Grid Integration of Large Loads (Data Centers)

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About Portland General Electric

Who We Are

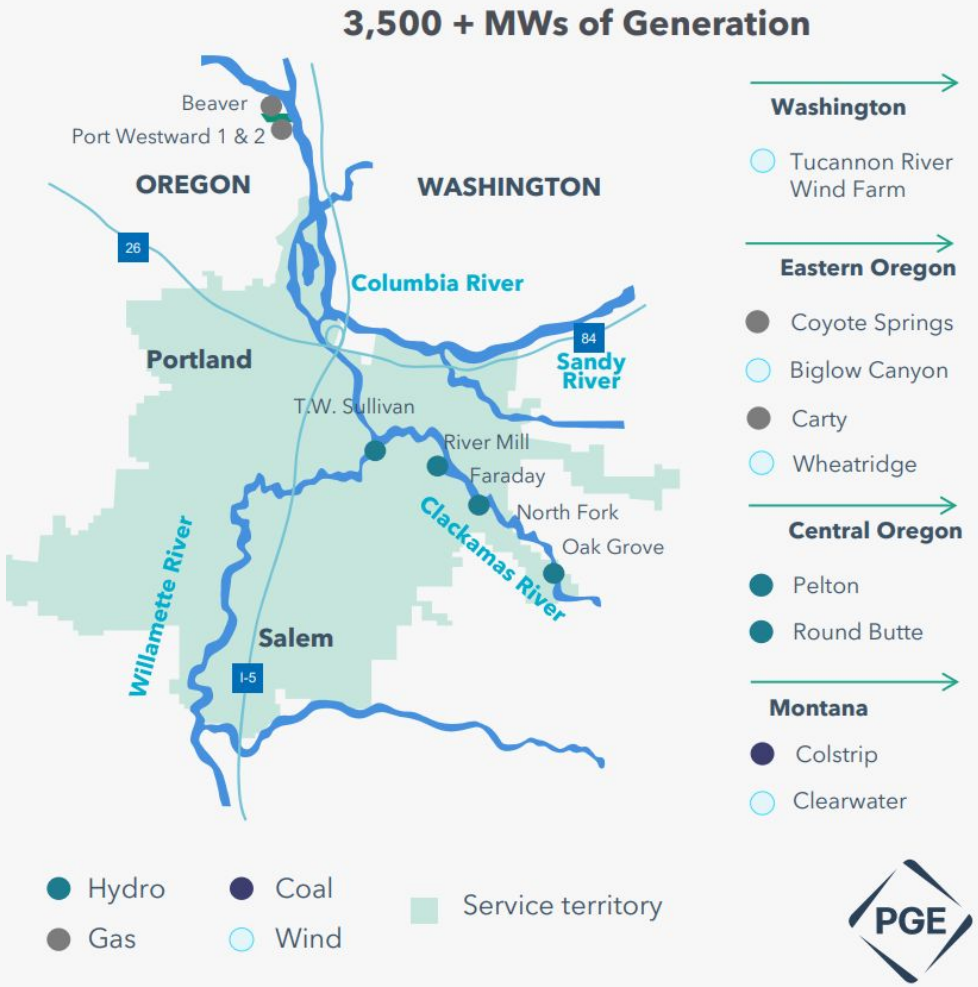
- PGE serves about 955,655 customers across 51 cities in Oregon—home to roughly 1.9 million people.
- Our team includes 2,960 employees dedicated to safe, reliable, and affordable energy
- Roughly two-thirds of Oregon's commercial and industrial activity occurs in PGE service area, driving robust demand growth

