NY GEOTHERMAL ENERGY ORGANIZATION

VIA E-MAIL

Hon. Kathleen H. Burgess
Secretary to the Commission
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223

December 17, 2018

Re: proposal filed by Niagara Mohawk Power Corporation d/b/a National Grid to amend its electric tariff schedule, P.S.C. No. 220, to establish a voluntary residential beneficial electrification rate structure – Comments from NY-GEO stemming from case 17-E-0238

Dear Secretary Burgess:

Please accept NY-GEO's comments in support of National Grid's proposal to establish a voluntary residential beneficial electrification rate structure.

Sincerely,

Bill Nowak

Bill Nowak
Executive Director, NY-GEO
518-3136-GEO
nygeoinfo@gmail.com

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.

On March 15, 2018, the Commission issued its ORDER ADOPTING TERMS OF JOINT PROPOSAL AND ESTABLISHING ELECTRIC AND GAS RATE PLANS [1] in rate case 17-E-0238. The Attachments to Order includes the following language negotiated by the parties in this case:

"13.10 SC-1 Alternative Rate Structures
Within six months of the order setting rates in these proceedings, the Company will file with the Secretary a proposal or proposals for time-of-use and/or other voluntary residential rate structure(s) to further the State's energy goals, including the adoption of beneficial electrification technologies such as electric vehicles and renewable electric heat pumps. The Company will provide interested parties prior to filing the proposal with the Commission. Any revenue impacts associated with any alternative rate structure will be reconciled within the SC-1 RDM." [2]

On September 17, 2018 the company filed its DRAFT PROPOSAL OF NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID FOR VOLUNTARY RESIDENTIAL RATE STRUCTURE TO FURTHER ADOPTION OF BENEFICIAL ELECTRIFICATION TECHNOLOGIES [3]

NY-GEO writes to support National Grid's proposal for a voluntary beneficial electrification (BE) rate. There is currently a substantial overcharge for customers using geothermal heating and cooling (GH&C) inherent in the use of volumetric (per kWh) delivery rates. The proposed BE rate addresses this overcharge and NY-GEO urges the Commission to adopt this rate on a voluntary basis.

NY-GEO offers the following rationale:

---

[1] ORDER ADOPTING TERMS OF JOINT PROPOSAL AND ESTABLISHING ELECTRIC AND GAS RATE PLANS, 2018 03 15
http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=17-E-0238 accessed 2018 12 12

[2] Attachments to Order, 2018 3 15 – page 106
http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=17-E-0238 accessed 2018 12 12

[3] PROPOSAL OF NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID FOR VOLUNTARY RESIDENTIAL RATE STRUCTURE TO FURTHER ADOPTION OF BENEFICIAL ELECTRIFICATION TECHNOLOGIES, 2018 09 17,
http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=17-E-0238 accessed 2018 12 12

1. For most ratepayers, volumetric delivery rates encourage the efficient use of energy.
2. In the case of beneficial electrification, volumetric delivery rates discourage the efficient use of energy
3. Current delivery rates don't reflect costs accurately for geothermal heat pump ratepayers, and are thus inefficient.
4. The resulting overcharge is substantial, unjust and unreasonable.
5. The overcharge imperils New York's ability to reach its adopted Greenhouse Gas (GHG) reduction goals.

Expanding on these points:

1. For most ratepayers, volumetric delivery rates encourage the efficient use of energy.

As National Grid's website notes, "the vast majority of residential customers are by default assigned to the SC1 service classification." [4] National Grid's delivery rate for SC1 customers is currently 5.044 cents per kilowatt hour (kWh) used by the ratepayer. Because it is calculated on a per kWh basis it is known as a "volumetric" charge – the charge goes up directly proportional to the volume used. This volumetric delivery charge is in addition to a $17 per month fixed charge designed to cover the costs of keeping a customer in the system, as well as a volumetric (per kWh used) supply charge through which National Grid collects revenue to pay the generators that supply the electricity to its delivery system. The delivery rate is determined for SC1 by dividing the costs of building and maintaining National Grid's delivery system (lines, substations, transformers, etc.) by the kilowatt hours used by SC1 customers.

