



NY GEOTHERMAL ENERGY ORGANIZATION

VIA E-MAIL

January 27, 2022

**Re: – NY-GEO Testimony on the 2022-23 New York State Budget**

Dear Senator Kaminsky and Assembly Member Englebright

Thank you for this opportunity to present testimony regarding the 2022-2023 State Budget. My name is Bill Nowak. I have been Executive Director of the New York Geothermal Energy Organization, or NY-GEO, since its inception in 2014. We are a non-profit trade organization representing geothermal heat pump (GHP) installers, manufacturers, distributors, drillers, consultants and industry stakeholders from throughout New York State and beyond. We currently have more than 300 paid members active in 66 companies.

As part of my work over the past couple years, I was an appointed member of the Energy Efficiency and Housing Advisory Panel to the Climate Action Council, which recently released its scoping plan to reduce New York's greenhouse gas emissions in an equitable manner by 40% by 2030 and 85% by 2050. I am not presenting this testimony on behalf of the Advisory Panel, but want you to know I have had a close look at what it has taken to develop the scoping plan.

NY-GEO requests the inclusion of two bills in the budget that we see as key to making ground source heat pumps (gsHP) affordable and getting NY in position to meet the 2030 and 2050 emission reduction goals while protecting against the grid impacts of peak electricity demand.

The bills are the 25% geothermal tax credit ([S3864/A7493](#)) sponsored by Senator Kennedy and Assembly Member Rivera and the sales tax exemption bill ([S642a/A8147](#)), sponsored by Senator Sanders and Assembly Member Rivera.

These bills are designed to provide parity for GHP with NY's treatment of Solar Photovoltaic (PV) installations. GHP technology, like Solar PV, accesses renewable energy while providing a host of economic and environmental benefits that are well aligned with NYS priorities.

For solar PV, addition to the federal solar tax credit, New York State residents can currently access rebates, a 25% tax credit and a sales tax exemption for an installation at their building. These incentives combined have made solar PV a good investment for many thousands of NY building owners. I can state from personal experience that the

state solar tax credit and sales tax exemption were key in making PV affordable when my wife and I installed it on our roof.

Through NY's Clean Heat program, geothermal customers currently enjoy a rebate similar in size to the solar rebate but are lacking the State tax credit and sales tax exemption.

In the Energy Efficiency & Housing Advisory Panel process, we became aware that it will be difficult to find the dollars necessary to make the building electrification transition affordable for the vast majority of New Yorkers and that there is only so much funding that can come from ratepayers through the utility System Benefit Charge and other channels.

The Draft Climate Action Council Scoping Plan lays out a number of options for funding and incentivizing the transition to a decarbonized economy. On page 134 in the Buildings section of the plan (Chapter 12) the Council makes the following recommendation:

**Scale up incentives for building decarbonization:** The State should scale up direct cash incentives for energy efficiency, electrification, and electrification-readiness in residential and commercial buildings. In incentive program design, place an emphasis on ease of access to available and relevant resources for consumers and installers, particularly for LMI households and buildings in Disadvantaged Communities that may access resources from multiple programs. *This includes designing incentive levels to align with value to the energy system and consumers, for example by offering adequate incentives for GSHP systems and for comprehensive retrofits inclusive of energy storage in LMI homes, as such retrofits will mitigate grid impact, increase bill savings, and improve building resilience. The State should also explore a geothermal tax credit to offset GSHP system expenditures (comparable to the State's Solar Energy System Equipment Credit).*

NY currently relies on utility ratepayers to provide much of the funding for clean energy incentives. A primary source is System Benefit Charge (SBC) that is levied on the monthly bills of utility ratepayers based on how much energy they use. New York's base of low and moderate income ratepayers are often stressed to the limit in paying their utility bills and will not be able to provide more than a fraction of the incentive funding needed for the clean energy transition. Other funds must be made available.

In that regard it is important to note that the tax credit and sales tax exemption access a more progressive source of funds - the state tax base, which is largely funded by a progressive state income tax.

These bills have been passed by the legislature before. In 2015 the legislature passed both the tax credit and sales tax exemption bills and in 2016 it passed the tax credit bill. The bills were subsequently vetoed by former Governor Cuomo, who cited the bill's

passage outside the budget process and NYSERDA's incomplete plans for electrification at that time as reasons for the veto. We are proactively urging you to include these bills as part of the budget process this year, and New York through NYSERDA's work and the Climate Action Council process is now clearly committed to electrification as its primary strategy for decarbonizing the heating sector.