Vertically Integrated Utility

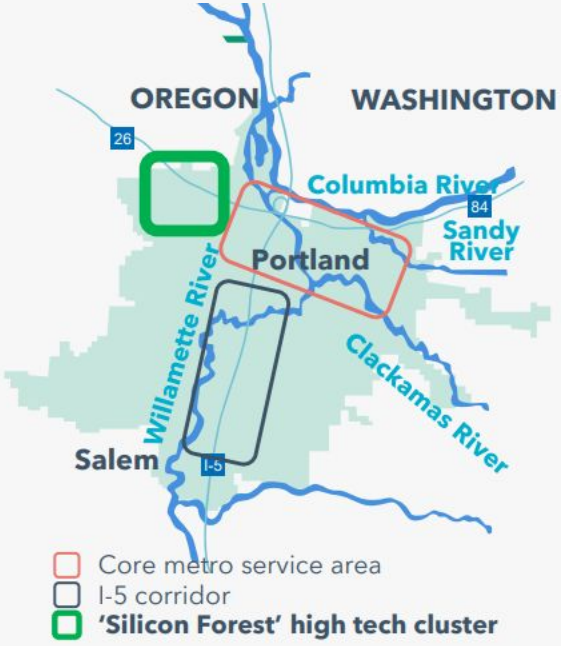
- 3,500 + MW of Generation
- 1,744 miles of Transmission and 29,251 miles of Distribution
- All-time summer peak load 4,498MW (August 2023)
- All-time winter peak load 4,113MW (December 2022)

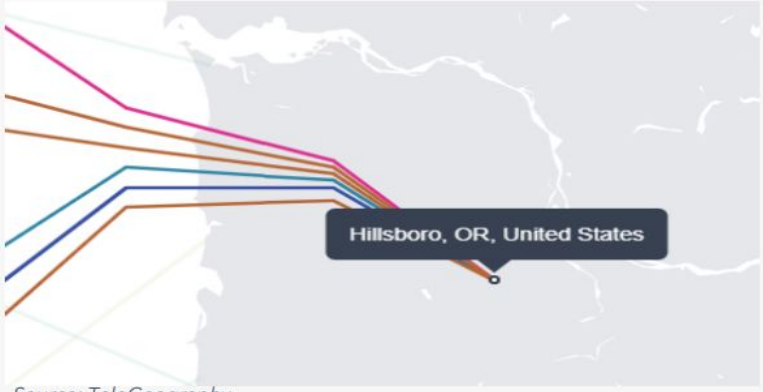
Leading to a clean energy future for Oregon

- Our goals align with the state's 100% clean energy goals.



