

Features

TERRY LOWENTHAL/BECHTEL CORP.



From San Francisco to London, Athens to Seoul, Bechtel boosts rail transit efficiency.

Right on Time

Bechtel has been keeping rail projects on track for more than a century.

Closing the Gap

New Bechtel-built power plants help ease California's energy shortage.

Protecting a River

An ambitious cleanup effort is restoring the environment at Hanford.

Something in the Air

AT&T Wireless gets an expansion and upgrade of its U.S. cellular network.

Road to the Future

Croatia's modern motorway is a first step toward rebuilding the Balkans.

Sinkholes, caverns, and land mines don't deter Bechtel from succeeding in Croatia.



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After terrorists struck on September 11, Bechtel employees responded by volunteering their time, talent, and money.

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Keeping up with Bechtel projects and people on job sites and in offices worldwide.

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In Australia, Bechtel workers get into the spirit of giving by giving up their hair.

CLOSING THE GAP

For half a century, power plants designed and built by Bechtel have fueled California's headlong growth. Now the company is playing a key role to help solve an energy crisis.

The rolling blackouts and soaring energy prices that thrust California into the national spotlight in 2001 did more than just disrupt people's daily lives and present them with blood pressure-raising utility bills. They also served as a wakeup call and a stark reminder that in today's world, abundant energy is the cornerstone of a healthy economy.

Fueled by affordable power, California's economy has grown to be the fifth largest in the world, ranking only behind the United States, Japan, Germany, and the United Kingdom. But the specter of productivity losses from power fluctuations and outages—which could run \$13 billion to \$20 billion per year for California's industrial and technology companies alone—has riveted the attention of the highest-ranking state and federal officials, not to mention businesses and consumers.

There are many complex reasons for California's energy shortage, but "static supply and increased demand" readily sums up the situation. "Until the early 1990s power plant construction in California generally kept pace with demand,"

BY SYBIL HATCH PHOTOGRAPHS BY TERRY LOWENTHAL

explains Tim Statton, president of Bechtel Energy. "But no new major power plants have been built since then, and electricity demand has grown by approximately 15 percent."

Today, California is acting to remedy that imbalance by adding new power plants at a breakneck pace, and Bechtel is in the forefront of the effort. It's a familiar role for a company that has been designing and building power plants in the state for half a century (starting with Pacific Gas and Electric's Contra Costa Power Plant, which opened in 1951).

In the 1950s and '60s, a massive influx of people and industry into California created an unprecedented demand for electric power. The result was a heyday for construction of fossil-fuel-burning plants. Plants designed and built by Bechtel during that period added some 9,500 megawatts to the state's energy supply. Bechtel also constructed more than 1,200 megawatts of hydroelectric power, including major dams and powerhouses throughout the state.

In the 1970s and '80s, Bechtel built San Onofre and helped in the completion of Diablo Canyon—California's two nuclear power plants. Together, they supply 4,310 megawatts of power and are the largest electricity generating facilities in the state. Bechtel also built over 2,000 megawatts of smaller industrial and cogeneration power facilities, as well as numerous waste-to-energy projects.

Since the 1980s, spurred by regulations requiring major utilities to buy power from independent power producers, Bechtel Enterprises has joined with others to develop and finance numerous power plants. In 1998, Bechtel Enterprises and Calpine Corporation announced plans to jointly develop 2,000 megawatts of power in Northern California—enough to



BECHTEL AND CALPINE ARE BUILDING MORE THAN A FIFTH OF THE ELECTRICAL POWER GENERATION UNDER CONSTRUCTION IN CALIFORNIA.

power 2.5 million homes. In addition, Bechtel built the recently completed Sutter Energy Center for Calpine, located just southeast of Sacramento.

"Building new, highly efficient, clean plants close to the demand reduces the need for new transmission lines in the already overtaxed distribution system," says Doug Brown, vice president and manager of power development for Bechtel Enterprises.

Together, Calpine and Bechtel are building more than 20 percent of the power capacity currently under construction in California. "Our joint development with Calpine has facilitated our ongoing proactive approach

to help resolve the supply deficit in the California market," says Brown.

Because it can take two to three years to obtain permits for a new power plant, and an additional two years for construction, the first of these new plants are just now coming online. The 540-megawatt Sutter Energy Center—the first full-production power plant to be licensed in California in over 10 years—began operations in June 2001. Thanks to an accelerated construction schedule, it came online two months ahead of projections, and on its first day of commercial operation provided electricity that enabled the state to avoid a rolling blackout. "By coming online early, Sutter saved the day," says Bechtel Power Project Manager Robert Riggs.

