Chapter 8.

Plan for Part 2 development

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"We want to ensure that those communities that were locked out of the last century's pollution-based economy will be locked into the new, clean and green economy."

— Van Jones, author of The Green Collar Economy

8.1 Reader's guide

PGE's Distribution System Plan (DSP) takes the first step toward outlining and developing a 21st century community-centered distribution system. This system primarily uses distributed energy resources (DERs) to accelerate decarbonization and electrification and provide direct benefits to communities, especially environmental justice communities.[139] It's designed to improve safety and reliability, ensure resilience and security, and apply an equity lens when considering fair and reasonable costs.

As we plan for Part 2, PGE shares information on DER load forecasting improvements that will increase transparency and broaden resource parameters, leveraging open-source tools and best practices with locational results of DER adoption. As we prepare for development of Part 2, we are exploring how non-wires solutions (NWS) can compete with traditional solutions and what tools and resources are needed to meet this goal. Better forecasting capabilities introduced to PGE in 2021 present the opportunity to share more detailed DER data with Integrated Resource Plan (IRP) and integrate these reports with modeling tools used by IRP.

Table 49 illustrates how PGE has met the Public Utility Commission of Oregon's (Commission or OPUC) DSP Guidelines under Docket UM 2005, Order 20-485.[140]

WHAT WE WILL COVER IN THIS CHAPTER

PGE's activities for distributed energy resource and load forecasting

How PGE is planning for non-wires solutions

How PGE will synchronize the Integrated Resource Plan with Part 2 of the DSP

Table 49. Plan for Part 2 development: guideline mapping

DSP guidelines	Chapter section
4.5	Section 8.2, 8.3, 8.4
4.4.f	Section 8.4

For more details on how PGE has complied with the requirements under UM 2005, Order 20-485, see **Appendix A.** DSP plan guidelines compliance checklist.

139. PGE uses the definition of environmental communities under Oregon House Bill 2021, available at oregonlegislature.gov
140. OPUC UM 2005, Oregon 20-485 was issued on December 23, 2020, and is available at apps.puc.state.or.us

8.2 Introduction

Through Order 20-485, the OPUC required investor-owned utilities (IOUs) to provide a high-level summary of their preparation for Part 2 of their DSP, focusing on planning evolution and interaction with the IRP.

In this chapter, PGE provides details in compliance with these requirements, focusing on planning practice updates around distributed energy resource (DER) forecasting/potential and NWS. These speak directly to requirements for Part 2 (4.1 Forecasting of Load Growth, DER Adoption and EV Adoption and 4.3 Solution Identification). PGE also provides details on the IRP interaction with the DSP, focusing on the upcoming IRP. This builds on the details provided in **Section 2.5**.

DERs, due to their operational versatility, create a dynamic operational environment in which greater levels of data, analysis and optimization are needed for PGE to continue to maximize value for customers. Improving PGE's planning capabilities is a critical step in enabling and leveraging DERs for different use cases, such as NWS, improved asset utilization and other projects that provide community benefits.

8.3 DSP Part 2 activities in flight

PGE has been proactively improving our planning capabilities prior to the approved guidelines issued in December 2020. As part of our evolving planning capability, we have identified data requirements, necessary tools and workforce needs. **Section 4.7** includes additional details on expected investments in planning and engineering. In preparation for Part 2 of the DSP, PGE is focusing its planning efforts on load forecasting and NWS.

8.3.1 DER AND LOAD FORECASTING

As noted in **Section 1.3** and further discussed in **Appendix B**, PGE continues to advance our DER modeling tools by contracting with consultants to build an in-house, bottom-up adoption model applied to behind-the-meter DERs and electrification called AdopDER. The AdopDER model improves on prior forecasting techniques because it increases transparency of the modeling approach (inputs, outputs, algorithms), captures broad resource parameters and key assumptions, advances understanding of the potential of flex loads to achieve a range of grid services, and develops supply curves with levelized costs to better integrate with the IRP analysis.