Load growth driven by tech and data center demand

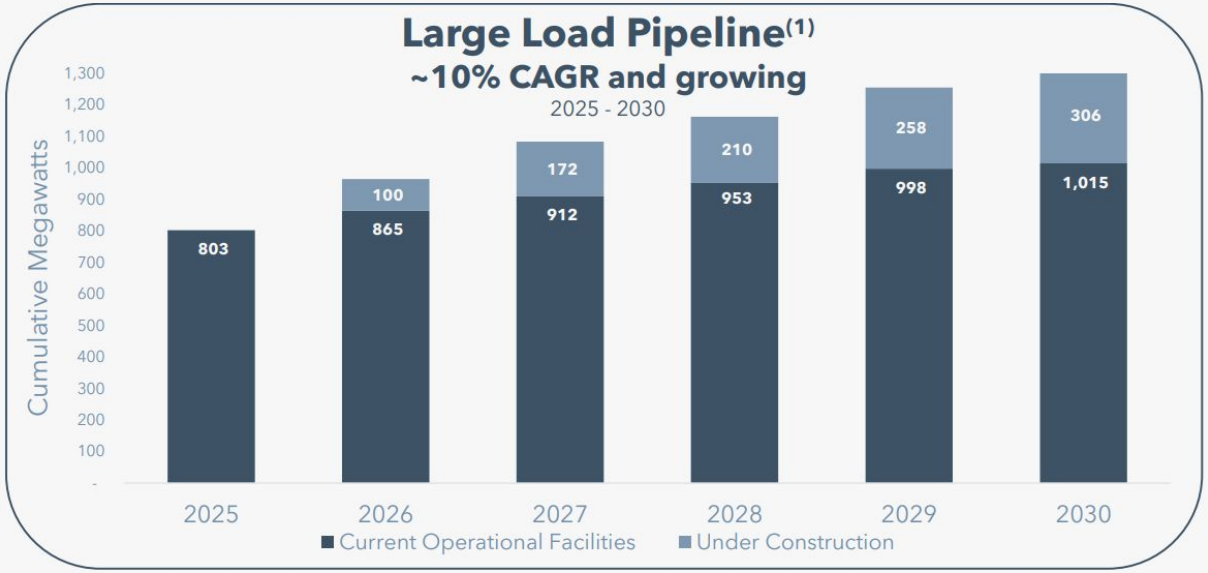




Source: TeleGeography

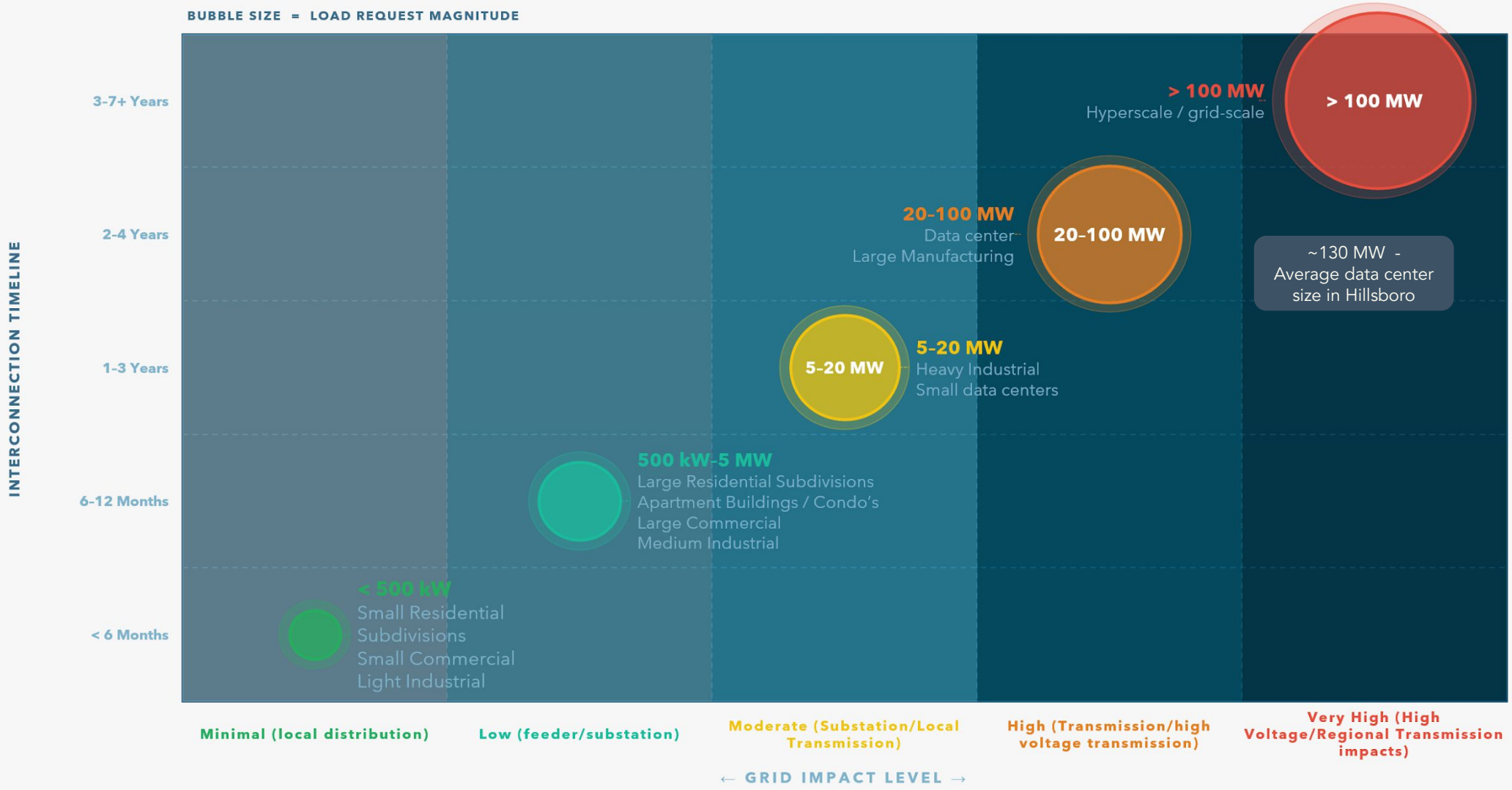
Trans-pacific subsea fiber optic cables terminate in Hillsboro supporting data center expansion

