GREAT AMERICAN ENERGY

GAE Darrough Hot Springs Geothermal Power Plant

PROJECT DESCRIPTION
2010

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Principal business: **GAE Darrough LLC**[1], the project company was incorporated in Delaware by Articles of Incorporation on January 4, 2006, and registered to do business in the State of Nevada on February 15, 2006

Geothermal Leases:

GAE holds geothermal leases in Big Smoky Valley, Nevada, signed by the owners of fee property commonly know as the Darrough Hot Springs, and the Roger Berg Ranch, for the development of the geothermal resource and the production of electricity. The Darrough Geothermal Lease Agreement was signed August 2007 and includes the assignment of the BLM geothermal lease applications on the adjacent section. The lease, comprising 847 acres of fee land and the BLM geothermal lease, contains approximately 320 acres located due west of the Darrough's. The Darrough leases will expire on January 10, 2027 but can be extended for so long thereafter as any Leased Substances are being produced and sold or utilized from the Leased Lands.

GAE holds a geothermal lease on the Roger Berg ranch containing 260 acres and located directly north of the Darrough Hot Springs. The Berg lease is for primary term of 20 years and can be extended for an additional 60 years.

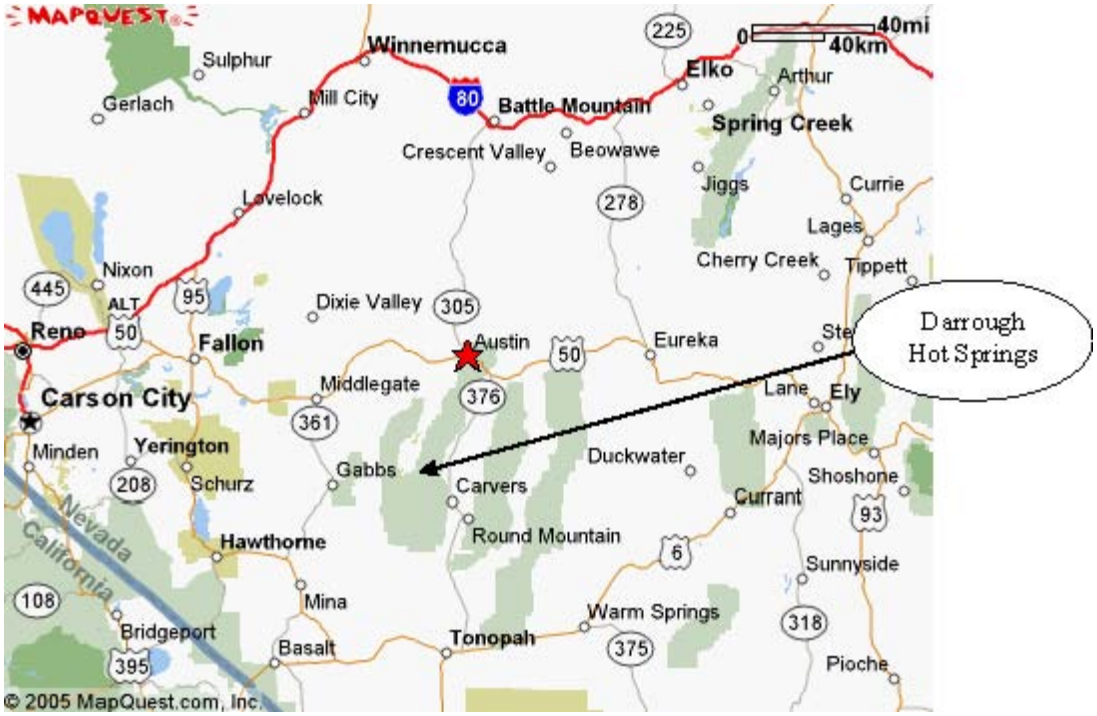
[1] GAE Darrough was formerly Smoky Valley Geothermal LLC

2. Project Description

Location:

Darrough Hot Springs is located approximately 200 miles east of Reno in Big Smoky Valley, Nye County, Nevada. The project is located approximately 10 miles northwest of Round Mountain and 60 miles north of Tonopah on Highway 376.

The project is situated on relatively flat ground, which slopes eastward from Highway 376, and is at an elevation of 5,750 feet above sea level. The Darrough Hot Springs is located in Section 17 of Township 11 North, Range 43 East of the Mount Diablo Meridian, Nevada. The BLM Geothermal Lease covers Section 18 of Township 11 North Range 43 East of the Mount Diablo Meridian, Nevada.



