

# **GEOHERMAL DISTRICT HEATING INSTITUTIONAL FACTORS THE KLAMATH FALLS EXPERIENCE**

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## **ABSTRACT**

The city of Klamath Falls Geothermal District Heating System started to provide heat to 10 government buildings on March 20, 1984. This startup was two and one-half years after construction of the system was completed and the operation is scheduled for only a four-month test period. The delay was the result of citizens objecting to pumping and injecting geothermal fluids in the reservoir and was legally enforced by means of a city ordinance passed by the voters. This Initiative Ordinance essentially regulates the resource by requiring any additional water pumped from a geothermal well be returned to that same well. The state of Oregon filed a lawsuit against the city, claiming that state regulation preempted city action. The issue currently is in the Court of Appeals, after Klamath County Circuit Court ruled that the state was not preempted and the ordinance was valid and enforceable.

Historical description of development that led up to these institutional and legal problems are discussed. Citizens objections and third party mitigation measures by means of reservoir engineering studies and public meetings are described. Lessons learned from the Klamath Falls experience are pointed out so future developments in other communities may benefit.

## **BACKGROUND**

Geothermal utilization in Klamath Falls, Oregon, has consisted of about 600 homes, multi-family housing units, almost all of the public schools, Oregon Institute of Technology, a medical center, melting snow from a state highway pavement, direct use in a laundry and for heating swimming pools. Unfortunately, the shallow resource is only located under a portion of the city as shown in Figure 1. This shallow reservoir extends for at least 11 km (7 miles) in a northwest-southeast direction with a width of about 3 km (2 miles) and is typical of the fault charged reservoirs of the Basin and Range Province. Presumably, hot water upwells along a major range front fault and flows laterally in highly permeable near surface rocks.

Unfortunately, the main known geothermal area is located along the east side of the city, and not within the main business and industrial districts. Due to the 1973 "energy crisis" and the subsequent escalation of fossil fuel prices, an interest was generated to study the possibilities of district heating by geothermal. Several limited studies (Lienau, 1976 & 1977) were performed as a result of this interest in 1976 and 1977. Both of these studies indicated that district heating was not only technically feasible, but also economically viable.