Northwest **Power** and **Conservation** Council

August 8, 2023

MEMORANDUM

TO: **Council Members**

FROM: **John Ollis**

SUBJECT: **Portland General Electric Integrated Resource and Clean Energy Plan**

BACKGROUND:

Presenter: Seth Wiggins, Manager of Integrated Resource Planning
Tomás Morrissey, Principal Strategy and Planning Analyst

Summary: This presentation will summarize key findings from Portland General Electric's 2023 Clean Energy Plan and Integrated Resource Plan.

Relevance: The 2023 Clean Energy Plan and Integrated Resource Plan is the most recent planning exercise to determine how PGE will serve their customers' needs over the next 20 years. This is PGE's inaugural clean energy plan in response to Oregon legislature passing House Bill 2021 (Clean Energy Targets Bill). Additionally, PGE faces increasing loads and transmission constraints, thus their most recent plan features increased future reliance on non-emitting resources and distributed energy resources (DERs), and it discusses options for addressing resource deliverability issues. Tracking and understanding where utilities are headed is critical to informing our mid-term assessment and next power plan.

Workplan: A.3.2. Coordinate with regional utilities on integrated resource planning and other activities to share plan findings and leverage utility insights and advancements.

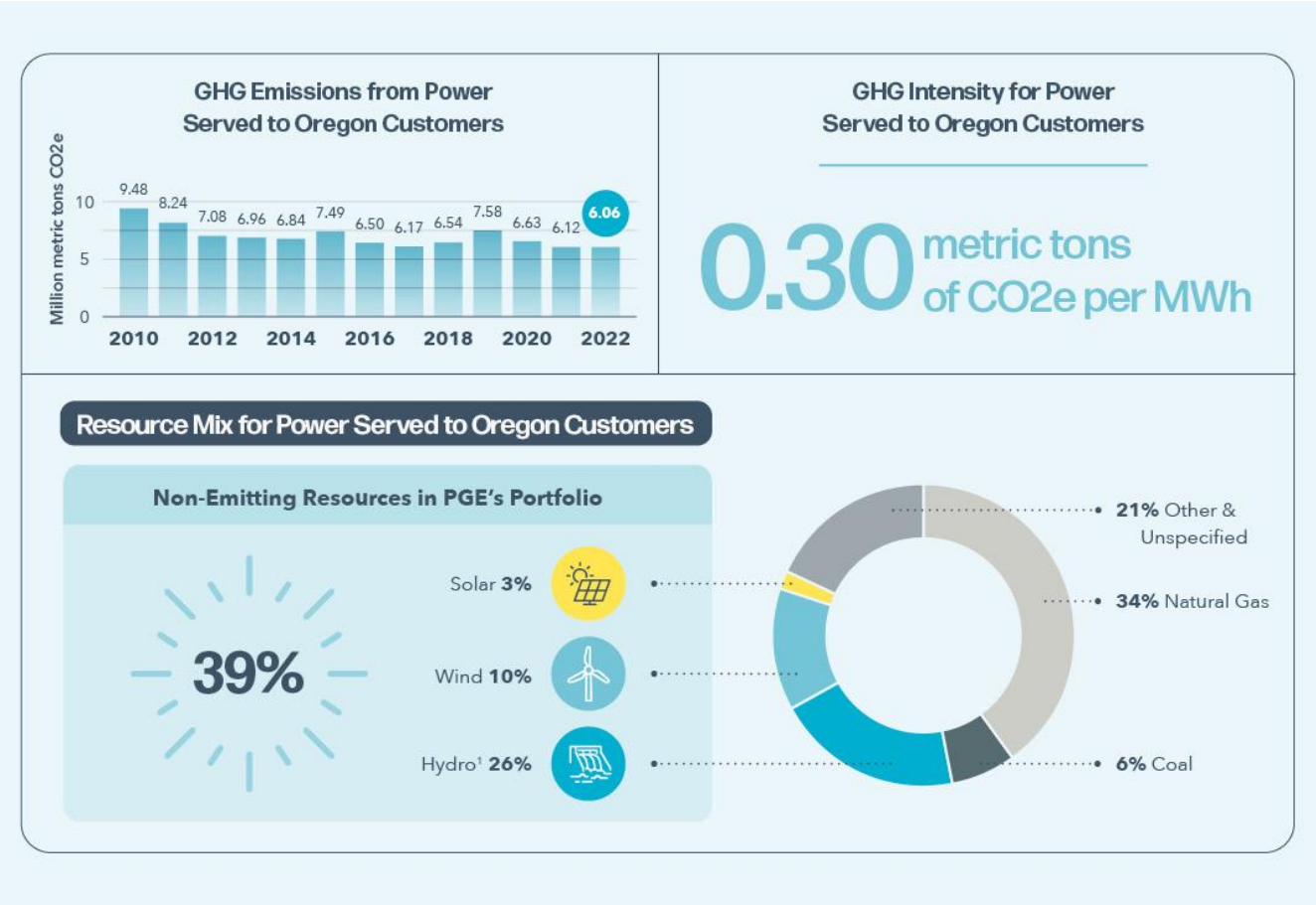
More Info: https://portlandgeneral.com/about/who-we-are/resource-planning/combined-cep-and-irp