Project History:

Since the late 1800s, the Darrough Hot Springs has been recognized as a well-known hot springs and geothermal resource. The USGS mapped the area and noted the Darrough Hot Springs as a prominent hydrothermal resource with high temperature surface hot springs and pools. In 1963, Magma Geothermal drilled a well in the northwest corner of the Darrough ranch. The Magma well reached a depth of 812 feet and recorded a temperature of 221° F with an artesian flow rate through an 8 inch pipe of 1145 gallons per minute. The well is in good condition and, with minor rehabilitation, will be the project's first production well.

In 1985, Oxbow Geothermal drilled a slim hole well on BLM land approximately 2000 feet east-northeast of the Magma well. The Oxbow well

reached a depth of 2,520 feet and recorded a temperature of 221° F. This well has been decommission and filled-in. Numerous investigations using various exploration techniques, including geology, geochemistry, geophysics, and the drilling of temperature gradient wells have been preformed on the Darrough ranch and surrounding areas. These reports and surveys are summarized in the 2006 Geothermal Resource Assessment of Darrough Hot Spring and Big Smoky Valley, Nevada written, by Dennis Trexler, Ph. D. and in the 2009 Geothermal Assessment of Darrough by David Faulder Ph. D.

In March of 2006, Halliburton measured the static temperature at the bottom of the Magma well at 222° F, a magnetic survey and water analysis was completed. The results of these explorations strongly indicate the presence of a geothermal reservoir with an areal covering approximately 1260 acres and a temperature ranging from 221° F to 280° F. These attributes identify the Darrough Hot Springs unit as a "medium temperature" field and a geothermal site with a 2009 Geothermal Assessment rating the site with capacity for a 31 MW power plant for 30 years. For economic reasons, most geothermal resources are evaluated commercially relative to potential lifetimes of 30 years. However, there are geothermal fields in production for more than 50 years, and longer lifetimes are forecast. GAE plans to inject 98% of all geothermal fluids back into the geothermal resource, and because only 2% of the fluids are consumed for cooling and natural recharge exceeds 2%, the geothermal resource should have an extremely long production life.

It is anticipated that power from the Darrough Hot Springs Power Plant will be sold in Southern California. The Company will negotiate a long-term power sales contract with major Southern California utility. The power will be wheeled through the transmission systems of the Sierra Pacific, PacifiCorp and LA Department of Water & Power to southern California.

Project Facilities:

The project involves the design, construction and operation of physical facilities comprising production and injection wells, a gathering and injection system and a power generation plant on site, with a transmission line connecting it to the grid. A general description of the nature of these facilities follows.

