

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

Docket No. UM 2033

In the Matter of

PORTLAND GENERAL ELECTRIC

2023 Transportation Electrification Plan.

Comments

Introduction

Staff appreciates the work Portland General Electric (PGE or the Company) put into this Transportation Electrification (TE) Plan (the Plan) for 2023-2025. In these Comments, Staff will discuss the following topics:

- Procedural schedule of Docket No. UM 2033,
- Background to electric company TE planning in Oregon,
- PGE's TE's Plan,
- State of the electric vehicle (EV) market in the Company's service territory,
- PGE's estimate of charging infrastructure need
- Benefit/cost analysis,
- Reporting on portfolio performance areas,
- Impact on rates, and
- Impact on the competitive market.

Staff makes specific recommendations for PGE's Reply Comments where Staff finds that additional information is required.

Procedural Schedule

The next events for this docket are displayed in Table 1 below.

Table 1: UM 2033 Procedural Schedule

Time	Description
July 28, 2023	Stakeholder reply comments due
August 11	PGE reply comments due
August 25	PGE final TE Plan filed

Time	Description
September 15	Staff Report filed
September 29	Comments on Staff Report due
October 17, 2023**	Public hearing and Commissioner work session

** - TBD

Background

Each electric company in Oregon must file a TE Plan for Oregon Public Utility Commission (Commission) acceptance.¹ PGE filed its first TE Plan on September 30, 2019. On September 8, 2022, the Commission adopted new Division 87 rules,² which prescribe the required elements of transportation electrification plans. On June 1, 2023, PGE filed a draft TE Plan under the new rules. PGE's draft TE Plan will be finalized as part of the Company's response to initial stakeholder comments.

The objective of the Division 87 rules is to integrate the electric company's TE actions into one document that acts as a summary of the electric company's investments and activities.³ The TE Plan must include:⁴

- a) A description of current market conditions,
- b) A summary of programs and future concepts,
- c) A discussion of how the TE Plan advances specific portfolio performance area categories,
- d) Supporting data and analysis,
- e) A discussion of potential impact on competitive EV supply equipment market,
- f) Ratepayer impact,
- g) A TE Budget, and
- h) Any new Program and Infrastructure Measure applications.

The Commission will decide whether to accept this Plan at the conclusion of the review in UM 2033. Under the new rules: "Acceptance, or acceptance subject to conditions, shall constitute approval of the electric company's program applications and TE Budget as filed in the TE Plan and its appendices."⁵

Overview of PGE's Plan

The Plan includes annual TE expenditures averaging approximately \$31.3 million over the next three years. This builds on existing pilot budgets the Commission has already approved.⁶

The Plan does provide a helpful accounting of planned expenditures over the next three years. A large portion of PGE's TE Budget consists of unspent funds from pilot budgets the Commission previously approved. Beyond what the Commission has

¹ ORS 757.357(3).

² See Docket No. AR 654, OPUC, Order No. 22-336, September 8, 2022, p 1.

³ OAR 860-087-0020(1).

⁴ OAR 860-087-0020(3)-(4).

⁵ OAR 860-087-0020(2)(a).

⁶ See Docket No. UM 2033, PGE, Draft TE Plan, June 2, 2023, Table 31, p 139.

already approved in 2023, the TE Budget includes new ratepayer expenditures in the amount of **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** in 2024 and **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** in 2025.⁷ These numbers appear to contradict Table 3. If Table 35 is accurate, Staff then believes the \$6.2 million in Table 3 to be an error.

PGE's TE Budget funds a broad range of activities. The Plan spans different forms of charging ownership, access, and use cases. PGE's primary measure for private residential charging is the Residential Smart EV Charging Pilot. The other private charging measure for residential customers the Company is also exploring involves smaller modes of electric mobility in what the Plan calls the Micromobility Approach.

Private charging for residential customers primarily goes to owners of single-family homes. For residential customers who live in multifamily housing, private charging tends to be owned by a commercial customer. In apartments and condominiums, this is generally the landlord and the homeowner's association. Accordingly, for PGE customers living in these types of housing, their private charging needs are covered by PGE's non-residential pilots and programs.

For nonresidential customer private charging, PGE has two measures: Affordable Housing EV-Ready Funding and Fleet Partner. PGE also has eight activities for nonresidential customers that cover both private and public use cases:

- Business and Multi-family Make-ready Solutions,
- Drive Change Fund grant program for EV and charging purchases,
- Business EV Charging Rebates,
- Electric School Bus Fund,
- Technical Assistance,
- Clean Fuels Credit Optimization,
- Heavy Duty Charging Demonstration Sites, and
- Matching External Funds.

For public charging, PGE has four measures:

- Electric Avenue,
- Oregon Electric Byways,
- Pole Charging Pilot, and
- Municipal Charging Collaboration.

The Plan provides outreach and education to both residential and nonresidential customers as well as research and development for both residential and nonresidential use cases. These efforts are funded by both ratepayer and residential Clean Fuels Program (CFP) funds. (For further information, please see PGE's Table 32 which breaks down the budget for many of the bulleted activities above.)

⁷ Ibid. Table 35, p 150.

The Plan has no new applications for Commission approval. PGE's application for Business and Multi-family Make-ready Solutions, a new infrastructure measure for 2023, was approved with the 2023 Monthly Meter Charge Budget in April.⁸ The Company filed the application earlier than its TE Plan after the Commission granted a deadline extension for the Company's TE Plan filing.⁹

General Comments on the Overall Plan

At this time Staff cannot highlight the magnitude of portfolio-wide change this Plan represents compared to prior years. Unlike Pacific Power, PGE does not know the total amount of TE expenditures in 2022 or prior years.¹⁰ Beyond having a baseline knowledge of prior TE portfolio spending, this draft plan also lacks utility-specific insights into the EV market in PGE's service territory. For example, PGE's AdopDER modeling uses an EV load shape from the Environmental Protection Agency's website rather than one derived from data PGE has collected from the Company's own customers.