In addition to these two bills, NY-GEO is active in the Renewable Heat Now campaign and we support including the All-Electric Building Act ([S6843a/A8431](#)) that would sunset fossil fuels in new construction starting January 1, 2024. Heat pumps are a viable and cost-effective heating solution for new builds today. We are in a climate crisis and it is plain wrong to be building new structures with fossil fuel heating systems that will be spewing massive amounts of greenhouse gases into the atmosphere for another 2 or 3 decades before they need to be replaced. We applaud Governor Hochul's State of the State message which set a date for ending fossil fuels in new builds by 2027 at the latest. It is a clear message to builders and all New Yorkers that the era of fossil fuel heating is over. The Climate Action Council Plan starts the sunset of fossil fuels in new builds in 2024, and we agree with Assembly Member Gallagher and Senator Kavanagh's bill that the earlier date is both necessary and achievable.

The remainder of my testimony will focus on the economic costs and benefits of including S-3864/A7493 and S642a/A8147 in the 2022-23 New York State budget. Much of this text is taken from the support memo NY-GEO has filed for the tax credit bill but it also applies to the sales tax exemption bill which has the same impact of supporting geothermal installations.

Regarding S-3864/A7493, it provides a tax credit of 25% of a residential GHP project's qualifying cost against the property owner's personal income tax, capped at \$5,000. Data from NYSERDA's 2017 rebate program, before it was handed to the utilities by the PSC as part of NY's Clean Heat program, found an average of about 700 annual residential geothermal heat pump installations for those years. Given that installations are growing rapidly as the utilities have starting to get the hang of the rebate program, this indicates a floor of perhaps \$3 million as the cost of the geothermal tax credit since not all taxpayers will take the full amount of the tax credit in the first year after installation.

One of the questions that has been asked is the source of the tax credit funding. The text that follows indicates significant cash flows to the State's coffers from income and sales taxes that will result as New York undergoes a massive transition from fossil fuels to efficient electric heat pumps. We point out below that this transition will also stop the draining of wealth from local communities, as about half of the approximately \$50 Billion that New Yorkers pay for energy is currently flying out of state for fossil fuels produced elsewhere

In answering the funding source question this year we have the added element of the Fossil Fuel Subsidy Act - [S.4816](#) (Krueger) and [A6882](#) (Cahill) which would repeal over \$334 Million in annual state tax giveaways that encourage the use of fossil fuels.

Surely, a geothermal tax credit and sales tax exemption would be excellent ways to redirect some of those funds in a climate-positive direction

## **Economic Benefits**

There are numerous benefits that result when GHPs are installed in New York State. The environmental benefits of GHPs are enormous, and they will have strong, positive economic consequences. For the purposes of this document though, we will leave environmental benefits aside and concentrate on the more direct economic consequences of GHP market penetration.

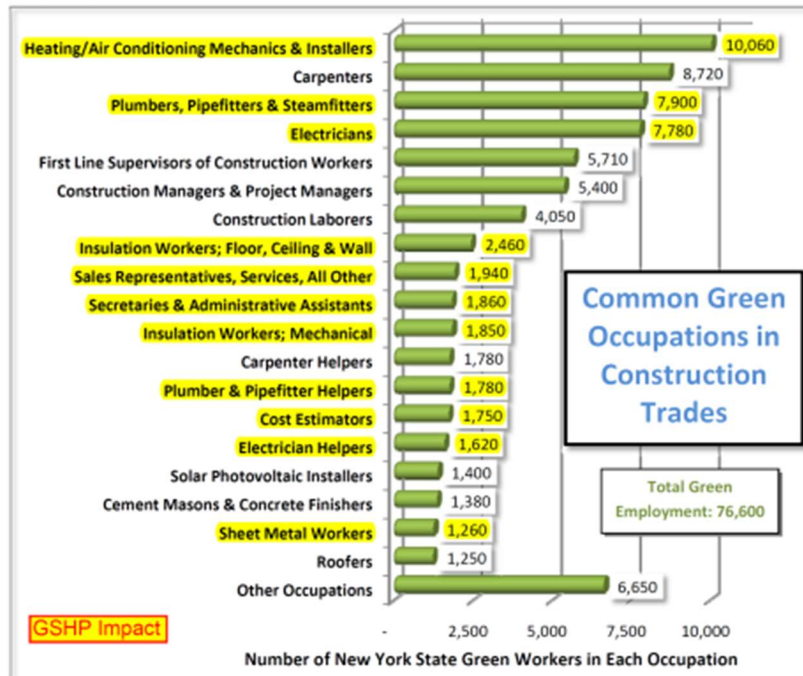
1. **CREATING JOBS:** There are 300 members of NY-GEO involved in all aspects of the geothermal business. New York's GHP industry hires New Yorkers to install US made heat pumps. According to the US Energy Information Agency, in 2009, there were 27 known domestic manufacturers of geothermal heat pumps, employing 1,832 workers. GHPs accounted for 90-100% of the sales of 12 of these companies. The export market accounted for nearly 17 percent of total capacity shipments by domestic manufacturers and was dominated by sales to Canada, with more than 83 percent of total exports.