Currently, most of National Grid's residential ratepayers heat their homes by burning fossil fuels on site. Electricity is by and large used for lighting, cooling and appliances. In this circumstance, a volumetric electric delivery rate encourages ratepayers to conserve electricity and use it as efficiently as possible. As the

[4] https://callmepower.com/ny/utility/national-grid/rates-tariffs accessed 2018 12 11

ratepayer's heating bill is independent of electricity use, any reduction in electricity use will decrease their electricity bill and thus their total energy bill. Likewise, as the energy used to heat their home is independent of the energy used for lighting, cooling and appliances, any reduction in the energy used for those functions reduces their total energy use.

Inasmuch as most residential customers with fossil fuel heating systems have fairly similar use patterns, a volumetric delivery rate, by encouraging conservation of electricity, does tend to hold down utility delivery costs. It is thus is beneficial to most SC1 ratepayers and allows ratepayers, especially LMI ratepayers, to cut their costs by cutting electricity use.

Across New York State electricity use peaks on the hottest days of summer and it is for these days that utilities must spend heavily on the delivery system to maintain the capacity to meet peak demand. A typical heavy residential electricity user probably does put upward pressure on the delivery system cost by continuing heavy electricity use on the warmest days of the year, contributing to summer peaks. It is a plausible reflection of costs for those ratepayers to contribute more to the upkeep of the delivery system by paying more under the volumetric rate.

2. In the case of beneficial electrification, volumetric delivery rates discourage the efficient use of energy

Beneficial Electrification in the heating sector means replacing on-site combustion of fossil fuels with more efficient electrical heating devices. Combustion of fossil fuels can never exceed 100% efficiency, and is generally in the range of 75% to 96%. For heat pumps the efficiency is the ratio of the heat produced to the electricity used to run the heat pumps. Air source heat pumps might have an average efficiency of 200-230% over a heating season in upstate New York. The only study undertaken to date in New York State found an average efficiency of 360% for ground source heat pumps (GSHP) [5]. This GSHP efficiency level will certainly improve as more efficient variable speed pumps become the norm.

---

[5] Final Report For Analysis of Water Furnace Geothermal Heat Pump Sites in New York State With Symphony Monitoring System, Submitted to: New York State Energy Research and Development Authority by: CDH Energy Corp. , May 18, 2017, page 54 https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Other-Technical-Reports accessed 2018 12 12

These relative efficiencies mean that when fossil fuel heating is replaced by a heat pump, particularly with a ground source heat pump, total energy use is reduced. Electricity use for the ratepayer increases, but with fossil fuel burning being replaced by efficient electric heat pumps, total energy use is reduced.

As an illustration, a typical home in National Grid's service territory may require 87,000,000 BTU's for heating over a season. BTUs and kWhs are both measures of energy, with 1 kWh equaling 3,412 BTU's. This home's heating load is thus 25,498 kWh. If heated with fossil fuels, at an optimistic efficiency of 96%, this home would use 25,561 kWh of energy for heating. In contrast a ground source heat pump operating at a 360% efficiency would use 7,083 kWh for heating, a net savings of 19,478 kWh. This translates to 66,458,804 BTUs saved (kWh * 3,412).

Given that the use of heat pumps reduces energy use consistent with New York's energy efficiency goals, it would be counter-productive for rates to be set in a way that overcharges heat pump ratepayers. It is important that the electricity delivery rates paid by ratepayers to power heat pumps be set in a reasonable manner that accounts accurately for the costs the heat pump use imposes on the delivery system. In fact, volumetric delivery rates result in overcharges of hundreds of dollars annually for heat pump ratepayers, as we will document in the next section.

This overcharge has the effect of discouraging the efficient use of energy by discouraging switching to and using heat pump systems. A key incentive to purchase a heating system is the expected annual operating cost. If ratepayers can project paying hundreds of dollars less annually to heat with heat pumps with a more accurate rate than volumetric rates, it would be a strong incentive to move to a heat pump system.

NY-GEO is even aware of anecdotal evidence from downstate New York, where electricity prices are highest in the state, that some customers purchase air source heat pumps but use them only for cooling. They do so because it is less expensive to use fossil fuels to heat, given the relative cost of electricity and gas from downstate utilities. In those instances, New York's utility system is failing to capture energy efficiency savings due, at least in part, to volumetric delivery rates.