PGE has been working on transportation electrification for more a decade. This should provide a long-term insight into the development of the EV market in PGE's service territory. As Staff will discuss further below, the Company does not appear to be using key data that has been collected from customers on such things as load shapes, be they from a decade ago or last year. **Staff recommends that, in Reply Comments, PGE clarify the magnitude of portfolio-wide changes and the total amount of prior years' TE expenditures.**

Staff's understanding is that more than half of PGE's planned TE expenditures are expected to benefit underserved communities. When PGE presents the percentage of expenditures that benefit underserved communities, the primary metric presented in the Plan is 58 percent, which Staff understands to be the portfolio-wide accounting. However, Staff notes that PGE also refers to 45 percent on page 22 of the Plan. **Staff recommends that, in Reply Comments, PGE clarify the difference in accounting for the 45 percent.**

Staff also seeks clarification in the Plan's discussion of HB 2027. This bill moved the deadline for SB 1044's state fleet light duty vehicle zero emission standard up from 2029 to 2025. PGE characterizes that standard as 100 percent. Staff's reading of the bill is that the standard remains 25 percent, with only the deadline changing. This is important because ratepayer funding for the electrification of the state fleet of light duty vehicles may not be reasonable if it has already been fully mandated. **Staff recommends that, in Reply Comments, PGE clarify the scope of HB 2027.**

⁸ See Docket No. UM 2033, OPUC, Order No. 23-147, April 21, 2023, p 1.

⁹ See Docket No. UM 2033, OPUC, Order No. 23-034, February 8, 2023, p 1.

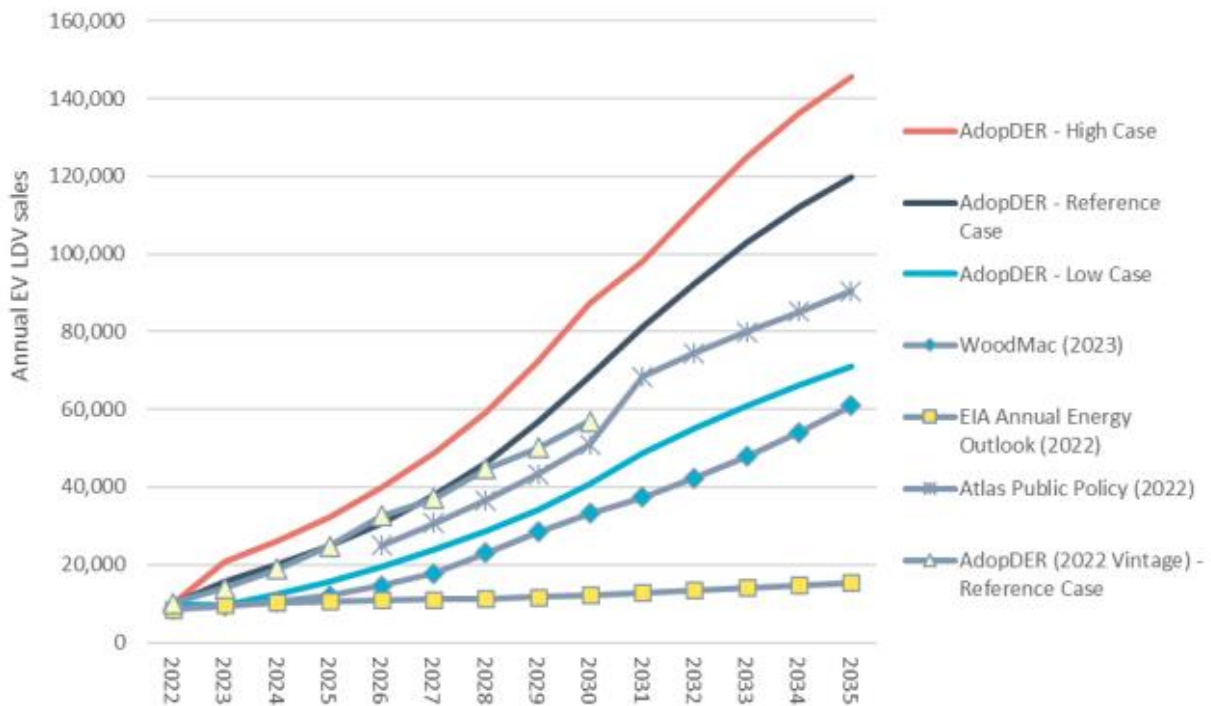
¹⁰ See Docket No. UM 2033, PGE, Response to OPUC IR 38, July 10, 2023, p 1. Further, PGE is required to report Clean Fuels Program expenditures to the Department of Environmental Quality. Staff is unclear why 14 calendar days was not long enough for PGE to provide this information in response to OPUC IR 38.

EV Market in PGE's Service Territory

The Plan provides a summary of EV market activity in PGE's service territory, but the Plan lacks an observed analysis using actual PGE data of important metrics, such as EV load shapes, percentage of charging that occurs at home, charger utilization, the distribution of session data by unique users, and the capacity demand of EV charging. Further, PGE's characterization of the future EV market and charging behavior is more of a description of PGE's modeling, and it is unclear how analysis of empirical data from the Company's service territory was actually utilized, if at all.