PGE has1.7GW of additional incremental large load requests



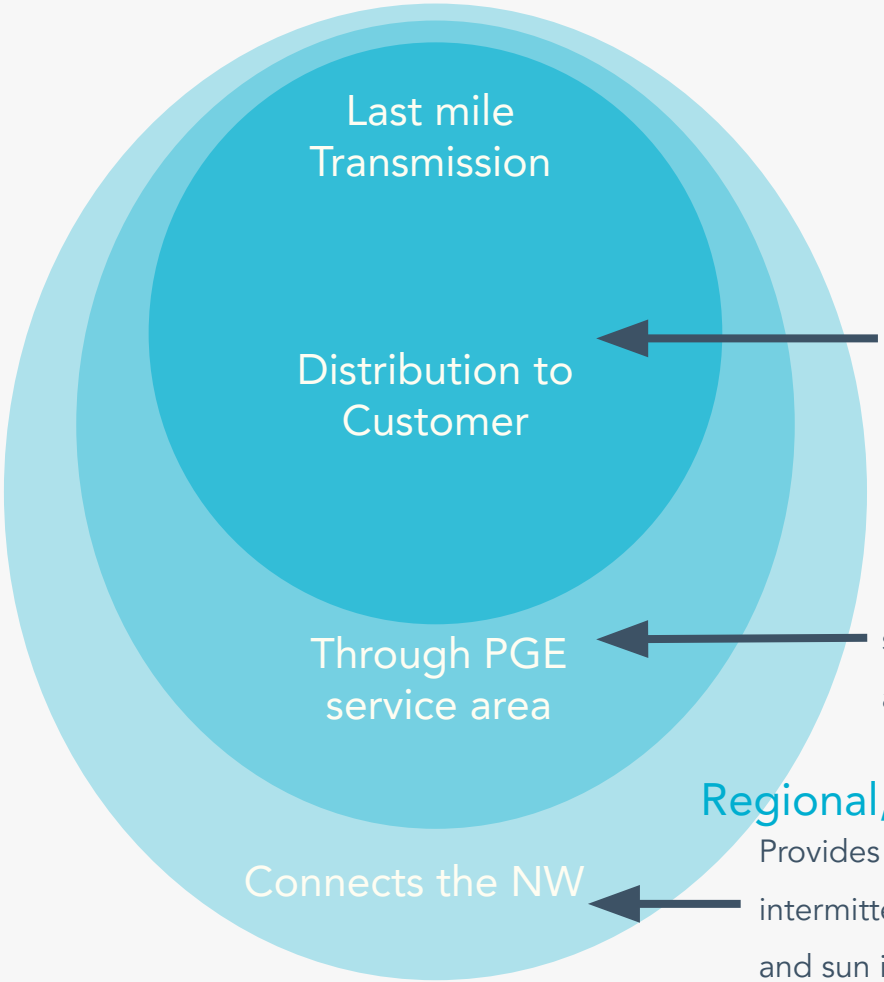
(1)Values represent customer capacity. As of January 31, 2026

Large Loads : Grid Impact and Timing



Note: The above diagram is a generalization. Actual timing, impact may vary with location, grid configuration and other factors

