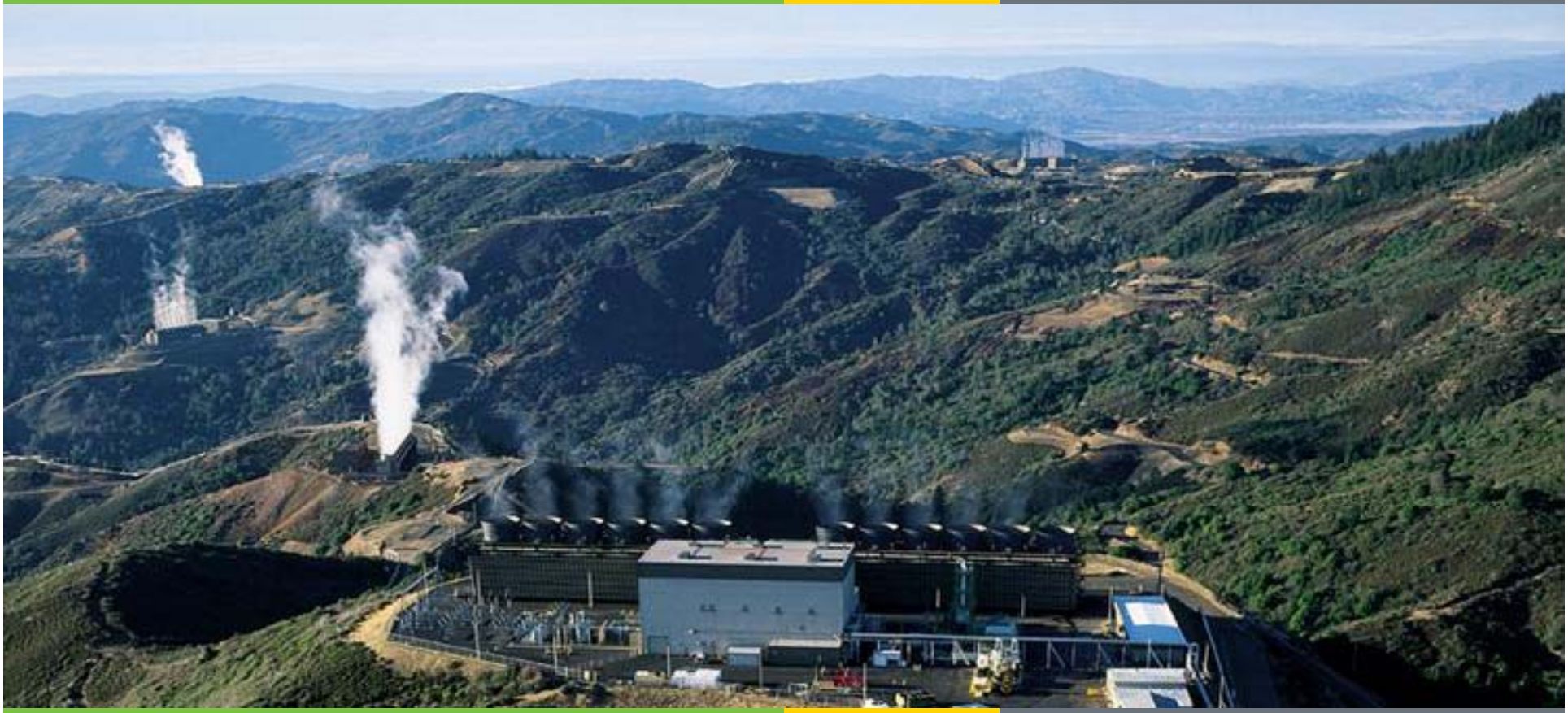
Geothermal Technologies Program 2010 Peer Review

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



Jobs and Economic Development Modeling

May 19, 2010

Principal Investigator: Kate Young

Presenter: Tom Williams
National Renewable Energy Laboratory

Analysis, Data System and Education

Overview

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Objective:

- Develop models to estimate jobs and economic impacts from geothermal project development and operation.

Timeline:

- Project start date: 2/1/2010
- Project end date: 6/30/2011
- Percent complete: 15%

Budget: $110k

Barriers: Suite of Models and Tools

- Existing models have limitations and cannot sufficiently address all of the GTP analytical needs and requirements

Partners: MRG & Associates

Relevance/Impact of Research

Innovative analysis tool to quantify effects of geothermal deployment on jobs and economic development

- The models can be used to easily identify the local economic impacts to gain support of:
  - geothermal developers,
  - renewable energy advocates,
  - government officials,
  - decision makers and
  - other potential users
- The results of the analyses will provide information to researchers, policy-makers, and investors on the potential for job creation and economic impact from to geothermal development

Scientific/Technical Approach

- JEDI is a user-friendly, input-output, spreadsheet (Excel) based model intended for web posting as a publicly available, downloadable tool
- Utilizes geothermal technology costs and IMPLAN (impact planning) multipliers to estimate economic development impacts at the state level from constructing and operating geothermal power generation facilities and direct use applications
- Economic impacts addressed by JEDI include:
  - Jobs,
  - Wages and salaries earned, and
  - Increases in overall economic activity.

Scientific/Technical Approach

- Two JEDI models will be developed, one for power generation and another for direct use, each model will have a “drop-down” menu for specific technologies.

  JEDI Geothermal Power Generation:
  - Engineered geothermal,
  - Traditional hydrothermal and
  - Co-production geothermal

  JEDI Geothermal Direct Use:
  - Direct use heating and
  - Heat pumps
- The models will then be used to conduct an analysis to estimate job and economic impacts at the state level for geothermal power plant development and direct use applications

Accomplishments, Expected Outcomes and Progress

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- The JEDI Geothermal models are recently under development.
- Technology cost data gathering, an essential component to the JEDI models, is underway and should be completed 6/15/10

Project Management/Coordination

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Existing JEDI suite has models available for following technologies:
  - Wind
  - Natural gas
  - Coal
  - Concentrating Solar Power (CSP)
  - Solar Photovoltaic (PV)
  - Lignocellulosic ethanol
  - Dry mill corn ethanol
  - Hydro: conventional, marine, and hydrokinetic (under development)

- JEDI Geothermal Power Generation and Direct Use project adds geothermal technologies to suite of JEDI models

Project Management/Coordination (2)

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

- Project led by NREL analysts
  - MRG & Associates, as a subcontractor, is gathering geothermal cost data (with review from NREL geothermal analysts) and will then develop the model
  - NREL analysts review geothermal cost data, facilitate model development, manage peer review of the model and arrange for web posting and download capabilities
  - Upon model completion, NREL geothermal analysts will conduct an analysis to estimate potential economic impacts from geothermal deployment
- Next steps and planned completion date are as follows:
  - Model development: 8/15/10
  - Peer review and posting of models to make available for public download: 12/15/10
  - Draft jobs/economic impact report: 4/15/11
  - Final report: 6/30/11

Future Directions

- Subsequent analysis conducted using the JEDI models will provide a baseline for jobs and economic impacts and may address impacts from scenarios based on potential RPS goals, incentives, and other policy mechanisms.
  - JEDI can be used in conjunction with results of supply curves in market penetration models to determine job and economic benefits of geothermal deployment

Summary

- The JEDI models address a crucial question in these strained economic times, “What are the job and economic impacts from constructing and operating geothermal power generation facilities and direct use applications?”
- Two JEDI models will be developed, one for power generation and another for direct use
- JEDI Geothermal Power Generation and Direct Use join many other renewable energy technologies in the JEDI suite of models

Supplemental Slides