

# Capsule history of Hawaii's geothermal power

**1881** - A Sept. 26 article in the New York Sun relates a meeting between King David Kalakaua and Thomas Edison, inventor of the light bulb, at which the possibility of generating electrical power from Kilauea Volcano is discussed.

**1961** - Four shallow wells are drilled by Hawaii Thermal Power Co. in the Kilauea East Rift Zone. Not deep enough to be economically viable.

**1973** - A National Science Foundation-sponsored deep geothermal research well at the Kilauea summit attains high temperatures.

**1976** - The federally funded Hawaii Geothermal Project-Abbott (HGP-A), in agricultural land near Pohoiki, taps 676-degree steam to become the world's hottest well.

**1979** - Two wells on the northwestern flank of Hualalai volcano near Kailua-Kona come up too shallow for commercial application.

**1980** - Four deep wells are drilled by Barnwell Industries and three by Puna Geothermal Venture in agricultural lands in the lower Kilauea East Rift Zone. In 1985, Barnwell announces it's getting out of geothermal development in Hawaii.

**1981** - A government-funded, 3-megawatt wellhead generator plant is completed at HGP-A.

**1981** - The Hawaii Integrated Energy Assessment, conducted by the state Department of Planning and Economic Development and the Lawrence Berkeley Laboratory at the University of California, concludes that geothermal energy and a submarine transmission cable were critical to Hawaii's energy future.

**1981** - The state initiates the Hawaii Deep Water Cable program to demonstrate the feasibility of a high-voltage submarine cable between the Big Island and Oahu.

**1982** - The U.S. Energy Department becomes a sponsor of the deep-water cable program.

**1982** - True Geothermal Energy Co. and Mid-Pacific Geothermal Co., Wyoming companies that formed a partnership in 1980, file applications for permits to develop a 250-megawatt geothermal project on Campbell Estate's Kahauale'a land in the upper Kilauea East Rift Zone.

**1984-85** - After a statewide assessment mandated by 1983 law, the Board of Land and Natural Resources designates three geothermal resource subzones totaling 22,000 acres in the Kilauea East Rift Zone and one subzone of 4,108 acres in the Haleakala Southwest Rift Zone on Maui. Geothermal activity, including exploration, is permitted only within these pre-designated subzones.

**1985** - The state land board approves the exchange of 27,785 acres of the state-owned Wao Kele O Puna forest for 25,807 acres of Campbell Estate-owned land at Kahauale'a. The Campbell estate land is closer to Hawaii Volcanoes National Park and considered more pristine than the Wao Kele forest.

**1986** - The Board of Land and Natural Resources accepts a supplemental environmental impact statement and issues a conservation district use permit for True/Mid-Pacific to explore for up to 100 megawatts,

and to develop an initial 25 megawatts, of geothermal energy in Kilauea East Rift Zone, part of Wao Kele O Puna.

**1987** - An environmental assessment of the 500-megawatt transmission system predicts adverse effects during construction as well as unsightly overhead power lines, but notes that the alternative, new oil-fired plants, would be worse.

**1987** - The Hawaii Supreme Court, considering a lawsuit by Ralph Palikapu Dedman challenging geothermal development, ruled unanimously that such development does not subvert worship of the ancient Hawaiian volcano goddess. Appealed to U.S. Supreme Court.

**1987** - Gov. John Waihee appoints former Republican Gov. William Quinn to head an advisory board on the geothermal/cable project.

**January 1988** - The Quinn panel reports that the concept of the 500-megawatt project appears to be technically feasible and, compared to oil, economical.

**January 1988** - The Public Media Center, a non-profit San Francisco advertising agency, launches an anti-geothermal ad campaign for the Pele Defense Fund in Hawaii and major Mainland newspapers.

**April 1988** - The U.S. Supreme Court refuses to hear an appeal by the Pele Defense Fund, leaving intact the Hawaii Supreme Court decision on the religious opposition to geothermal development.

**April 1988** - Pele Defense Fund files suit in U.S. District Court over the Campbell Estate land exchange.

**May 1988** - Ormat Energy Systems Inc. of Nevada completes its purchase of Puna Geothermal Venture, including a 25-percent share held by Amfac.

