

4.2.3 Klamath and Lake Counties Agricultural Industrial Park

Presentation Number: 013

Investigator: Riley, Betty (South Central Oregon Economic Development District)

Objectives: To attract new businesses to Klamath and Lake counties for the purpose of capitalizing on the area's abundant geothermal resources.

Average Overall Score: 3.3/4.0

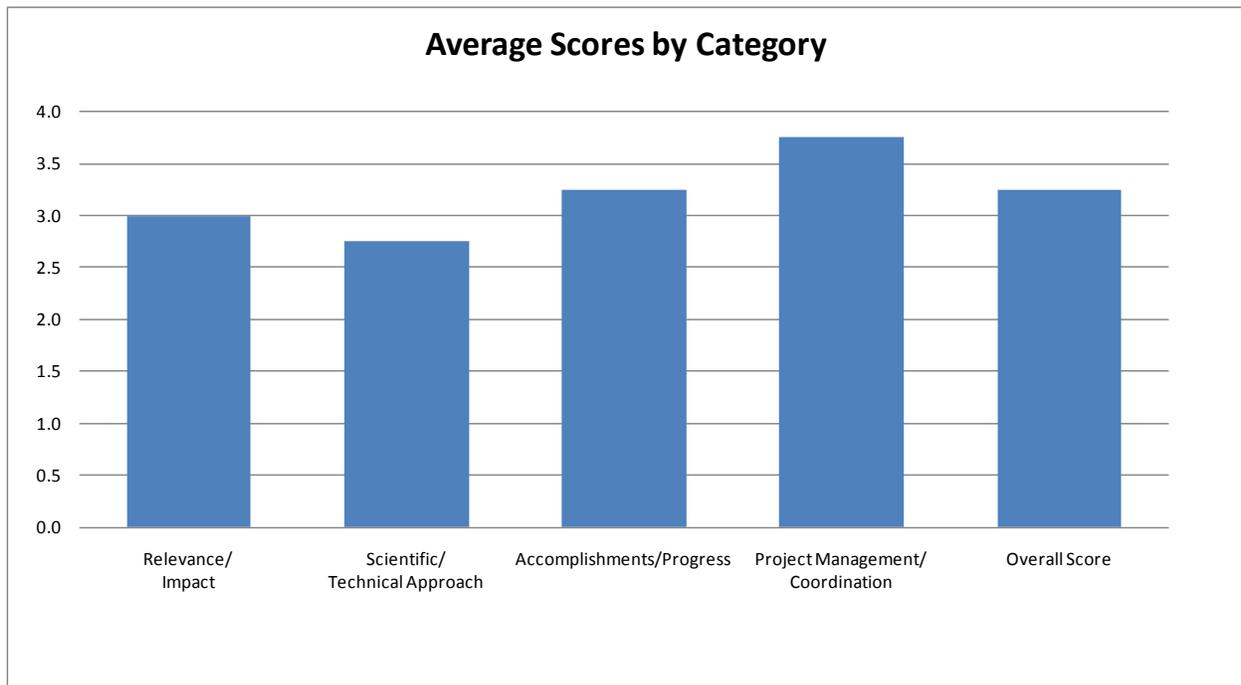


Figure 13: Klamath and Lake Counties Agricultural Industrial Park

4.2.3.1 Relevance/Impact of the Research

Ratings of Four-member Peer Review Panel: Outstanding (4), Fair (2), Good (3), Good (3)

Supporting comments:

- DOE's contribution was \$298,000, and among the benefits is public facilities savings of \$170,000 per year. This return is excellent.
- The goal of this project was to attract new businesses to Klamath and Lake counties for the purpose of capitalizing on geothermal resources through the development of a geothermal well on property that would be available for purchase or lease by businesses considering a relocation or expansion into the area.

This project is a community assistance/improvement project and can have a significant impact on the rural communities with little or no economic resources of their own to establish a business park to attract corporate investment. This is a badly needed project to foster business development in an area that has a viable geothermal resource that could be parlayed for the benefit of the concerned communities.