Portland General Electric: 2023 Clean Energy Plan and Integrated Resource Plan

8/15/2023

2022 PGE Emissions & Targets

Emissions are already 25% below HB 2021 target baseline level*



Emissions targets & goals

HB 2021 Targets:

- 80% reduction below baseline for retail sales by 2030 **(1.62 MMT)**
- 90% reduction below baseline for retail sales by 2035 **(0.81 MMT)**
- 100% reduction below baseline for retail sales by 2040

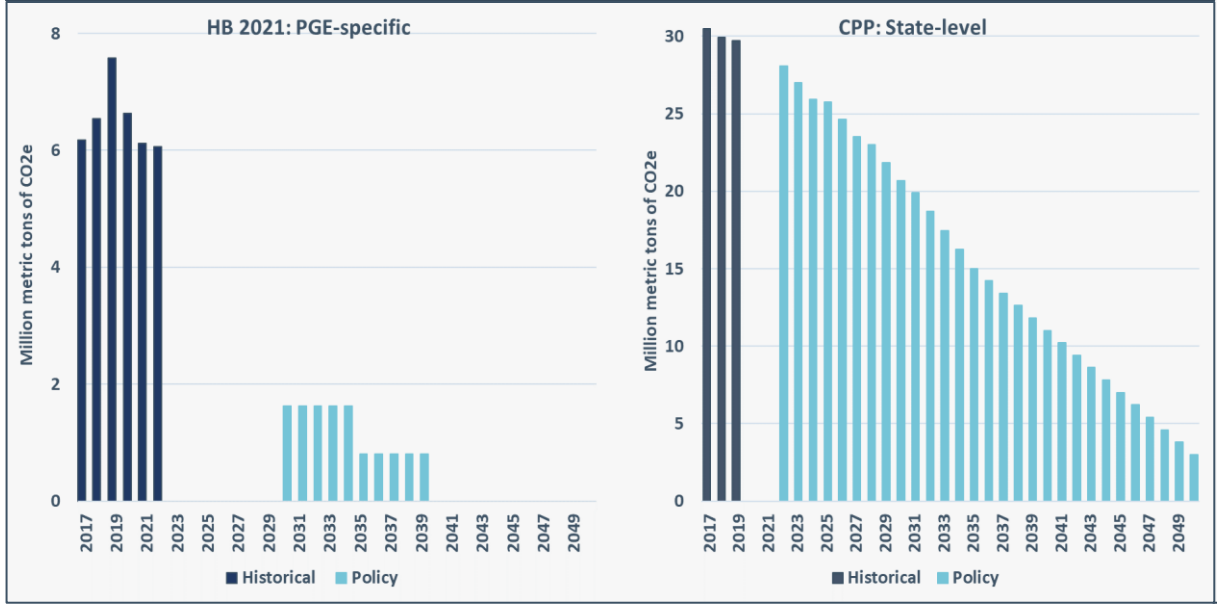
*Baseline = 8.1 MMTCO2e as established by ODEQ based on average of 2010-2012 PGE reported emissions.
Based on energy served to retail customers within the State of Oregon, as required by Oregon Department of Environmental Quality (ODEQ)
Some or all the renewable energy attributes associated with PGE's Basic Service Mix may be sold, claimed, or not acquired
1. This includes power purchased from Bonneville Power Administration