**March 1989** - A state-sponsored environmental review of the 500-megawatt geothermal development proposal says special attention should be paid to avoiding archeologically and biologically sensitive areas and to noise abatement, air quality and potentially dangerous lava flows and earthquakes.

**May 1989** - Hawaiian Electric Co. invites private-sector proposals to finance, develop and operate the 500-megawatt geothermal/cable project with the first increment of electricity to come on line in 1995.

**May 1989** - The state Health Department issues an air-quality authorization for True/Mid-Pacific to drill up to 12 wells in Kilauea's middle-east geothermal resource subzone. The permit is challenged in state court by the Pele Defense Fund.

**June 1989** - The state Department of Business and Economic Development contracts with ERC Environmental and Energy Services Co. for preparation of a master development plan, environmental impact statement and analysis of overland transmission systems for the 500-megawatt geothermal/cable project.

**June 1989** - Hawaiian Electric reports successful lab testing of the submarine power cable at a cost of \$2.6 million, funded by the U.S. Energy Department and Pirelli Cable Corp. of Italy.

**July 1989** - The San Francisco-based Rainforest Action Network, in

cooperation with the Pele Defense Fund, takes up the issue of geothermal development in Wao Kele.

**August 1989** - True Geothermal is fined \$15,000 for clearing five more acres of forest than called for in its permit. True intended to clear 8 acres, but said a mistake in paperwork put the area at only three.

**September 1989** - Higher-than-normal emissions of hydrogen sulfide gas from HGP-A prompt the voluntary evacuation of 10 people from adjoining Leilani Estates.

**September 1989** - The state Health Department issues an air-quality authorization to Ormat Energy Systems Inc., operating as Puna Geothermal Venture, to drill 14 geothermal wells and install 10 Ormat generators with a net capacity of 25 megawatts, one fifth of the Big Island's energy needs, in an abandoned papaya field in Pohoiki.

**October 1989** - 350 demonstrators construct an altar to Pele on the True/Mid-Pacific geothermal drilling site. The company takes it down.

**November 1989** - True/Mid-Pacific begins its first exploration well.

**November-December 1989** - Five international consortia submit proposals to Hawaiian Electric Co. to privately finance, develop and operate the 500-megawatt geothermal/cable project.

**December 1989** - Waihee announces that the HGP-A geothermal power plant has been permanently closed down.

**December 1989** - A surrogate deep-water cable undergoes successful tests at sea, the final task of the cable research program.

**December 1989** - Police arrest 39 demonstrators at the True/Mid-Pacific drilling site. Trespassing charges against several later are dropped.

**February 1990** - Hawaiian Electric and the state announce that negotiations on proposals for the 500-megawatt geothermal cable project have been narrowed to two partnerships: Kilauea Energy Partners, comprised of Mission Power Engineering Co., California Energy Co., and Sumitomo Corp.; and Pacific Gas & Electric, Bechtel Generating Co., Sumitomo Electric Industries and Mitsubishi Heavy Industries America Inc.

**March 1990** - In the state's biggest anti-geothermal demonstration, 1,200 supporters of the Big Island Rainforest Action Group and Pele Defense Fund gather at the True/Mid-Pacific gate. Police arrest 141.

**April 1990** - True/Mid-Pacific announces that its first well has hit "geothermal resource," presumably some mixture of hot water and steam.

**April 1990** - Videotaped criticism of geothermal development by Health Director Dr. John Lewin is made public by the Big Island Rainforest Action Group. Gov. John Waihee says Lewin stays on the job.

**April 1990** - The Legislature budgets \$3 million to continue geothermal research drilling and \$250,000 to reactivate the HGP-A well and sell the steam to Puna Geothermal Venture.

**May 1990** - The U.S. 9th Circuit Court rejects Pele Defense Fund's appeal in its suit against the Big Island land swap between the state and Campbell Estate.

**May 1990** - Circuit Judge Shunichi Kimura rules in favor of True/Mid-Pacific in the suit by Pele Defense Fund over pollution issues.