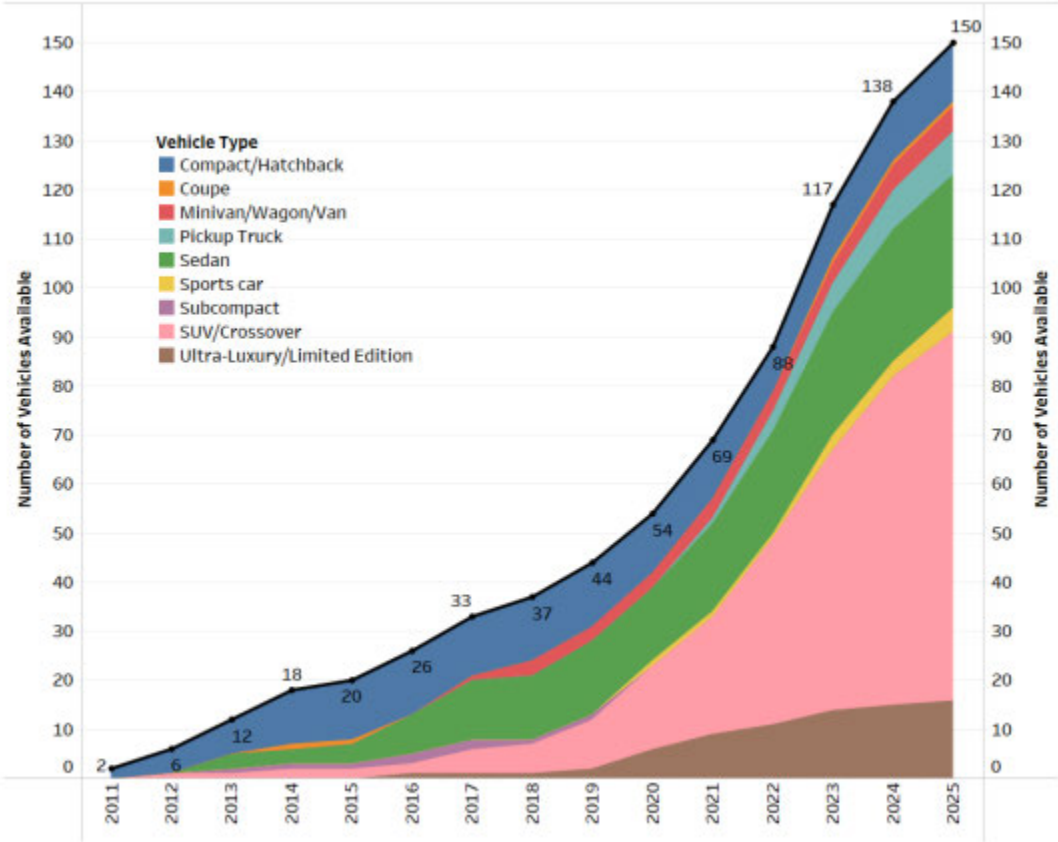
The AdopDER model is primarily a forecast of EV adoption and its corresponding load. PGE compares that forecast to national forecasts from Wood Mackenzie, the Energy Information Administration, and Atlas Public Policy. PGE's reference case forecast is higher in comparison. Even the AdopDER low case exceeds Wood Mackenzie.

Figure 1: EV LDV sales, PGE's Figure 10 from the Company's 2023-2025 TE Plan.



The Company provides a description of the market trends used in PGE's EV adoption forecast in the AdopDER model, such as the Electric Power Research Institute's survey of EV model type availability.

Figure 2: Model availability, PGE's Chart 1 from the Company's 2023-2025 TE Plan.



While Staff had an advanced look at AdopDER when reviewing PGE’s Distribution System Plan (DSP) Part II filing last year in UM 2197, the EV adoption forecast used for the Plan has been refreshed with new data. PGE’s description of the new AdopDER modeling includes a discussion of how the price caps and industrial policy in the Inflation Reduction Act (IRA) may limit the availability of federal subsidies for EV buyers. In response to OPUC IR 30, PGE provided a similar qualitative description of this modeling issue but did not provide the changed amount of subsidy per EV AdopDER assumes.¹¹ **Staff recommends, in Reply Comments, PGE identify what AdopDER now assumes the average federal EV subsidy will be.**

The AdopDER model marks a change in EV forecasting methodology over the 2019 TE Plan. PGE developed this proprietary model to forecast adoption of EVs and other distributed energy resources. In contrast to the Company’s 2019 TE Plan, which used a Bass Diffusion Model that fit EV market share of new EV purchases onto an S-curve based on assumptions of declining EV prices, AdopDER uses a regression model to predict EV adoption based on a more granular set of variables.

Beyond consideration of AdopDER’s inputs, a more basic means to assess the reasonableness of PGE’s EV adoption forecasting is to track near-term performance.

¹¹ See Docket No. UM 2033, PGE, Response to OPUC IR 30, July 10, 2023, p 2.

PGE's prior method overestimated EV adoption in 2022. In the 2019 IRP, the Company forecast 48,265 EVs.¹² PGE ended 2022 with 40,426.¹³ In contrast, the AdopDER forecast for 2022 from PGE's DSP Part II filing was 38,183, which appears to be an improvement in accuracy.¹⁴ Also, the impact of the IRA at the end of 2022, when the federal government was not enforcing the bill's price caps or industrial policy may explain the underestimation, which was nevertheless much closer to the observed rate of adoption than the previous forecasting methodology. Now that the eligibility rules have tightened, understanding the expected value of federal subsidies has become more complex.

While AdopDER's light duty vehicle forecast appears to correspond with observed EV adoption, AdopDER's forecast of heavy-duty vehicles does not. PGE is using the mandates in California's Advanced Clean Truck (ACT) rule as the reference forecast. There are two problems with this. First, California is actively working with truck manufacturers on an alternative path due to increasing stakeholder feedback that the mandates are not feasible.¹⁵ Second, if California did not relax the rules, the consequence could mean that California and states like Oregon that have adopted ACT will simply become a magnet for used diesel trucks. The feasibility of electrifying heavy-duty vehicles cannot be separated from PGE's forecast of these heavier use cases. **Staff recommends that, in Reply Comments, PGE put forth a modeling change to better reflect the economics of heavy-duty vehicle fleet operators.**

While the Plan provides a robust discussion of EV adoption, PGE's description of charging behavior is relatively limited. PGE makes references to the use of this data, on page 12 where the Company states: "Load shapes and usage patterns have informed PGE that a review of interconnection and line extension allowances is needed."¹⁶ PGE has indeed accumulated more data on real-world charging than the Company had in 2019 or than Pacific Power has now. However, PGE's Plan does not present more charging data than PGE's 2019 TE Plan or Pacific Power's new TE Plan that the Commission accepted on July 11, 2023.

