

Geothermal Energy Weekly

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National News

Federal Agencies Fast-Tracking Transmission Projects to Support Renewable Energy

Federal agencies will fast-track the approval of seven pilot transmission projects, according to plans unveiled this week by the Obama administration. "The president has been committed to moving forward with an electrical grid system that is modernized and carries us forward into the 21st century," Interior Secretary Ken Salazar [told reporters](#). "We know that solar, wind, geothermal, nuclear, clean coal and natural gas all play a role, but it is absolutely critical that we have the infrastructure in place to deliver power to our homes, our businesses and our economy." Further details pending on what this may mean for geothermal projects.

The transmission projects are in various stages of permitting and span 12 states:

- Connecting Oregon to Idaho, 500-kilovolt power line, 300 miles (proposed, Idaho Power)
- Across Wyoming and Idaho, 1,150 miles (Idaho Power and Rocky Mountain Power)
- Hampton-Rochester-La Crosse Line, from Minnesota into Wisconsin, 345-kilovolts
- Cascade Crossing Transmission Project, in Oregon, 500-kilovolts, 210 miles (proposed, Portland General Electric)
- Arizona and New Mexico, two 500-kilovolt lines (SunZia Transmission LLC)
- Wyoming, Utah and Nevada, 600-kilovolts, 700-miles (TransWest Express LLC)
- Susquehanna to Roseland Line in Pennsylvania and New Jersey, 500-kilovolts, 145-miles (PPL Electric Utilities and Public Service Electric and Gas Co.)

The Obama administration supports these projects as ways to generate jobs and increase renewable energy production.



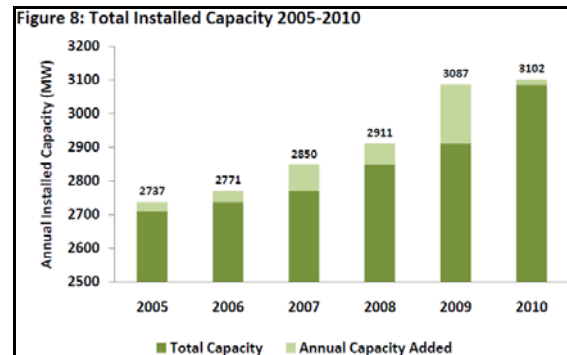
Energy Tax Credits Need Extension, GEA Tells House Committee

This week, the Geothermal Energy Association submitted a Statement for the Record of the Joint Hearing on Energy Tax Policy and Tax Reform, which was held September 22, 2011 by the Subcommittee on Select Revenue Measures and Subcommittee on Oversight, both of the Committee on Ways and Means. See more on this hearing in our [September 23, 2011 issue of the GEW newsletter](#) and at: <http://waysandmeans.house.gov/Calendar/EventSingle.aspx?EventID=260256>. Statement of the Geothermal Energy Association, submitted by Executive Director Karl Gawell, follows:

Mr. Chairmen, Members of the Subcommittees, on behalf of the Geothermal Energy Association, which has over 100 US company members across the United States, I submit this statement for the record of your hearing. We thank the Subcommittee for considering our statement as part of its deliberations on Energy Tax Policy and Reform.

The extension of the renewable energy production tax credit (PTC) to geothermal energy in the Energy Policy Act of 2005 has been a principal factor in the recent growth of geothermal energy. Prior to this change the PTC was available only to wind and closed-loop biomass power projects and geothermal energy was disadvantaged in renewable power bidding opportunities. Since 2005, geothermal power has seen steady growth in the United States, as the figure shows:

Table: Growth in US Geothermal Capacity On-Line



Today, new geothermal power projects continue to be placed in service, and we expect that a significant number of new projects will be completed before the December 31, 2013 PTC deadline.

However this deadline presents a serious obstacle to geothermal energy growth. According to our analysis, geothermal power projects in the US typically require between four and eight years to complete. The time period from initial discovery and exploration to bringing power on-line therefore takes longer than the current tax window allows. Once projects now in later stages of development are completed, there are indications that we will see only limited if any new development as a result of the uncertainty surrounding geothermal tax incentives.



We respectfully urge that geothermal tax credits be extended to provide continued support for new project development and the deployment of new geothermal energy technology. Our nation has among the world's most promising geothermal energy resources, but without the support of long-term tax incentives, we will not see the investment necessary to develop this invaluable domestic source of baseload renewable energy.

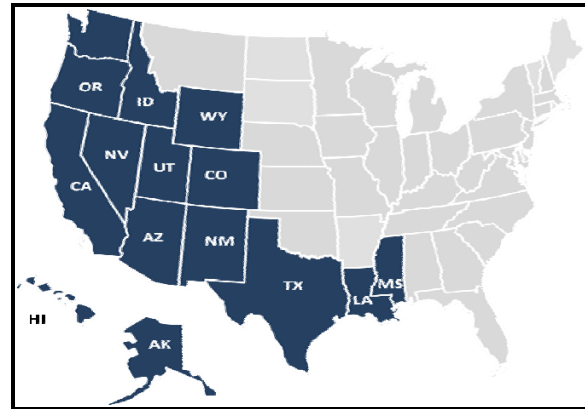
It is worth noting that the US Department of Energy has recently approved important research projects in geothermal energy, which are the first significant investments in new geothermal technology by DOE in decades. A growing market for geothermal energy is important to realizing the full benefits of this investment and extension of the geothermal PTC is essential to growing the U.S. demand for geothermal energy.

The health of the US geothermal industry and its domestic market is also important to the role of US geothermal firms internationally. There is a strong and growing world market for geothermal energy, and US firms are among the leaders in these markets. According to the Department of Commerce, geothermal is one of only two renewable technology areas where US firms are exporting more than the US market is importing, and the benefits of sustaining that leadership are obvious.

Extending the deadlines under the current law would help provide the incentive needed by investors looking at new geothermal power projects. Today, there are projects under development in some 15 states, as shown in the next figure, and we hope that

advances in technology will support expansion to many more states in the future.

