

# EMD Leadership Meeting, 18 June 2005

## EMD Geothermal Committee Report

Joel Renner, Chairman

### Introduction

There has been no change in the capacity of geothermal power plants producing electricity over the past year. However, a number of projects are in various stages of development. Ongoing work is generally in the Basin and Range or the Imperial Valley. However US Department of Energy is funding several projects investigating use of hot fluids associated with oil production. World wide interest in geothermal energy is increasing both for electrical production and direct use. The geothermal community met for a week in Turkey for the 2005 World Geothermal Congress. About 1,000 delegates attended five days of concurrent sessions. Although electrical production took center stage, a large number of delegates from Europe were more concerned with direct use and utilization of ground-source heat pumps. Current world geothermal electrical capacity is about 8,900 MWe, an increase of about 12% since 2000.

### U. S. Geothermal Activity

#### US Geothermal Production

##### Electrical power

Installed capacity	2,559 MWe
Operating capacity	~2,000 MWe
Producing	17,840 GWh/year

	Installed capacity (MWe)	Power produced (GWh/yr)
California 7 fields	2264	15,479
Hawaii 1 field	30	218
Nevada 9 fields	239	1,943
Utah 2 fields	26	200

##### Direct use

Installed capacity	7,817 MWt
Producing	31,200 TJ/year

The past year has seen a dramatic increase in geothermal development. Power purchase agreements have been reached with utilities in Arizona, California, Idaho and Nevada for an additional 483 MWe. Of that, about 270 MWe is from reserves and the remainder of the resources needed is at some stage of exploration.

CalEnergy Company, a subsidiary of MidAmerican Energy, is nearing construction of a 225 MWe plant at the Salton Sea, CA. Current production there is 336 MWe. The USGS and others have estimated that the field's ultimate capacity may be about 3,400 MWe for 30 years. Production at the field requires titanium casing because the reservoir fluids are from 150,000 to 250,000 ppm total dissolved solids. Countering the high salinity are the reservoirs high temperature (about 300°C) and the high productivity of the wells – generally 15 to 20 MWe per well.

Most exploration projects are in Nevada, but exploration projects also are underway or have been announced in Alaska, Arizona, Idaho, New Mexico and Oregon.

Dr. Dave Blackwell, Southern Methodist University, and Dr. Richard Erdlac, University of Texas, Permian Basin, are separately investigating use of hot oil field fluids for geothermal production. There are anecdotal reports that such fluids are used to generate electricity on offshore platforms. We would appreciate additional information on such activities.

The increased geothermal activity results from increased demand for electricity and renewable energy portfolio standards. If a production tax credit similar to that which has been in place for wind and biomass power, geothermal development is expected to increase.

## **World Wide Summary**

Worldwide geothermal electrical capacity is about 8,900 MWe with total generation of about 57,000 GWh/yr in 24 countries. In decreasing order of capacity, the United States, Philippines, Mexico, Indonesia, Italy, Japan and New Zealand are the leading producers. Most production is associated with young volcanism related to subduction zones.

Papers from the World Geothermal Congress 2005 are available through the International Geothermal Association (IGA):

[http://iga.igg.cnr.it/iga\\_pub.php?sub=WGC\\_Proceedings](http://iga.igg.cnr.it/iga_pub.php?sub=WGC_Proceedings)

Additional information on the conference is available at the IGA web site:

<http://iga.igg.cnr.it/index.php>

## **Upcoming Meeting**

The Geothermal Resources Council will hold its annual meeting at the Reno Hilton, Reno, Nevada, September 25-28, 2005. Additional information concerning the technical sessions, short courses, field trips, and registration materials are available at:

<http://www.geothermal.org>