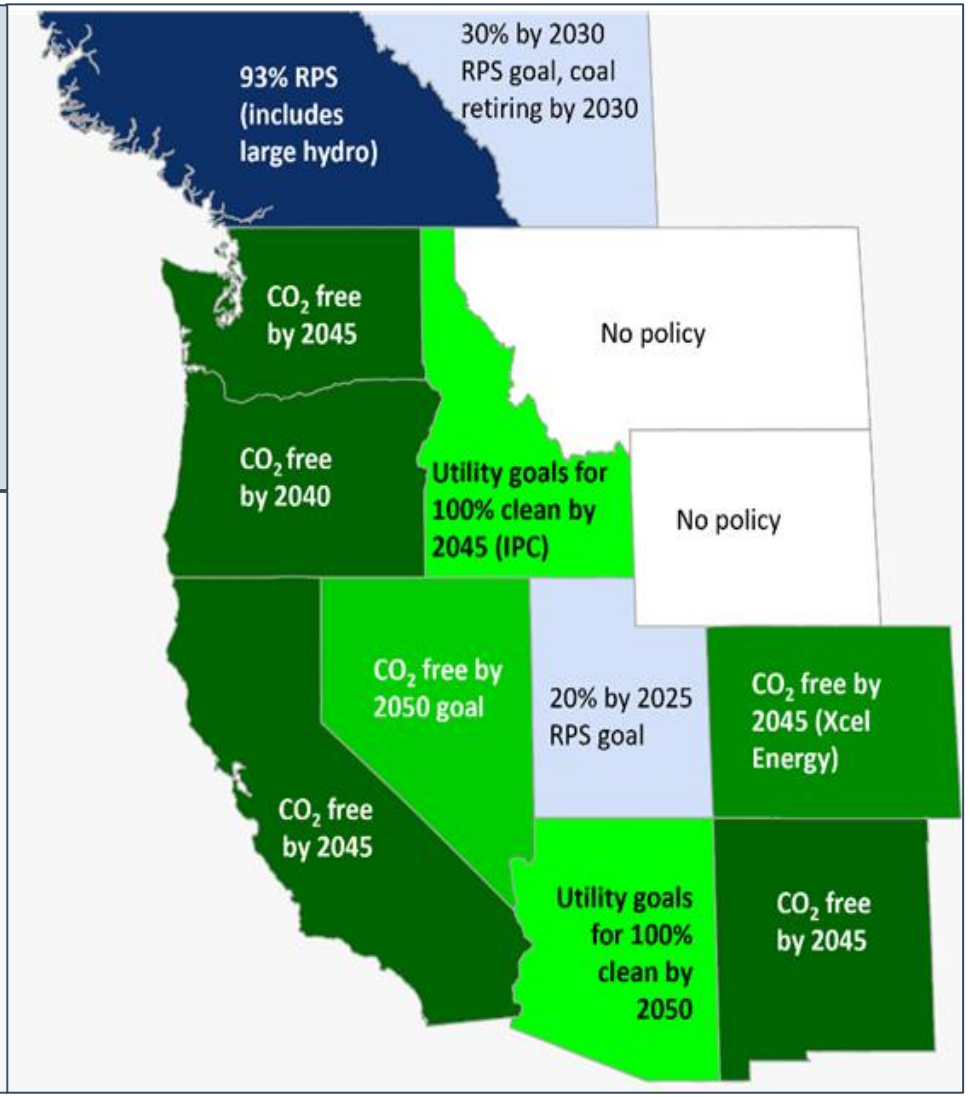
All 2022 emissions data is preliminary and subject to change as internal review procedures are performed. Certain emissions information is subject to review and approval by the ODEQ and Environmental Protection Agency.