3. Current delivery rates don't reflect costs accurately for geothermal heat pump ratepayers, and are thus inefficient.

The recently filed DPS staff Whitepaper on Standby and Buyback Service Rate Design aptly asserts: "*a rate design that provides a better match between cost causation and revenue recoveries than the existing rates should be made available to customers wherever possible.*" [6]

Delivery rates are meant to cover the costs of delivering energy to ratepayers. These costs include real estate, rights of way, power lines, substations, transformers, and other equipment, as well as the labor to maintain and install them.

A utility takes on delivery costs when equipment needs to be replaced from wear and tear, which increases with peak usage, or when peak demand begins to exceed the capacity of the equipment and it needs to be replaced with equipment of greater capacity.

SC1 rates are set so that a typical ratepayer covers their fair share of these costs through the volumetric delivery charge.

In the case of a ratepayer who purchases a geothermal system, they will likely already have been paying their share through the delivery charge they have been paying on their electric bills for lighting, cooling and appliances. When that ratepayer stops using fossil fuels and turns on the heat pumps, their electricity use in the case cited above for a home with an 87MMBTU heating load would increase annually by 7,083 kWh. At the SC1 rate of 5.044 cents per kWh, the delivery portion of their annual electricity bill would increase $357 in spite of the fact that they had already been paying an amount adequate to cover delivery to their home.

Geothermal systems decrease summer peak cooling demand by cooling much more efficiently than air sourced cooling systems. They increase system utilization during winter months when distribution equipment is underutilized. For these

---

[6] CASE 15-E-0751 – In the Matter of the Value of Distributed Energy Resources WHITEPAPER ON STANDBY AND BUYBACK SERVICE RATE DESIGN AND RESIDENTIAL VOLUNTARY DEMAND RATES, December 12, 2018, page 6 http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-e-0751&submit=Search accessed 2018 12 14 under "Staff Standby Whitepaper"

reasons geothermal systems do not add delivery expenses for utilities to any real degree, and, depending on the summer cooling load, they may decrease a utility's delivery expenses. Appendix 1 further explores the grid impact of geothermal installations.

Given that geothermal systems do not increase delivery costs to the utility and to other ratepayers. The extra $357 in the example above is essentially an overcharge. NY-GEO has been seeking the establishment of a rate that addresses this overcharge.

We support National Grid's proposal because it addresses the overcharge to a substantial degree. As mentioned above, peak demand is the significant driver in utility delivery costs. By basing its proposal on coincident and non-coincident peak demand, coupled with time of use charges, the proposal comes close to assuring that geothermal ratepayers are paying the actual costs they are imposing on the system and not gratuitously overpaying.

The overcharge that geothermal ratepayers have been paying represents a distorted signal that discourages ratepayers from switching to geothermal systems. Efficiency is lost when the most efficient heating and cooling technology is kept off the market by electricity delivery rates that cover far more than the costs they are designed to recover.

4. The resulting overcharge is substantial, unjust and unreasonable.

We will provide 3 examples from our own data, from NYSERDA, and from National Grids to demonstrate that this overcharge is substantial:

A. NY-GEO

The annual overcharge cited above, taken from a home with an 87MMBTU heating load comes to $357. This figure doesn't take into account the added volumetric delivery overcharge in a conversion to geothermal where water heating is accomplished with a combination of electricity and heat coming from the heat pump. Nonetheless a $357 annual overcharge, when extended over the accepted

25 year life of a geothermal system[7], results in a total overcharge of $8,932 to the ratepayer.