There are about 250 HVAC companies in New York State that have installed GHP systems. For most, this is currently a small part of their business and most GHP jobs are done by 25 of these companies. NY-GEO estimates there are currently 500 to 1,000 NY workers employed in GHP marketing, sales, system design and installation. Thousands more employees across a variety of industries provide necessary products and services, including plastic pipe, tools and equipment, installation, engineering, drilling and excavation—jobs that can't be outsourced to other countries. GHP jobs are generally well paying, family sustaining jobs.

New York's opportunity for the expansion of the geothermal industry is enormous with a concomitant opportunity for job creation.

NY-GEO has modified the Green Jobs chart below from the NYS Department of Labor to highlight in-state green jobs that are created in the process of installing geothermal heat pumps:

New York State Green Jobs Survey Finding 5:  
 Which Occupations are Green, or Greening?



2. REDUCING ELECTRICITY RATES BY CUTTING PEAK DEMAND: According to the *Draft Generic Environmental Impact Statement* for the NY PSC's Reforming the Energy Vision (REV) and Clean Energy Fund proceedings, "Increasing system efficiency such that if the 100 hours of greatest peak demand were flattened, long-term avoided capacity and energy savings would range between \$1 billion and \$2 billion per year." <sup>1</sup>

In New York State, peak demand happens on the hottest summer days, when New Yorkers maximize their air conditioning consumption. Most air conditioners use a tremendous amount of electricity to concentrate and exhaust a building's heat to the hot outside air. GHPs are vastly more efficient than conventional air conditioning systems. GHPs extract the heat from inside a building and very efficiently transfer it to the cool soil below the ground.

In an article published in Renewable Energy World, Michael Voltz P.E., PSEG Long Island's Director of Energy Efficiency Programs noted,

"...As outside air temperatures increase, air conditioners become less efficient. Air conditioners are least efficient on the hottest days. This is exactly when efficiency is needed most, and when it could do the most to contain costs for our customers and reduce the chance of power outages that may result from isolated distribution system

<sup>1</sup> <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=14-m-0094&submit=Search+by+Case+Number> pdf of the DGEIS is available at this site – accessed 12/6/14

overloads. Of course, the efficiency of ground source heat pumps is independent of outside air temperature. GHPs can provide enormous savings when an electric utility is supplying hundreds of thousands or even millions of buildings that require cooling at the same time."<sup>2</sup>

A 2010 Oak Ridge National Laboratory study estimated the peak electrical demand for cooling single family homes in the Northeast at 60.7 GW.<sup>3</sup> The study projected that a 20% market penetration of GHP would bring a 7.9 GW reduction in peak demand throughout the region. New York's share of the Northeast peak reduction, if it were proportional to the state's population within the region, would be 2.8 GW for every 20 % of GHP market penetration. 2.8 GW is over 8% of New York's peak demand in recent years.

New York State government is a significant consumer of electricity. Savings will result for all electricity ratepayers when peak demand is shaved by the efficient use of GHP for air conditioning. As an electricity consumer, state government will save on electricity expense. In addition, savings accruing to constituents would largely be spent in state, boosting the state economy and increasing tax revenues.

In the future, as New York electrifies its heating sector there will come a time – currently projected in the 2030's, when New York's peak demand will cross over to a winter peak. It is important to reinforce geothermal installations now and in the future in order to minimize that peak. Geothermal's superior performance on the coldest days of the year will be crucial to reduce the need to build more expensive electrical generating capacity.

**4. IMPACTING LOW AND MODERATE INCOME RESIDENTIAL ENERGY BILLS:** According to US Department of Energy (DOE), nearly three quarters of homeowners' monthly energy bills is for heating, cooling and producing hot water. GHPs can reduce residential and commercial heating and cooling bills by 40 to 70 percent. That money flows back into the pockets of consumers, bolstering the larger economy. Because the tax credit is capped it will benefit low and moderate-income customers the most. A \$5,000 credit on a \$20-30,000 system is far more significant than a \$5,000 credit on a \$50,000 system that might be needed to heat and cool a mansion.

