

# Frederickson Generating Stations

## Ensuring reliable electric service

PSE.COM



Frederickson Generating Station

Puget Sound Energy strives to ensure reliable electric service at a reasonable cost by acquiring power supplies from a variety of different sources, both PSE-generated and purchased from other suppliers. These sources primarily are hydropower, wind power, natural gas-fired generation, and coal-fired power from Montana. This diversified-portfolio strategy minimizes risk – and costs – in the event that an unforeseen circumstance (a drought, for example) causes regional shortages in one form of power and, in turn, drives up wholesale power prices. While hydroelectricity comprises the single largest share of PSE's total power-supply mix, electricity from clean-burning natural gas-fired facilities also makes up a significant share – about one-fifth of PSE's total.

PSE today owns nine natural gas-fired plants, all in Washington state. Two of these plants – the Frederickson Generating Station and the Frederickson 1 Generating Station – are located southeast of Tacoma, near Frederickson, Pierce County. PSE is the sole owner of the older, Frederickson Generating Station. In 2004, PSE bought a 49.85 percent interest in the newer, Frederickson 1 facility (a subsidiary of Atlantic Power owns the remaining share).

### Power Output

Frederickson can produce 147 megawatts of electricity when operating at full capacity. That is enough power to meet the peak electricity needs of about 110,000 households.

Frederickson 1 has a 249-MW capacity, although supplemental duct-firing generation can boost maximum output to 275 MW. PSE's share of total capacity is 137 MW. Frederickson 1's 275-MW maximum output is enough to meet the peak electricity needs of about 200,000 households.

### Location

The two adjacent plants are located about 18 miles southeast of Tacoma, near Frederickson in Pierce County.

### Facility Profiles

#### *Frederickson Generating Station*

PSE employs this facility primarily to provide back-up “peaking” energy for the utility's power system during daily or seasonal spikes in customers' power usage. An additional benefit is the plant's ability to be started remotely from PSE's electric-dispatch center and reach full generating output within 10 minutes. This quick-start capability helps to ensure service reliability for PSE customers during electrical-system emergencies. The plant, built in 1981, contains two “single-cycle” (also called “simple-cycle”) generating units.

#### *Frederickson 1 Generating Station*

This plant, which came online in 2002, employs modern, “combined-cycle combustion-turbine” technology that allows it to generate electricity using both a natural gas cycle and, from the exhaust heat of its power-generating turbines, a steam cycle. The two-stage process boosts operating efficiency, lowers fuel costs, and cuts air emissions. Combined-cycle plants like Frederickson 1 operate more efficiently than single-cycle gas-fired plants.



The latter typically run only to help meet daily or seasonal peaks in customers' power usage, while combined-cycle plants often operate to help meet utility customers' base power requirements. They also complement hydro and wind-powered generation because gas-fired plants can operate on a firm schedule while power generation from hydro and wind-generating facilities is dependent upon Mother Nature. A subsidiary of Atlantic Power operates the Frederickson 1 facility.

### **Personnel**

Five full-time PSE employees operate and maintain the Frederickson facility. Atlantic Power's subsidiary employs 16 full-time employees to operate Frederickson 1.

### **Tax Benefits to Public**

Property taxes levied on PSE's Pierce County facilities, including the two Frederickson stations, provide significant revenues for local schools, county roads, and other public services.



*Frederickson 1 Generating Station*