The 880-megawatt Delta Energy Center in Pittsburg—co-developed by Bechtel Enterprises and Calpine, and designed and constructed by

Managing the Energy Crisis

When it became apparent that California was facing potentially devastating shortages of energy, Governor Gray Davis garnered resources from throughout the state to help solve the crisis. He appointed Richard Sklar, former special U.S. envoy for southeast Europe during the Bosnian crisis, as head of a task force to identify all of the planned power plants in the state, and, if possible, identify ways to streamline the permitting, design, and construction process.

"As the energy crisis unfolded," says Robert Duncan, vice president of Bechtel Enterprises, "it became increasingly important to know exactly when the state could expect some energy relief."

Duncan, who is working pro bono along with several other hand-picked energy experts from the private sector, started by consolidating more than a dozen databases into a definitive list of all of the planned power plants, including their megawatt capacities and when they're scheduled to come online. "There are many organizations and state entities involved in the building of a power plant," says Duncan, "from the air quality boards to the local building inspectors. Our work in tracking schedules and progress helps keep the focus on moving the process forward."

Bechtel Power—is expected to come online in June 2002. It will be one of the largest new power plants built within the San Francisco Bay Area power grid in a decade.

Delta's design, based on a Bechtel PowerLine® model adapted to Calpine's requirements, features combined-cycle technology that gets the most out of natural resources. Three combustion turbines generate power from natural gas. Heat from the exhaust of the combustion turbines is recovered as steam, which powers a turbine that produces even more power and maximizes the fuel efficiency.

Moreover, says Bechtel Project Manager Steve DeMinco, "by utilizing gray water imported from an adjacent water treatment facility, the impact to the existing water distribution system has been minimized."

Bechtel and Calpine also co-developed the 600-megawatt Metcalf Energy Center, in San Jose, which received approval from the California Energy Commission in September. And plans are in the works for the 600-megawatt Russell City Energy Center in Hayward.

Another major power project involving Bechtel is unfolding in San Bernardino, California, where construction has begun on a 1,034-megawatt natural gas-fired, combined-cycle plant for Mountainview Power Company. Bechtel is providing engineering, procurement, and construction on the project, which is scheduled for completion in the summer of 2003.

Energy experts agree that increasing capacity is critical to easing California's energy crisis. But giving the system an extra boost during peak summer and winter demand times also is essential. On hot summer days, for example, widespread use of air conditioners can increase energy demand sharply. The solution—smaller "peaker" plants that can supplement the energy supply when

it's needed most. InterGen, a partnership between Bechtel Enterprises and Shell, has built two peaker facilities in California, the 90-megawatt Larkspur plant in San Diego and the 135-megawatt Indigo plant in Palm Springs.

These peaker plant generators are powered by jet engines, the same that are used on Boeing 757 airplanes. "From our personal travels, we all have seen how quickly these turbines can be started and throttled to full power," says Gary Zieroth, managing director of Bechtel Enterprises. "They're well-suited to the cycling demands of peaker plants that are

powered up and down quickly—maybe even several times a day."

InterGen also is developing the 750-megawatt La Rosita plant in Mexicali, Mexico (along with a peaker plant installed at the same facility), which is expected to export 250 megawatts to the California grid.

All told, from the early days of power construction to the present, Bechtel has built roughly a third of California's power generation capacity. With the new plants, Bechtel continues to be a major force in the state's energy infrastructure, creating the means by which California's golden economic future can be secured. 🌱

Meeting the Needs of the Future

Natural gas currently provides about 30 percent of California's electricity. But California sits at the terminus of natural gas pipelines from fields in the Gulf of Mexico and Canada, and other western states are siphoning off more and more gas for their own growing energy needs.

"Ensuring an adequate supply of natural gas is California's next major energy challenge," says Tim Statton, president of the newly formed Bechtel Energy, "especially considering that fuel accounts for around 70 percent of the total cost of electricity."

Bechtel Energy was created by combining Bechtel Power, Bechtel Petroleum & Chemical, and Bechtel Pipeline into a single group capable of better integrating services to the electricity and oil-and-gas industries, which have been converging. Bechtel Power's clients rely on Bechtel to develop, design, and construct their power generating facilities. Bechtel Petroleum & Chemical's customers supply the natural gas. Bechtel Pipeline's customers own and operate pipelines that transport the fuel to end users.

"With our combined focus, Bechtel is now developing several alternatives that encompass the complete fuel-power equation," says Statton. "Although they're still on the drawing boards, these alternatives represent real breakthrough thinking about the way energy is created, stored, and transported to California and points beyond."