Table: States with Geothermal Projects Under Development in 2011



In this Congress, legislation has been introduced to address the disparity geothermal faces in the existing tax code. H.R. 2408, sponsored by Reps. Dave Reichert (R-WA) and Earl Blumenauer (D-OR), would extend the IRC Section 48 investment tax credit for geothermal power through December 31, 2016, thus putting geothermal on a par with solar energy. Identical legislation has been introduced in the Senate, S. 1413, by Sens. Ron Wyden (D-OR), Mike Crapo (R-ID) and Dean Heller (R-NV). We understand that a principal reason for providing solar projects the 2016 deadline was the long lead-times expected for concentrated solar power projects. We believe that geothermal projects, with considerably longer lead times than currently faced by solar projects, warrant a comparable time frame.

In addition to extending the underlying tax credits, the production tax credit or investment tax credit, we believe it is important to also provide more flexibility to investors. One approach being discussed would extend access to use of master limited partnerships



to geothermal and other renewable projects, or provide greater latitude through transferability or refundability of tax credits. GEA would urge the Subcommittee to include such measures as MLP eligibility along with provisions to extend the current PTC and ITC deadlines. This will ensure a broader investment base for the billions of dollars of new investment which will be needed.

The investment of billions of dollars in new geothermal power projects will help the economy and create jobs. To give some perspective, let's look at one new project under development in California. CalEnergy, a subsidiary of Mid-American Energy, has three 65 megawatt geothermal projects permitted and under development in Southern California. These three projects will represent about \$900 million in new investment in a county with one of the highest unemployment rates in the state -- over 30%. During the roughly four years of construction, CalEnergy will employ a monthly average of 323 workers. When completed, the project will employ 57 full-time employees (operations, engineering, maintenance, administration). For comparison, MidAmerican notes that a 300MW natural gas plant in operation will employ about 18 people.

Tax incentives for new geothermal investment will not only mean economic stimulus and job creation, but will produce highly reliable baseload power. Geothermal power plants operate 24 hours a day, 7 days a week, 365 days a year, regardless of

whether the wind blows or the sun shines. They provide much needed reliability to the power grid, an attribute which utilities value and an important reason why they find geothermal power attractive when it is available.

With continued progress in exploration, technology development, and market growth there are substantial new geothermal resources which could be made available. Geothermal resources in the US remain largely untapped, because of the high risk of finding and proving geothermal resources. Recently a meeting of leading researchers and exploration experts called for a national exploration initiative by identifying specific prospects for an additional 50,000 MW of geothermal power, which could be tapped to establish a Strategic Geothermal Reserve. With continued incentives for investment in new power projects we will capitalize on new technologies which could make significant new geothermal energy production a reality in the US and sustain US leadership in the world geothermal market.

Thank you for considering our views on energy tax policy.



Company News

Calpine Corp.: EGS Project at The Geysers Moves Forward

A [Bloomberg article this week](#) discusses recent strides in enhanced geothermal systems (EGS) technologies. The technology “offers the opportunity of creating additional reserves,” Mark Walters, a senior geologist at Calpine Corp. told press.

Calpine is at the stage in its EGS project near The Geysers where it is beginning to inject water at extremely high pressures two miles (3.2 km) into the ground, where the underground rocks are at a temperature of about 750°F. “We are trying to create a cloud of small fractures,” Walters said. “We’re talking millimeter fractures.”

The project is supported by \$6.2 million in grants from DOE for the \$11 million project. About \$182 million in federal funding has been earmarked for EGS since 2009.

GEA: Geothermal Energy Expo 2011 to Feature Breakthrough Developments

[Press Release](#), San Diego CA, October 3 — *Companies from around the world to convene in San Diego to display technological advancements to the geothermal community* — Additional information in the **Events** section of this newsletter — From Oct. 23-26, the Geothermal Energy Association (GEA) will convene the world’s geothermal business leaders in San Diego for the Geothermal Energy Expo, the world’s largest gathering of businesses involved in geothermal resource exploration, characterization, development, production and management. The event provides a unique opportunity for exhibitors to showcase their projects, equipment, services and state of the art technology to the geothermal community.



This year the GEA Geothermal Energy Expo will host over 160 global businesses from around the world. Leading geothermal exhibitors include Ormat, NALCO, Siemens, Geothermal Resource Group, POWER Engineers, Íslandsbanki, Pratt & Whitney Power Systems, Mitsubishi Power Systems, Calpine Corporation, BM Holdings Company and TNG Energy Services.

“As our industry continues to proliferate among global markets, more advancements are being made. The GEA Geothermal Energy Expo will highlight these new and important technical advancements, providing a robust forum for industry buyers and sellers,” said GEA Executive Director Karl Gawell. “We look forward to welcoming geothermal business leaders and exhibitors from around the world for a very hands-on, dynamic event.”



More than 3,000 attendees are expected to walk the sold out Expo floor. The general public can visit the Expo Hall for a \$50 registration fee per day, and student registration is complimentary with valid student ID.

“Ormat is thrilled to be the Platinum sponsor and exhibitor at the Expo,” said Paul Thomsen, GEA Board President and Director for Ormat Technologies, Inc. “We consider the Expo the must-attend networking event of the year bringing the entire geothermal business community together under one roof.”

California is a policy leader in the United States with one of the most ambitious Renewable Portfolio Standards in the country. California’s landmark renewable energy standard legislation was signed into law by Governor Jerry Brown this year, and will require California utilities to provide at least a third of their electricity from clean and safe renewable sources like geothermal by the year 2020.

California is No. 1 in installed geothermal capacity with a total of 43 operating geothermal power plants producing nearly 1,800 megawatts, about two-thirds of the total United States’ geothermal generation. It is estimated that the state has a potential of more than 3,000 megawatts of additional power from geothermal energy, using current technologies.

Geothermal power presently supplies the world with 10,715 Megawatts of electricity in 24 countries on six continents. The potential to use geothermal resources is much greater. With the technology available today and under development for the future, geothermal resources could supply more than 300,000 Megawatts of power, while producing far fewer carbon emissions than from legacy sources.