Decarbonizing during highly dynamic period of change

Federal, state, and regional decarbonization efforts pose significant challenges:

- Forecasting load
- Resource competition
- Supply chain and labor market dynamics
- Transmission constraints
- Resource adequacy
- Predicting rate of technology development and costs





Clean Energy Plan & Integrated Resource Plan

HB 2021 requires a clean energy plan (CEP) which builds off, expands on, and modifies the robust resource planning PGE is required to do for its integrated resource plan (IRP)

Integrated Resource Plan

- Forecasts system energy & capacity needs
- Optimizes a preferred portfolio
- Concludes with short-term Action Plan, the basis for next RFP

Clean Energy Plan

- Details PGE's plans to meet emissions targets & demonstrate continuous progress
- Requires extensive community engagement
- Must include community benefits in meaningful way

Combined CEP & IRP

- Filed March 31, 2023
- Acknowledgement decision anticipated in January 2024

CEP/IRP Addendum

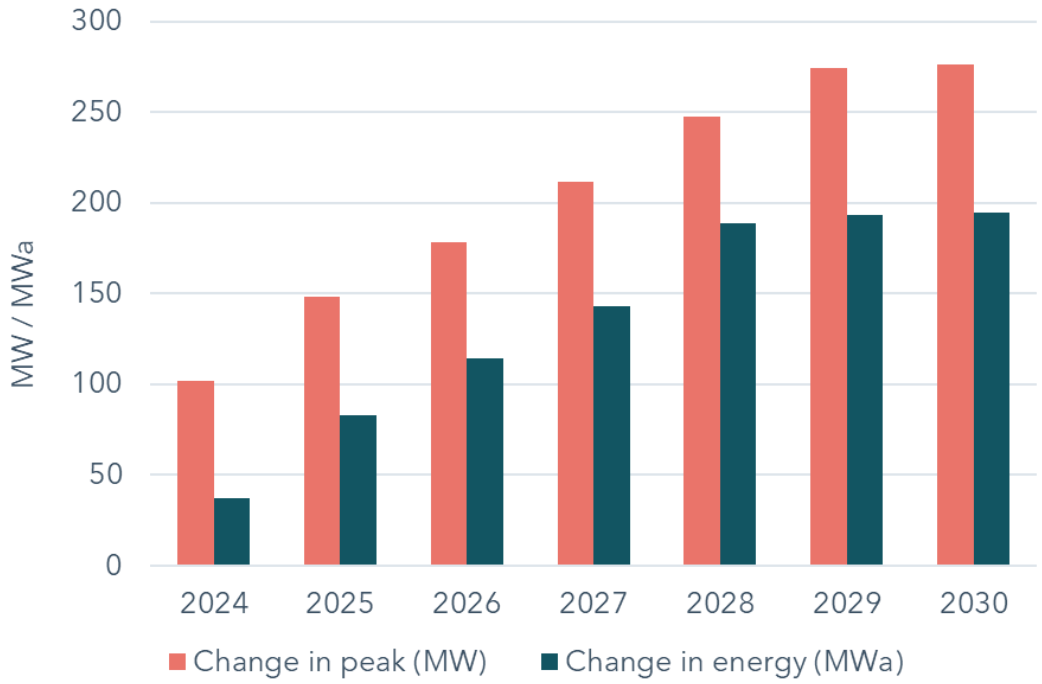
- Filed July 7, 2023
- Incorporates updated assumptions
- Refreshes CEP/IRP energy and capacity need forecast
- Refreshes CEP/IRP portfolio analysis