The Plan would be much more helpful to Staff and stakeholders if PGE presented on the observed data of residential charging load shapes. In the 2019 TE Plan, PGE presented an estimated load shape.¹⁷ In the 2023 Plan, PGE presents the load shape used in AdopDER¹⁸ but clarified that the residential load shape used in AdopDER came from EVI Pro Lite, a U.S. Department of Energy tool.¹⁹ As PGE possesses real-world residential charging data from the Company's service area, such as tracking onboard vehicle telemetry and residential electric vehicle supply equipment (EVSE) through the

¹² PGE EV Forecasts - 2018 Navigant Study ES.xlsx.

¹³ Department of Environmental Quality, Residential EV Credits for the Second Half of 2022, March 2023, Table 1, p 3.

¹⁴ See Docket No. UM 2197, PGE, Response to OPUC IR 9, October 18, 2022, cell Q22.

¹⁵ California Air Resources Board. *CARB and truck and engine manufacturers announce unprecedented partnership to meet clean air goals* July 6, 2023.

¹⁶ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, p 12.

¹⁷ See Docket No. UM 2033, PGE, TE Plan, September 30, 2019, Figure 8, p 35.

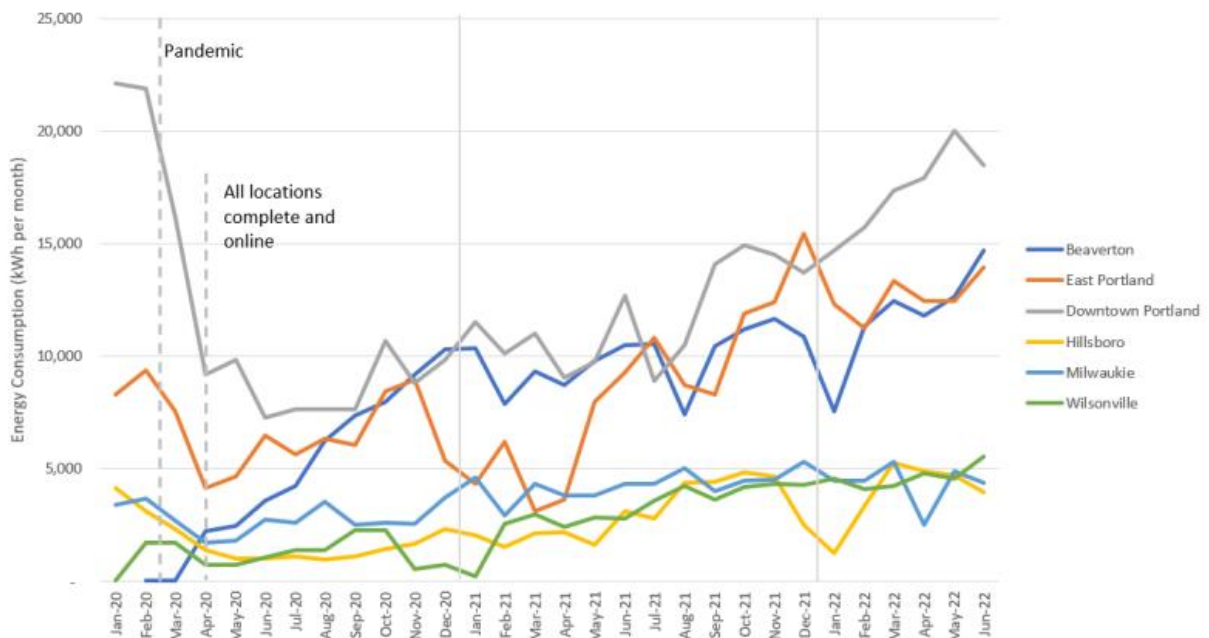
¹⁸ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, Chart 4, p 55.

¹⁹ Staff-to-Staff communication at PGE's June 26, 2023 office hours.

Residential Smart EV Charging Pilot, it would be useful to see these charging patterns and how they may impact AdoptDER. **Staff recommends, in Reply Comments, PGE present the average observed load shape of residential charging in 2022 from the Company’s vehicle-based data and residential EVSE data. Staff also recommends, in Reply Comments, that PGE use the vehicle-based data to provide the average observed percentage of charging that occurred at home in 2022.**

The Plan provides a helpful graph displaying energy outlays to PGE’s Electric Avenue public charging stations. This data shows steady recovery since the outbreak of the COVID-19 pandemic.

Figure 3: Electric Avenue energy consumption, PGE’s Chart 6 in the Company’s 2023-2025 TE Plan



Unlike Pacific Power’s 2023-2025 TE Plan and PGE’s 2019 TE Plan, PGE did not also present load shapes at Company-owned EVSE. Insights derived from observed charging in PGE’s service territory should be shared publicly with stakeholder and will be useful to the Company’s ongoing efforts to refine offerings and tariffs. **Staff recommends, in Reply Comments, PGE provide the 2022 load shape for each Electric Avenue, Oregon Electric Byways, and pole charging site.**

Beyond the growth in energy demand and the shape of this load, Staff is looking for how high the demand for charging has grown, relative to the growth in charging infrastructure capacity. **Of multiport charging sites that are separately metered from other commercial load, Staff recommends, in Reply Comments, PGE identify the highest utilization of nameplate capacity and list the number of sites that utilized at least 75 percent of nameplate capacity for at least one hour in 2022.**

Pacific Power’s TE Plan also analyzed the distribution of public charging by unique user. Pacific Power provided the distribution of charging sessions by user at utility-owned sites, which revealed that a small share of EVs account for a significantly disproportionate amount of charging sessions. **Staff recommends, in Reply Comments, PGE provide the 2022 distribution of unique users at Company-owned sites.**

Most presentation of EV charging load in the Plan uses energy metrics such as MWh (megawatt hour) and MWa (average megawatts). PGE presents the load forecast from EVs in terms of MWa.