“At NALCO we are focused on differentiated services and technologies that save water and energy, enhance production and improve air quality while reducing total costs of operation,” said GEA Expo exhibitor Jim Boak, Sr Industry Development Manager, NALCO. “For geothermal power plants, we are excited to share a recent treatment we developed to prevent silica scale formation in process piping and injection wells that can significantly improve mega watt production.”



Renewable Energy and Climate Change

IEA Report Calls for Phase-Out of Fossil Fuel Subsidies

The International Energy Agency (IEA) [this week released](#) a report showing the estimated budgetary support and tax expenditures relating to fossil fuels. [The analysis](#) is an extension of data prepared by several international organizations (the IEA, OECD, OPEC and the World Bank) originally requested by G-20 Leaders in Pittsburgh in September 2009.

The IEA warns the amount governments spend on fossil fuel subsidies is likely to increase to \$660bn by 2020 unless action is taken. The data estimates show that governments spent \$409bn on fossil fuel subsidies in 2010, a 36% increase from the previous year. Almost half of last year's amount supported oil products. The agency says these subsidies are inefficient and often fail to meet their intended objectives, and that phasing them out would provide numerous benefits such as raising national revenues and reducing greenhouse-gas emissions.

"Both developing and developed countries need to phase out inefficient fossil fuel subsidies. As they look for policy responses to the worst economic crisis of our lifetimes, phasing out subsidies is an obvious way to help governments meet their economic, environmental and social goals," said OECD Secretary-General Angel Gurría in a statement.

The joint work discusses the scope of energy subsidies and identifies gaps in the existing data and issues around the measurement of energy subsidies. It analyses the implications for socio-economic and trade impacts, the environment, and the energy sector if fossil fuel subsidies are phased out, and offers suggestions for the phase-out by drawing on country case studies. To provide governments with greater access to the data they need in order to do this, the OECD has begun by compiling the first-[ever Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels](#).

Co-located Energy Technologies Could Expand Renewable Energy

A [Renewableenergyworld.com article](#) recognizes hybrid relationships that are forming by bringing together technologies from different energy sectors to be used together for even greater efficiency. The article names "5 Partnerships that Could Expand Renewable Energy." Three of the five involve geothermal energy: Geothermal and Batteries, Geothermal and Solar, & Geothermal and Oil. The other two are Solar and Wind & Solar and Oil.

California-based Simbol Materials is working on tapping existing geothermal plants for lithium to be used for electric vehicle batteries. Enel Green Power North America plans to integrate a 24-MW photovoltaic solar farm into its existing 60-MW Stillwater geothermal plant in Churchill County, Nevada. And a currently pending Senate



bill would allow companies with federal oil and gas leases to produce geothermal power using byproducts of existing oil and gas wells, a technology that has been tested at demonstration facilities in Louisiana, Mississippi, and Wyoming.

Media Stir Over Solyndra Concerns Touches on Geothermal

The media has been abuzz over the implications of last month's bankruptcy announcement of Solyndra, the solar firm that had been working on millions of dollars of grants from a federal loan program. Coverage this week pointed out important differences between Solyndra's situation and that of geothermal developers.

For example, Nevada Geothermal Power's "Blue Mountain Power Plant [in Nevada] is up and running, generating clean, renewable power and has been consistently making its loan payments on time and in full," [one article correctly stated](#). Additionally, DOE has voiced its continuing confidence in this project.

The development of geothermal resources in the U.S. creates economic benefits in the form of jobs as well as opportunities to provide expertise, goods, and services in a growing international market. See also: [AOL Energy](#).

State News

Colorado: State Moving Toward Geothermal Development

On October 7, the Colorado Geothermal Working Group will tour the developing geothermal projects at Pagosa Springs, including local geothermal wells, hot springs and a district heating system. Mayor Ross Aragon and other town officials will also discuss plans for potential geothermal power development with geothermal experts. The event is open to the public.

"Geology experts consider Colorado to be hot state, with good potential for energy development, but our challenge is that they're not proven. It's kind of a chicken-and-egg thing," working group coordinator [Ben Northcutt told press](#). The Raton Basin, in south-central Colorado, is being looked at for potential geothermal development. The Denver, San Luis, San Juan and Piceance basins also have potential for geothermal viability.

GEA's [April 2011 Annual US Geothermal Power Production and Development survey](#) [PDF] reported a 10-MW conventional geothermal project underway by Mt. Princeton Geothermal. Additionally, there are a few projects receiving funding from DOE. A \$1.1 million DOE grant was awarded to Colorado School of Mines professor Stuart Simmons to find as-yet undiscovered geothermal resources. Andre Revil and Mike Batzle, also with the school of mines, received \$630,000 to develop a framework for survey data to reduce the cost of geothermal exploration.



Nevada: Five Geothermal Projects in Churchill County Given OK

Up to five geothermal projects in Churchill County which are headed by Ormat Nevada Inc. and Gradient Resources have been [approved by the BLM](#). The environmental impact of the projects was coordinated among county, state and federal officials over the course of two years. The five plants could generate up to 60 MW each and are expected to collectively create 370 jobs during construction and 70 permanent jobs. A new transmission line from Fallon to Carson Lake was also approved.

International News

Americas

Montserrat Island: DFID, CDB Provide Funding for Montserrat Geothermal Project

A US\$13.3 million geothermal power plant project is in the works for the British territory Montserrat, with funding by London's Department for International Development and the Caribbean Development Bank. Acting Premier and Minister of Communications Charles T. Kirnon [told press he](#) was grateful for the grant for "bridging the financial gap to enable us to complete the project" and said the government is actively exploring renewable sources of energy "to reduce the island's dependence on imported fossil fuel for its energy needs."

The island has seen increased electricity blackouts over the past few years. "For the past 15 years Montserrat Utilities Ltd. (MUL) has been using high speed containerized diesel generating sets to meet the electricity demand," according to a government statement. "The Gensets were designed for emergency situations and with a service life of about ten years."

