



NY GEOTHERMAL ENERGY ORGANIZATION

October 30, 2017

Re: Comments for Case 17-E-0238 and 17-G-0239

Via e-mail

Ms. Kathleen H. Burgess
Secretary, NYS Public Service Commission
Agency Building #3
Empire State Plaza 12223-1350

Dear Secretary Burgess:

We are writing to more thoroughly explain and quantify certain values and concepts cited in our August 1st public comments in this case. We are requesting that these values be properly considered in this case.

This letter discusses:

- Recent GSHP System Cost Reduction Initiatives
- Monetary Value of GSHPs Lowering Summer Peak Demand
- Monetary Value of GSHPs Improved Winter Grid Utilization
- Market Impact of Monetizing GSHP Benefits
- Recognition of the Carbon Reduction Value of GSHP
- Gas Expansion Considerations

Recent GSHP System Cost Reduction Initiatives

We know that first costs are often seen as a reason not to consider geothermal heat pumps in utility programs. For that reason, we wanted to point out recent industry offerings that have lowered upfront costs for homeowners.

In Western New York GSHP systems with performance monitoring are being offered by many installers, including Buffalo Geothermal, for \$23,000 or less after the current NYSERDA rebates are applied.

This type of cost range is not unique to Western New York, as Dandelion Energy is advertising a similar fixed GSHP system installation price of \$20,000 in the Albany and Hudson Valley service areas.

In addition, in this letter we propose quantification of significant unmonetized values that GSHP brings to the grid that add to the GSHP value proposition. We urge careful consideration of



monetizing these values in order to provide a fair and equitable treatment in this rate case for those who install ground source heat pumps.

In the August 1, 2017 comments that we submitted in this case, we supported the Electric Heat initiative that National Grid had proposed and urged that it be expanded.

“A full-on Electric Heat Initiative could lower rates in the following primary ways, among many others:

- A. Lowering peak summer demand*
- B. Increasing winter system utilization*
- C. Increasing return on distribution system assets”*

Monetary Value of Lowering Summer Peak Demand

Regarding peak demand, page 20 of "PSC CASE 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision" includes the statement:

"Increasing the responsiveness of demand will reduce price volatility in the near term and price inefficiency in the long term. If, for example, the 100 hours of greatest peak demand were flattened, long term avoided capacity and energy savings would range between \$1.2 billion and \$1.7 billion per year."

Table 3: "Peak and Average Load Levels for NYCA 2009-2016" from page 19 of the most current 2016 State of the Market Report published by the New York Independent System Operator, gives the best picture we were able to find of what it would take to flatten the 100 hours of greatest peak. Between 2009 and 2016, statewide demand peaked above 33 GW three of the eight years, and in six of the eight years cutting the peak below 28 GW would have eliminated the top 100 peak hours of peak usage. The average peak over the eight years was 32.2 GW. For most years, approximately 4 GW would have been adequate to reduce the peak by 100 hours.

Taking a mid-range number from the DPS Staff estimate, shaving 4 GW off the peak should bring around \$1.5 billion annually to ratepayers. Amortizing \$1.5 Billion over 20 years yields about \$30 billion in value to ratepayers.

NY-GEO submits that a dual stage or variable stage GSHP system shaves an average of 1.75 kW off peak demand relative to conventional air conditioning. This figure is derived from field experience and corresponds with numbers used by PSEG Long Island in calculating their GSHP rebate. A GSHP shaves peak demand because it is by far the most efficient means of air



conditioning on the hottest days of the year, discharging heat into the receptive cool earth beneath the building instead of the resistant hot air surrounding the building.

At 1.75 kW per system, the installation of 2.286 million GSHP systems statewide could shave 4 GW off the peak demand. Dividing \$30 billion by 2.286 million systems means each system installed could represent an average, currently unmonetized grid value of \$13,123 per system over the next 20 years.

We know there is a lower number per kW of peak demand reduction embedded in various documents associated with this case and look forward to working through the difference.

Monetary Value of Improved Winter Grid Utilization

When a customer installs a GSHP system they will use more electricity in a way that currently subsidizes other ratepayers. That is due to distribution charges being volumetric. A GSHP customer will be paying substantially more in distribution charges for electricity use that places little or no additional cost burden on the utility distribution system. GSHP systems use more electricity in the winter, particularly at night when temperatures are coldest. This is when electricity demand is typically lowest, and the least stress is placed on the distribution system. At the same time, as mentioned above, GSHP systems reduce stress on the distribution system during the summer air conditioning season, forestalling the need for increased distribution capacity and infrastructure

We know NYSERDA has been developing an estimate of this benefit and has shared it with the joint utilities. They are in the process of refining this estimate, and NY-GEO contends it is important that a process be left open in this rate case to allow the monetization of that value for GSHP customers for when a final mechanism for calculating that benefit is determined. Given the scant 13 years New York has to meet its 40% GHG reduction goal, waiting another 3 years for a new rate case to come up to develop a mechanism, that could easily be part of this case, is not a wise option. .