Figure 4: EV charging in MWa, PGE's Table 12 from the Company's 2023-2025 TE Plan.

Scenario	2023	2024	2025	2026	2027	2028	2029	2030
High	19	36	57	87	119	158	203	252
Ref	17	29	43	63	83	110	141	177
Low	15	23	31	43	55	70	87	106

The instantaneous peak demand can sometimes be almost double the average, which is captured in the table below.²⁰

Table 2: Corresponding peak load in MW to PGE's Table 12 from the Company's response to OPUC IR 32.

Scenario	Season	2023	2024	2025	2026	2027	2028	2029	2030
hi	summer	39	68	101	132	176	252	322	400
hi	winter	30	53	85	135	179	204	254	336
ref	summer	36	58	84	110	144	205	262	326
ref	winter	28	45	71	112	147	167	207	275
lo	summer	32	46	62	78	98	135	167	202
lo	winter	24	36	52	79	99	107	128	165

PGE derived the peak contribution of EVs based on aggregated average EV charging load during high loss of load probability hours (LOLP). In response to OPUC IR 32, PGE did not identify which hours were used to derive the MW in Table 3. **Staff recommends, in Reply Comments, PGE identify which hours were selected as peak hours in response to OPUC IR 32.**

Another means of estimating the peak load from averages is to derive the equivalent of an ELCC (effective load carrying capability). Load is the opposite of resource generation. Therefore, TE has a negative ELCC. **Staff recommends, in Reply Comments, PGE use observed charging data from 2022 to derive an ELCC from charging load.** This ELCC can be multiplied against the assumed nameplate capacity

²⁰ See Docket No. UM 2033, PGE, Response to OPUC IR 32, July 10, 2023, Attachment A.

of EV charging in AdopDER to cross-validate the accuracy of PGE’s peak load forecasting.

With these two methods in mind, Staff looks closely at PGE’s load forecast of Schedule 8 participants, the Company’s Residential EV Smart Charging Pilot. PGE presents these in MW.

Table 3: Load forecast for Schedule 8, PGE's Table 47 from the Company's 2023-2025 TE Plan.

Year	Participants Added	Total Participants	Load Forecast (MW)
2022	1,757	2,396	0.66
2023	1,804	4,200	1.39
2024	3,300 ²⁶¹	7,500	2.39
2025	2,399	9,899	3.49

Staff would like to confirm how this load forecast was derived. If these MWs are understood to be an ELCC and the average nameplate capacity per charger is 7 kW, then the implied ELCC in 2022 may be approximately -3.9 percent. The sentence in the Plan that precedes this table refers to “flex load,” making Staff wonder if Table 47 presents the net load after demand response (DR) events are called, or whether this represents the capacity contribution of the DR. **Staff recommends, in Reply Comments, PGE explain how the load forecast in Table 47 was derived.**

Ultimately, both methods (converting MWa and calculating ELCC) are using an average, and the instantaneous demand is necessarily higher. So, Table 3 underestimates actual peak load by some unknown magnitude. PGE should investigate the magnitude of this underestimation. **Staff recommends, in Reply Comments, PGE show the functional relationship between MWa and MW from observed charging data.**

The other place in the Plan where load is presented in MW terms is in Figure 2 on page seven. Fleet Partner is expected to have 13.2 MW of load capacity by 2028. **Staff recommends, in Reply Comments, PGE explain how Fleet Partner’s 2028 load capacity was derived and, if “load capacity” is intended to mean something other than coincident peak load, what the Company means by that term.**

Beyond coincident peak, PGE has not performed calculations for noncoincident peak MW for TE.²¹ Staff finds this concerning. Noncoincident peak is the maximum demand of a customer regardless of the time of occurrence within a specified period.²² It could

²¹ See Docket No. UM 2033, PGE, Response to OPUC IR 32, July 10, 2023, p 1.

²² NREL. *Peak Demand and Time-Differentiated Energy Savings Cross-Cutting Protocols* April 2013, P 10-5.

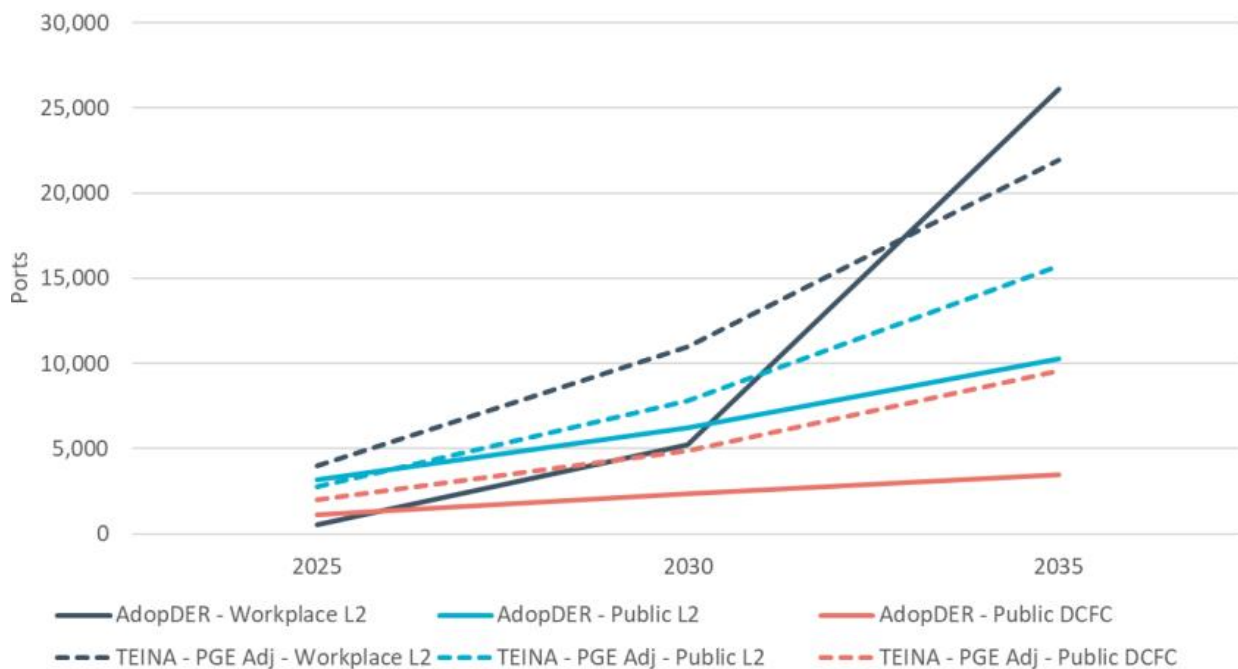
be the same number as coincident peak. Looking at PGE’s assumed load shapes in AdopDER, the Company appears to be assuming both are the same thing, but PGE should be aware of this assumption. Noncoincident peak is important because, if a customer charges outside hours that are high risk to the generation system, the customer may still impose cost on the distribution system. **Staff recommends, in Reply Comments, PGE confirm whether noncoincident peak is a metric the Company uses in distribution system planning.**

