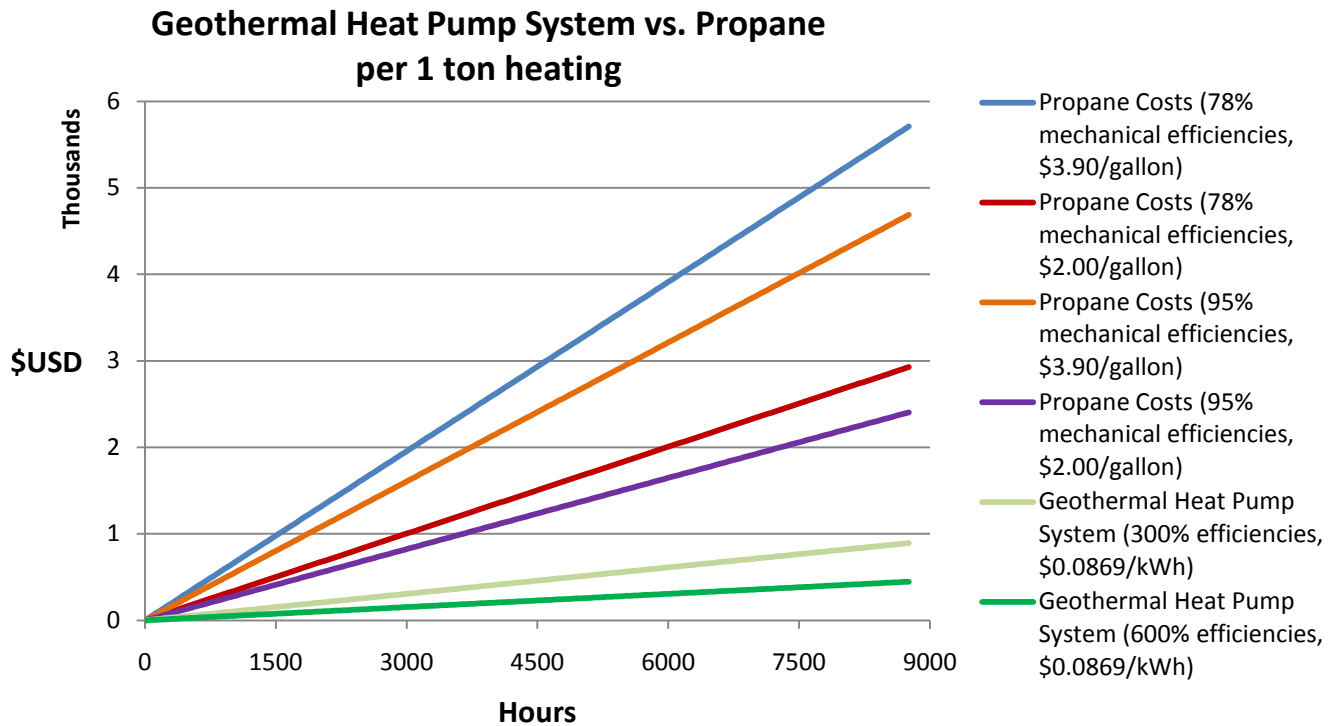


## Geothermal Heat Pump Systems vs. Propane A Cost Comparison for Heating Facilities



The above chart is a cost comparison between four different heating systems:

- A propane boiler running at 78% efficiency
  - A propane boiler running at 95% efficiency
  - A geothermal heat pump system running at 300% efficiency
  - A geothermal heat pump system running at 600% efficiency
- Efficiencies are based on high and low efficiencies for each type of mechanical system*

Costs for Propane and Electricity in Arizona are as follow:

- Avg. state electricity costs = \$0.0869/kWh
- Low state propane costs = \$2.00/gallon(27kWh)
- High state propane costs = \$3.90/gallon(27kWh)

**Costs for propane and electricity: U.S. Department of Energy, Energy Information Association ([www.eia.gov](http://www.eia.gov))**

The above chart is based on a 1 ton heating capacity for the systems. 1 ton of heating is approximately 3.5 kW, so if a geothermal system runs at 300% efficiency at full capacity (1 ton) for 4000 hours the cost to the facility owner would be as follows:

$$1 \text{ ton} \times 3.5 \text{ kW} \times 1/300\% \text{ efficiency} \times 4000 \text{ hr} \times \$0.0869 = \$405$$

This number corresponds to the above chart. To calculate costs on higher capacities simply multiply the costs from the chart by the corresponding capacity. For example, if the system capacity was 200 tons the cost would be as follows:

$$\$405 \times 200 = \$81,000$$

The amount of savings experience by GHPs when compared to propane boilers is remarkable.