Pacific

New Zealand: Mighty River Power Annual Reports Shows Geothermal a Strength

Mighty River Power's [2011 Annual Report](#) called geothermal a "game changer" for its earnings base and showed a 17% increase in generation production from its new geothermal plant and a significant increase in NZ generation market share, displacing thermal with renewables. With \$1 billion put into domestic geothermal developments, more than a third of its total generation now comes from base-load geothermal, a figure that is expected to rise to 40% with the contribution from the new Ngatamariki plant. Chief Executive Doug Heffernan [told press](#), "Our firm production has gone from 3,700 GWh to 5,400 GWh in the course of a few years, and our total annual generation capability is now more than 8,000 GWh."

"Our commitment this year to the new \$466 million Ngatamariki geothermal plant near Taupo is another important milestone in our domestic growth and the further diversification of our New Zealand generation base," the company's Board Chair Joan Withers told press. She added, "Investment in geothermal generation in New



Zealand has enabled this Company to grow faster than any other in the sector over the past decade, and internationally geothermal development provides Mighty River Power with a platform for considerable future growth.

Philippines: Camarines, APRI Contract for Geothermal Power

AP Renewables, Inc. (APRI, of Aboitiz Power) has inked a 10-year deal with Camarines Norte Electric Cooperative for 18 to 20 MW from its geothermal plants in Tiwi and Makiling-Banahaw, following a competitive bid for renewable energy. Starting December 26, APRI will provide power which will help supply the cooperative's customers in Camarines Norte's capital city of Daet and 10 other municipalities.

"Canoreco is very pleased that in partnership with Aboitiz Power, it will have a stable and secure power supply for the next 10 years," General Manager [Lorenzo Canlas told press](#). Aboitiz's geothermal power plants in Albay and Laguna generate 467 MW of power.



<http://www.geo-energy.org/updates.aspx>

Notices

New This Week

Correction — Oregon City, Ohio Looking at Geothermal Energy

A story in last week's issue of GEW incorrectly placed Oregon City, which is looking at providing geothermal power to local government, school, business and residential buildings, in Oregon. The city is actually in Ohio.

The EGS project that is discussed in the same issue is located in Oregon State.

Application Deadline for RE&EE Trade Mission to Turkey due October 17

October 17 is the deadline to apply to participate in the U.S. Department of Commerce-led Renewable Energy and Energy Efficiency Executive Business Development Mission to Turkey, taking place December 5–9 in Ankara, Istanbul and Izmir, Turkey. Details and documents available at

http://export.gov/california/kern/trademissions/eg_us_ca_029994.asp. See also more information on the mission in the **Events** section of this newsletter.



Registration for RAM Bidders' Conference due October 25

From SCE — The Offer Form and Developer Form (Appendix A) for the RAM program is available on PG&E's Web site at www.pge.com/rfo/RAM. PG&E will be hosting a Bidders' Conference on October 28 from 9:00 am–1:00 pm (PPT) at PG&E's facilities located at 245 Market Street. If you plan on attending the Bidder's Conference, the [Bidders' Conference registration form](#) is available on the Web site and is due by 5:00 pm on October 25th. Note that only in-person attendees need to register. Webex details will be posted online prior to the Conference. For more on SCE's 2011 Renewable Auction Mechanism Solicitation, see "SCE Launches 2011 Renewable Auction Mechanism Solicitation (November 15)" in the **Requests for Proposals** section of this newsletter. For questions regarding this program, please send all emails to the RAMRFO@pge.com.

Current Notices

For Sale: Binary Cycle Geothermal Power Plant

U.S. Geothermal Inc. is seeking indications of interest to purchase the 4.8 MW (gross) binary cycle power plant located near Empire, Nevada. The plant was built in 1986 and consists of four 1.2 MW Ormat Energy Converters ("OEC"), a wet cooling tower, electrical equipment and controls, and associated spare parts, including a spare turbine. After substantial refurbishment during 2009 and 2010, the plant is fully operational, and achieved 98.8% operating availability in 2011. Sale of individual OEC units will be considered. Please contact: Mr. Doug Glaspey at 208-424-1027 or Mr. Chris Harriman at 208-645-2600.



Site Needed for DOE Demonstration, Chena Power

Chena Power is in need of a site location for their DOE Demonstration incorporating a [Pratt & Whitney](#) 280 kW power module and 3 evaporative coolers, placed on 2 low boy trailers, with satellite monitoring. The system requires 20 gallons per minute of water for cooling. Here's an opportunity for testing the production of a reservoir over the next few years and produce electricity for onsite use. Contact Bernie Karl recycle@polarnet.com for more information.



Employment

Employment Opportunities

Chief Reservoir Engineer, CalEnergy, Calipatria (Imperial Valley), California

Applicants should apply via our careers Web site (full job description available there):

<http://www.calenergy.com/common/careers/taleo.asp?c=cal>

Primary Job Duties and Responsibilities

- Maintain an accurate and current reservoir engineering database for the areas of responsibility. This includes maintaining a current set of well production histories, observation of well data, geochemical trends and relevant geological data for the assigned fields.
- Prepare authorization for expenditures (AFE's) and economics for well work and equipment.
- Conduct and supervise well-field related activities that include but are not limited to the following: well acidization, well surveys (static, pressure-temperature-spinner (PTS), caliper), coiled tubing cleanouts, capillary tubing installations and tracer enthalpy testing.
- Develop new and innovative technical solutions to resource and/or drilling related issues as required.
- Diagnose well problems and engineer solutions. This includes using simulation tools to model downhole flow conditions to diagnose well problems and be proactive in preventing possible problems.
- Monitor well-field performance of MidAmerican Energy Company geothermal fields to determine potential problems that could arise and simulate current trends to the future to determine needed changes in operating procedure.
- Coordinate with all professional resource sources to provide a comprehensive interpretation of the company's geothermal and mineral reservoirs. Interpretation should be fully documented for financing.
- Responsible for data collection and analysis of Region 1 shallow heat anomaly to meet regulatory obligations and provide an appropriate management program.
- Responsible for coordinating the development of appropriate software tools to manage the reservoir and production data gathered from the field.
- Provide monthly reporting to California department of oil, gas and geothermal resources on production and injection as well as quarterly reporting to environmental agencies.
- Collect/analyze Pressure-Temperature-Spinner (PTS) and capillary tubing data.
- Must have working knowledge of reservoir simulation to oversee, direct and troubleshoot outside simulations of reservoir for financing and development.
- Develop well flow performance curves.