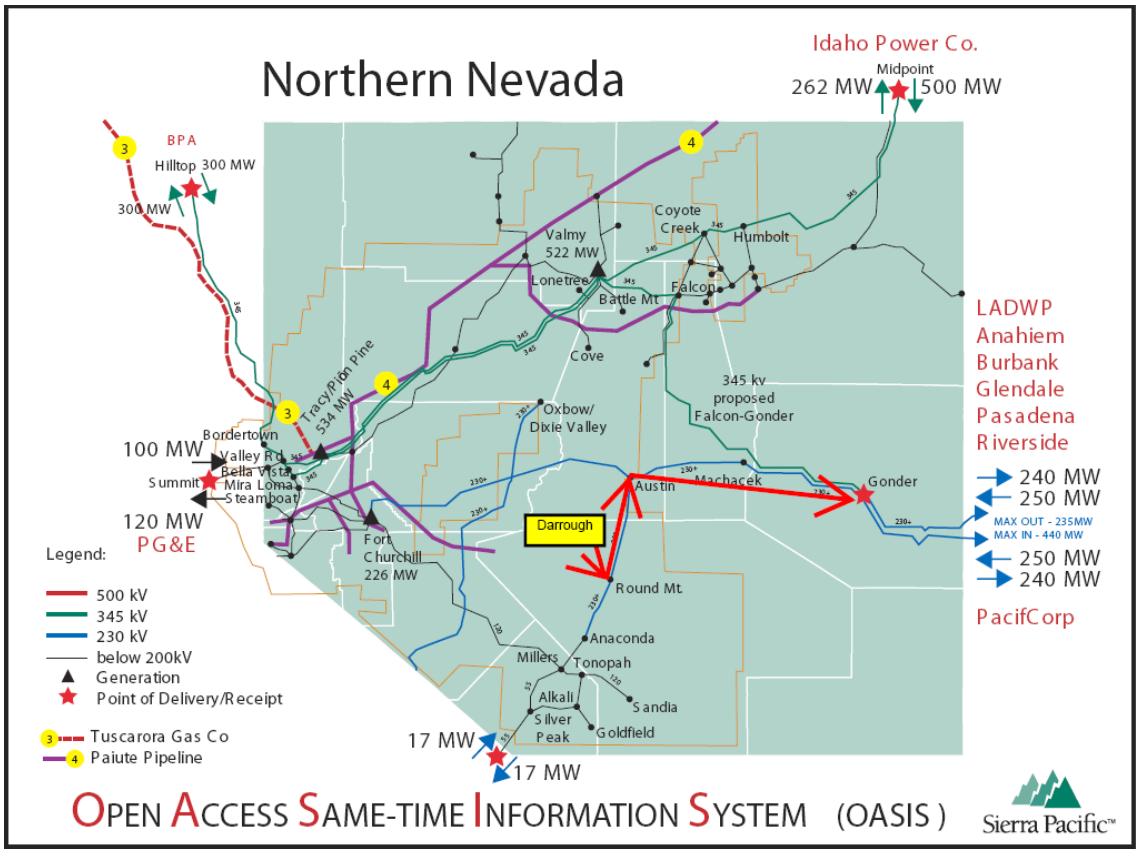
Production and Injection Wells: Production wells will be constructed by drilling from individual drilling pads located directly above the geothermal resource. Production holes not meeting the temperature and flow-rate criteria may be used to inject processed geothermal fluids back into the geothermal resource. Anticipated production well depths are 1000 to 2000 feet. Wells will be drilled using established technology similar to that employed in the oil and gas industries.

Fluid Gathering and Injection Systems: The geothermal fluids will be gathered by a system of pipelines that will transport the geothermal fluid from the wellheads to the power plant. The injection system will use pipes and pumps to inject the geothermal fluids back into the geothermal reservoir.

Power Plant: The Darrough Hot Springs Geothermal Power Plant will utilize a binary power plant design. A heat exchanger will transfer the heat from the geothermal fluid to a working fluid of pentafluoropropane which has a boiling temperature of 59° F. The working fluid will be flashed in turbine generator sets to produce electricity. This type of plant installation has been used very successfully at many geothermal projects in Nevada, Alaska, Utah California and 11 European countries.

Cooling: Before the working fluid can be reused and heated again, it must be cooled and condensed into a liquid. GAE will use its geothermal fluids with low dissolved solids for evaporative cooling. The cooled geothermal fluids will be used in efficient water heat exchangers to cool the working fluid for reuse.

***Transmission Line*:** Darrough Hot Springs Power Plant will deliver power to Sierra Pacific's Round Mountain substation approximately 10 miles southeast of the project via a new 69 kV or 230 kV line. From Darrough Ranch the new line will connect to the Sierra Pacific's 230 kV line which runs north from the Round Mountain substation to the Gonder substation and east to PacifiCorp and LADWP's 230 kV 240 MW transmission line (indicated in red on the OASIS map below) connecting directly to southern California.



3. Land Use Setting

The Darrough Hot Springs Power Plant will primarily be located on private fee land. A few production wells, gathering pipes, and injection wells might possibly be located on BLM lease lands. Sierra Pacific's 24.9 kV transmission line runs through the Darrough Ranch and connects to the Round Mountian substation. At the end of the project's life, all geothermal wells will be sealed and the land surrounding the wells and plant will be reclaimed. All buildings, pipelines, machinery and ancillary facilities will be removed and all areas re-vegetated.

4. Environmental and Socio-Economic Considerations

Environmental Assessments: GAE Darrough's wells and power plant will be on fee land which has been greatly disturbed and actively used as a working ranch and as an Army mule training camp during World War I. All of the Darrough ranch has been extensively used for ranching and as such is no longer in it natural state.

In 2008 the US Forest Service and the Bureau of Land Management (BLM) completed a five year long environmental assessment of the region and has concluded that no threaten or endangered species will be effected by the development of Darrough Hot Springs.

Prior to commencement of drilling or construction an EIR that complies with the California Environmental Quality Act (CEQA) and with Title 14 Section 15277 will be completed.