Infrastructure Need

The Plan presents two estimates of infrastructure need. PGE uses the Oregon Department of Transportation’s Transportation Electrification Infrastructure Need Analysis (TEINA) to forecast the required buildout of public charging by use case. PGE also used AdopDER to produce an estimate of infrastructure need that resulted in different results.

Staff is considering the possibility PGE’s AdopDER model is an improvement over TEINA, which the Staff Guidance in UM 2165 identifies as a minimum standard. One clear difference between the two models is their results. AdopDER mostly forecast a lower port count, as shown in Figure 5 below.

Figure 5: AdopDER vs TEINA, PGE's Chart 5 from the Company's 2023-2025 TE Plan.



Staff would like to better understand what drives these differences. **Staff recommends, in Reply Comments, PGE identify what drives the differences between the Company’s use of TEINA and AdopDER in forecasted infrastructure need and why AdopDER’s forecast of workplace charging begins to converge with TEINA in 2030.**

Staff cannot compare the basic inputs of PGE's TEINA model with AdopDER. This is important because either TEINA overestimates charging need or AdopDER underestimates charging need. In the Company's response to OPUC IR 28, the workpaper PGE provided is missing ODOT's original sheet titled "Inputs." **Staff recommends, in Reply Comments, PGE identify what settings the Company used in TEINA's Inputs sheet.** In response to OPUC IR 30, PGE did not provide all the AdopDER workpapers. PGE does not appear to even have provided most of the workpapers. **Staff recommends that, before the Company files Reply Comments, the latest EV portion of the AdopDER model is made available to UM 2033 parties.**

PGE does not appear to have performed a comparison of existing charging infrastructure with forecasted need at the census tract level. This is an important metric for assessing the equitability of existing charging site development. **Staff recommends, in Reply Comments, PGE present a comparison of the existing ports for each census tract with the forecasted ports from TEINA, by use case.**

Benefit/Cost Analysis

Staff has reviewed PGE's analysis of the benefits and costs of the Company's proposed TE Portfolio. Staff finds PGE performed a standard benefit/cost analysis, meeting the requirements of OAR 860-087-0020. The Company's analysis finds its TE portfolio has a benefit/cost ratio (BCR) of 0.67 under a Ratepayer Impact Measure (RIM) test. Under the Total Resource Cost (TRC) test, which aggregates the net benefit of program participants with ratepayers, the Company finds the portfolio has a BCR of 1.47. Under the Societal Cost Test (SCT), PGE's analysis finds the portfolio has a BCR of 1.71.²³

While Staff finds the Company adequately meets this requirement from the Staff Guidance, we did find some issues with PGE's analysis:

- **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED] **[END HIGHLY CONFIDENTIAL].**²⁴ Other pollutants from combustion engines might also provide a net benefit that could raise the SCT's BCR.
- PGE does not include government EV subsidies as social costs in the Company's SCT.
- PGE treats credit revenue from Oregon's Clean Fuels Program (CFP) as a benefit.²⁵ In the RIM and TRC test, CFP revenue is neither inherently a cost nor a benefit. It can have the effect of reducing costs, but this comes from a reduction in the size of the ratepayer cost in the RIM test and reductions in program participant cost in the TRC test. External funding can be a cost in the SCT, but CFP credit revenue is not. Were the Company to not claim its credits, DEQ would transfer them to another organization, called the Backstop Aggregator. So, the social cost of Oregon's Clean Fuels Program is not increased by PGE's monetization of CFP credits.

²³ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, Table 44, p 166.

²⁴ See Docket No. UM 2033, PGE, OPUC IR 27 and 29_TE Plan Consolidated_rev2d_HIGHLY CONF.xlsm, June 28, 2023, sheet titled "Assumptions" Cell J67.

²⁵ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, Table 41, p 162.

- **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
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[REDACTED] **[END HIGHLY CONFIDENTIAL]**.²⁶
- **[BEGIN CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]**.²⁷ While a retrospective benefit/cost analysis will provide insight for the Company’s annual TE Plan Report, Staff expects the first year of analysis for the TE Plan to be the first budget year.
- Staff is not able to fully comment on the reasonableness of the estimated savings of program participants, because PGE uses a hard copied value in the BCA workbook the Company provided in response to OPUC IR 27. For example, PGE assumes **[BEGIN CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]** for heavy duty vehicles.²⁸ That appears high to Staff, but we withhold further comment until Staff has reviewed PGE’s supporting workpapers.
- Staff is not able to fully comment on the reasonableness of PGE’s estimate of social savings. This too is hard copied into PGE’s response to OPUC IR 27. PGE included an energy security component. Staff would like to see whether the Company’s analysis nets out the energy security cost of greater dependence on imported rare earth metals. Staff appreciates PGE’s effort to add a new social benefit that the other two electric companies did not include, but we withhold further comment until Staff has reviewed PGE’s supporting workpapers.