Delivering Power to the Customers : Transmission and Distribution



PGE's System

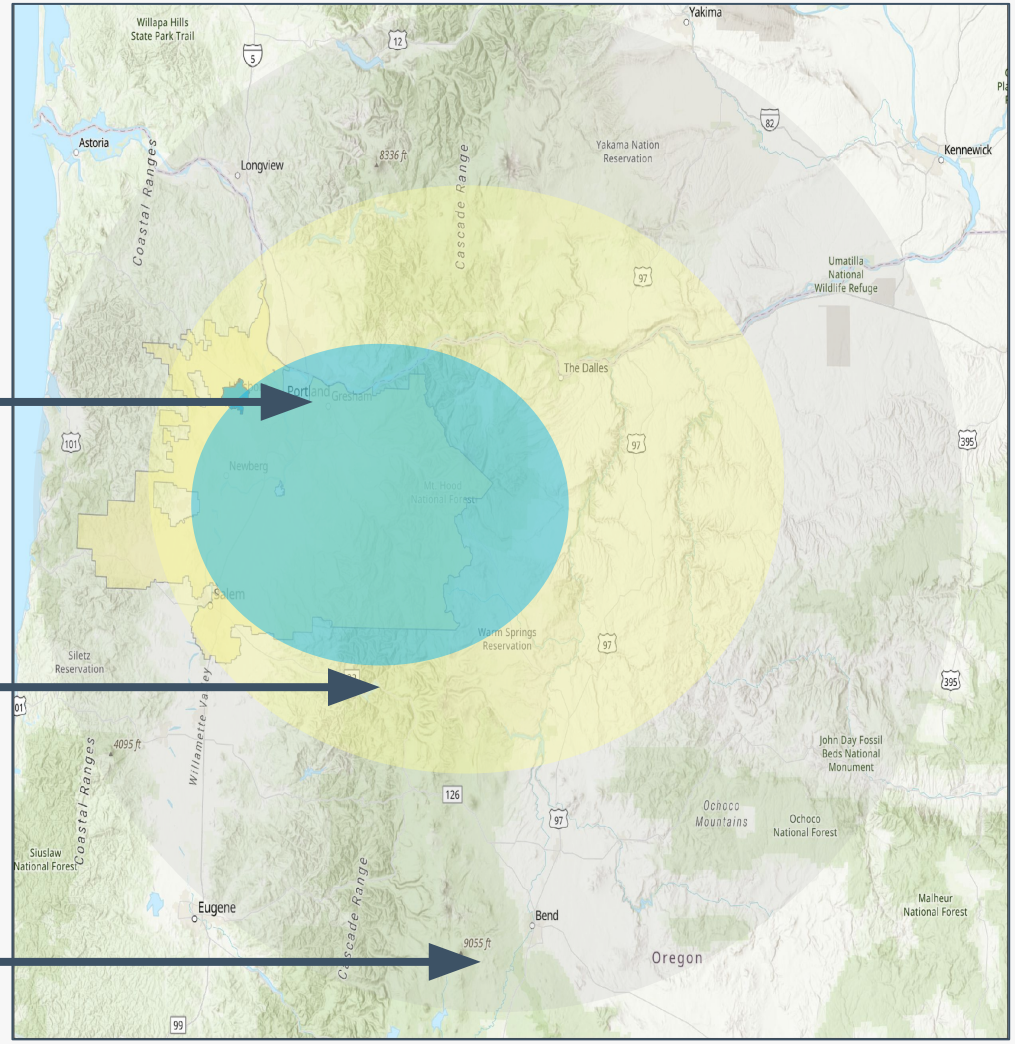
PGE's Transmission and Distribution – last mile delivery system to serve load from resources on and off our system

BPA & PGE Interface

Brings power from our region via BPA's system, which encapsulates our service area

Regional, Interregional Transmission

Provides access to energy markets and least cost intermittent resources, such as wind in Wyoming and sun in the desert Southwest



Grid Challenges – Large Loads

Grid Constraints – Local (Circle 1)

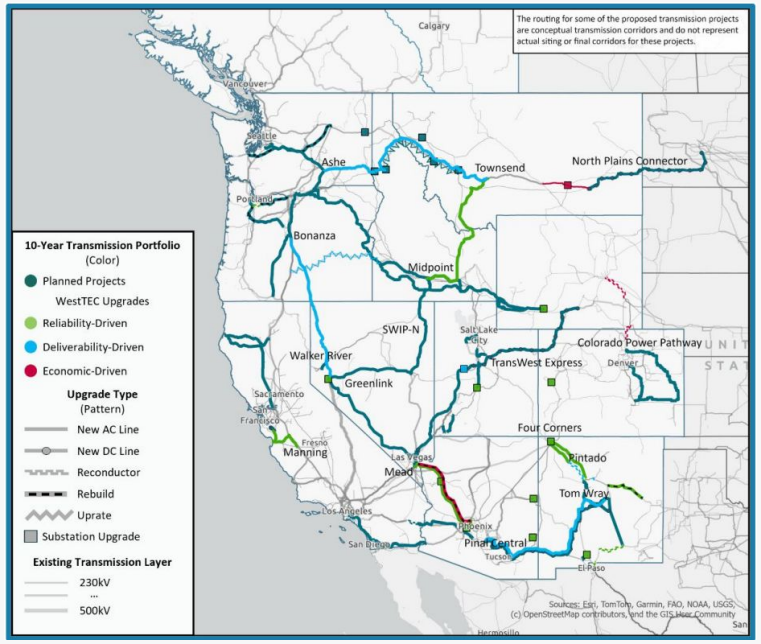
- New transmission and distribution builds are needed to accommodate new load
- Additional investments needed to enhance the local grid for reliable delivery of power
- New transmission development takes time – especially for new Right-of-Way (ROW)