- Provide engineering analysis and economic models for exploration, development, workover and acquisition projects.
- Provide engineering technical support to CalEnergy Operating Corporation and global MidAmerican Energy Company operations as required.

Qualifications

- Bachelor's degree or higher in engineering, preferably petroleum.
- At least fifteen years of related experience and/or additional resource engineering-related training. Geothermal resource engineering experience is required and some petroleum engineering experience in oil and gas is also desired.
- Effective oral and written communication skills. Ability to read, write, analyze, and interpret technical procedures or regulations. Ability to effectively present information and respond to questions from managers and employees.
- Effective analytical, problem-solving and decision-making skills. Ability to work with mathematical concepts such as probability and statistics and complex equations including algebra, trigonometry, geometry, calculus, as well as differential equations. Must have basic computer programming ability and be very fluent in spreadsheet analysis. Must have a solid understanding and be proficient in economic analysis. Must be able to work with math in an abstract way. Must be able to modify and/or derive mathematical equations from physical processes and relationships.
- The employee should be able to solve tough problems and deal with a variety of variables in situations where only limited standardization exists. Employee needs to synergize several inconsistent partial data sets to arrive at abstract answers. Employee should be able to interpret a variety of instructions furnished in written, oral, diagram or schedule form. Ability to visualize and comprehend the dynamic conditions and possibilities that occur during power plant and well-field development and the changes to the process that will occur over time and with proposed changes.
- A valid California driver's license is required.
- Project management skills; ability to prioritize and handle multiple issues and projects concurrently.

Research Geologist/Geophysicist, United States Geological Survey

The USGS in Menlo Park, California, has an opening for a Research Geologist/Geophysicist to conduct research in support of geothermal energy assessments, with a focus on the structural, geomechanical, thermal, and hydrologic properties of fault-hosted hydrothermal systems. Detailed information on the position can be found at <http://tinyurl.com/USGSGeothermalJob>. Individuals must apply online at <http://www.usajobs.gov/> to receive consideration. For more information about the USGS, visit: <http://www.usgs.gov/ohr/great.html>.



Tenure-line Position, Energy Resources Engineering, Stanford University

The Department of Energy Resources Engineering at Stanford University [invites applications for a tenure-line faculty appointment](#). The position is at the assistant professor level. It is desired that the selected candidate be able to start by January 2012. (Application reviews began April 15, 2011)

The Department of Energy Resources Engineering focuses on a wide range of activities related to the recovery of the Earth's energy resources (e.g., hydrocarbons, geothermal, and renewables). The Department also has active research programs on carbon sequestration and clean energy conversions. ERE offers degrees in both energy resources engineering (B.S., M.S., Ph.D.) and petroleum engineering (M.S., Ph.D.). The ideal candidate should have research and teaching interests beyond traditional petroleum engineering disciplines.

We seek scholars with a Ph.D. in a relevant field with novel and innovative research interests in energy resources, such as in one or more of the following areas:

1. Energy systems modeling and optimization, for example integration of energy recovery and carbon sequestration
2. Engineering of enhanced geothermal systems
3. Recovery of unconventional energy resources, such as coalbed gas, shale gas or gas hydrates
4. Renewable energy resources

Please apply online at <https://academicjobsonline.org/ajo/jobs/685/> in electronic format (pdf only) with the following application material:

- cover letter
- curriculum vitae
- a statement outlining research and teaching interests
- the names of three references including e-mail addresses
- copies of up to five selected papers published in refereed journals over the past three years

Requests for Proposals

New This Week

Purchase of Environmental Attributes - New York (October 13)

The New York State Energy Research and Development Authority seeks to procure the environmental attributes created by eligible generation resources under the Renewable Portfolio Standard Program. Responses due 10/13/11. For more info, contact rps@nyserda.org or go to: <http://www.nyserda.org/funding/2389rfp.asp>. Refer to RFP# 2389.



Graduate Fellowships for the Environment, EPA (November 8)

The U.S. Environmental Protection Agency requests proposals for Graduate Fellowships, for master's and doctoral level students in environmental fields of study. Areas of interest include, but are not limited to: Environmental Entrepreneurship; Global Change; Built Environment and Land Use/ Protection; Tribes and American Indian/Alaska Native/Pacific Islander Communities; Green Energy/Natural Resources Production & Use; and Green Engineering/Building/Chemical Products & Processes/Materials Development. \$4.5 million expected to be available, 80 fellowships anticipated. Responses due 11/8/11. For more info, including contacts, go to: http://www.epa.gov/ncer/rfa/2012/2012_star_gradfellow.html. Refer to Sol# EPA-F2012-STAR. (Grants.gov 9/15/11)

Environmental Education Sub-Grants, EPA (November 8)

The U.S. Environmental Protection Agency requests proposals for the Environmental Education Sub-Grants Program. The RFP will provide support to recipients that make and manage sub-awards to organizations, other than their own, to design, demonstrate, and/or disseminate environmental education practices, methods, and/or techniques. \$1.5 million expected to be available, up to 10 awards anticipated. Responses due 11/8/11. For more info, including Regional contacts, go to: <http://www.epa.gov/enviroed/grants.html>. Refer to Sol# EPA-EE-11-03. (Grants.gov 9/12/11)

People, Prosperity and the Planet, EPA (December 22)

The U.S. Environmental Protection Agency requests proposals for the National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet (P3). The P3 Awards program was developed to foster progress toward sustainability by achieving the mutual goals of economic prosperity, protection of the planet, and improved quality of life for its people. Areas of interest include: Energy; Built Environment; Materials and Chemicals; Water; Agriculture; Green Infrastructure; and Clean Cookstoves. \$1.05 million expected to be available, up to 45 awards anticipated. Responses due 12/22/11. For more info, contact Cynthia Nolt-Helms at nolt-helms.cynthia@epa.gov or go to: http://www.epa.gov/ncer/rfa/2012/2012_p3.html. Refer to EPA-G2012-P3. (Grant.gov 10/2/11)

Sustainable Energy Pathways, NSF (February 1)