Consider the following numbers to help illustrate the grid value GSHP brings relative to distribution costs. Currently, National Grid charges 4.758 cents/kwh in upstate NY for residential delivery. The thermal load statewide per residence is about 16,576 kWh annually for heating plus 5,032 kWh for hot water – a total of 21,608 kWh. https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/ny.pdf. This load is likely greater in NiMo's service area as it covers much of the colder portion of New York State.



A total of 21,608 kWh x \$.04758 yields \$1,028 annually. Modern GSHP systems operate at a typical COP of 4, meaning that for every KW used to power the system, 4 KW of heat are produced. This means an average GSHP customer would be overpaying by \$257 annually in distribution charges, more if the NiMo territory winter climate is factored in. Over 20 years that amounts to \$5,140 in overpayments by an average GSHP system owner.

Thus the current rate regime overcharges GSHP customers and NY-GEO requests that this overcharge be addressed in this rate proceeding.

Writ large, if the 2.286 million households units referenced above were contributing an average of \$257 in excess grid value, it would mean over \$587 million dollars in value annually.

This line of reasoning stems from comments made to NY-GEO's 2014 annual conference by Greg Hale, New York's Senior Advisor to the Chairman of Energy & Finance. Hale noted that New York's system utilization had been falling, and projected a savings to ratepayers of \$200 Million/year for each percentage point of increased grid utilization if that trend could be reversed.

Market Impact of Monetizing GSHP Benefits

Combining the 20-year peak shaving benefits of GSHP installations of over \$13,000 with the distribution overcharge of \$5,140 could result in a monetary value of around \$18,000 being generated by each GSHP installation. This is accomplished without incurring significant utility system costs. If the delivery rate remains untouched, we project the most efficacious way to monetize this value might be for utilities to provide an upfront rebate or financing package. With systems now being sold for just over \$20,000, if a significant portion of this \$18,000 of value were appropriately monetized, GSHPs would become the most affordable heating and cooling system in New York State for most buildings.

We believe refining this value and determining the best way to monetize it should be the focus of continued discussions between the GSHP industry, utilities, NYSERDA and DPS during the remaining course of this rate case. As mentioned above NY-GEO believes there is an obligation to work this process through as part of this rate case, both as a matter of justice for GSHP customers and to clear the way for New York to meet its greenhouse gas goals. Waiting for the next rate case is an alternative that would both exploit GSHP customers and harm the state's climate efforts. We are at a turning point in New York's treatment of renewable heating and cooling and it is not too early to begin integrating the necessary changes.

The financial implications of the peak demand and distribution overcharges are enormous when looked at on a utility-wide basis. And as beneficial electrification takes hold, new heating and EV customers could be the key factor that balances out the "utility death spiral" being projected



as distributed electricity generation reduces the number of kWhs available over which utilities can spread their costs.

Recognition of the Carbon Reduction Value of GSHP

Finally, we do encourage the successful institution of a carbon reduction EAM as part of this case. The financial benefits of the factors cited above stand on their own and are not dependent on carbon reduction for their calculation, although carbon reduction adds strength to the rationale for monetizing them. The carbon reduction value of GSHP systems should also be recognized and monetized in the EAM part of this proceeding.

Gas Expansion Considerations

We are at a turning point. New York State will not get to its target of a 40% reduction in greenhouse gases without significantly cutting GHG emissions from the building sector. We submit that a much cleaner means of heating and cooling buildings is at hand at a comparable or lesser cost than natural gas expansion.

When a ratepayer switches over from oil or propane to natural gas, they often individually pay a surcharge, as well as the costs to convert their house infrastructure and appliances to natural gas. They will then be subject to the historical volatile costs of the fuel itself every month. They will also join the pool of ratepayers who will be reimbursing the utility for its costs in extending the gas infrastructure.

When the initial costs, plus the operating costs, are accurately calculated, perhaps in a BCA revised to be fuel neutral, we believe GSHP systems become a very attractive option, particularly in light of the industry cost reductions mentioned at the beginning of this letter.

Given the undebatable necessity of reducing fossil fuel consumption to achieve the 40% target, we also must face the question whether, and how soon, any new gas distribution infrastructure will become a stranded asset, and a burden on ratepayers.

Sincerely,

A handwritten signature in black ink that reads "Bill Nowak".

Bill Nowak
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The New York Geothermal Energy Organization (NY-GEO) is a non-profit trade association representing geothermal heat pump (GHP) installers, manufacturers, distributors, drillers, consultants and industry stakeholders from throughout New York State and beyond.