Grid Constraints – Regional (Circles 2 & 3)

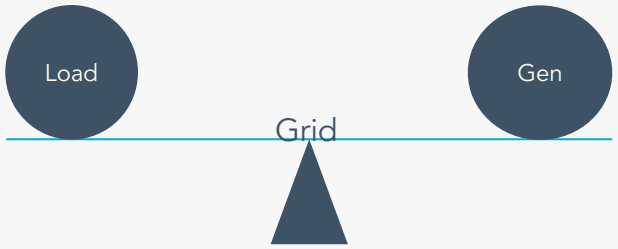
- Large-scale load growth also impacts the regional grid
- BPA system upgrades
- Drives the need for energy access through inter-regional transmission development (even longer timeframe, complex permitting)

Resource Adequacy (Energy)

- Meeting customer demands even during extreme weather or equipment failures
- High Load Factors (Data Centers) vs. Low Capacity Factors (Variable Energy Resources)



Transmission needs from WestTEC study



Optimize Current Grid - > While Building New

PGE is using Grid Enhancing Technologies (GETs) to make the system more efficient while maximizing existing infrastructure and managing customer costs.

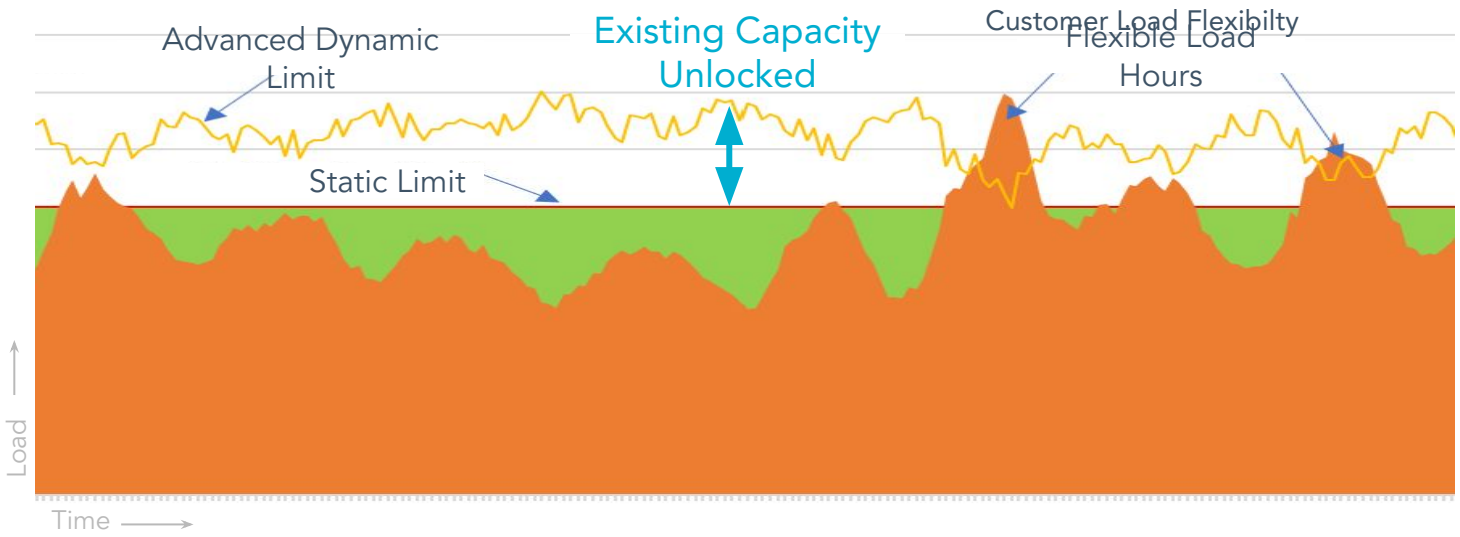
- Advanced Conductors.
- Dynamic Line Ratings (DLR)
- Power Flow Controllers
- Topology Optimization