This project does not in the immediate future involve any research, development and demonstration projects to establish EGS for electricity generation or advance the underlying science and technology or add to the knowledge base.

- The project was well planned and has made the progress required to meet the objectives. The annual savings per year appear to amount to about 50% of the grant which is a very good rate of return.
- The goal of this project is to stimulate the use of geothermal resources in specific counties. This goal contributes a modest amount of progress towards DOE goals and the rate of accomplishment has been very good.

4.2.3.2 Scientific/Technical Approach

Ratings of Four-member Peer Review Panel: Good (3), Fair (2), Good (3), Good (3)

Supporting comments:

- No comments.
- The South Central Oregon Economic Development District (SCOEDD) team planned and developed the appropriate methods and procedures to achieve project objectives with the available funding and personnel. The approach taken is based on reasonable and logical planning and business development practices which were incorporated into the deployment of the project. Project deployment is well grounded and focused on completion of goals and objectives. The project was implemented in the following four phases:
 - Land Parcel Identification
 - Land acquisition and negotiation
 - Resource Development
 - Outreach

Phase 1 – Land Parcel Identification consisted of identifying suitable land required for geothermal resources, land ownership and zoning to with the best prospects for development of geothermal wells, water availability, utilities, zoning etc. and other regulatory issues. Two site selection reports were prepared in late 2005, early 2006. The reports documented efforts to identify and prioritize potential geothermal sites. The site selection involved the identification of geothermal wells co-located with vacant land. Other factors such as site access, land value, utility availability, well access, presence of multiple wells, owner interest, zoning, piping costs potential, and fees for the use of heat were considered.

Phase 2 - Land acquisition and negotiation consisted of land evaluation and prioritization. In Klamath County, a lease agreement with Liskey Farms was obtained. This agreement provided for the development of the property for geothermal heating of buildings, irrigation of crops, warming of water and other uses. In Lake County, a lease agreement was executed on a property located directly next to Highway 395, which has several advantages:

- The wells already exist and produce hot water.
- The hot springs directly west of the site and a geothermal spring to the northeast of the site indicate the geothermal resource is close to the surface.
- No geothermal development has been done in this area resulting in no prior water rights or conflicting geothermal rights.
- The landowner is interested in working with the Town, and agreed to a Geothermal Well Development Agreement with the Town.

Phase 3 Resource Development consisted of conducting pump well capacity pump tests, and appropriate water right and consider regulatory requirements. In Klamath County, two re-injection well sites were proposed with funding through the Natural Resource Conservation Service (NRCS) at Liskey Farms. SCOEDD worked with NRCS on the required NEPA process for both the well testing and the in ground piping. NRCS approved the use of their funding for both the well testing and additional piping expanding the geothermal system. Pumping tests were completed in December 2007.

In Lake County, an environmental review to rehabilitate the existing geothermal wells was completed. A NEPA ruling was issued on December 31, 2007 authorizing use of DOE funds for cleaning and pump testing of the geothermal wells. Pump testing indicated water temperatures of 180° to 190 °F were present. A feasibility report completed in January 2009 determined the district heating project would be feasible. The estimated cost of the project is \$3.5 million. Savings for Lake Health District and Lake County School District would total \$2.4 million over the life of the system.

A review by DOE NEPA staff determined that a full third party environmental assessment (EA) would need to be completed. SCOEDD contracted with RMT, Inc from San Mateo, California to complete this EA. The draft EA has been released for review.

Lake County – Paisley

Through a feasibility study completed with funding from a USDA Value Added Ag grant, it was determined that enough hot water for the development of a 1 MW electrical generation facility was possible. Surprise Valley Electric Coop has taken the lead in the development of this project. This project received \$2 million in economic stimulus funding from the US Department of Energy to move forward.

Phase 4 Outreach consisted of a promotional campaign to target industries.

In 2007, Green Fuels of Oregon, Inc. signed a lease with Liskey Farms to develop a Biodiesel production facility in existing greenhouses. Utilizing geothermal water to heat the greenhouses helped lower their utilities and eliminate the high expense of propane.