FORECASTING OF LOAD GROWTH, DER ADOPTION AND ELECTRIC VEHICLE (EV) ADOPTION

- Improve forecasting to account for DER impacts on load, as well as the ability of these resources to productively modify load
- Improve the accuracy and granularity of existing and anticipated constraints on the distribution system
- Input into grid needs identification

The model ties to the ETO forecast where possible and leverages open-source tools and best practices, including:

- CalTRACK for standardized baseline and net load profile calculations
- NREL data sets and forecasts
- PVWatts
- Re-Opt Lite
- EVI-Pro Lite
- NEEA CBSA/RBSA stock studies
- End-use load research studies

AdopDER calculates the technical and economic potential of DER programs and the market adoption of electric vehicles (EVs), photovoltaic (PV), building electrification measures and storage at the site level. PGE has broken the development of the AdopDER model into two phases. Phase 1 focuses on providing the system-level impacts of DER adoption for integration with PGE's upcoming IRP. Phase 1 development of AdopDER was completed in Q2 2021, with final draft results shared in the DSP partner meetings and the final system-level results shared in the IRP monthly roundtable in August 2021.

Phase 2 of the AdopDER model provides the locational results of DER adoption, which can be translated into localized impacts of DERs. PGE expects the development to be completed by Q4 2021. Phase 2 represents a key step in both providing critical data to accelerate DER adoption and enabling key studies to understand the transmission and distribution (T&D) impact of DER adoption on both load and hosting capacity. PGE also expects the underlying adoption modeling of Phase 2 to help us better estimate adoption probabilities of DERs for NWS.

8.3.2 NON-WIRES SOLUTIONS (NWS)

PGE is exploring how NWS can replace, defer or be combined with traditional T&D solutions. We support partner and regulator interests in understanding how NWS can complement environmental justice policies and foster procedural equity for historically underrepresented communities, creating a more equitable system.

As part of the requirement to propose a minimum of two NWS pilots in Part 2, we are developing internal processes for NWS and acquiring a tool that will be capable of running more comprehensive analyses. PGE's new process document for NWS is developed with input from relevant departments that are involved in or affected by distribution planning processes and community engagement. By leveraging work from leaders such as New York and California and speaking with experts and applying industry best practices developed by Electric Power Resource Institute (EPRI), PGE will balance between reliability, cost, local economic development and community benefits. In addition to developing this process, PGE is currently working with the CYME team at Eaton Corporation to integrate new modules that enable the analyses needed for NWS. We are also integrating advanced metering infrastructure (AMI) and advanced distribution management system (ADMS) data where possible to improve planning analytics.

PGE previously worked with two vendors to develop this functionality. Unfortunately, both tools required significant workforce investments and had unexpected issues delaying PGE's ability to implement NWS for behind-the-meter DERs. We are confident that the new modules from CYME will provide the platform to enable NWS. Working on two or more NWS pilots during Part 2 of the DSP presents an opportunity for PGE to test the new process and tool from a planning perspective.

8.4 Efforts to synchronize IRP activities with requirements of Part 2

As noted in **Section 2.6**, PGE is developing the AdopDER tool, a bottom-up model to forecast DER adoption for technical potential, market adoption and economic potential analyses. Phase 1 of the AdopDER model provides system-level DER potentials based on PGE's current cost-effectiveness methodology. Through this model, PGE has synchronized the following activities with the IRP:

- The AdopDER tool estimates PV and EV adoption, both naturally occurring adoption and programmatic adoption stemming from programs that provide fleet solutions, rebates or incentives. These results are then translated to load impacts for EV and solar PV, which are then integrated into the IRP process to determine resource needs.
- Using the current cost-effectiveness method, the AdopDER model determines the economic potential of flexible loads, including tariff offerings such as Time of Use and Peak Time Rebates. This portfolio of cost-effective flexible loads is integrated within the IRP's analysis as resources that can be used to reduce load.
- PGE has also ensured the AdopDER model can provide levelized cost curves of non-cost-effective DERs to the IRP process to better understand the portfolio selection mechanics around DERs.

PGE expects the interaction between the IRP and the DSP to improve even further through incorporation of locational impacts, improved portfolio optimization and aligned cost-benefit approaches.

Distribution system planning evolution framework

Stage 3		Achieving the long-term vision for distribution system planning capabilities and outcomes
Stage 2	Advancing requirements incrementally to better match growing utility capabilities and evolving grid, customer and community needs	
Stage 1	Beginning with Initial Requirements of Utility DSP Filings, providing a foundation for future stages	
	2021 – 2022	**2023 – beyond**