The National Science Foundation requests proposals for Sustainable Energy Pathways. This RFP will support interdisciplinary efforts by teams of researchers to address the challenges of developing efficient pathways towards a sustainable energy future. \$34 million expected to be available. Responses due 2/1/12. For more info, including agency contacts, go to: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11590. Refer to Sol# 11-590. (Grants.gov 9/22/11)



Proposal Announcements

Advancement of Clean Energy - India

The U.S. Agency for International Development in India announces its intent to request proposals for a new energy and climate change program titled Partnership to Advance Clean Energy Deployment (PACE-D). The contract will assist in deploying clean energy technologies, systems and solutions and will accelerate India's transition to a high performing, low emissions and energy secure economy by primarily working on three key components improved end use energy efficiency, increased supply of renewable energy and adoption and accelerated deployment of cleaner fossil technologies and management systems. The RFP will be posted on or about 9/6/11. For more info, contact Sumit Dutta at indiarco@usaid.gov or go to:

https://www.fbo.gov/?s=opportunity&mode=form&id=0cfaa54bb271f1398f93d5b31e6e7f45&tab=core&_cvview=0.

Refer to Sol# 386-11-000002. (FBO 8/14/11)

Electric Energy Innovations - California (October 12)

The California Energy Commission requests proposals for the Energy Innovations Small Grant Program - Electricity Program. EISG funds the early development of innovative energy RD&D projects. Projects must target one of the following: Industrial/Agriculture/Water End-Use Efficiency; Building End-Use Efficiency; Environmentally Preferred Advanced Generation; Renewable Generation; Energy-Related Environmental Research; and Energy Systems Integration. Proposed projects must be clearly relevant to CA's electric market. Individual hardware awards NTE \$95K, individual modeling awards NTE \$50K. Responses due 10/12/11. For more info, contact eisg@projects.sdsu.edu or go to: <http://www.energy.ca.gov/contracts/smallgrant/index.html>. Refer to Sol# 11-02.

Alaska Native Fund (October 15)

The Alaska Conservation Foundation requests proposals for the Alaska Native Fund. The Fund seeks to advance Alaska Native priorities for protecting land and sustaining ways of life. The 2011 priority issues include: Climate Change, Food Security, Sustainable Economies, Energy, and Holistic Wellness. \$100K expected to be available, individual awards NTE \$20K. Letters of Inquiry are required, and are due 7/25/11, final proposals due 10/15/11. For more info, go to: <http://alaskaconservation.org/grant-opportunities/alaska-native-fund/>. (Tribal Climate Change Newsletter 6/2011)



Procurement Notice, Geothermal Clean Energy Investment Project, World Bank, Indonesia

From USTDA: This is the procurement notice for the World Bank's Geothermal Clean Energy Investment Project, a \$574.7 million investment in new geothermal resource development, and encourage all of those interested to pursue contract and procurement opportunities.

This project will be implemented by PT Pertamina Geothermal Energy (PGE) and will necessitate numerous contracts, including contracts for confirmation of geothermal resources and steam field development, as well as construction of the Steamfield Above-Ground System (SAGS) and power plants of approximately 110 MW and approximately 40 MW at the Ulubelu and Lahendong (Tompaso) geothermal fields, respectively.

Other contract opportunities may include:

- a) FEED Consultant for the design of the steam gathering station and power plant
- b) Supervision Consultant for Infrastructure to supervise the infrastructure works related to the development of certain fields;
- c) Supervision Consultant for EPC to supervise the process of power generation installation.

Consulting services will be procured in accordance with the World Bank's Guidelines: Selection and Employment of Consultants by World Bank Borrowers. Interested bidders should immediately contact PGE, procurement@pgeindonesia.com, and register to receive the Specific Procurement Notices as they are issued. A pre-qualification notice is expected to be released in the month of September.

More information for potential bidders can be found at the project homepage:

<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P113078>

U.S. companies interested in learning more about World Bank procurement guidelines should contact Mr. David Fulton, Advisor & Director of Business Liaison from the U.S. Department of Commerce at the Office of the U.S. Executive Director, dfulton@worldbank.org.



Invitation for Prequalification, Ulubelu and Lahendong Plants, PGE, Indonesia (October 28)

Pertamina Geothermal Energy (PGE)'s pre-qualification documents for contracts related to the Ulubelu 110-MW and Lahendong (Tompaso) 40-MW plants are now available. Interested bidders should respond no later than October 28th, 2011. Information for potential bidders can be found at the project homepage or see contact information below:

<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P113078>

Project Officer: Mr. Gatot Suhermanto/ Menara Cakrawala Building, 15th Floor/ Jl. MH Thamrin No 9/ Jakarta 10340, Indonesia/ Telephone: +62 (21) 398 33222/ Facsimile number: +62 (21) 398 33230/ Electronic mail address: pge.group.procurement@pertamina.com

U.S. companies interested in learning more about World Bank procurement guidelines should contact Mr. David Fulton, Advisor & Director of Business Liaison from the U.S. Department of Commerce at the Office of the U.S. Executive Director, dfulton@worldbank.org.

SCE Launches 2011 Renewable Auction Mechanism Solicitation (November 15)

From SCE — SCE is pleased to announce that it has launched its 2011 Renewable Auction Mechanism [RAM] Request for Offers [RAM RFO] from owners of eligible renewable resource [ERR] Generating Facilities. Information regarding the RAM RFO can be found on the RAM RFO Web site at <https://sceram.actionpower.com>.

The RAM RFO is open to projects utilizing ERRs with contract capacities not less than 1 MW and not greater than 20 MW. Additional Offer qualification criteria can be found in the RAM RFO Participant Instructions [RFO Instructions], available in the Documents section of the RAM RFO Web site.

To participate in the RAM RFO, Offerors must register on the RAM RFO Web site as an Offeror and complete prequalification in the Offer Management tab of the RFO Web site. Only those participants who have completed and met the prequalification criteria may submit an Offer using the Offer Form. Offerors will be notified once the Offer Form has been posted on the RFO Web site.

