

Status of Nevada Geothermal Resource Development – Spring 2002

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ABSTRACT

At least 40% of Nevada has potential for electric-power generation from geothermal resources, and much of the rest of the state has potential for direct use. Nearly all of Nevada's resources are related to deep fluid circulation in an area of crustal extension and high heat flow. Electric power is generated from geothermal resources at nine areas in northern Nevada, and several other areas have potential. Nevada produced about 1250 GWh of electric power from geothermal energy in 2001; this amount has remained relatively stable for the past nine years. Non-electric uses include vegetable dehydration, space heating, and spas; several aquaculture and space-heating applications have been discontinued over the past 10 years.

Geology

Over 40% of Nevada is believed to have potential for electric-power generation from geothermal resources, and another 50% of the state has potential for direct use of such resources. Surface and subsurface indications of these resources are demonstrated by >1000 thermal springs and wells in the state that represent several hundred resource areas.

Geothermal reservoirs in the northwestern part of the state have generally higher temperatures; these reservoirs are usually interpreted to be related to circulation of ground water to deep levels along faults in a region of higher-than-average heat flow (e.g., Hose and Taylor, 1974). In east-central and southern Nevada, the low- to moderate-temperature geothermal resources are generally believed to be related to regional intrabasin ground-water circulation in fractured carbonate-rock aquifers (e.g., Winograd, 1962; Mifflin, 1968). The maximum temperatures

attained during deep circulation in eastern and southern Nevada could be 100-150°C, but spring temperatures at discharge points are generally <65°C. Temperatures slightly higher than 150°C have been encountered in deep oil wells of eastern Nevada; assuming a gradient of 25°C/km, circulation to depths of 6 km is likely.

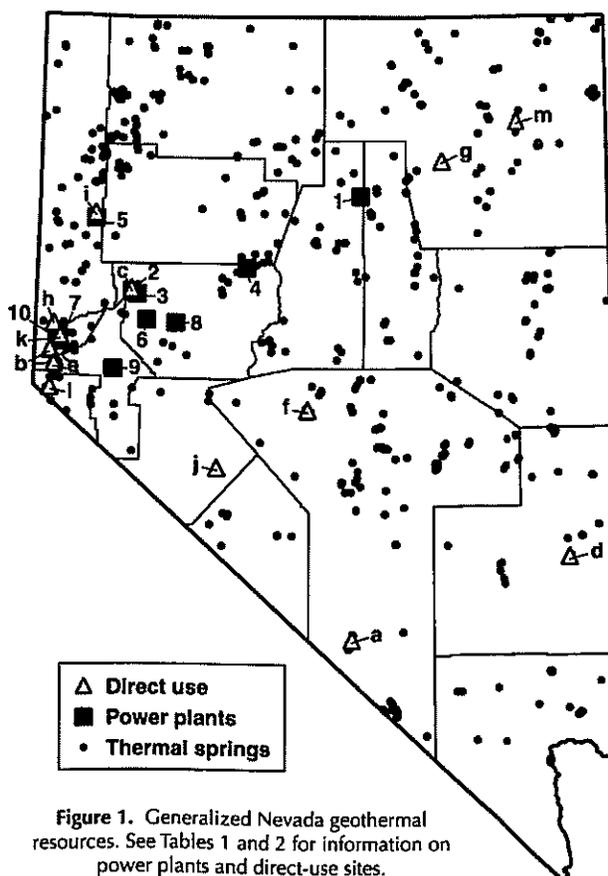


Figure 1. Generalized Nevada geothermal resources. See Tables 1 and 2 for information on power plants and direct-use sites.