

Proposed Agreement between California Energy Commission and Renovitas, LLC

Title: Exploration Drilling and Assessment of Wilbur Hot Springs, Colusa County, California
Amount: \$1,492,722.00
Term: 21 months
Contact: Pablo Gutierrez
Committee Meeting: 5/10/2011

Funding

| FY | Program | Area | Initiative | Budget | This Project | Remaining Balance | |
|----|------------|------------|------------|-------------|--------------|-------------------|----|
| 09 | Geothermal | Renewables | | \$4,500,000 | \$1,492,722 | \$0 | 0% |

Recommendation

Approve this agreement with Renovitas LLC for \$1,492,722. Staff recommends placing this item on the agenda of the Commission Business Meeting.

Issue

Wilbur Hot Springs is located in Colusa County, California, is viewed as a significant target for the discovery and development of geothermal energy for power generation. This area has been the focal point for geothermal, gold and mercury exploration for over 100 years. There are several thermal springs in the area, plus thermal waters that were encountered in mine tunnels and shafts.

Geothermometry was performed for waters from Wilbur Springs and Jones Hot Springs (mine shaft water), and for samples obtained from the two deep wells. The results consistently cluster between 300F and 360F for spring waters and well waters believed to be originated from 3,000 to 7,000 feet in depth. The most optimistic value for power generation, based on the higher temperature range, is 112 MW. This estimate remains to be proven by the drilling and testing of commercially productive wells. Extensive resource evaluation work is needed for drilling and geothermal power development.

Background

Renovitas, LLC and key partners (Geonomics Inc., GeothermEx) propose to explore and assess the geothermal resource potential in the Wilbur Hot Springs area.

Geonomics has the geothermal rights for over 4800 acres in the Wilbur Springs area. Geonomics has the mining and geothermal claims on properties in the Wilbur Hot Springs area. This represents over 4800 acres that are situated in a composite grouping and all exhibiting near-identical, strong geothermal manifestations and structural features. There are many documented indicators of geothermal potential in this area. Several thermal springs are in the area. Also thermal waters were encountered in mine tunnels and shafts. According to published reports, measured temperatures of these thermal waters range from 110F to 156F. Reported well temperatures have been recorded at 225F and 334F. These wells were abandoned almost immediately when a liquid-dominated resource was found. At the time the operators were looking for dry steam, similar to that found at "The Geysers".

Renovitas, LLC and key partners have an agreement with the private landowner for the rights to explore and develop the resource. GeothermEx was retained to conduct a preliminary resource assessment for the area. GeothermEx's analysis indicate that the resource should have no problem supporting (<50 MW) binary power plant. The resource has the potential to support an even larger development, possibly double the most likely estimate, but more data are needed. This was sufficient enough to induce Renovitas, LLC to initiate this exploration effort. There are two 110-161 kV transmission lines which pass through the center of the project area. This is an ideal voltage with respect to line capacity and cost for interconnection of a 50-100 MW power plant. Once the resource is verified and accessed, the anticipated technology that will be used is binary. The binary technology is well proven and commercial. So long as the geothermal resource is realized and any environmental concerns are mitigated.

Proposed Work

The objectives of this project are to perform pre-drilling geology and geophysical programs, and to drill exploration wells in the resource area near Wilbur Hot Springs. The ultimate objective is to prove this resource area to be a viable for geothermal electrical production.

If successful, this project will provide favorable economic impacts to Colusa County and will stimulate possible further geothermal development in an area where presently there is none. It would add a liquid-dominated resource to northern California's geothermal assets. The project will acquire open-filed records and public-domain geologic and geophysical data and other information on the subsurface characteristics of the resources to complete conceptual geothermal exploration model and better determine exploration approach. In addition, the proposed will drill 3-4 temperature gradient wells and gather more information on the subsurface characteristics of the resource to better determine the resource potential and locations for drilling exploratory wells. Also, the proposed project will drill 2 slim-hole exploratory wells and test the potential of natural gas availability in the resource area. The project will conclude with the analysis all information to determine if further development of the resource is appropriate.

Justification and Goals

This project "[will develop, and help bring to market] advanced electricity generation technologies that exceed applicable standards to increase reductions in greenhouse gas emissions from electricity generation, and that benefit electric utility customers" (Public Resources Code 25620.1.(b)(3)), (Chapter 512, Statues of 2006)).

This will be accomplished by:

- Perform pre-drilling geology and geophysical programs, and drill exploration wells in the geothermal resource area with the ultimate objective to prove this resource area is viable for geothermal electrical production