Key July Addendum assumption changes

Key changes from March CEP/IRP:

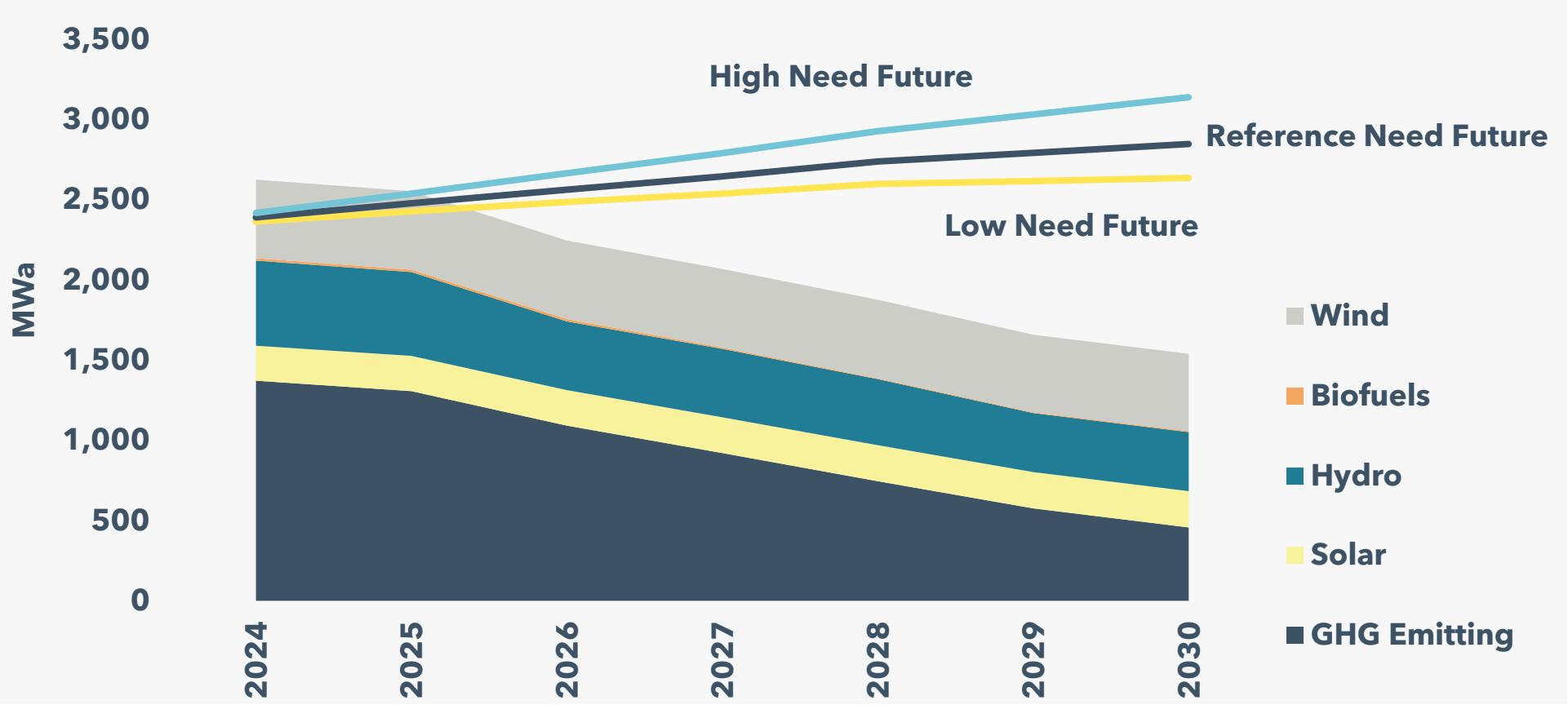
- Increased load forecast (largely due to industrial/tech load expectations)
- New EV, BE, and distributed PV forecasts
- PGE 2021 RFP resources finalized
- Qualifying facilities forecast updated
- Other smaller changes occurred as well

