

ANAHEIM PUBLIC UTILITIES

THE FACTS ABOUT PARK SUBSTATION & ROOSEVELT PARK

Park Substation is unique in that it shares a site with Roosevelt Park, making it the first electric substation in the United States that is built below ground and topped off with a park. Located in east Anaheim, it is Anaheim Public Utilities' 11th and newest distribution substation and has the capacity to serve 25,000 residential customers.

Park Substation would not have been feasible without the latest in compact, reliable Gas Insulated Switchgear (GIS) technology; making it possible for Anaheim Public Utilities to:

- build a compact, highly reliable, strategically located electric distribution station in an enclosed structure and covered by a developed neighborhood park, all in an existing residential neighborhood;
- achieve the Mayor's and City Council's vision of building an aesthetically pleasing electric facility that enhances the neighborhood, is quiet and not visible to the surrounding neighborhood;
- reduce the required space for the substation to approximately 30 - 40 percent of a conventional surface station design; and
- develop Roosevelt Park, a passive neighborhood park that makes optimal use of the 2.7-acre site.

Facts and Figures

- Siemens manufactured the SF6 12 and 69 kilovolt (kV) switchgear in Frankfurt and Berlin, Germany, respectively
- Pair of Siemens 50 MVA, 69/12 kV transformers manufactured in Bogotá, Colombia



"While Park Substation is the first of its kind in the United States, the technology is used widely in Europe and Japan."



- Underground structure is 110 feet wide by 130 feet long
 - 25,000 yards of dirt moved to build station's concrete enclosure
 - Walls are 2 feet thick
 - Roof and floor are 18 inches thick
 - Supported by 138, 2-foot diameter caissons to a depth of 35 feet
 - Roof contains 540 post tension cables
- All circuits into and out of the station are underground
 - 10 circuit miles of underground cable installed on Santa Ana Canyon Road while another 5 circuit miles of existing overhead cable are being undergrounded
 - 8 circuit miles of underground cable installed on other streets
 - More than 50 miles of cable total
- Slopes surrounding Roosevelt Park's 2-acre lawn area are covered with hundreds of plants and dozens of trees
- Brick veneered rock walls run a total of 900 feet

A second enclosed GIS station is planned for construction in downtown Anaheim, starting early in 2007, with completion by summer 2008. Replacing an older station that has outlived its useful life, the new Anaheim Substation will be installed inside a building designed to fit the historical and architectural theme of the neighborhood. An outdoor GIS station is being planned for roughly the same time frame on a small City-owned site in a commercial area.

Construction Schedule

- September 28, 2004** – City Council Project Approval
- February 2005** – Site Preparation
- May 2005** – Start of Construction
- January 2006** – Substation Structural Completion
- February 2006** – Transformer Installation
- October 17, 2006** – Dedication

Management

Project Manager

Anaheim Public Utilities

Construction Management

Sargent & Lundy, LLC

Joint Venture Partners

Power Systems Design/Build/Install

Siemens Power Transmission & Distribution Inc

Site General Contractor

Turner Construction Company

Station Electrical T&D Contractor

Beta Engineering California LP

Financing

Total Project Cost	\$19.5 million
Share of Cost for Roosevelt Park	\$ 1.2 million

GIS Technology

The Technology – With gas-insulated switchgear, or GIS, the 69 kV and 12 kV transmission and distribution conductors and switches are enclosed in steel pipes. A special inert gas, called sulfur hexafluoride (SF6), fills the pipes under low pressure to provide insulation for the conductors and minimize electrical arcs when the circuit breakers open and close.

The Beginning – Research into GIS technology dates back to 1960 in the U.S. and Europe. In 1976, SF6 circuit breakers were first used at Lewis Substation. Currently, Anaheim has SF6 switches and circuit breakers throughout its transmission and distribution system.

More Compact – Because they require significantly less space, GIS-based electric substations are gaining popularity in urban areas where vacant property is scarce and aesthetics are a primary concern. Park Substation is an excellent example of this benefit. While this station is covered by a park, the first of its kind in the United States, the technology is used widely in Europe and Japan, including below soccer fields.

