned by the business (such as fleet vehicles).

This program intends to address the multi-family property owner and developer barrier: few incentives to install EV charging for residents, and even fewer to install the type of right-sized, future-proofed (assuring the make-ready infrastructure has capacity to meet expansion at the site), networked, and DR-capable EV charging that will be required for widespread EV adoption. This solution extends two major benefits of driving electric not widely available to multi-family residents today: the convenience of home charging and affordability of electricity as a "fuel". These barriers are exacerbated for low-income customers and other underserved communities, which comprise a significant portion of the multi-family market.

For customers participating in the program, PGE proposes to design, install, own, and maintain electrical infrastructure behind-the-customer-meter to support 100 customer installed, owned, and maintained EV chargers at approximately 10 different locations. This approach leverages PGE's expertise in service design and installation and relieves customers of the logistical burden of managing these projects. Customers can install EV chargers from a pre-qualified list and receive a rebate for a portion of their costs. For its part, PGE will receive charging session data to better understand the grid impacts of EV charging and plan for more widespread passenger vehicle fleet electrification in the future. The data and experience gathered during the 2023-2025 program activity will be used by PGE to develop rates and tariffs. We will also explore program designs to enable EV adoption in underserved communities in a scalable way.

The overall budget for this three-year program is \$2.5 million as approved via Commission Order No. 23-147¹⁹⁶, with program revisions included herein to address stakeholder comments (see [Appendix C.1](#) for more detail).

7.3.3 Business and Multi-Family Customer Programs: Portfolio View

PGE’s envisioned business and multi-family portfolio of infrastructure measures presents customers with a menu of options, empowering each to select the program design that best meets their needs as they install L2 charging. The following table demonstrates how these programs fit together:

Table 23. Business and Multi-Family Level 2 Infrastructure Portfolio

Infrastructure Measure	2023 Multi-family, Commercial Workplace Make-Ready
Eligibility	Multi-family sites in underserved communities; any commercial or workplace locations. Minimum 8 ports
Ownership and Management	Customer installs, owns, maintains EVSE; PGE manages site design; installs and owns PGE- and customer- side make-ready
Incentives	<p>Make-ready incentive of \$17,000 per port</p> <p>Charger incentive for commercial public and workplace: \$1,000 per port</p> <p>Charger incentive for multi-family: \$2,300 per port, split into \$1,000 rebate for installation and \$1,300 rebate after five years if the property owner maintains a rate within 10% of Schedule 50</p>

7.3.4 Fleet Customers

7.3.4.1 Fleet Partner Phase 2 Expansion

PGE proposes to expand the Fleet Partner pilot through 2025 to continue support for our fleet customers by reducing the cost and complexity associated with transitioning to electric “fuel”. The core of the program will remain the same: we will continue to provide planning and technical assistance for fleet electrification as well as custom cost incentives for the make-ready infrastructure. However, considering the high demand for the program and the entry of state and federal incentives/grants in this space, we propose a reduction in the maximum incentive from \$750,000 to \$400,000 and also a 50 percent reduction in incentive levels. Likewise, we are reducing coverage of site costs from an average of 74 to 38 percent. The program will continue working towards creating a network of DR-enabled EV charging that can support both efficient grid operations and future renewables integration and collecting data that will help inform a more traditional rate and tariff structure for make-ready in the future. See [Appendix A.2](#) for further details.

¹⁹⁶ Oregon Public Utility Commission. *Order No. 23-147*, entered April 21, 2023, retrieved from <https://apps.puc.state.or.us/edockets/orders.asp?OrderNumber=23-147>.

7.3.4.2 Fleet Managed Charging

PGE anticipates the need for fleet managed charging solutions to address both fleet and grid management. The proposed solutions are still in a research and development stage. PGE is looking to define flexible load programs that may incorporate a variety of strategies. One path could be time of use rates and/or incentives for customers to charge during certain times. We are also researching Automated Load Management technologies to help customers install more chargers to sites without needing expensive infrastructure upgrades and also connect to energy storage systems and solar. These future flex load programs will also look to integrate V2G and DR with our VPP either through the charger, the vehicle telematics, or both. PGE's primary objectives are to support electrification and create DR-enabled EV charging to support both an efficient grid and the integration of renewables.

7.4 Impact on Competitive EVSE Market

Utilities have an obligation to serve all customers, not just those with the most profitable use cases, and we have designed our TE plan with this in mind. In some cases, this means customer ownership of EVSE, while in others it means utility ownership. The breadth and speed required for the EV transition requires an "all-of-the-above" approach.