B. NYSERDA

In NYSERDA's presentation at the October 3, 2018 heat pump forum, held as part of the Comprehensive Energy Efficiency Initiative (18-M-0084), they noted on slide 8 a:

"Winter electricity use cost shift. Switching from oil or gas heating to heat pump heating increases the customer's winter electricity use above that of a current typical customer. Current residential rate structures charge a proportion of fixed costs through volumetric charges. Where heat pumps increase the volume of energy consumed, heat pump customers can bear a disproportionate amount of fixed costs. In other words, a **cost shift** from non-participating ratepayers to heat pump customers occurs:" [8]

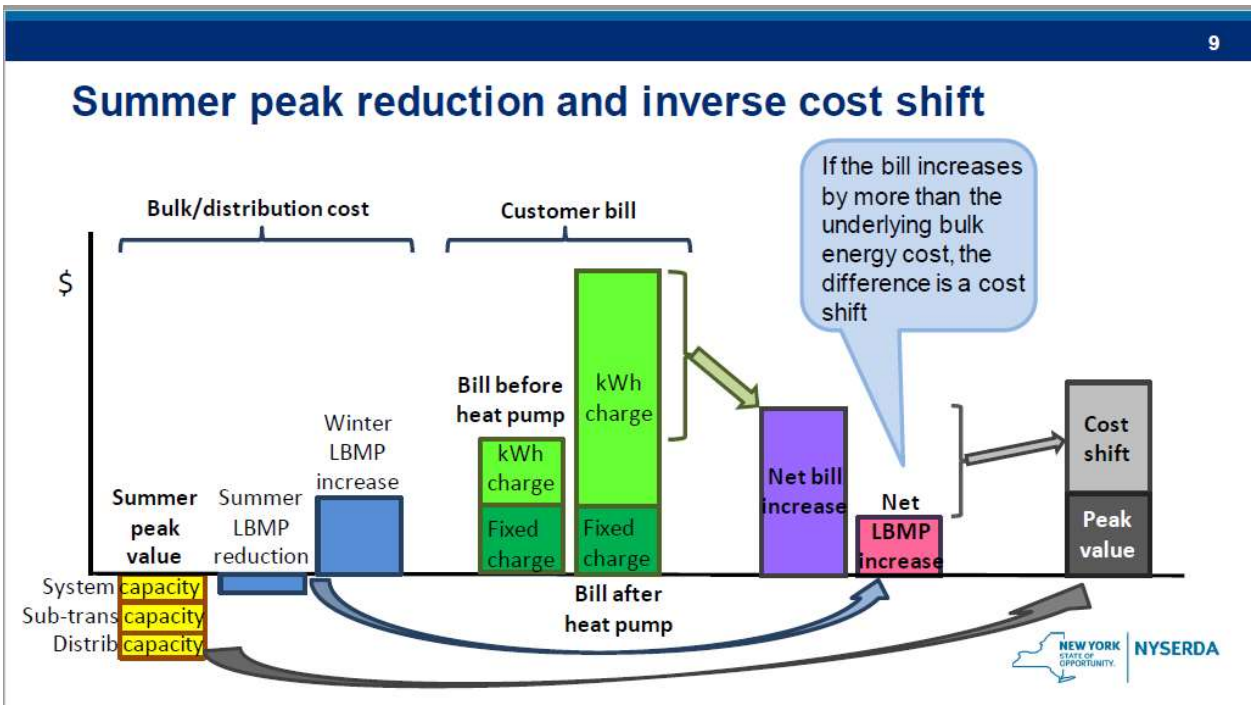
This "cost shift" is essentially the same as the "overcharge" we have been describing here. NYSERDA has committed to releasing the assumptions, data and formulas used to calculate this cost shift. NY-GEO looks forward to analyzing NYSERDA's release when it comes. We would caution that the word "energy" in the third sentence of NYSERDA's statement should read "electricity". As we noted above, total energy decreases with the use of efficient heat pumps.

NYSERDA's next two slides after slide #8 were:

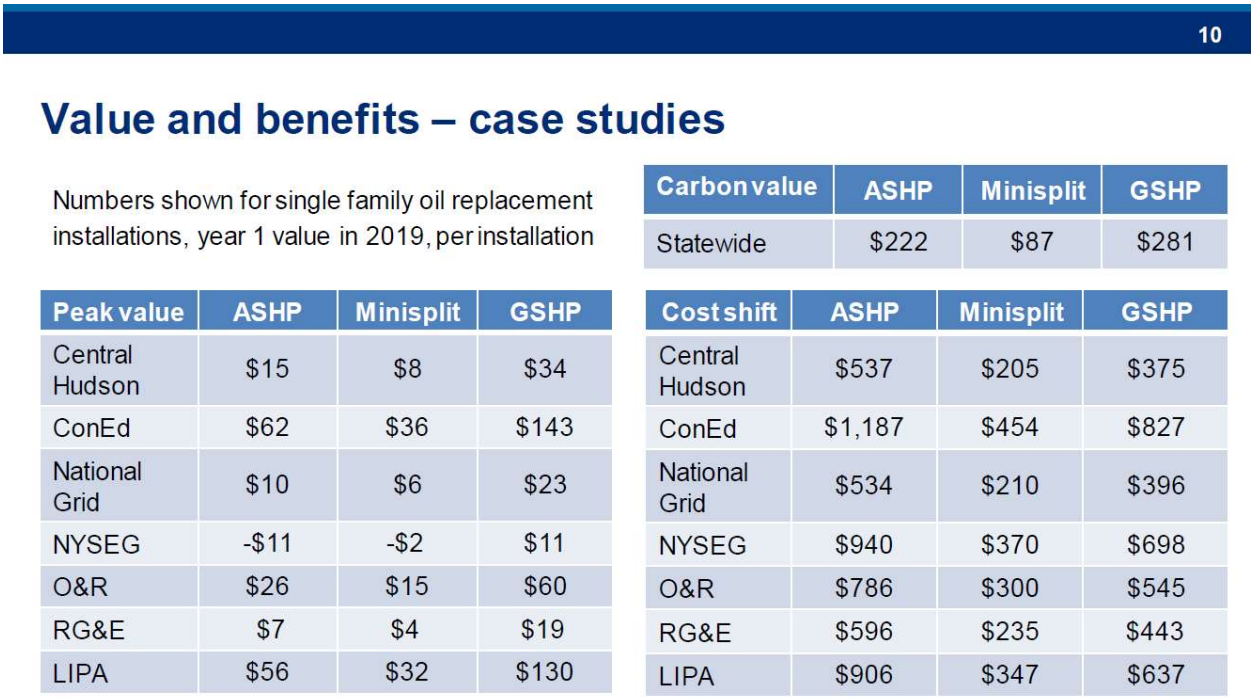
---

[7] New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs – Residential, Multi-Family, and Commercial/Industrial Measures, Version 6, Issue Date – April 16, 2018 Effective Date – January 1, 2019, New York State Joint Utilities, Appendix P, page 628 - http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/72c23decff52920a85257f1100671bdd/$FILE/TRM%20Version%206%20-%20January%202019.pdf Accessed 2018 12 14

[8] 10/3/18 Heat Pump Forum Presentations, filed by the New York Department of Public Service on 10/09/18, NYSERDA's slides 8-10 are on the 62nd through 64th pages of the 211 page pdf document. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={9442D2EF-D3A6-4988-B6B4-EAD1F645442F} accessed 2018 12 14



Slide 9 is a schematic illustrating the grid value of heat pump installations.



Slide 10 puts a number to the cost shift for each of New York's investor owned utilities. The number for a National Grid customer switching from oil to

geothermal is $396 per year. Taken for a 25 year system life this cost shift amounts to $9,900.

C. National Grid

In its proposal, National Grid has estimated the bill impacts of a demand-based/ time of use (TOU) delivery rate. This is their estimate of the difference between a more cost-based delivery rate and the less cost-based volumetric delivery rate – the overcharge on heat pump customers. Their estimate is a 26% average decrease for geothermal ratepayers [9]. In the Annual Customer Savings Per Technology table, the average annual savings for the 15 sample geothermal customers comes to $292 per year.[10] $292 year yields a $7,303 total over the 25 year effective useful life of the geothermal system.

Public Service Commission Law requires rates to be "just and reasonable"[11]. Relevant text is as follows (bold emphasis added):

"1. Every gas corporation, every electric corporation and every municipality shall furnish and provide such service, instrumentalities and facilities as shall be safe and adequate **and in all respects just and reasonable**. All charges made or demanded by any such gas corporation, electric corporation or municipality for gas, electricity or any service rendered or to be rendered, shall be just and reasonable and not more than allowed by law or by order of the commission. **Every unjust or unreasonable charge** made or demanded for gas, electricity or any such service, or in connection therewith, or in excess of that allowed by law or by the order of the commission **is prohibited**.…

5. **Nothing in this chapter shall be taken to prohibit a gas corporation or electrical corporation from establishing classifications of service based upon the quantity used, the time when used, the purpose for which used, the duration of use or upon any other reasonable consideration**, and providing schedules of just and reasonable graduated rates applicable thereto. No such classification, schedule, rate or charge shall be lawful unless it shall be filed with and approved by the commission, and every such classification, rate or charge shall be subject to change, alteration and modification by the commission."