Beyond the observation of some issues, Staff has no recommendation for PGE on the topic of benefit/cost analysis in this proceeding. Staff’s highlight of methodological issues above is only meant to contribute to the conversation that will develop a jurisdictional specific cost test before the Company files its next TE Plan.

Portfolio Performance Areas

Under the new Division 87 rules, the Plan must provide a “discussion of how programs and infrastructure measures in the TE Plan holistically advance” a list of performance areas.²⁹ During the AR 654 proceeding, a group of stakeholders and utilities met to prescribe specific metrics. The Commission approved these metrics with minor changes from Staff in Order No. 22-314.³⁰ Those metrics are listed below after the respective performance area category:

- (A) Environmental benefits including greenhouse gas emissions impacts – This requires an assessment of net reductions of GHG and tailpipe emissions. The Plan meets this requirement for GHG emissions.³¹ The Staff Guidance also calls

²⁶ See Docket No. UM 2033, PGE, OPUC IR 27 and 29_TE Plan Consolidated_rev2d_HIGHLY CONF.xlsm, June 28, 2023.

²⁷ Ibid., sheet titled “CE Results” Cells F41:F59.

²⁸ Ibid., sheet titled “Assumptions” Cell J67.

²⁹ OAR 860-087-0020(3)(c).

³⁰ See Docket No. UM 2165, OPUC, Order No. 22-314, August 26, 2022, Appendix A, pp 9-13.

³¹ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, Table 24, p 123.

for an assessment of the net reduction in particulate matter of 2.5 micrometers (PM_{2.5}), sulphur oxides (SO_x), and nitrogen oxides (NO_x). **Staff recommends that, in Reply Comments, PGE present the net reduction of PM_{2.5}, SO_x, and NO_x.** Staff has coordinated with other state agencies to develop a broader list of emissions from the combustion of fossil fuels. **Staff recommends that, in Reply Comments, PGE provide the Company's average emission per kWh of total hydrocarbons, carbon monoxide, NO_x, PM_{2.5}, PM₁₀, SO_x, volatile organic compounds, benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, naphthalene, mercury, nickel, arsenic, and chromium.**

- (B) Electric vehicle adoption – This requires a qualitative description of how the Plan is expected to impact EV adoption. The Plan meets this requirement.³²
- (C) Underserved community inclusion and engagement – This requires that the Company provide a qualitative description of outreach and capacity building to, and participation by, underserved communities in the development of the TE Plan. PGE appears to have adequately met this requirement through a stakeholder feedback process and consultant-led “rapid needs assessment” that informed equity aspects of the proposed Plan.³³ PGE plans to inform its future TE planning through a TE Community Working Group led by a minority-owned implementer to solicit input directly from underserved communities.
- (D) Equity of program offerings to meet underserved communities requires:
- a. The percentage of program-enabled ports by use case located within and/or providing direct benefits and services to underserved communities. The Plan does not include this. **Staff recommends that, in Reply Comments, PGE provide the percentage of program-enabled ports by use case located within and/or providing direct benefits and services to underserved communities.**
 - b. For transit agencies who have participated in a utility EV program during the portfolio period, the transit agencies' annual service hours, number of routes, and number of routes serving underserved communities, to the extent this information is provided to the utility. The Plan does not include this. **Staff recommends that, in Reply Comments, PGE provide the annual service hours, number of routes, and number of routes serving underserved communities, to the extent this information is provided to PGE, for transit agencies that have participated in a utility EV program during the portfolio period.**
 - c. Types of electric transportation technology supported by a utility portfolio as a percent of total investments, organized into categories such as micromobility, passenger vehicles, light-duty fleet vehicles, medium- and heavy-duty fleet vehicles, school buses, and transit buses. The Plan does not include this. **Staff recommends that, in Reply Comments, PGE provide the types of electric transportation technology supported by a utility portfolio as a percent of total investments, organized into categories such as micromobility, passenger vehicles, light-duty fleet vehicles, medium- and heavy-duty fleet vehicles, school buses, and transit buses.**

³² Ibid., pp 123-124.

³³ Ibid., pp 82-83.

- (E) Distributions system impacts and grid integration benefits requires:
- a. Percent of program-enabled charging load that occurs off-peak, by use case. The Plan provides a forecasted comparison of peak and off-peak charging at program-enabled ports. However, Staff is not certain the 5 pm to 9 pm hours chosen as peak hours fully reflect PGE's system risk. **Staff recommends, in Reply Comments, PGE explain how peak hours are defined. This definition should show why the hour ending at 6 pm is included in PGE's assessment of peak hours and the hour ending at 10 pm is not.**
 - b. Total EV load enrolled in managed charging and potential for managed charging with the estimated percent of EV load enrolled in managed charging. The Plan meets this requirement for residential customers. **Staff recommends, in Reply Comments, PGE clarify if any nonresidential EVSE participate in Energy Partner.**
- (F) Program participation and adoption requires:
- a. Number of program-enabled ports by use case. The Plan meets this requirement.
 - b. Percent of total public ports by use case within utility service territory that are program-enabled. The Plan does not include this. **Staff recommends that, in Reply Comments, PGE provide the number of program-enabled ports by use case as a percentage of total public ports.**
 - c. Number of participants in utility programs, broken down by program and underserved community status. The Plan does not include this. **Staff recommends that, in Reply Comments, PGE provide the number of program-enabled ports of participants in utility programs, broken down by program and underserved community status.**
- (G) Infrastructure performance, including charging adequacy, reliability, affordability, and accessibility requires:
- a. Price (\$/kWh) to charge at program-enabled ports by use case. The Plan includes this for only Company-owned sites. **Staff recommends that, in Reply Comments, PGE provide the price (\$/kWh) to charge at the program-enabled ports of customers by use case.**
 - b. Uptime at utility-owned and supported ports by use case. The Plan discusses this topic but does not provide the metric. **Staff recommends that, in Reply Comments, PGE provide the uptime during calendar year 2022 at utility-owned and supported ports by use case.**

Ratepayer Impact

PGE's estimation of the rate impact of the TE Budget in 2023 finds a 1300 percent higher impact on residential customers than Schedule 83 and 90 large nonresidential customers. The rate with the highest impact is Schedule 38.³⁴ **Staff recommends, in Reply Comments, that PGE explain what drives the relative difference in rate impact among rate schedules.**

Another rate impact issue is the question of what the appropriate rate is for Schedule 50, PGE's tariff for charging at Company-owned EVSE. PGE plans to revamp

³⁴ See Docket No. UM 2033, PGE, Draft TE Plan, June 1, 2023, Table 45, p 167.