Socio-economic: There have been no public concerns expressed about the geothermal plant development. GAE will locate and design the power plant and transmission lines to minimize any potential visual/aesthetic impact.

A socio-economic assessment has concluded that economic and social impacts from the construction and operational phases of the power plant on the local ranchers and residents will be positive. The Darrough Hot Springs Geothermal Power Plant and operations is dwarfed in size and impact by the Round Mountain Gold Mine and its large open pit mine operation, and its 500 employees.

No timber will be cut to locate the wells or power plant and no additional geothermal fluids beyond the current natural surface flows, existing thermal pools and seeps will be released.

5.0 PROJECT BENEFITS

Green Energy: As a sustainable "green" source of electrical energy, the Darrough Hot Springs Power Plant responds to the United Nations Framework Convention on Climate Change and the associated Kyoto Protocol, and supports the related objectives and policies of the Clean Energy Act and the Energy Policies Act of 2005 and the **American Recovery and Reinvestment Act of 2009**.

Energy Supplies: Southern California, in general, either burns fossil fuels to produce electricity or it imports energy from outside the state. California utilities have a mandate to buy green renewable energy to meet a portion of the growing demand for increased energy production. Recent legislation has prohibited California Utilities from buying additional power produce by burning coal, even if it was produced outside the state. The Darrough Hot Springs Power Plant could supply 16,000 new southern California households with green power and prevent the burning of additional fossil fuels to supply those new homes.

Employment: The GAE's head office currently employs 2 staff. The resource confirmation program will employ 6 persons from northern Nevada for drilling, area site preparation and building. Some 10 persons from the northern Nevada area have been employed in supporting roles during the confirmation drilling program. Approximately 15 experienced workers and professional staff from other jurisdictions will be employed on the drill crews and drilling support services and in supervisory or professional roles.

The capital construction of a geothermal power plant and associated transmission line, substation and other facilities would employ some 10 personnel per year during the construction period. Once in operation, the plant and transmission facilities would employ only four persons full-time. Work related to transmission route, maintenance and similar services would be sub-contracted locally, with employment varying on a seasonal basis. Maintenance required on a binary geothermal plant is very minimal and will be subcontracted to a power equipment maintenance contractor or the power equipment manufacturer maintenance division.

Expenditures: The capital cost of a 31 MW net power generating plant (31 MW gross Nameplate) and associated facilities is estimated at $123 million over the 18 month construction period. Operational expenditures are estimated in the order of $11 million annually. The project will pay $1.5 million in Nevada property tax and will generate a moderate sized local payroll. Significant spin-off employment and business opportunities are expected with respect to the purchase of equipment, supplies and services from local and area sources.

Downstream Benefits: Geothermal projects in other jurisdictions have generated significant spin-off opportunities by providing heating for residential and commercial use, greenhouses, and land-based fish farms and spas. There are many potential spin-off projects such as aquaculture or greenhouse operations, utilizing the generating plant's excess thermal energy and surface water from mountain snow melt.

Recreational Development: Outdoor recreational potential in the project area may include a youth camp, horseback riding, hiking and camping, fishing and hunting, and hot springs facilities. However this potential is extremely limited because of the remote location and limited commercial facilities, such as motels and restaurants.

6. Public Consultation No concerns have been raised with respect to the planned drilling program or power plant construction. A public information session will be held in Carver's to inform the valley's residents and businesses about the geothermal power plant project and to respond to questions and any concerns that may be raised. GAE plans to have several professionals on hand to answer more in-depth questions. .

7. Permits and Licenses Current plans call for all drilling and other activities to be on private fee land and the required permits and approvals needed are readily available. Only permits for drilling on BLM land pose any potential delay, but GAE has no plans to drill on BLM land. The following permits are required for the drilling of confirmation and production wells.

State of Nevada – Division of Minerals - Permit to Drill
U.S. Bureau of Land Management – Permit to Drill
Sierra Pacific – Transmission Agreement

8. Project Timing

The potential project schedule is envisaged as follows:

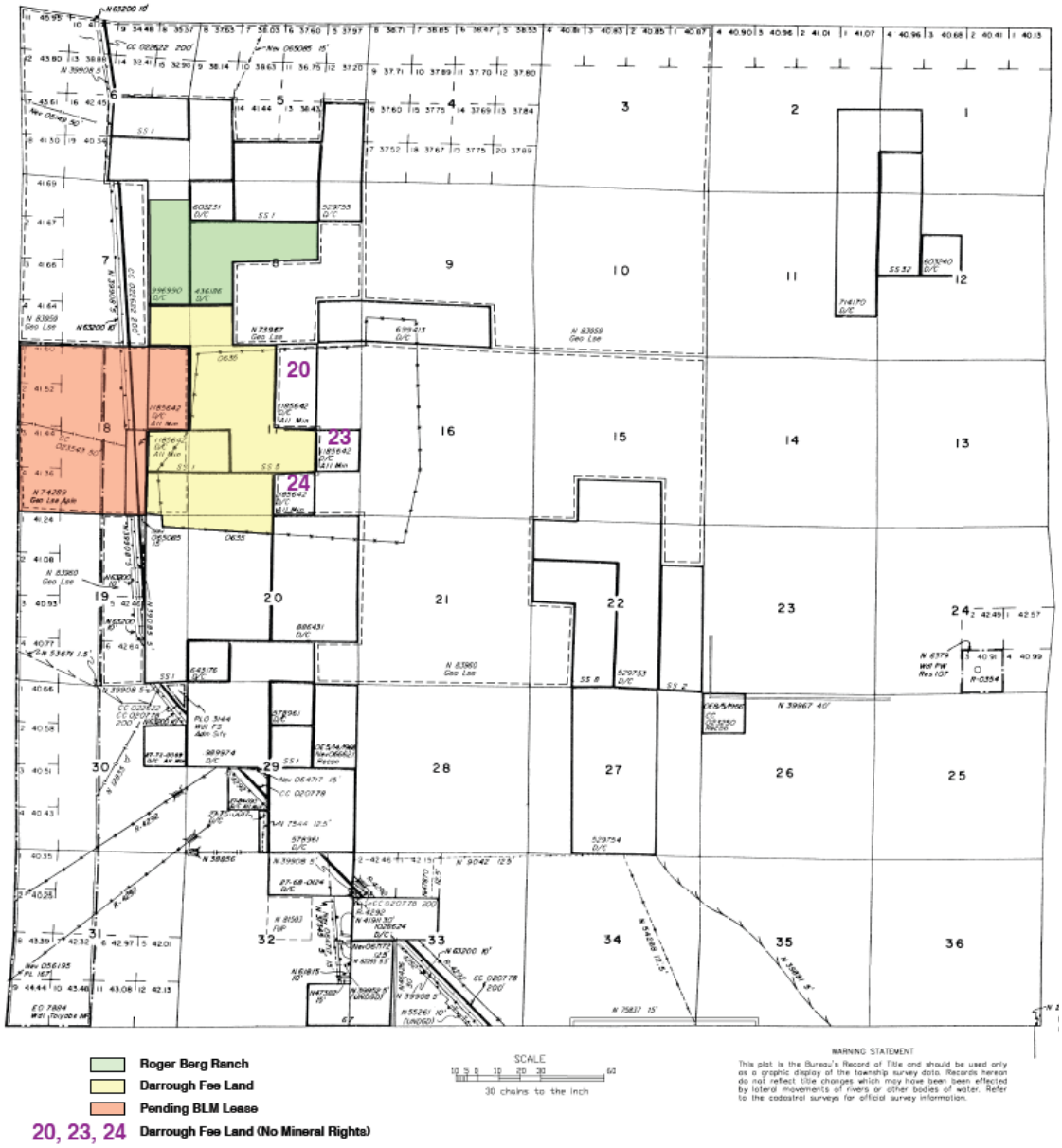
Year 2010

Flow test existing well
Drill 3 Thermal Gradient holes (500' depth).
Seismic Mapping:
This will dramatically increase the chances of reaching the higher temperature fluids and increase the size of the power plant.
Pratt & Whitney Power Plant Purchase and Installation Agreement
Power Purchase Agreement
Interconnect Agreement
State of Nevada – Division of Minerals - Drilling Permit
BLM - Drilling Permit
Drill 8 Production wells and 4 Injection wells

Year 2011

Construct geothermal fluids gathering and injection system piping
Power plant installation
Construct power transmission facilities and lines to substation
Power production

Map of GAE Darrough's Leased Lands
(Darrough, Berg and BLM)



