Star, Anthony

From: Doug Dougherty <doug@geoexchange.org>
Sent: Friday, July 25, 2014 4:44 PM
To: Star, Anthony
Subject: FW: Illinois Power Agency Request for Comments: EE as a supply resource
Attachments: HomE white paper on Heat Pump costs, installations.docx

Dear Mr. Star

The Geothermal Exchange Organization is pleased to submit the following answers to your questions on Energy Efficiency as a supply resource.
Thank you.

Douglas Dougherty
President & CEO
GEO, The Geothermal Exchange Organization
312 S. 4th St. Springfield, IL 62701
www.geoexchange.org
Direct 217-414-0341
doug@geoexchange.org

Illinois Power Agency
"Energy Efficiency as a Supply Resource"

Comments from the Geothermal Exchange Organization (GEO)

July 25, 2014

1) The IPA has traditionally looked at procurement blocks using regular definitions of those products as on-peak (16 hours on the 5 weekdays) or off-peak (8 hours on 5 weekdays, weekends and holidays). Should the IPA consider procurement of a new resource of demand reducing resources during the summer months for a narrower peak period? If so, how should that "super-peak" period be defined?

Geothermal heat pumps (GHPs) use the constant temperature of the earth as a heat source or a heat sink. In the cooling mode the earth is used by a GHP as a heat sink regardless of the ambient air temperature. Super peaks of 100-105 degrees or higher have little impact on the peak Kw achieved by a GHP. As such, whatever the daily time period, geothermal heat pumps will provide expected (based on the GHP's Energy Efficiency Rating (EER) peak load reduction performance.

2) What types of products should qualify for delivery as a super-peak product? What measures can the IPA take to ensure that super-peak demand-side resources feature an actual lower delivered cost than supply side alternatives? Please provide evidence (either empirical, or modeled) for demand-side resources with delivered costs that could be lower cost than supply side resources.

GEO advocates for the inclusion of GHPs as a super-peak reducing product. By using the data from the Association of Illinois Electric Cooperatives (AIEC) (attached white paper) and the American Heating and Refrigeration Institute's EER ratings for GHPs, GEO calculates that an average four ton GHP reduces the peak load of an electric supplier by 2.60 Kw (.65x4). As such, 38,460 tons of GHP capacity would reduce peak by 25 megawatts. Given the success of the AIEC GHP rebate program, $375 per ton of GHP capacity appears to be a fair incentive. The cost for incenting GHP installations at $375/ton would cost a total of $14,422,500 to achieve a 25 megawatt peak reduction.

3) Should a resource for this procurement also be eligible to participate in other energy efficiency (and/or demand response) programs? If so, how should the value of each be accounted for? For example, could a product have its kWh reductions separated between multiple programs? What timing challenges may result from including resources in both supply resource procurement and existing energy efficiency (and/or demand response) programs, and how can those be resolved?

GEO recommends that new installs or retrofits of existing HVAC systems tied to the $375/ton incentive be exclusive to this program.

4) How could delivery of demand-side resources be metered and/or verified? What provisions should apply for non-delivery?

There are existing metering devices to calculate the energy consumption of a GHP in real time. As an example, please see www.openthermal.net

5) What limitations, if any, should be placed on customer classes that could provide these resources? Specifically, should it only be potentially eligible retail customers, or all customer classes? Should the resources have to be located within the service territory of the utility to which they are delivered?

G***eothermal heat pumps can be used for similar efficiencies in both residential and commercial/institutional settings with the only differences relating to scale. GEO believes that any geothermal heat pump promotion/installation program should be accessible by all classes of ratepayers. We would like to see as broad a program for geothermal heat pump demand side management as possible.***

6) In 2014 the IPA is procuring energy blocks of 25 MW, down from 50 MW in previous procurements. What size block would be appropriate for this potential procurement?

GEO agrees with IPA's suggested energy block size of 25 MW.

7) If the IPA were to propose the procurement of super-peak demand-side resources as part of its 2015 procurement plan, could these resources be procured for the upcoming delivery year (starting June, 2015), or should there be more time given to ramp up any new programs that would deliver these resources?

Certainly, geothermal heat pump providers in the State could begin incremental installation of geo systems starting in June 2015. Fulfillment of 25 MW of avoided power would take some time, however, so given lead times for sales, deliveries and installations and GEO would thus recommend a longer ramp up period.

8) Are there other approaches the IPA should consider in its procurement plan for procuring resources other than what it has traditionally procured that could lower the total cost of the portfolio used to serve eligible retail customers?

Seventy percent of a building's energy consumption is for its thermal load, heating cooling and hot water. Geothermal heat pumps can reduce that energy consumption by 50%. GHPs can be installed anywhere given the multiple options for installing the ground heat exchanger; vertical, horizontal, directional, closed loop pond, open loop and standing column well. GHPs are scalable and can be configured to meet the thermal load of any size residential and commercial building. GEO strongly believes in energy efficiency as the least cost lowest risk for energy resources and GHPs are the most energy efficient technology for satisfying the thermal loads of buildings.