PGE is partnering with customers on Flexible Load Interconnection to accelerate load additions

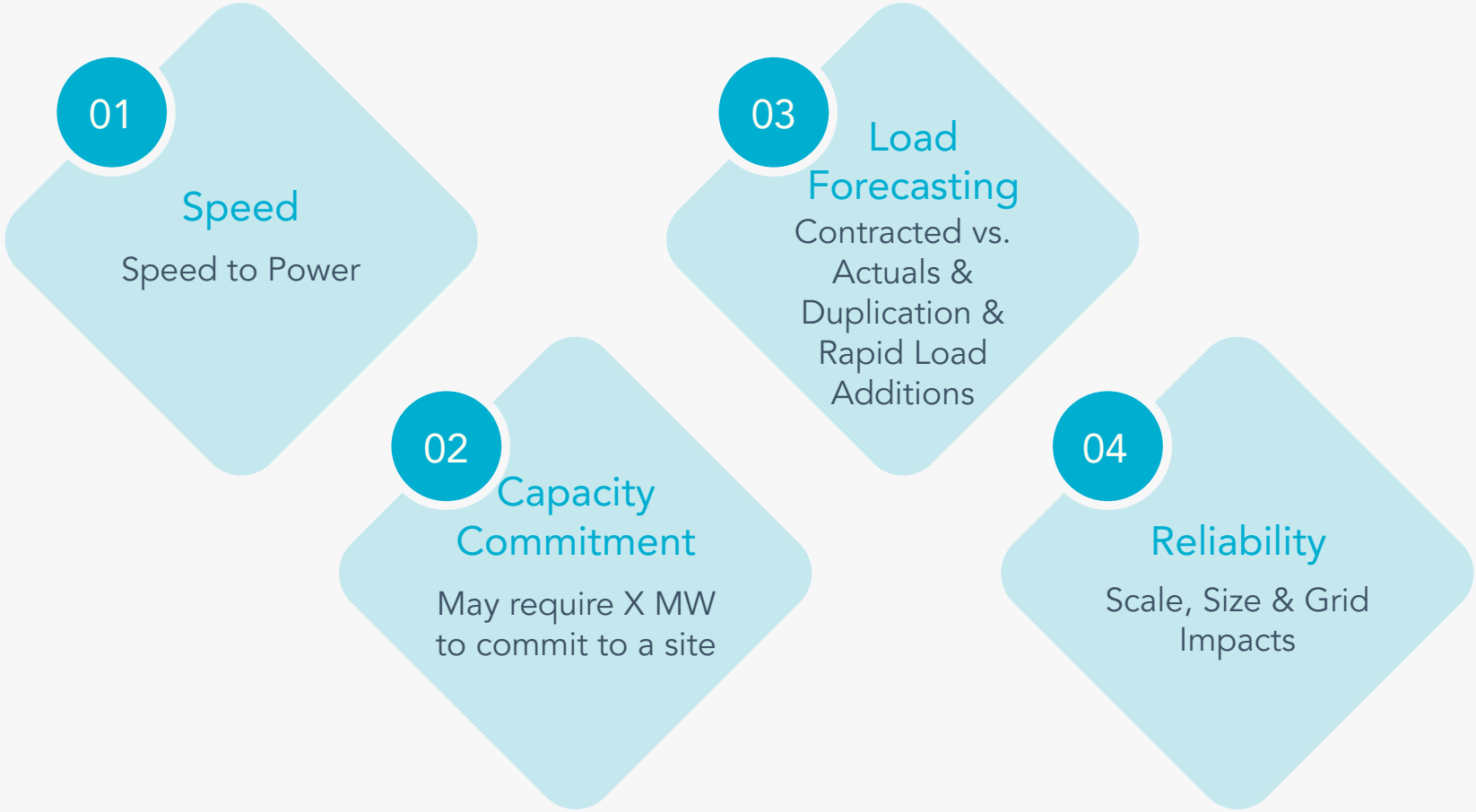
- Dispatchable Customer Load Flexibility
  - Load Shifting (Time, geography)
  - Load Reduction (computational)
  - Backup Generation (Diesel Gen)
  - Load Flexibilty with Battery Energy Storage

Energy Storage to "firm up" variable energy resources.

