Portland General Electric

Marquam substation project: Quick Facts

Project objectives

The Marquam substation is being built to provide reliable service to Portland's downtown and South Waterfront areas. It will replace 60 year-old substation equipment located on the east side of the Willamette River, which currently serves the downtown area via eight undersea cables, half of which date to the 1950s.

Short-term customer benefits

Although the existing substation equipment and river-crossing cables have performed admirably, the downtown core area is the nerve center of the region's business and government and a hub for education, transportation and tourist attractions. The Marquam substation will assure reliable electric service for this critical area by offloading the downtown energy grid from the old east-side substation.

Long-term customer benefits

In addition to assuring a reliable supply of electric power to the downtown core area, in the future, the Marquam substation will be connected with other PGE substations serving the west side. This "radial" capability will allow the Marquam substation to serve as a backup power source for nearby parts of the PGE energy grid, increasing reliability. The Marquam substation location will serve as the gateway spot for this type of interconnection beyond the downtown area.

Additionally, the project will provide future capacity to align with the expected growth of the South Waterfront District.

Recent developments and milestones

Four tunnels to accommodate underground transmission lines that will supply the Marquam substation – each over 200 feet long – are being bored under Interstate 405. Two of the four tunnel casings have been completed successfully, and work on the third tunnel casing is underway.

"This is a really challenging piece of work because the tunnel casings are being bored at an upward angle of 10.5 degrees, and they have to hit a target location more than 200 feet away where a vault will be located," says Ezra Richards, PGE project manager. "They had to be precise to within a matter of inches to make it work. Ultimately, with the first one, they were off by less than three-quarters of an inch. That is incredibly accurate."

Marquam substation project: Quick Facts

Known as "feeder getaways," the four tunnel casings will house the conduit and feeder cables that, when complete, will supply the PGE energy grid serving downtown Portland.

Each of the tunnels has a diameter of 48 inches and measures approximately 235 feet long. The work of boring the tunnel casings began with the digging of a 25-foot deep pit, designed so that the tunnels would be at an appropriate depth beneath the freeway and to allow for future construction of equipment above them.

In addition to the tunnel casings, work is also well underway on building a new retaining wall on the southern part of the property. An existing wall will remain in place, and the space between the new and existing wall will be backfilled.

Artist's depictions of substation

Aesthetics and Design Facts

- Open air facility with City of Portland-approved 12' wall and landscaping
- Equipment will be approx. 20-25' in height, with limited visibility from the street
- Landscaping to be maintained by PGE, and done in accordance with local permitting requirements
- SW Baker Street to be paved

Estimated date of completion

Project duration will span four years with anticipated completion in 2018.