Local farmer Rick Walsh has located his Fresh Green Organic Garden Community Supported Agriculture facility at Liskey Farms.

Also in 2007, SCOEDD staff has worked with Team Klamath to assist a company that provides Augmentative Biological Controls (ABC) for spider mite pests. The company currently employs eleven fulltime workers utilizing 70,000 sq ft of existing greenhouses at Liskey Farms. Future plans include building an additional 130,000 sq ft.

“Gone Fishing” Farms uses the waste water from the Liskey Farms greenhouses to grow tropical fish for aquariums and tilapia for the food market. Gone Fishing processes up to 300,000 pounds of Tilapia per year which equates to \$450,000 in annual sales.

In Lake County, the website sustainable-Lake-County Oregon. com promotes geothermal sites in the community of Lakeview. Once the geothermal heating district is installed, SCOEDD will include the availability of geothermal energy in promoting Lake County’s Industrial site through the Oregon Prospector.com.

Both Lake and Klamath Counties expanded their Enterprise Zones to include the geothermal properties identified. Oregon’s enterprise zones offer a unique resource to local communities, unmatched by any other business incentive. Besides tax abatement, an enterprise zone lends visibility and focus to local economic development efforts.

- There was not a high level of technical input to this project but the approach was well thought through and there was good outreach and public collaboration.
- The project is designed to eliminate barriers to local use of geothermal resources. The barriers include awareness, drilling risk, regulatory uncertainty. These barriers are not technical. The plan was well organized and focused towards these defined barriers.

4.2.3.3 Accomplishments, Expected Outcomes and Progress

Ratings of Four-member Peer Review Panel: Good (3), Good (3), Good (3), Outstanding (4)

Supporting comments:

- No comments.
- The SCOEDD claims that the proposed \$10 million investment for geothermal development in Klamath and Lake Counties region could provide up to 50 jobs in a small rural community of 250. A staggering number in a region where employment opportunities are desperately needed.
- This appears to have been a very well balanced project which has resulted in significant cost savings for the community and the generation of many new jobs in a rural area.
- The project has successfully met or exceeded its objectives. Wells have been identified and industries are committed to using them. It appears that additional industries are considering utilizing other sites in the area as a result of this project, saving a town considerable money and creating jobs.

4.2.3.4 Project Management/Coordination

Ratings of Four-member Peer Review Panel: Outstanding (4), Good (3), Outstanding (4), Outstanding (4)

Supporting comments:

- This is a well-managed program with good results.
- The SCOEDD personnel have proven that they have worked very hard and have leveraged the small amount of DOE GTP funds to obtain funding from diverse federal, state and private sources to make their corner of Oregon attractive to businesses. The SCOEDD has effectively managed the small grant provided by DOE. They are well organized and have been very effective in managing their funds through proper controls and discipline.
- This project had a well managed team approach to raising the awareness of the potential of local geothermal resources and led to the successful implementation of both district heating and various direct use applications leading to cost saving, investment and job growth in a rural area.
- Management seems well structured and effective.

4.2.3.5 Overall

Ratings of Four-member Peer Review Panel: Good (3), Outstanding (4), Good (3), Good (3)

Supporting comments:

- An outstanding project but I rated it just good because I didn't consider it "world-class." Still this is a project DOE can be proud of.
- For \$297,640 it is amazing what the SCOEDD has accomplished since June 30, 2005.

Budget:

Total project funding - \$637,848

DOE Share - \$297,640

Awardee Share - \$340,208

- The project objectives were well thought through and the project was undertaken by a well balanced team involving resources, planning, permitting and outreach with the successful implementation of district heating and several new direct use applications. It is an excellent case study that can be used as a demonstration of what is possible in areas with relatively low enthalpy geothermal resources. I rated it as very good.
- This is a very well run project with a small but positive impact on geothermal utilization.

4.2.3.6 PI Response

I am pleased with the comments related to our project and appreciate the opportunity to attend the Peer Review.