

The Energy and Technology Committee
Public Hearing, March 7th, 2013
Testimony of Aaron J. Danenberg, Hartford CT

During the 2012 session, this committee passed Section 10 of Bill 450 directing the Public Utilities Regulatory Authority to conduct a proceeding to establish rates that would promote the use of geothermal systems. Unfortunately the Bill did not reach a vote in the Senate. I believe the relevance of this section has grown with the release of the Comprehensive Energy Strategy (CES).

Recent discoveries of large natural gas reserves are offering the state a cleaner, lower cost, and American fuel source to provide heating and electricity. We have the technology to take this resource even farther. A medium to low efficiency geothermal heat pump will extract 4 times the energy from the ground than was used to operate the system. For 2011, ISO New England reported a fleet power generation efficiency of 44.7%. If natural gas is used to generate electricity, and in turn the power is used to operate a geothermal heat pump harvesting energy from the ground, fuel consumption is reduced by 45% to provide the equivalent level of heating when comparing against a 95% efficient natural gas boiler. Though these systems reduce fuel consumption to meet equivalent loads, commercial owners of this technology will experience an increase in their \$/kWh costs upwards of 35% in heating months due to an increased demand charge. This not only narrows or eliminates the \$/BTU savings to provide heating, it substantially raises the cost to operate all of the other equipment in the building. This market barrier prevents this technology from reducing cooling electrical loads in critical and expensive summer months upwards of 40%.

The cost of electricity and natural gas increase exponentially as demand increases. There are numerous factors that contribute to energy prices, many of which are highly speculative in nature and difficult to project for the long term. The one constant to lower costs in any market environment is to lower demand. Energy is the lifeblood of our economy and inherently has limitations in regards to reducing consumption. However technologies that leverage renewable energy sources such as the earth, air, and sun fuel a stronger economy that does more with less.

Heat pump technology offers a substantial and unique opportunity to shave peak demand and lower energy costs. Recent advancements in the technology have increased the strength of compressors such that they are now capable of efficiently pulling heat from air at temperatures down to 0 degrees Fahrenheit. A cold climate air source heat pump reduces fuel consumption by nearly 20%. Stronger compressors offer considerably lower fuel consumption in a geothermal configuration when compared to air source. However the market for air source technology is significantly larger due to the high initial capital investment to install a geothermal well field.

Equitable Energy Pricing (EEP) is a concept that recognizes the cost of energy for all rate payers is in part determined by the energy efficiency measures of all market participants. When one organization makes an investment in a renewable or peak shaving technology, all rate payers stand to benefit. This creates a level of disincentive to invest in energy conservation that will be compounded as energy prices decrease. EEP utility riders offer the CES a tool to boost efforts employing technologies that lower emissions and energy costs by affording investors in the technology their weighted share of cost reductions. With the relatively clean ISO New England power generating portfolio, these technologies reduce emissions upwards of 65% with current infrastructure.

I recommend the committee reintroduce language similar to the 2012 Section 10 of Bill 450 to direct PURA to conduct a proceeding to investigate and if appropriate establish EEP utility riders to promote renewable and peak shaving technologies.