- Procured 475MW of BESS (Battery Energy Storage System)



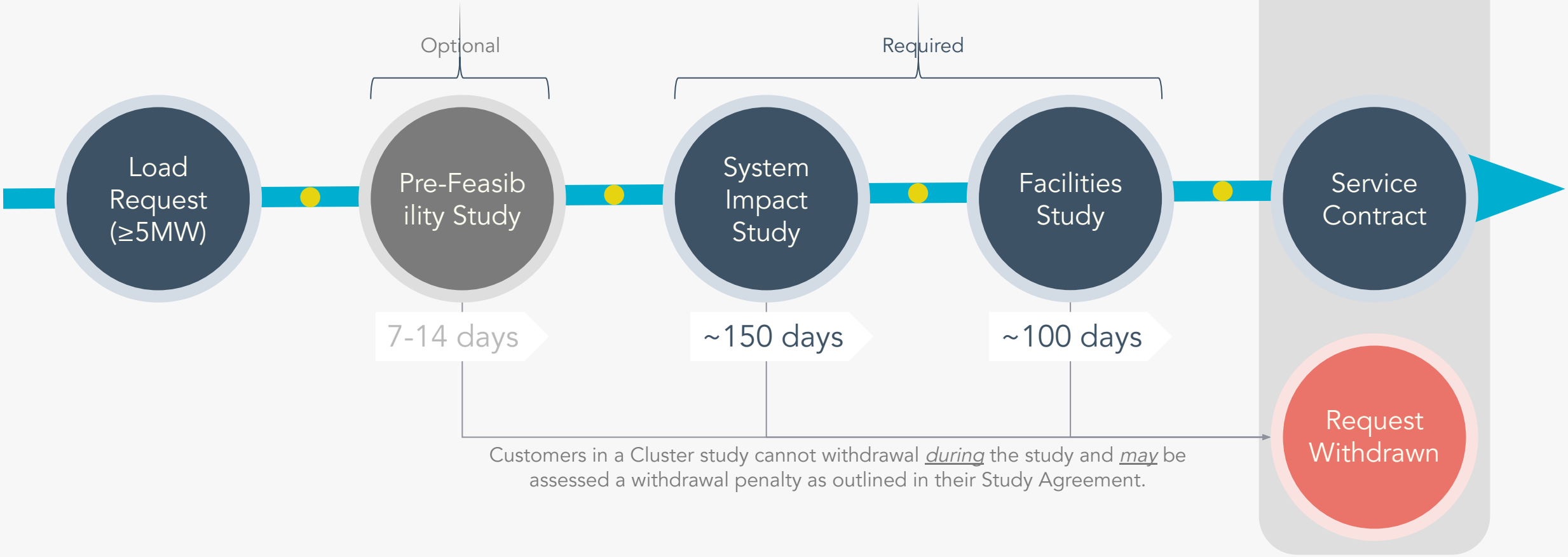
Data Center Specific Challenges



Large Load Study Process

Serial Study (One Request at a time)
Cluster Study (Multiple Requests at Once)

Customer Decision Point – Must decide to move to next advised step (30-90 days)



HB 3546/ POWER Act/UM2377

HB 3546 (POWER Act) required the Oregon PUC to provide a "separate and distinct" classification of service, with its own tariff schedule, for large data centers.

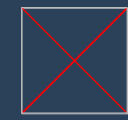
HB 3546 allowed for a separate customer classification for large energy use facilities

- Distinct treatment from ordinary commercial and industrial customers
- Applies to data center facilities 20 MW or more.

OPUC Docket UM 2377 – an investigation into large load customer cost allocation – incorporated the requirements of the POWER Act.

The OPUC issued a final order in UM 2377

- Adopted Schedule 96 – Large Load Tariff, specifically for data center customers.
- Minimum transmission and generation demand provisions of 90% of contracted capacity.
- A flat, billed distribution charge covers 100% of the cost to expand the distribution system.
- Large Load Customer Agreements (LLCAs) require a minimum contract length of 10 years, up to 30 years, depending on the size of the load request.
- Interconnection queue requirement and plan of service must include special contracts for energy and capacity resources and should not impede HB 2021 obligations.
- An exit fee applies for customers exiting service agreements.



Thank you

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