



July 27, 2022

Carmen D. Diaz
Acting Secretary of the Board
New Jersey Board of Public Utilities
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Subject: Comments from Dandelion Energy on the Proposed Updates to the New Jersey Clean Energy Program - New Construction Program

Thank you for the opportunity to comment on the proposed updates to the New Jersey Clean Energy Program (NJCEP) New Construction program. The NJCEP New Construction program provides a critical tool towards achieving the building decarbonization and emissions reductions goals of the New Jersey Energy Master Plan.¹ Dandelion Energy supports the proposed updates to simplify the application process flow and expand the scope of new construction measures to encourage building electrification.

Dandelion is one of the nation's leading providers of home geothermal heating and cooling systems; our mission is to make geothermal heat pumps so inexpensive and easy to install that we enable a widespread shift from fossil heating to renewables. Geothermal heat pump systems provide the most efficient heating and cooling option for homeowners and also provide significant grid benefits; Dandelion encourages the Board of Public Utilities to incorporate geothermal heat pump rebates as part of the proposed Advanced Measure Bonus to appropriately account for these significant benefits of geothermal systems.

Summary of Dandelion Energy's Comments:

1. The NJCEP New Construction program should incorporate bonuses for geothermal heat pump systems as part of the Advanced Measure Bonus.

¹ *New Jersey Energy Master Plan*, January 27, 2020, <https://www.nj.gov/emp/index.shtml>.

Full Comments and Recommendations by Dandelion Energy:

Benefits of Geothermal Heating and Cooling Systems

Geothermal heat pump systems have a critical role to play in decarbonizing the building sector and transitioning to an economy run on clean energy, and geothermal is among the **most efficient** ways to heat and cool buildings, according to the U.S. Environmental Protection Agency.² It is also the **lowest cost** way for homeowners to heat and cool their homes. As such, geothermal heat pumps represent a key technology for advancing energy affordability and value, supporting the growth of the green economy, and achieving economy-wide decarbonization without meaningfully increasing peak demand. New Jersey can realize these benefits by encouraging adoption of geothermal heat pumps through the updated NJCEP New Construction program, updated building codes, and other energy efficiency incentive programs.

Geothermal heat pump systems have the potential to **reduce carbon emissions from New Jersey homes by 80% as compared to conventional fuel oil systems and 65% as compared to conventional propane systems.**³ Residents will typically see a 40-50% reduction in total annual energy costs when switching to a geothermal heating and cooling system – factoring in both their savings in fuel and air conditioning costs they are no longer paying, and the electricity costs to run the heat pump. The majority of our customers finance their geothermal system, and by doing so they can save money from day one as compared to their previous energy bills. While operating costs are low, the upfront installation cost of geothermal presents a barrier to many homeowners.

Geothermal heat pumps also **offer significant grid benefits**; they increase baseload demand, decrease summer peaks, and don't meaningfully increase winter peaks. This is in contrast to technologies like air source heat pumps, which provide electrification benefits, but also increase peak demand. A study by the Brattle Group found that fully electrifying New England using geothermal heat pumps would only minimally impact peak demand and leave energy prices unchanged.⁴ Sensitivity analysis conducted for the New York State Climate Action Council calculated **over \$10 billion in net benefits** by maximizing the use of ground source heat pumps and district heating vs. air source heat pumps. This included a 2.8% decrease in annual electric loads and a **10.8% decrease in peak electric loads**, yielding significant savings in avoided electric infrastructure costs.⁵

² "Geothermal Heat Pumps," Energy Star, U.S. Environmental Protection Agency, accessed June 29, 2022, https://www.energystar.gov/products/geothermal_heat_pumps

³Savings calculated by Dandelion and available on Dandelion's website: <https://dandelionenergy.com/environmental-impact>

⁴ The Brattle Group, Heating Sector Transformation in Rhode Island: Pathways to Decarbonization by 2050, Pages 30-31, <https://www.brattle.com/reports/heating-sector-transformation-in-rhode-island>

⁵ New York State Climate Action Council Draft Scoping Plan, Appendix G, Integration Analysis Technical Supplement, p. 80, December 2021.

1. The NJCEP New Construction program should incorporate bonuses for geothermal heat pump systems as part of the Advanced Measure Bonus.

Dandelion supports the proposed updates to the NJCEP New Construction program, including efforts to optimize process flow and broaden the scope of available measures to encourage building electrification. The proposed Advanced Measure Bonus to prepare the market for code advancements and electrification will further complement the program's goals by incentivizing advanced technology measures.

Dandelion encourages the Board of Public Utilities to include bonuses of up to \$2,500 per ton for geothermal heat pump systems as part of the Advance Measure Bonus. Geothermal heat pumps are fully consistent with the other advanced technology solutions under consideration for the Advanced Measure Bonus, while also yielding significant grid benefits through enhanced efficiency and reduced peak loads. States such as New York (\$1,500-\$5,000/ton), Illinois (\$1,000/ton), and Vermont (\$2,100/ton) all offer prescriptive rebates for geothermal heat pumps in new construction, and New Jersey can make significant progress towards building decarbonization by offering a similar bonus as part of the NJCEP new construction program.

Incentives for geothermal heat pumps and energy efficiency measures are particularly important for the New Construction program, as builders don't benefit from the long-term operating cost savings and are potentially less motivated to pay higher up-front cost for the most efficient equipment. Homeowners often have less visibility into the long-term potential savings during the homebuying process, and programs to increase the efficiency of new homes will ultimately provide the greatest benefits to New Jersey homeowners and residents.

Given long-term natural gas price uncertainty and broader policy trends, fossil fuel burning equipment installed today may also need to be replaced before the end of its useful service life. Gas price volatility, gas infrastructure supply constraints, and all-electric building codes and ordinances can all impact the future availability of natural gas, potentially leaving homeowners with the cost burden of a stranded asset in their otherwise modern and efficient home. Decisions made by home builders today will lock-in energy usage for many decades to come, and the NJCEP New Construction program provides an ideal opportunity to incentivize geothermal heat pumps as the most efficient way to heat and cool a new home.

Conclusion

The proposed updates to the NJCEP New Construction program provide a critical tool towards building decarbonization and should seek to fully incentivize the most efficient and impactful electrification measures. Dandelion supports the proposed updates and encourages the Board of Public Utilities to incorporate geothermal heat pump rebates as part of the

proposed Advanced Measure Bonus to appropriately account for the significant system-wide benefits of geothermal systems.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'H. Deese', is centered on the page.

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Dandelion Energy