---

[9] PROPOSAL OF NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID FOR VOLUNTARY RESIDENTIAL RATE STRUCTURE TO FURTHER ADOPTION OF BENEFICIAL ELECTRIFICATION TECHNOLOGIES, 2018 09 17, Appendix A, page 15 of 17 http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=17-E-0238 accessed 2018 12 12

[10] Ibid – Appendix 1.7 page 3 of 3

[11] New York Consolidated Laws, Public Service Law - PBS § 65. Safe and adequate service; just and reasonable charges; unjust discrimination; unreasonable preference; protection of privacy https://codes.findlaw.com/ny/public-service-law/pbs-sect-65.html

Given the PSC's charge in the law, total lifetime overcharges of between $7,303 and $9,900 need to be addressed. NY-GEO endorses National Grid's proposal as a means of addressing the overcharge.

5. The overcharge imperils New York's ability to reach its adopted Greenhouse Gas (GHG) reduction goals.

The New York State Energy Plan sets a 2030 target of a "40% reduction of GHG emissions from 1990 levels" [12]. The same plan notes that on-site combustion (largely heating buildings with fossil fuels) is responsible for 35% of the GHG emissions from fuel combustion in the State. [13]

As heating buildings causes almost 35% of the State's emissions, the heating sector will have to play an important role in meeting the 40% target. Surely insulating buildings and reducing the heating load will play a role, but it is becoming increasingly clear that massive numbers of buildings will need to move from fossil fuels to heat pumps as the source of heat.

Governor Cuomo's New Efficiency New York Report noted:

> "Given the magnitude of New York's GHG emission reductions goals (40% by 2030 and 80% by 2050), the Biennial Report to the 2015 State Energy Plan named electrification of thermal end uses in buildings as a core opportunity for New York State. As a key component of New York's continued climate leadership, the Biennial Report called for the State to "seek to develop electrification policies and opportunities as steps for early action." [14]

More recently, the PSC's December 13, 2018 order Adopting Accelerated Energy Efficiency Targets stated:

---

[12] New York State Energy Plan, Volume 1, The Energy to Lead, page 112 https://energyplan.ny.gov/Plans/2015 accessed 2018 12 12

[13] Ibid – Volume 2 – Impacts and Considerations, page 11

[14] New Efficiency, New York, April 2018, page 53 https://www.nyserda.ny.gov/About/Publications/New-Efficiency accessed 2018 12 12

> "By changing primary fuel use from direct combustion to electricity, heat pumps will utilize the low-carbon electric generation mix the State is developing, resulting in large reductions in GHG emissions over time, compared with on-site combustion by customers." [15]

And a bit further on in the text:

> "Heat pumps can also be one of the most cost-effective means of delivering TBTU reductions. NYSERDDA estimates that heat pumps can deliver carbon reduction at a cost of approximately $30 per ton." [16]

NY-GEO looks forward to the development of an adopted glide path for heating sector GHG reductions. In the absence of an adopted path, the Alliance for a Green Economy requested Thomas G. (Jerry) Acton to submit testimony outlining a glide path for heating sector GHG emission reduction for the recent Orange & Rockland rate case (18-E-0067). Mr. Acton is a former IBM and Lockheed Martin Systems Engineer and is currently a Science and Technology Advisor at Physicians, Scientists and Engineers (PSE) for Healthy Energy. In his testimony Mr. Acton estimated that in order to achieve the 40% by 2030 goal 226,956 housing units per year would need to transition from fossil fuel burning to efficient electric powered heat pumps. [17]