Net impact is an increase in need for energy and capacity resources



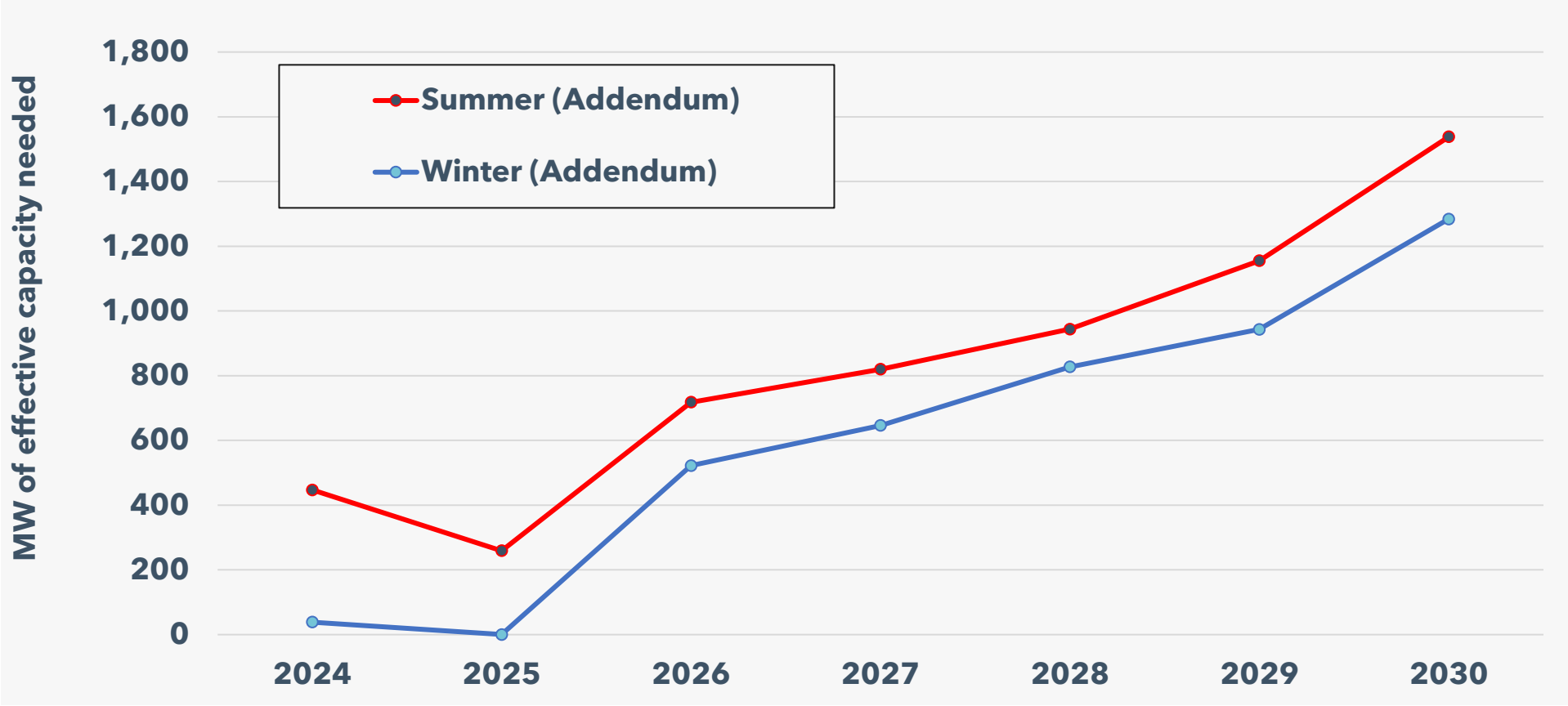
Energy need through 2030

Energy need grows due to load growth, resource retirements, and decreasing ability to serve load with emitting resources. Need is shown without any CEP/IRP resources added.