**4. PROTECTING CONSUMERS BY INCREASING FUEL DIVERSITY:** Natural gas is rapidly increasing its share of New York's energy market. The NY PSC has noted gas "price spikes in the winter of 2013-2014, with an estimated total cost to New York customers of over \$1.0 billion. Because local natural gas prices, at times, can be dramatically affected by gas pipeline bottlenecks, reliance on gas also means that New

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<sup>2</sup> <http://www.renewableenergyworld.com/rea/news/article/2014/10/how-one-utility-enlisted-geothermal-cooling-to-reduce-peak-electric-demand-and-improve-system-utilization> accessed 2015 04 28

<sup>3</sup> Assessment of National Benefits from Retrofitting Existing Single Family Homes with Ground Source Heat Pumps, June 2010, Xiaobing Liu, Oak Ridge National Laboratory  
[http://www.energy.ca.gov/2013\\_energy\\_policy/documents/2013-03-21\\_workshop/background/Liu\\_GSHP\\_Report\\_8-30-2010.pdf](http://www.energy.ca.gov/2013_energy_policy/documents/2013-03-21_workshop/background/Liu_GSHP_Report_8-30-2010.pdf) accessed 12/06/14



York can be adversely affected by price consumption spikes in neighboring markets.”<sup>4</sup> The same PSC REV order also notes that “the portion of New York State’s generating capacity from gas and dual fuel (gas and oil) facilities grew from 47 percent in 2000 to 55 percent in 2014”<sup>5</sup>. Natural gas prices are notoriously volatile, and generally the more a jurisdiction is dependent on a fuel resource, the larger will be the impact of price volatility.

5. REDUCING COSTS OF REPLACING OIL AND PROPANE HEATING: Heating with oil and propane is very expensive in New York State and consumers in areas not currently served by natural gas are looking for alternatives. The Rocky Mountain Institute, in a March 2013 report notes that Connecticut is considering a \$5 billion expansion to its natural gas distribution system. New York and Pennsylvania are considering similar projects. However, the costs for new hookups in Connecticut will average \$11,800 for each household already within 150 feet of a distribution main and \$22,160 for those further away. An \$83 million expansion of the gas system in Vermont’s Addison County cost an average of \$35,000 per new customer connection.

If, instead of forcing ratepayers (the public) to fund expansions of the gas distribution network, the same amount of money was used to finance GHP installations, New York would be much better off. Households would be better protected against the risk of rising and volatile gas prices. Less energy would be consumed, producing fewer emissions. Fewer costs would be pushed onto ratepayers (i.e. the public.). Building owners would, over time, pay off the capital expense of equipment they owned, rather than paying for gas company assets.

6. KEEPING FUEL REVENUES IN STATE: As pointed out in the *2014 Draft New York State Energy Plan*, \$36 billion of the \$61 billion New Yorkers annually pay for energy flows *out of* state,<sup>6</sup> draining wealth from the state’s economy. GHP systems provide a unique opportunity both to reduce the \$61 billion figure and to replace much of the fossil fuel dollars leaving the state with a home-grown, renewable source of energy, while creating jobs in the process.

7. REDUCING ELECTRICITY RATES BY INCREASING SYSTEM UTILIZATION: The February 26, 2015 REV order from the NYS Public Service Commission states: “The utilization rate of New York’s electric system averages under 60 percent, and the trend

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<sup>4</sup> Ibid, Page 18

<sup>5</sup> Draft Generic Environmental Impact Statement in CASE 14-M-0101 - Reforming the Energy Vision and CASE 14-M-0094 – Clean Energy Fund  
<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=44991> - accessed 12/7/14, available on this website as a pdf – listed with the 10/24/14 items – PAGE 2-17

<sup>6</sup> <http://energyplan.ny.gov/Plans/2014.aspx> 2014-draft-nysep-vol2-end use energy.pdf page 13  
accessed 2015 04 28 - sources NYSERDA. *Patterns and Trends: New York State Energy Profiles* (1997–2011). June 2013. 2012 values based on EIA preliminary estimates.

is negative. Peak loads are growing five times faster than base sales.”<sup>7</sup> A low utilization rate means that large portions of the generation and delivery systems are being used inefficiently, driving up costs. The 40% of New York’s capacity that is unused on an average day is expensive for ratepayers, including New York state government, to maintain. GHPs reduce utility peaks during the summer, and build load during the winter. This levels out demand throughout the year, helping make utility operations more efficient.

8. REDUCING ELECTRICITY RATES BY INCREASING REVENUE TO ELECTRIC UTILITIES: With GHP market penetration, the revenue that is currently going to propane, gas and oil providers and being exported outside New York State would shift to the electricity providers. Electric utilities and power producers would then have a larger revenue base to amortize their fixed costs, putting downward pressure on the fundamental cost per Kilowatt-hour. This improved financial strength of the grid can then accelerate the development of the necessary “Smart Grid” and the deployment of additional PV and Wind generation.

New York State can lead the way in reducing energy bills for our citizens by bringing the tax treatment for GHP systems to parity with solar PV. S3864 and A7493 will achieve that goal with minimal cost to the state’s coffers, creating jobs and strengthening our economy and electric distribution system in the process.

Sincerely,



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

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<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/26BE8A93967E604785257CC40066B91A?OpenDocument>  
Related documents [February 26, 2015](#) – Order Adopting Regulatory Policy Framework and Implementation Plan,  
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