Mr. Acton's projection indicates a massive transition needs to begin immediately. Even if New York winds up adopting a substantially weaker glide path, the current number of fossil fuel to heat pump transitions will need to ramp up significantly. In the December 13, 2018 Order AOPTING ACCELERATED ENERGY EFFICIENCY TARGETS, the PSC sets a target of 5 TBTU of energy efficiency for heat pumps by 2025 "representing 83,000 buildings. [18]

---

[15] ORDER ADOPTING ACCELERATED ENERGY EFFICIENCY TARGETS Issued and Effective: December 13, 2018 by the New York State Public Service Commission, page 57, http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B330F932-3BB9-46FA-9223-0E8A408C1928} accessed 2018 12 17

[16] Ibid. p 59

[17] AGREE-OR Testimony Jerry Acton, filed by The Alliance for Green Economy, 05/25/2018, page 16, http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=18-E-0067&submit=Search accessed 2018 12 14

[18] ORDER ADOPTING ACCELERATED ENERGY EFFICIENCY TARGETS Issued and Effective: December 13, 2018 by the New York State Public Service Commission, page 61

In any case, the current number of fossil fuel to heat pump transitions will need to ramp up significantly. For that to happen there will need to be substantial measures to reduce the upfront cost of heat pump systems, building on NYSERDA's current rebate programs, coupled with fair, cost-based electric rates that will allow heat pump ratepayers to achieve the potential savings that are currently "cost shifted" away from them by volumetric delivery charges.

Maintaining a volumetric delivery rate which maintains artificially expensive electricity discourages New Yorkers from making the necessary switch to efficient electric heat pumps.

The Voluntary Beneficial Electrification rate proposed by National Grid is a just, cost-based solution to the overcharge that is currently experienced by geothermal heat pump ratepayers.

Appendix 1

Geothermal System Grid Impacts

Summer:

It is important to understand that geothermal heat pumps are the most efficient cooling technology on the market today. On the hottest days of the year, conventional air sourced air conditioning technologies use the hot outside air as a heat sink. This requires significant electricity use to expel heat from indoor spaces. In contrast geothermal heat pumps expel heat to the cool earth below ground. On the hottest days of the year, geothermal systems can easily have twice the efficiency, measured as Energy Efficiency Ratio (EER) as conventional air sourced air conditioning.

The hottest days of the year currently drive delivery costs in New York State. It necessitates investments in expanded capacity when peak demand on hot days takes utilities near or beyond the current capacity of their delivery assets.

Inasmuch as geothermal systems are more than twice as efficient at cooling on the hottest days, they function as a buffer against peak demand and have a positive impact on utility delivery costs.

Winter:

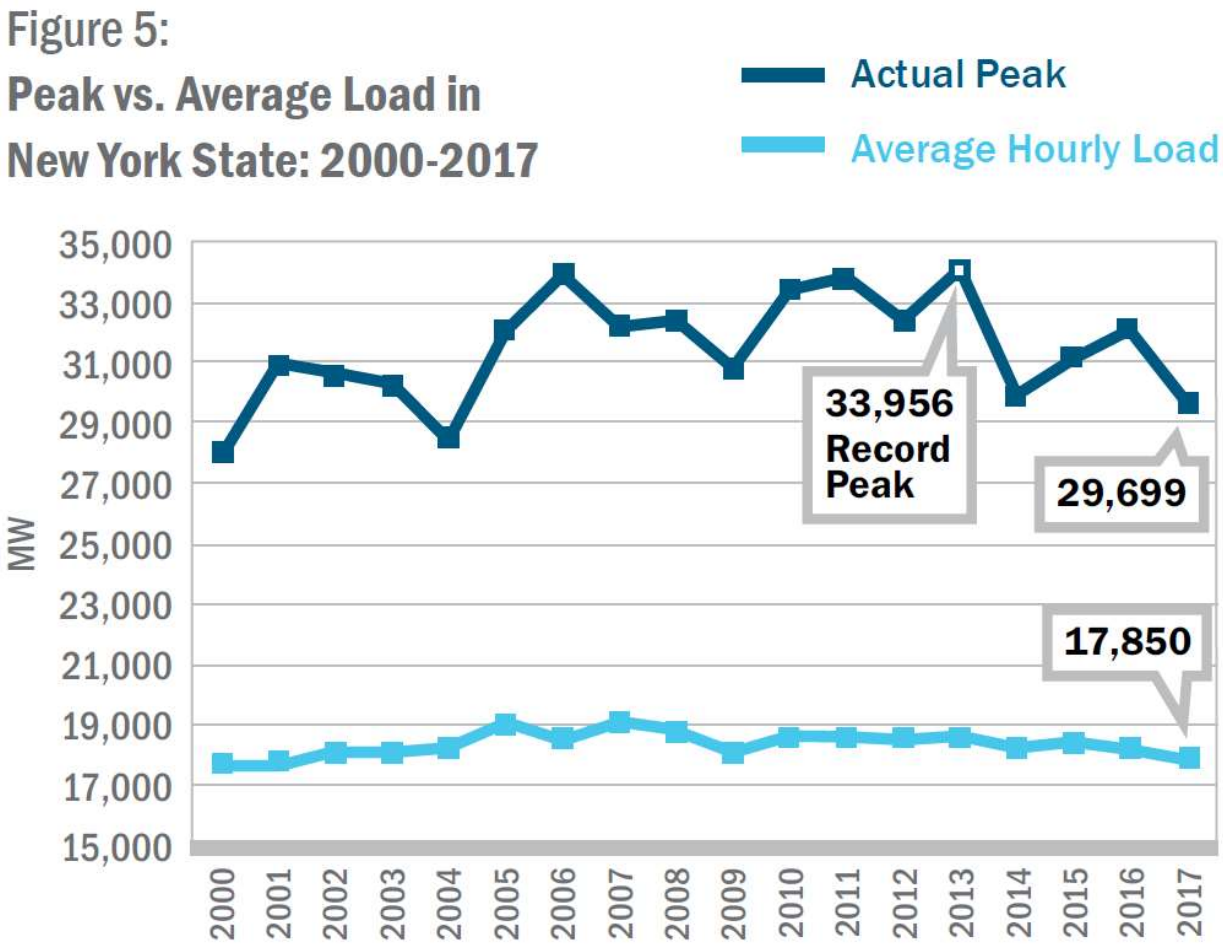
During cold winter weather, geothermal systems are also very efficient. For every unit of electricity used to power them, current variable speed geothermal systems produce an average of 4 units of heat. This 400% efficiency can be contrasted with the 75-96% efficiency found in fossil fuel furnaces and boilers.

In the winter, New York currently faces a problem of low system utilization. According to the Track 1 Department of Public Service Commission staff whitepaper in the REV proceeding:

> *"Increasing system efficiency: if 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. Merely increasing*

the system load factor from 55% to 56% would produce potential gross benefits of $150 million to $219 million per year."[19]

The figure below illustrates the point above regarding load factor, which is the average load (or use in kWh) vs capacity.



Average use is an even smaller percentage of grid capacity than it is of peak demand. According to the NYISO Gold Book grid capacity was 38,778 Megawatts (MW)for the summer of 2018 [20] and 41,259 MW for the winter of 2017/18 [21]

[19] DEVELOPING THE REV MARKET IN NEW YORK: DPS STAFF STRAW PROPOSAL ON TRACK ONE ISSUES, August 2 2014, pp. 9-10, http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BCA26764A-09C8-46BF-9CF6-F5215F63EF62%7D Accessed 2018 12 11

[20] 2018-Load-Capacity-Data-Report-Gold-Book, New York Independent System Operator (NYISO), page 37, https://www.nyiso.com/documents/20142/2226333/2018-Load-Capacity-Data-Report-Gold-Book.pdf/7014d670-2896-e729-0992-be44eb935cc2 accessed 2018 12 11

[21] Ibid, page 38

In New York State winter electricity use is far below capacity of the grid. Peak winter use was only 25,081 MW in 2017 [22].

Because heat pump customer electricity use is primarily for heating, it promises to be an important element of solving New York's low system utilization problem.

It is a problem to be using a volumetric delivery rate which discourages this efficient heat pump use pattern, which is beneficial in both summer and winter. A more cost-based rate, such as the 3 part rate proposed here by National Grid, would support heat pump adoption and use, to the benefit of all ratepayers. As a voluntary rate, it would be accessible to heat pump electric ratepayers across National Grid's service territory.

[22] Ibid, page 15