Utilities play a central role in advancing TE regardless of who owns the EVSE. Utilities are well-positioned to facilitate charger deployment for both public and business entities by reducing the cost of make-ready infrastructure, providing equipment rebates, and valuing the flexibility that EVs can provide to the grid. PGE's TE Plan seeks to enable businesses, charging networks, governments, and non-profits to deploy EV charging, supporting all customers in the transition to electric "fuel".

In recent years, the Oregon Legislature has provided statutory guidance regarding how electric utilities can assist in the TE transition and play a larger role in enabling deployment of EV charging. In House Bill 2165¹⁹⁷ (2021), the Legislature amended ORS 757.357 and clarified that utilities could invest in and receive a return on infrastructure measures including both investments in the distribution system and investments for behind-the-meter electrical infrastructure. The statute provides that the OPUC must evaluate infrastructure measure investments differently from broader TE programs, which for purposes of the statute, are TE investments and expenditures other than an infrastructure measure. While TE programs are to be evaluated through a six-part list of considerations, including whether a utility program is "reasonably expected to stimulate innovation, competition and customer choice in electric vehicle charging," infrastructure measures have different considerations. The Legislature instead added a much narrower provision focused on allowing customers to choose their charger, subject to equipment prequalified by the utility.

PGE values a robust and competitive market for EVSE amongst both network service providers who provide the back-end software services for networked EVSE and also charger operators in the business of owning and operating EVSE. We also believe there is an important place for utility ownership of EVSE, particularly in areas where the private market has not overcome market barriers such as EV charging that is provided to underserved communities.

The balance of PGE's proposed TE portfolio—both in terms of budget and in terms of ports proposed—is focused on program delivery models where the EVSE is owned by the customer. Examples include make-ready approaches, where PGE proposes to own the make-ready

¹⁹⁷ See ORS 757.357: https://oregon.public.law/statutes/ors_757.357.

infrastructure but not the EVSE itself, and also grants and rebates, where PGE supports a customer in purchasing an EVSE that meets certain technical standards. Such programs include Fleet Partner, Heavy-Duty Charging Demo Sites, Business and Multi-family Make-ready Solutions, Business EV Charging Rebates, the Drive Change Fund, the Electric School Bus Fund, and Residential Smart EV Charging. These models lower customer barriers to adoption of EVSE, spur the competitive market, and give customers a great deal of choice amongst competing companies to find the hardware and software package that meets their business or personal needs.

When paired with PGE's product qualification process, these program delivery models give customers confidence they are purchasing high-quality products. Additionally, this product qualification process gives stakeholders, regulators, and customers confidence that customer funds are being prudently deployed to support charging infrastructure that is both networked, DR-capable, and appropriately accessible for the use case. PGE intends to keep its existing product qualification process open for the duration of this TE Plan to ensure we continue to support this competitive and evolving market.

In program delivery models where PGE proposes to own EVSE (e.g., Public Charging - Municipal Charging Collaboration and Business and Multi-family Make-ready Solutions) we aim to fill the current gaps in the competitive market that have led to inequitable access to EVs, EV charging, and clean transportation in general. These program delivery models consider and include equity throughout their program design, from choice of collaborator and charging type to siting, accessibility, and driver pricing. Products will be selected through a competitive RFP process to enable PGE to pursue the best commercial terms on behalf of our customers. Further, PGE will seek to develop partnerships for EV charger ownership as well as operations and maintenance.

Importantly, this TE Plan does not include a proposal for PGE to own—or even support through incentives—a majority of the charging ports that will be needed by 2025. The below charts demonstrate how PGE's involvement impacts the market for public and workplace charging. Using ODOT's TEINA methodology and adjusting for PGE's internal EV adoption forecast from AdopDER, PGE's service area will need 6,755 public/workplace L2 ports and 2,008 public DCFC ports by the end of 2025. These charts show how currently installed ports, current and envisioned PGE programs, and other potential funding sources support these needs.

