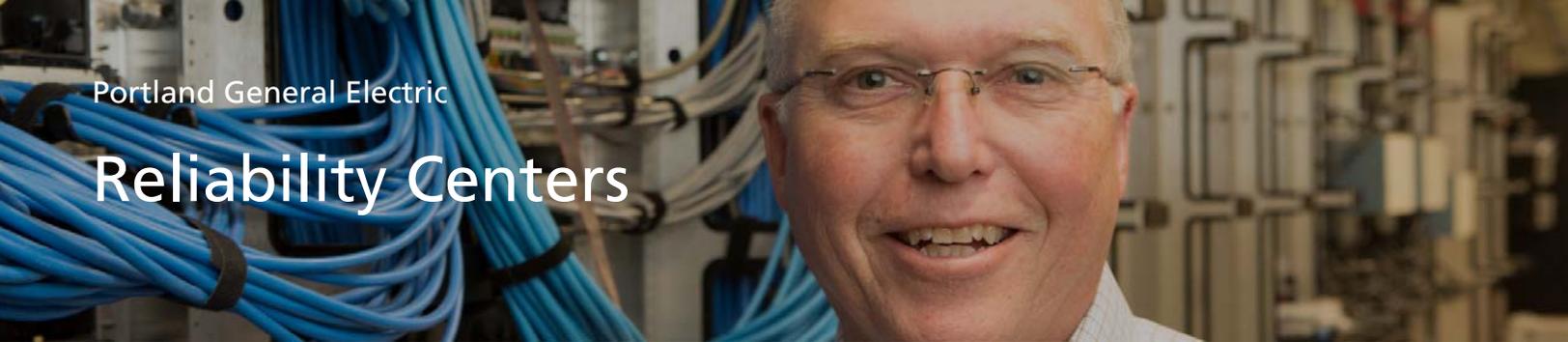


# Reliability Centers



In the Portland area, PGE has three Reliability Centers to serve businesses with high reliability requirements.

The Centers offer full redundancy at each level of the power network: transmission lines, substation transformers, and feeders. If any piece of equipment has problems, another can pick up the full load.

All three meet or exceed the most stringent industry specifications. PGE monitors power quality closely and offers power quality monitoring and reporting through the i-Grid system. Other reporting is also available.

## Hillsboro Reliability Center

Designed and built to meet the demanding requirements of several semiconductor facilities, including Intel's Ronler Acres site, the Hillsboro Center is made up of multiple substations and served by:

- Four 115kV transmission lines that include high-speed technology to sense and clear disturbances on the system within one-tenth of a second. Any disturbance on any two of the four lines will not result in an outage to customers.
- 50 MVA and 125 MVA transformers.
- 13kV and 35kV feeders serve customers through redundant underground distribution.

Metal-clad switchgear to keep wildlife out

## Gresham Reliability Center

The Gresham Reliability Center was also designed and built to meet semiconductor fabrication requirements. It is served by:

- Three 115kV transmission lines that include high-speed technology to sense and clear disturbances on the system within one-tenth of a second. Any disturbance on any two of the three lines will not result in an outage to customers.
- One 16.8 MVA and one 28 MVA distribution transformers that are configured to provide full redundancy. The station is designed to accommodate three 50 MVA transformers.



## Key advantages at a glance

- Substations sized to ensure plenty of capacity for current and future loads
- Each has at least three independent transmission sources
- Multiple transformers configured to provide full redundancy
- Redundant underground distribution systems connect the system to customers
- Portland City Center is served by a four-feeder, interconnected network

# Reliability Centers

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- 13 kV feeders serve the facility underground and are fully redundant.
- Metal-clad switchgear to keep wildlife out.

## Portland: Downtown Network Reliability Center

For the demanding requirements of a high-density commercial urban area, the Downtown Center is a network system.

Customers are not dependent on a specific transformer or feeder, but instead are fed by all. Networks mitigate most outages and voltage fluctuations caused by exposure to nature, traffic, or minor equipment failure. Downtown has:

- Two substations, each with three transmission lines (115- and 57kV).
- Networked grids that serve smaller customers at 120/208 volts, and spot networks that serve larger customers at 277/480 volts.
- Any one feeder or combination of transformers can be taken out of service without affecting the secondary system and voltage.

## Key advantages at a glance

- Substations sized to ensure plenty of capacity for current and future loads
- Each has at least three independent transmission sources
- Multiple transformers configured to provide full redundancy
- Redundant underground distribution systems connect the system to customers
- Portland City Center is served by a four-feeder, interconnected network