Darrough Hot Springs – boiling at the surface


Darrough Hot Springs – looking east in Big Smoky Valley

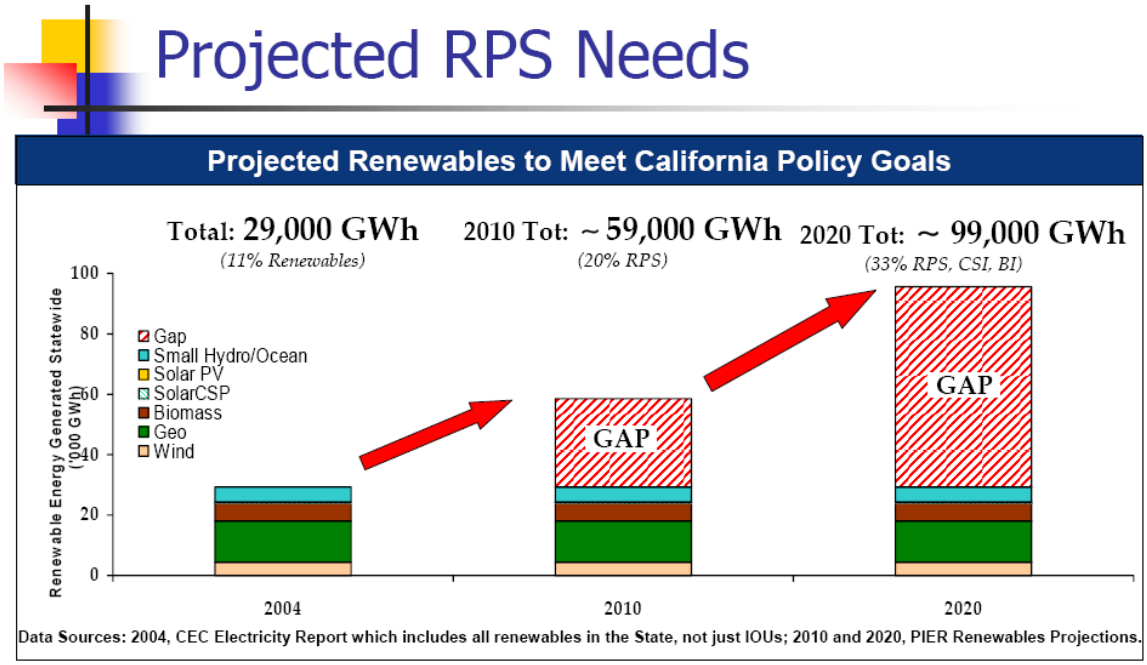
Old geothermal well. Cleaning main stainless steel slab valve and installing small valve and access port

Darrough geothermal well – small 2” valve and pressure gauge

Market for Renewable Energy

All the utilities in Nevada and California are required by law to purchase 20% percentage of their total power from renewable energy sources by 2010 and 33% by 2020. The primary sources of renewable energy are wind, geothermal and biomass.

The utilities are, and will increasingly in the future, be unable to meet the Renewable Energy Portfolio Standard (RPS) as this graph shows.



The price for renewable energy is $0.10 to $0.12 per kWh, but this price is predicted to increase as utilities bid up the price in an attempt to meet their RPSs.

Tax Credit Financing

To encourage the production of renewable energy Congress passed the **Energy Policies Act of 2005** which provided a Production Tax Credits ($0.022 per kWh per year for 10 years) or 30% Investment Tax Credits and accelerated depreciation as provided for by **The American Recovery and Reinvestment Act of 2009** (**ARRA**) and accelerated depreciation. Projects put into service before the end of 2013 will qualify for either ITC or PTC.

Just like the Tax Credit financing, provided to finance Section 8 housing, the large investment banks such as Merrill Lynch, Morgan Stanley, Goldman Sachs, Meridian Clean Fuels and others, have created a market to match investors and independent power producers. The investors receive an IRR of 10%,

Federal Loan Guarantee Program:

The American Recovery and Reinvestment Act of 2009 provides for up to 80% loan guarantee for geothermal power projects if approved before Sept. 2011. GAE Darrough qualifies for an ARRA renewable energy loan guarantee and plans to apply for the loan guarantee.

GAE Darrough will qualify for Production Tax Credits ($0.022 per kWh per year for 10 years) or **30% Cash Grant** for Investment Tax Credits, and accelerated depreciation.

Operational Plan I - the power plant uses 25% of the power it produces to power the pumps, cooling tower, transformers and general electrical needs of the power plant.

Operational Plan II - the power plant purchases its operational electrical needs off the grid at $0.06 and sell 100% of the power it produces to the purchasing utility at $0.109.