

The Geysers Geothermal Operation



North America's Largest Geothermal Operation

California-based Calpine Corporation is a recognized leader in environmentally preferred power generation. Calpine owns and operates 19 geothermal power plants at The Geysers region of Northern California, generating up to 725 megawatts of baseload renewable "green" power. This represents nearly 40 percent of the geothermal electrical generation in the United States, making Calpine the largest producer of geothermal energy in the nation. Geothermal power plants take advantage of a natural, clean energy source — heat from the earth's interior — to produce electricity. Because these plants do not burn fossil fuel, they have an inherent environmental advantage.

The Geysers Geothermal Resource Area

Located about 100 miles north of San Francisco in the Mayacamas Mountains, The Geysers is the single-largest geothermal operation in the world. A geothermal resource occurs when water deep below the earth's surface is heated by exposure to hot, porous, and permeable rock resulting in dry steam or hot water. At The Geysers, dry or superheated steam is produced.

Steam production wells, some greater than two miles deep, are drilled to tap this naturally-occurring steam. Once the steam reaches the surface it is piped overland to a network of interconnected power plants where it spins a conventional steam turbine that drives a generator to produce much-needed electricity for California.

Environmental Benefits in Public/Private Partnerships

Recognizing the importance of The Geysers, Calpine is expanding and sustaining production from this renewable resource through wastewater recharge projects whereby clean reclaimed wastewater from local municipalities is recycled into the geothermal resource where it is converted into steam for electricity production. This provides an environmentally sound wastewater discharge solution for neighboring cities and increases the long-term productivity of the geothermal operation.

THE GEYSERS BY THE NUMBERS

**World's Single-Largest
Geothermal Resource
Developed for
Electrical Generation**

**Supplies about 25%
of California's
Renewable Energy**

**Generates 40% of the
Geothermal Electrical
Generation in the U.S.**

**Serves Annual
Electricity Needs of
725,000 Households**

**350 Steam Wells
58 Injection Wells**

**First Commercial
Steam Well Drilled
in 1954**

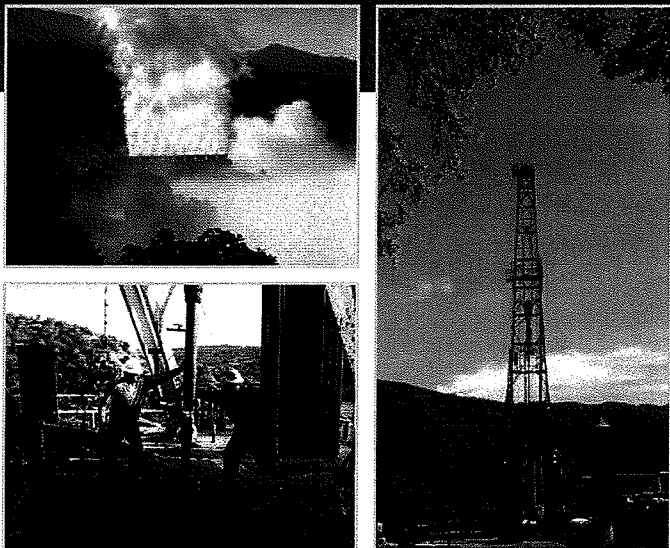
**Calpine Owns and
Operates 19 of 21
Power Plants**

**Steamfields Cover
Over 40 Square Miles**

80 Miles of Steamlines



Calpine is Repowering The Geysers



Calpine is Repowering California's and The Nation's Single-Largest, Renewable Geothermal Resource

Calpine's heritage of achievement in the power industry is grounded in renewable geothermal energy. In 1989, our company acquired its first megawatt of power production at The Geysers. Today, we own 19 of the 21 geothermal units and a vast network of steam fields, making Calpine California's largest renewable energy provider — a leadership position we at Calpine can all take pride in.

As California's most beneficial renewable energy resource, The Geysers represents about 25 percent of the state's green energy production. And, unlike traditional renewable energy resources like wind and solar, geothermal power plants continuously generate electricity. For instance, Calpine's geothermal units run with near-perfect availability. And because they interconnect with five major transmission corridors, they can deliver electricity throughout California.

To ensure Californians continue to benefit from this valuable geothermal resource, Calpine is launching a five-year, multi-million dollar initiative designed to increase production of The Geysers by as much as 80 megawatts of much-needed renewable energy. Our world renowned geothermal reservoir and well drilling experts will be tapping production and exploratory wells — some as deep as 11,000 feet — to expand steam production and to identify new sources of geothermal power.