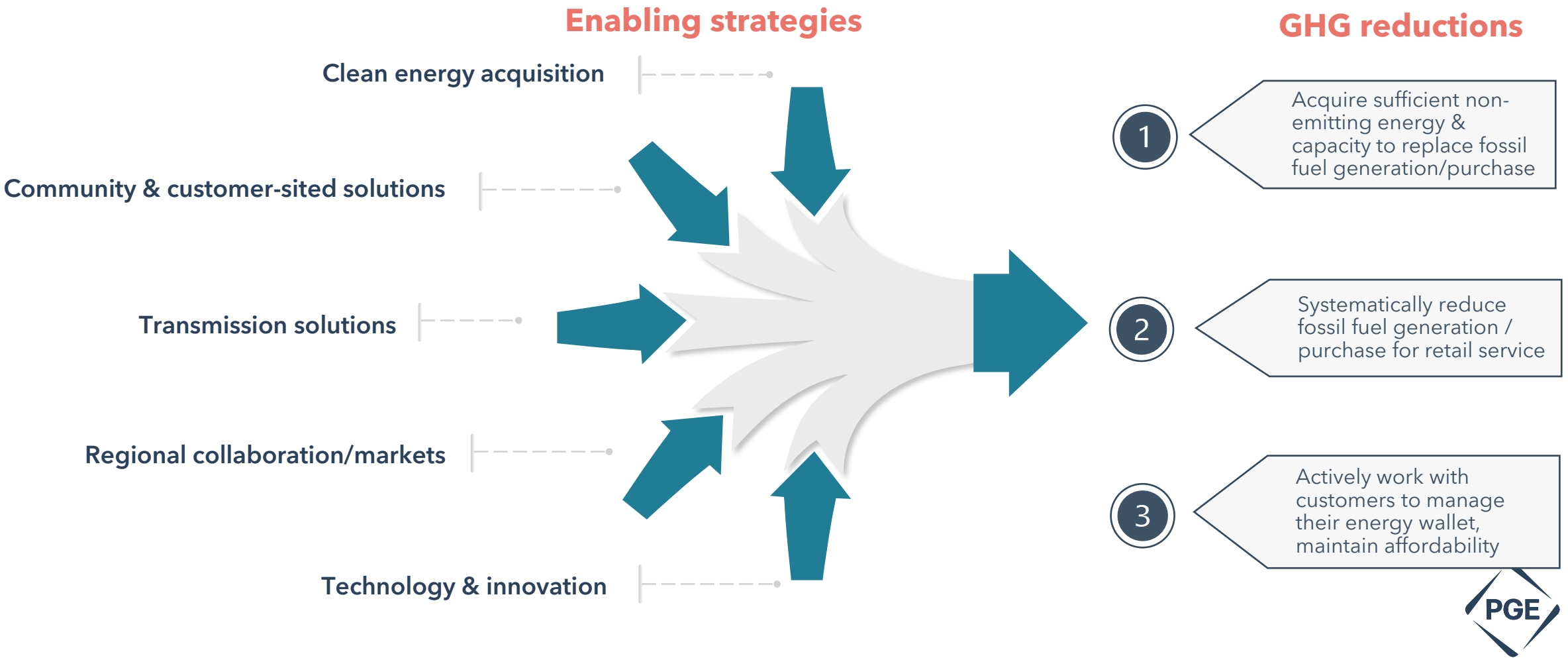
Capacity need through 2030

Effective capacity need grows due to load growth and resource/contract expirations. Need is shown without any CEP/IRP resources added.