Schedule 50. The primary change the Company has mentioned is moving from a fixed price per session to a volumetric rate. PGE should also consider whether the amount of cost share of EV operators is appropriate. PGE sells this service at a significant loss. Staff is looking for a discussion of how to adjust Schedule 50's rate to recoup more of the marginal cost of providing charging services. **Staff recommends that, in Reply Comments, PGE provide the marginal cost of the Company's existing charging stations that bill customers at the Schedule 50 rate, and the percentage of marginal cost recovered under Schedule 50. Staff recommends that PGE explain how the expansion of Company-owned infrastructure is expected to alter the percentage of marginal cost that Schedule 50 recovers. Staff further recommends that PGE estimate what the revenue-maximizing price of Schedule 50 is expected to be; and, after performing this analysis, provide a fresh proposal for Schedule 50's rate.**

Impact on the Competitive Market

Staff anticipates PGE's impact on the competitive market in charging services will bring less controversy than PGE's UM 1811 expansion of Electric Avenue in 2018 and Pacific Power's UM 2056 expansion of utility-owned DCFC chargers this year. This is because PGE is not expanding Company-owned DCFC chargers and is also actively looking for partners to operate the charging sites PGE already owns.³⁵

This concludes Staff's Comments on PGE's TE Plan for 2023-2025. In our review of this Plan, Staff has the following recommendations for the Company's Reply Comments:

- 1. Clarify the magnitude of portfolio-wide changes and the total amount of prior years' TE expenditures.**
- 2. Clarify the difference in accounting for the 45 percent benefit to underserved communities on page 22.**
- 3. Clarify the scope of HB 2027.**
- 4. Identify what AdopDER now assumes the average federal EV subsidy will be.**
- 5. Put forth a modeling change to better reflect the economics of heavy-duty vehicle fleet operators.**
- 6. Present the average observed load shape of residential charging in 2022 from the Company's vehicle-based data and residential EVSE data.**
- 7. Use vehicle-based data to provide the average observed percentage of charging that occurred at home in 2022.**
- 8. Provide the 2022 load shape for each Electric Avenue, Oregon Electric Byways, and pole charging site.**
- 9. Identify the site with the highest utilization of nameplate capacity in 2022 from multiport charging sites in PGE's service territory that are separately metered from other commercial loads.**
- 10. List the number of multiport charging sites in PGE's service territory that are separately metered from other commercial load that utilized at least 75 percent of nameplate capacity for at least one hour in 2022.**
- 11. Provide the 2022 distribution of unique users at Company-owned sites.**

³⁵ Ibid., p 101.

12. Identify which hours were selected as peak hours in response to OPUC IR 32.
13. Use observed charging data from 2022 to derive an ELCC.
14. Explain how the load forecast in Table 47 was derived.
15. Show the functional relationship between MWa and MW from observed charging data.
16. Explain how Fleet Partner's 13.2 MW load capacity in 2028 was derived and, if "load capacity" is intended to mean something other than coincident peak, what the Company means by that term.
17. Confirm whether noncoincident peak is a metric the Company uses in distribution system planning.
18. Identify what drives the differences between the Company's use of TEINA and AdopDER in forecasted infrastructure need and why AdopDER's forecast of workplace charging begins to converge with TEINA in 2030.
19. Identify what settings the Company used in TEINA's Inputs sheet.
20. Make the latest EV portion of AdopDER available to UM 2033 parties.
21. Present a comparison of the existing ports for each census tract in the Company's service territory with the forecasted ports from TEINA, by use case.
22. Present the net reduction of PM_{2.5}, SO_x, and NO_x.
23. Provide the Company's average emission per kWh of total hydrocarbons, carbon monoxide, NO_x, PM_{2.5}, PM₁₀, SO_x, volatile organic compounds, benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, naphthalene, mercury, nickel, arsenic, and chromium.
24. Provide the percentage of program-enabled ports by use case located within and/or providing direct benefits and services to underserved communities.
25. Provide the annual service hours, number of routes, and number of routes serving underserved communities, to the extent this information is provided to PGE, for transit agencies that have participated in a utility EV program during the portfolio period.
26. Explain how peak hours are defined for the performance areas. This definition should show why the hour ending at 6 pm is included in PGE's assessment of peak hours and the hour ending at 10 pm is not.
27. Clarify if any nonresidential commercial EVSE participate in Energy Partner.
28. Provide the number of program-enabled ports by use case as a percentage of total public ports.
29. Provide the number of program-enabled ports of participants in utility programs, broken down by program and underserved community status.
30. provide the price (\$/kWh) to charge at the program-enabled ports of customers by use case.
31. Provide the uptime during calendar year 2022 at utility-owned and supported ports by use case.
32. Explain what drives the relative difference in rate impact among rate schedules.
33. Provide the marginal cost of the Company's existing charging stations that bill customers at the Schedule 50 rate, and the percentage of marginal cost recovered under Schedule 50.

- 34. Explain how the expansion of Company-owned infrastructure is expected to alter the percentage of marginal cost that Schedule 50 recovers.**
- 35. Estimate what the revenue-maximizing price of Schedule 50 is expected to be; and, after performing this analysis, provide a fresh proposal for Schedule 50's rate.**

Dated at Salem, Oregon, this 13th of July, 2023.

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