Offer Submittal Deadline: Tuesday, November 15. For an Offer to be considered in SCEs 2011 RAM RFO, Offerors must submit complete Offer[s] via the RAM RFO Web site no later than 12:00 pm Pacific Prevailing Time on Tuesday, November 15, 2011.



RFO Web Conference: SCE will host a RAMRFO Conference via Webex to discuss the RAM RFO process on Tuesday, October 25, 2011. Conference details will be made available on the RAM RFO Web site.

All inquiries regarding the RAM RFO must be posted in the Q and A section of the RAM RFO Web site. SCE representatives will post responses to participants' questions on the RAM Web site.

RE&EE Awards, State Energy Program, DOE

The U.S. Department of Energy requests proposals for the State Energy Program. This program provides formula grants to State and Territorial energy offices to design and carry out renewable energy and energy efficiency priorities. \$39 million expected to be available, up to 56 awards anticipated. Due dates based on state/territorial program years. For more info, contact Sheldon Funk at sheldon.funk@netl.doe.gov or go to: <https://www.fedconnect.net/fedconnect/?doc=DE-FOA-0000507&agency=DOE>. Refer to Sol# DE-FOA-0000507. (Grants.gov 6/23/11)

Sustainability Research Networks, NSF (December 1)

The National Science Foundation requests proposals for the Sustainability Research Networks Competition. Through this competition, NSF, in partnership with other agencies, international efforts, and the private sector, aims to support members of the academic research community for projects which produce discoveries and knowledge that will inform decisions leading to environmental, energy, social and cultural sustainability. \$36 million expected to be available, up to 4 awards anticipated. Preliminary proposals due 12/1/11, final proposals due 4/1/12. For more info, including contacts, go to: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11574. Refer to NSF 11-574. (Grants.gov 8/25/11)

Industry/University Cooperative Research Centers, NSF (February 1)

The National Science Foundation requests proposals for Fundamental Research Program for Industry/University Cooperative Research Centers. Areas of interest include, but are not limited to: Energy and Environment; Advanced Manufacturing; Biotechnology; Advanced Materials; and Fabrication and Process Technology. \$1.6 million expected to be available, up to 10 awards anticipated. Responses due 2/1/12. For more info, contact Rathindra DasGupta at rdasgupt@nsf.gov or go to: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf11570. Refer to NSF 11-570. (Grants.gov 8/10/11)

Environmental Engineering, Energy for Sustainability, and Environmental Sustainability, NSF (February 17)

The National Science Foundation requests proposals for the following programs, with responses due 2/17/12. :

- Environmental Engineering. The goal of this program is to encourage transformative research which applies scientific principles to minimize solid, liquid, and gaseous discharges into land, inland and coastal waters, and air that result from human activity, and to evaluate adverse impacts of these discharges on human health and



environmental quality. \$9.4 million expected to be available, up to 44 awards anticipated. For more info, contact Paul Bishop at pbishop@nsf.gov or go to:

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501029. Refer to Sol# PD-12-1440. (Grants.gov 6/8/11)

- Energy for Sustainability. This program supports fundamental research and education in energy production, conversion, and storage and is focused on energy sources that are environmentally friendly and renewable. Sources of sustainable energy include: Sunlight, Wind/Wave, Biomass, and Geothermal. \$9.2 million expected to be available, up to 42 awards anticipated. For more info, contact Gregory Rorrer at gorrer@nsf.gov or go to: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501026. Refer to Sol# PD-12-7644. (Grants.gov 6/8/11)
- Environmental Sustainability. This program supports engineering research with the goal of promoting sustainable engineered systems that support human well-being and that are also compatible with sustaining natural systems. \$5.4 million expected to be available, up to 45 awards anticipated. For more info, contact Bruce Hamilton at bhamilto@nsf.gov or go to: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027. Refer to Sol# PD-12-7643. (Grants.gov 6/8/11)

Events

Happening This Week

Pagosa Springs Tour, Colorado Geothermal Working Group (October 7)

Colorado Geothermal Working Group will tour Pagosa Springs, where town leaders are pursuing geothermal projects like organic greenhouses and school heating systems. The October 7 tour runs from 8:30 a.m. to 3:30 p.m. and is open to the public. Visit <http://coloradogeothermal.groupsites.com/main/summary>.

New This Week

Geothermal Summit, Waimanalo, Hawaii (October 15)

A Geothermal Summit will be held on Saturday, October 15, 2011, from 8 a.m. to 12:30 p.m. The public is invited.

Where: Hawaii National Training Center Auditorium and Dining Center, Bellows Air Force Station

Hosted by: Sen. Pohai Ryan

Remarks: Scott Seu, Vice President of Hawaiian Electric Company (HECO); Richard Ha, a Big Island farmer/businessman and Ku'oko'a board chairman; and Sen. Mike Gabbard, Senate Committee on Energy and Environment Chair

Company presentations: Mililani Trask, Innovations Development Group; Ted Peck, Ku'oko'a; and Mike Kaleikini, Puna Geothermal Venture



GEA and GEA-Sponsored Events

Geothermal Energy Expo® and GRC Annual Meeting 2011, San Diego, CA (October 23–26)

The GEA Geothermal Energy Expo is the world's largest gathering of vendors providing support for geothermal resource exploration, characterization, development, production and management. It provides a unique opportunity for exhibitors to showcase their projects, equipment, services and state-of-the-art technology to the geothermal community. The Expo hall will be open from Monday, October 24 at noon until Wednesday, October 26th at noon. The 2010 Expo in Sacramento featured 162 exhibitors coming from 34 different states and 10 different countries.

Exhibitors include Ormat, NALCO, Siemens, Geothermal Resource Group, POWER Engineers, Íslandsbanki, Pratt & Whitney Power Systems, Mitsubishi Power Systems, Calpine Corporation, BM Holdings Company and TNG Energy Services. The complete exhibitor list is available at <http://www.geothermalenergy2011.com/exhibitors.asp>. The general public can visit the Expo Hall for a \$50 registration fee per day, and student registration is complimentary with valid student ID.