PGE's Path to 2030 Strategy

Our decarbonization strategy is multi-faceted to support reliable and affordable power



PGE Action Plan, Addendum Update

		2023 CEP/IRP	LC 80 Addendum
Customer actions	Acquire all cost-effective energy efficiency	150MWa Cumulative 2024-2028	Unchanged
	Incorporate customer demand response	211 MW summer & 158 winter by 2028	Unchanged
CBRE action	Issue RFP for all available and qualifying CBRE resources	66 MW by 2026	Unchanged
Energy action	Conduct one or more RFPs to acquire sufficient energy to position PGE to meet the forecasted 2030 need	181 MWa (905 MWa / 5 total years) per year through 2028 (543 MWa in Action Plan window)	**261** MWa (**1307** MWa / 5 total years) per year through 2028 (**783** MWa in Action Plan window)
Capacity action	Conduct one or more RFPs to acquire sufficient capacity to meet forecasted 2028 needs	624 MW summer & 614 MW winter	**944** MW summer & **827** MW winter
Transmission actions	Pursue options to alleviate congestion on the South of Alston (SoA) flowgate	n/a	Unchanged
	Explore options to upgrade the Bethel-Round Butte line (from 230 to 500 kV)	n/a	Unchanged

Addendum resources to 2030 (cumulative)

	2024	2025	2026	2027	2028	2029	2030
Wind	0	0	690	1090	1128	1528	1528
Solar	0	0	0	0	0	153	400
Hybrid	0	0	299	299	869	1010	1010
Battery Storage	0	0	0	0	0	0	0
Pumped Hydro Storage	0	0	0	0	0	0	0
CBREs	0	0	66	85	110	133	155
WY Tx	0	0	0	0	0	400	400
NV Tx	0	0	0	0	0	153	400
Generic VER	0	0	0	0	0	0	251
SoA Tx	0	0	0	400	400	400	400
Additional EE & DERs	0	0	0	0	0	0	0
Non-GHG-Emitting Contract Extension	0	0	200	200	200	200	200
Cost-effective EE (MWa)	30	60	90	120	150	183	216
Cost-effective DR	133	162	183	199	211	218	228
Clearwater Wind	311	311	311	311	311	311	311
Seaside Storage	0	0	200	200	200	200	200
Troutdale Storage	0	200	200	200	200	200	200
Evergreen Storage	0	75	75	75	75	75	75

July 2023 IRP/CEP Addendum

2021 RFP

Table does not include resources outside the CEP/IRP Preferred Portfolio or 2021 RFP

Post 2030 CEP/IRP

- The need for capacity and energy resources, as well as transmission, grows post-2030 due to load projections and resource/contract exits.

- The pathways to 2040 will require further development of non-emitting resources and/or access to non-Northwest resources to meet energy and capacity needs.

- It is challenging to draw actionable insights from post-2030 portfolio analysis with nascent resources due to speculative resource costs and characteristics. The CEP/IRP deemphasizes quantitative results post-2030. Much of the resource need post-2030 is met with generic resources in the CEP/IRP.

Key Takeaways

PGE is planning for a linear reduction in emissions associated with sales to Oregon retail customers from 2026-2030 and 2030-2040.

PGE forecasts a significant effective capacity need of 1538 MW in summer, 1284 MW in winter, and a significant energy need of 1,307 MWa by 2030.

2030 emissions targets can be met by technologies and resources that are currently known and commercially available.

Pathways to 2040 will require further development of non-emitting resources to meet the region's energy and capacity needs.

PGE's natural gas plants will continue to play a role in helping meet our resource adequacy needs during the clean energy transition.

Key Takeaways

Achieving emissions targets reliably and affordably requires access to a wider geographic diversity of resources and the transmission solutions to access them.

Transmission constraints drive a greater role for customer-sited resources, including demand response, energy efficiency and community-based renewable energy.

Regional markets and partnerships can increase reliability and lower costs for our customers.

Utilizing federal, state, and local funding opportunities to support decarbonization on our system will mitigate customer price pressure during the transition.

PGE's success will require continued collaboration with our customers, communities, and stakeholders and with a wide range of leaders at all levels of government.

Questions?