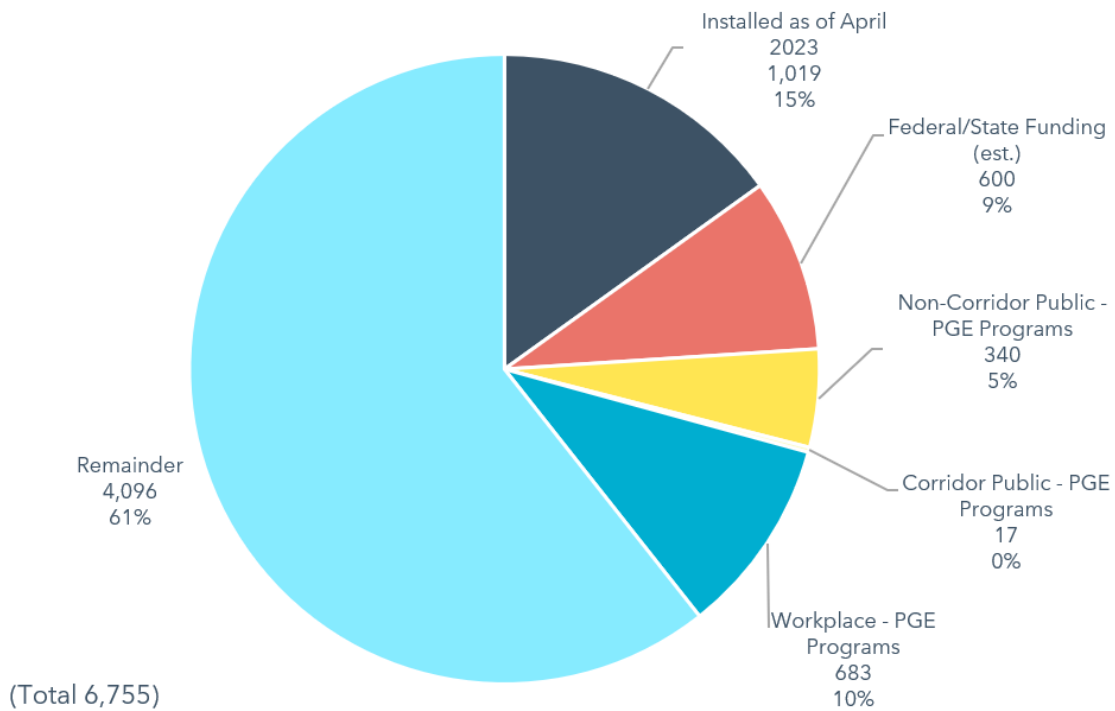


Chart 9. Estimated Public/Workplace L2 Ports Needed in PGE Service Area by 2025

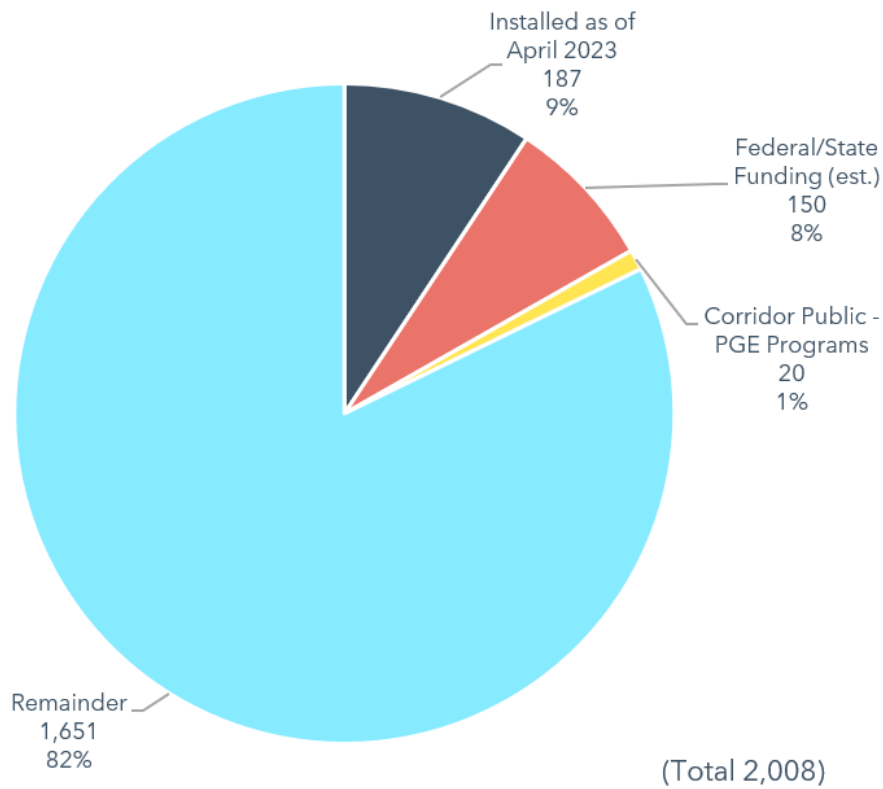


Chart 10. Estimated Public Direct Current Fast Charge Ports Needed in PGE Service Area by 2025

The significant portions of the charts that are not part of PGE’s TE Plan, in addition to the areas where customers will own chargers and have choices as to their hardware and software vendor, indicate the depth of competitive choice within the EVSE market supported by this Plan. A similar dynamic is applicable within PGE’s residential and fleet programs, where PGE does not propose to own chargers and where we offer customer choice from a Qualified Product List.