“The 2011 Expo is certain to be the largest-ever gathering of the geothermal community,” said GEA Marketing and Events Director Kathy Kent. “Each year the growing geothermal industry comes together for this event and it has become the most vital gathering for companies and leaders developing geothermal resources around the world.” Please contact Kathy Kent, Kathy@geo-energy.org for information, registration, sponsorship opportunities, etc. or visit <http://www.geothermalenergy2011.com/>. The GEA is also on Twitter @geoenergist, please join the conversation with the Twitter tag #GEAExpo. For more information, to schedule an interview or to request media credentials, please contact Leni Schimpf at the Rosen Group, 646-695-7045 or leni@rosengruppr.com.

Sponsorship Opportunities Available for GEA Events

Your company has the opportunity for high visibility at GEA's events. In addition to providing the financial support needed for GEA to undertake successful events, GEA events feature media availabilities with sponsors which garner extensive coverage in mainstream press outlets. Sponsorship details are posted online: <http://www.geo-energy.org/images/GEA2011SponsorshipOpps9.pdf>.



Sedimentary Basins Geothermal Workshop, National Science Foundation, Salt Lake City, UT (November 7–9)

Cosponsored by GEA: the "Tracking an Energy Elephant: Science and Engineering Challenges for Unlocking the Geothermal Potential of Sedimentary Basins" NSF-sponsored workshop will be held November 7–9 in Salt Lake City, Utah. Visit www.SedHeat.org or contact Devri: DevriRoubidoux@boisestate.edu.

The goal of this workshop is to focus on an under-studied portion of the renewable energy portfolio - the geothermal energy of sedimentary basins. The workshop will provide a road map for how NSF's community, through fundamental research, facilities development, data sharing and cyberinfrastructure, and education, can help make the vast geothermal potential of sedimentary basins a significant part of the nation's renewable energy portfolio.

The ability to translate that potential into productive use lies in the application of basic science and engineering to overcome challenges that currently restrain the utilization of these complex systems for electrical base load. Effective use also lies in reducing the economic risk of geothermal exploration and development which inhibits attracting financial investors to this energy sector. In addition, it is also important to provide federal and state decision makers and agencies with the information they require to make sound decisions about geothermal energy. Thus, the long-term vision is integrate NSF-sponsored research, education and cyberinfrastructure to build a partnership among researchers, industry, and state and federal agencies to insure that geothermal energy can meet its potential as a major and sustainable contributor to our nation's energy grid. This workshop is a step toward that goal.

Renewable Energy World North America Conference and Expo, Long Beach, CA (February 14–16, 2012)

The 2012 Renewable Energy World North America Conference and Expo event will take place February 14-16 in Long Beach, California — please save the date! GEA is on the planning committee and looks forward to highlighting geothermal energy at the event. If you have attended this in the past and would like to discuss next year's event or offer suggestions for the planning committee please contact Leslie Blodgett at GEA, leslie@geo-energy.org.



Other Events

Public Meeting on Geysers EGS Project, US DOE and Calpine Corp., Middletown, CA (November 4)

The Department of Energy and Calpine Corp. plan to hold public meetings on the EGS demonstration projects underway at the Geysers. The venture will present progress reports at 2 p.m. Friday, Nov. 4. The meeting will be held at The Calpine Geothermal Visitors Center, 15500 Central Park Road, Middletown. Phone 707-987-4270. For more information on the program, visit www.geothermal.energy.gov.

Geothermal Power Plant Tour at The Geysers, Calpine Corp. (November 4)

Calpine is offering free tours of a geothermal power plant at The Geysers. Reservations are required and can be made by going to www.geysers.com. Friday, November 4, Calpine Visitors Center, Middletown CA, Calpine's Geothermal Education Day, 9 a.m. – 1 p.m.

CanGEA's Annual Geothermal Power Forum, Calgary, AB (November 4)

CanGEA takes part in the upcoming Global Clean Energy Congress in Calgary November 1–3 (<http://globalcleanenergycongress.com>; CanGEA promo code GCE3U) through a geothermal panel and booth, and will hold its Annual Power Forum on November 4. "Today, several Canadian oil and gas companies are involved directly and indirectly in R&D efforts for utilizing existing technologies for providing geothermal power to Canadians, so it is with great pleasure that we are able to hold our annual Geothermal Power Forum in Calgary," said [Alexander Richter, Director](#), Canadian Geothermal Energy Association. Details at: www.cangeaevents.ca/calgary.

Turkey Renewable Energy and Energy Efficiency Trade Mission, U.S. DOC, Ankara-Istanbul-Izmir (December 5–9)

*October 17 - Application Deadline for Renewable Energy and Energy Efficiency Trade Mission to Turkey

Turkey's renewable energy investments will exceed US \$20 billion during the next 5 years. The country ranks Number 2 geothermal energy development potential in Europe and 5th in the world. A new Renewable Energy Law passed on December 12, 2010 increasing guaranteed prices for renewable energy resources, and additional incentives are in place.

Participants in this Trade Mission will gain:

- A senior U.S. Department of Commerce executive will lead the mission and facilitate valuable introductions to key Turkish energy industry decision-makers;



- A U.S. Export-Import Bank representative will travel with the delegation in all three cities and advise the participants on trade finance solutions;
- 10-15 pre-scheduled meetings with potential partners, distributors, end users, or local industry contacts;
- Meetings with key government decision makers and private sector firms;
- Pre-travel webinars on subjects ranging from industry briefings to business practices in Turkey;
- Meetings with CS Turkey's energy specialists in Ankara, Istanbul and Izmir, Turkey;
- Transportation to all mission-organized meetings inside Turkey (all air transportation within Turkey is the responsibility of the mission participant);
- The Trade Mission visit will provide visibility for participating American firms at networking receptions at the U.S. Ambassador's residence and U.S. Embassy press releases

Who should participate?: U.S. renewable energy equipment and systems manufacturers, RE project developers, engineering firms, energy efficiency systems and equipment suppliers, project finance companies, and any other RE & EE companies. Cost for small and medium size firms: \$3.285; large companies: \$4.055. To apply, go to: <http://export.gov/california/kern/trademissions/>.

Contact:

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GEOTHERMAL ENERGY WEEKLY

A newsletter for the geothermal industry written by Leslie Blodgett and Karl Gawell

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