

# Lake Side 1 and 2 Generation Facilities



**PACIFICORP**

Rocky Mountain Power  
Pacific Power  
PacifiCorp Energy



*Lake Side 1 (left) and Lake Side 2 Generation Facilities*

**The Lake Side combined-cycle natural gas power plants blend modern technology with environmental stewardship. The two plants share the 65-acre site in Vineyard, Utah, with a generating capability of 558 megawatts of electric power at Lake Side 1 and 645 megawatts at Lake Side 2.**

Owned and operated by PacifiCorp, Lake Side 1 was commissioned in 2007 and Lake Side 2 was commissioned in 2014.

Natural gas is transported via Questar Gas Company pipelines that connect to the Kern River Gas and Questar Pipeline transmission systems. Lake Side is located on property that was part of the former Geneva Steel site. The natural gas serves as fuel for the four combustion turbines and the duct burners in each of the four heat recovery steam generators.

Combined-cycle generation refers to the design of this type of power plant. For each generating facility, two combustion turbines, modeled after jet engine technology, are each connected to an electric generator. The exhaust from the combustion turbines, at about 1,100 degrees Fahrenheit, is directed to a heat recovery system, which produces steam for a turbine that drives a third generator. The output of all three generators is combined at the plant for transmission to customers.

The exhaust steam from the steam turbine is passed through a watercooled condenser and transformed back to a liquid for re-use in the heat recovery steam generators. The condenser is cooled by a multi-cell cooling tower which works on the same principle as a swamp cooler. Each cell in the cooling tower is equipped with a large motor-driven fan that moves air through the cooling tower and removes heat from the circulating water for re-use. The water for our plant operations comes from four on-site wells and from a water supply connection to the Central Utah Water Conservancy District.

Located in the heart of the Wasatch Front, about 35 miles south of Salt Lake City, Lake Side 1 and Lake Side 2 are placed strategically to meet our customers' continuing growth in electricity demand. We identified both the need and the type of generating resource we use at Lake Side through our integrated resource planning process.

The combined-cycle process increases overall efficiency of the plant. Combustion turbines alone are about 37 percent efficient. With the addition of the heat recovery system and steam turbine, generation efficiency increases to approximately 57 percent. Other significant benefits are low fuel consumption and low emissions.

Compared to burning coal, the natural gas-fueled Lake Side plants produce about 60 percent less carbon dioxide per unit of electricity, less than three percent of the nitrogen oxides, negligible sulfur dioxide and no ash or dust. The combustion turbines are equipped with low-NOx burners. In addition, each heat recovery steam generator is equipped with additional nitrogen oxide emission controls (selective catalytic reduction) and an oxidation catalyst that reduces carbon monoxide and volatile organic compound emissions.

The company gains efficiencies by sharing personnel and facilities between Lake Side 1 and Lake Side 2. The full-time-equivalent workforce increased by less than 30 percent – from 21 to 30 – when Lake Side 2 was commissioned, thanks to a common control room, similar control systems and integration of operations of the two units. Additionally, the turbines at both units are similar and from the same manufacturer, minimizing maintenance costs.

Both Lake Side 1 and Lake Side 2 have been designed so start times are reduced compared to conventional designs; this offers considerable flexibility to match real-time requirements of our customers.

*PacifiCorp is one of the lowest-cost electricity producers in the United States, providing approximately 1.8 million customers in the West with reliable, efficient energy. We operate as Rocky Mountain Power in Utah, Wyoming and Idaho, and as Pacific Power in Oregon, Washington and California. PacifiCorp's electric generation, commercial and energy trading, and mining functions are operated as PacifiCorp Energy.*

Lake Side 1 and Lake Side 2 (foreground) Generation Facilities