Calpine also is rejuvenating our Geysers operations by repowering, or rebuilding, four of our older geothermal units. By replacing antiquated parts with new, energy-efficient equipment to harness steam and generate electricity, Calpine can be better stewards of this valuable renewable energy resource. Our repowering program includes McCabe Units #5 and #6 (78 megawatts), as well as Ridge Line Units #7 and #8 (69 megawatts).

Powering A Green Future

California has a tremendous opportunity to continue to lead the nation in environmentally responsible power generation. The vision and investment we make today in renewable resources like The Geysers will be a catalyst for future geothermal development.

CALPINE'S GEOTHERMAL REPOWERING PROGRAM

**Up to 80 Megawatts
of Renewable
Geothermal Energy**

**Repowering 4
Antiquated Power
Units to Enhance
Efficiencies**

**Rejuvenating
Production from
Existing Wells — as
Deep as Two Miles**

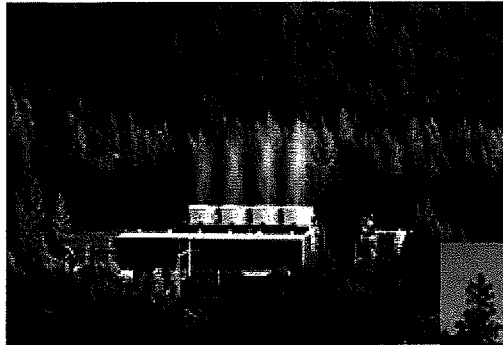
**Future
Exploratory Wells
to Identify New Areas
of Geothermal
Production**

**Five-Year Program;
Several Hundred
Millions of Dollars
To Complete**

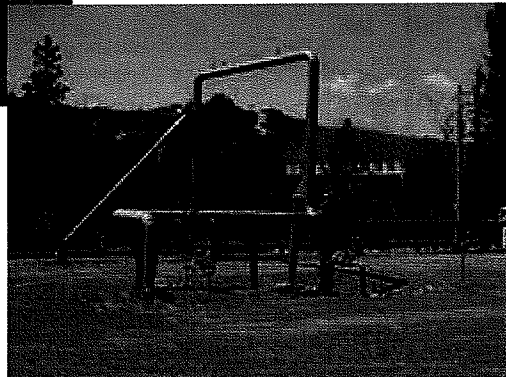


Santa Rosa Geysers Recharge Expansion

GEYSERS RECHARGE FACTS AT A GLANCE



Calpine is using recycled water from the City of Santa Rosa to increase renewable electricity production at The Geysers - the world's single-largest geothermal resource.



World's Largest
Recycled Water-to-
Electricity
Geothermal Project

40-Mile Pipeline;
Transports 4,015 Million
Gallons of Recycled
Water Per Year to The
Geysers

Enhances Renewable
Geothermal Production
by up to 85 Megawatts

Minimizes Discharge of
Recycled Water into
Public Waterways

Calpine and The City of Santa Rosa: Protecting the Environment. Powering California.

Calpine Corporation and the City of Santa Rosa have developed and are proposing to expand an award-winning, public-private partnership that is protecting the region's waterways while sustaining the life of a valuable renewable energy resource.

The Santa Rosa Geysers Recharge Project is a 40-mile pipeline that transports recycled water from the City of Santa Rosa to Calpine's Geysers geothermal operations in Sonoma and Lake Counties. There recycled water is injected deep into The Geysers geothermal resource where naturally occurring hot rock heats the recycled water into steam to fuel Calpine's geothermal power plants.

As the world's largest recycled water-to-electricity program, the Santa Rosa Geysers Recharge Project is replenishing declining steam supplies to help ensure California can continue to rely on The Geysers for renewable and sustainable energy for years to come. The project is a resounding success, having enhanced geothermal electricity production by as much as 85 megawatts—enough electricity to power approximately 85,000 California households. The project also represents an environmentally preferred discharge solution for Santa Rosa and protects Russian River habitat and public waterways.

Building Upon Our Success

Santa Rosa and Calpine are proposing to expand The Geysers recharge project to cost effectively capture additional environmental and renewable energy benefits. Calpine has agreed to receive an additional 1.65 million gallons per day of recycled water, a 5% increase over existing field-wide injection levels, from the City of Santa Rosa as part of its recently announced initiative to increase green energy production at The Geysers. The system has the ability to take additional recycled water over time as the City's recycled water production increases—helping to renew and sustain geothermal energy production for California. For Santa Rosa it substantially reduces or eliminates costly recycled water storage reservoirs—resulting in nearly \$200 million of cost savings.

GEYSERS RECHARGE EXPANSION:

Proposed Expansion to
Further Increase
Renewable Energy
Production

5% Increase in Recycled
Water Use Over Current
Injection Rates; 11 MW
gain expected

Reserves 1,300 Million
Gallons of Recycled
Water for Urban Reuse

Reduces or Eliminates
Need for Costly Recycled
Water Storage



GEYSERS RECHARGE QUICK FACTS

Entered Construction: 2000

Commercial Operation:
2004

Construction Companies: 9

Construction Crew: 700

Pipeline Operations Staff: 7

Pipeline: 40 Miles

Vertical Climb: 3,000 Feet

Pumping Stations: 5

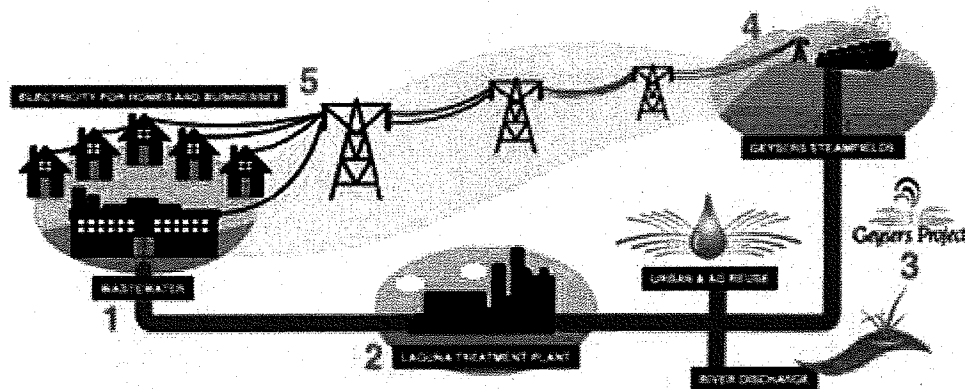
Piping System Maximum
Design Capacity 20 mgd

Recycled Water Currently
Transported: 11 Million
Gallons per Day

Renewable Energy
Equivalent: 85 Megawatts

Time to Transport Recycled
Water from Treatment
Station to The Geysers:
37 Hours

Pipeline Size: 31 Miles of
48-Inch Diameter Pipe; 9
Miles of 30-Inch Pipe



Santa Rosa Geysers Recharge Project History

Faced with a moratorium on discharging recycled water into the Russian River, in 1993, after a 13-year search, the City of Santa Rosa identified a weather-independent solution for its recycled water discharge—one that would be capable of taking its recycled water twenty-four hours a day, seven days a week. The solution: Calpine's Geysers geothermal operations. After an additional seven years of extensive design, engineering and environmental review, Santa Rosa and Calpine broke ground in the summer of 2000 on what would become one of the largest and most successful recycled water reuse programs of its kind.

In 2004, thanks to the help of nine construction companies and more than 700 dedicated construction workers, the Santa Rosa Geysers Recharge Project officially entered operation. The pipeline spans some 40-miles and rises more than 3,000 vertical feet to The Geysers geothermal resource where a network of pipeline systems transports the recycled water to geothermal injection wells to enhance steam production.

Today, 11 million gallons of recycled water is pumped each day to The Geysers—eliminating the need to discharge approximately 34 acre-feet per day of recycled water into the Russian River.

Calpine: Powering a Lower Carbon Future

Calpine is dedicated to serving California's growing power market. Its generating capacity is equivalent to almost ten percent of the state's peak power demand. As a leader in environmentally preferred power generation, Calpine is the state's largest renewable energy producer and leader in lower-carbon natural gas-fired generation.

With operations in 18 U.S. states and Canada, Calpine was founded in San Jose, California in 1984. The company is dedicated to powering North America with clean, reliable and affordable electricity. Calpine also is the nation's leading producer of renewable geothermal energy. Taken as a whole, the Calpine power portfolio is among the cleanest in the country, as reported in a recent study by the Natural Resources Defense Council.

The Geysers Steamfield

