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Sherri L. Golden
Secretary of the Board
New Jersey Board of Public Utilities
44 South Clinton Ave., 7th Floor
Trenton, NJ 08625
Electronic Submission: board.secretary@bpu.nj.gov

RE: Docket #QO24020126 - 2024 New Jersey Energy Master Plan

Vicinity Energy Inc. (Vicinity) applauds Governor Phil Murphy for his commitment to climate action and the New Jersey Board of Public Utilities (NJBPU) for leading the conversation on the future of the New Jersey Energy Master Plan (NJEMP). We are pleased to provide responses to the NJBPU's Request for Information to inform the continued development of the new NJEMP and help the state navigate key policy challenges and questions that exist within the climate and clean energy policy sectors, specifically addressing how district energy systems have historically supported clean energy initiatives and more importantly how they can play a key role in helping the state meet its clean energy and greenhouse gas (GHG) reduction goals. Since 1984, Vicinity has been a dedicated partner, firmly believing that our continuous collaboration will substantially propel decarbonization efforts, crucial for the State's ambitious goals. However, this cannot be achieved alone, and we look forward to exploring ways to work together.

In October of 2020, Vicinity released our 2050 Net Zero Carbon Roadmap. With this plan in place, we are confident we can make unique and vital contributions to the state's carbon reduction goals. Vicinity's roadmap to net zero carbon emissions by 2050 is not only consistent with the goals of the State of New Jersey's Energy Master Plan (EMP), but we are also exploring strategies to further align with Governor Murphy's more recent accelerated goals for net zero by 2035.

Vicinity Overview

With 19 district energy systems in 12 major cities, including Trenton, Vicinity is the largest provider of district energy solutions in North America. We produce and distribute steam, hot water, and chilled water through a network of underground pipes to over 230 million square feet of building space, eliminating the need for on-site boiler and chiller plants in individual buildings, improving overall efficiency, lowering carbon footprints, and increasing reliability.

One key advantage of district energy systems is their proven history of flexibility and adaptability. These systems are designed to be nimble and agile, capable of accommodating various fuel sources. As cities transition towards a carbon-free future, district energy systems can seamlessly adapt to the changing energy landscape. They are not limited to a single energy source and can integrate renewable energy technologies such as wind and solar. This flexibility enables district energy systems to play a crucial role in decarbonizing urban cores. For over a century, district energy

systems have integrated cleaner, more efficient, and more cost-effective technologies into their operations to improve the environment and economics for the communities they serve.

Moreover, district energy systems can leverage existing infrastructure to eliminate CO2 emissions at a significantly lower cost compared to alternative approaches. By utilizing the already established district energy infrastructure, the transition to decarbonized energy becomes more feasible and cost-effective for more facilities and therefore, more people. This affordability factor allows for a more inclusive approach to decarbonization, ensuring that even communities with limited resources can benefit from reduced carbon emissions.

The backbone of Vicinity's decarbonization plan is to electrify our operations by generating thermal energy using electric boilers and industrial heat pumps and procuring renewable electricity from the grid as our primary fuel source. The electrification of individual buildings in Trenton will be an incredibly challenging and expensive task in the time frame required. By connecting to the district energy system and using our electrified product, building owners will have the ability to successfully meet federal, state and local regulations and have access to 100% renewable, carbon-free thermal energy.

Vicinity in Trenton

Vicinity owns and operates the Trenton District Energy System, distributing reliable chilled and hot water–to critical buildings, including the Statehouse, Culture Complex, Justice Complex, Mercer County Criminal Courthouse, Mercer County Civil Courthouse, Mercer County Community College, New Jersey State Prison, Cure Insurance Arena, NJ DEP, new Tax Building, Labor & Industry, City Hall and other residential and commercial buildings.

Vicinity's facility in Trenton has operated since 1984 and continues to provide energy services under a series of long-term agreements. Beneath the streets of Trenton, Vicinity's robust underground district energy network of piping consists of 12 miles of hot water and 4 miles of chilled water piping. The piping network distributes reliable hot and chilled water for heating and cooling to more than 12 million square feet of building space in downtown Trenton. The energy is produced from combined heat and power (CHP) and a state-of-the-art chilled water facility. The facility was previously granted EPA's ENERGY STAR Award for leading the industry in producing and selling energy-efficient products and services and developing and adopting strategies that substantially save our homes, buildings, and plants. All these efforts contribute to reduced emissions and create a healthy environment. By combining the production of thermal energy and electricity into one process, CHP results in the most efficient use of fuel to generate electricity and condition buildings, using far less fuel than when heat and power are produced separately. CHP is also highly resilient, providing uninterrupted thermal energy and power in the event of a grid failure. In addition to improving Trenton's critical energy infrastructure and reducing its carbon footprint, with district energy, individual buildings do not require onsite equipment–freeing up space for building amenities, eliminating the risk of onsite combustion, and reducing upfront capital and ongoing operations and maintenance (O&M) costs. It is because of this commitment to excellence that Vicinity has enjoyed such a long and productive partnership with the state. In fact, we were recently able to renew one of our contracts beyond 2040.

Vicinity is pleased to provide the following responses to Strategies 4 and 5 and the questions posed by the NJBPU.

Strategy 4: Reduce Energy Consumption and Emissions from the Building Sector

(Q2) In addition to offering incentives to electrify existing oil- and propane-fueled buildings, as well as buildings heated with older and inefficient electric technologies, what else should New Jersey be doing to successfully achieve its goals of electrifying buildings heated with these technologies?

In the 2019 NJEMP, under goal 4.1.1: electrify state facilities, the State shared its goal of leading by example and adopting the "best practices and retrofit net zero carbon state facilities." Vicinity's district energy system currently serves several state buildings, including the State House, State Prison, and new Tax Building, giving the state a prime opportunity to lead by example when it comes to decarbonizing state buildings and achieving net zero carbon emission across state facilities. State buildings currently connected to Vicinity's Trenton District Energy System already benefit from best practices in energy efficiency and carbon reduction and, by connecting additional state buildings to our district energy systems, New Jersey can further accelerate its decarbonization goals while showcasing advanced, sustainable energy solutions. Additionally, the electrification of Vicinity's Trenton District Energy System will help state facilities achieve zero carbon emissions more effectively than traditional energy systems.

District energy systems can provide the necessary infrastructure to support the widespread adoption of electrified industrial heat pumps and hot water heaters. This infrastructure reduces the need for individual building retrofits and simplifies the transition process. In addition to offering incentives to electrifying existing oil and propane fueled building, Vicinity recommends including the following updates to the 2024 NJEMP:

- As an alternative to, or in conjunction with heat pumps, building owners should evaluate connecting to the district energy system where available, leveraging thermal energy delivered in the form of hot water or chilled water. Thermal energy heats and cools buildings by transferring energy from the district energy network to/from the buildings heating and air conditioning systems. It also enables advanced production technologies for clinical and life sciences manufacturing and research that rely on processes such as sterilization and humidification. For many buildings, connecting to the system will be more efficient, more reliable due to system redundancies, and cost effective depending upon the building, location, and existing infrastructure. During cold periods when heat pumps require auxiliary heating to meet building requirements, district heating could provide the needed "lift" to meet critical high temperature processes that cannot be served by heat pumps alone.

- In Trenton's densely developed downtown core, building-by-building electrification may prove to be difficult and expensive; therefore, customers who are currently receiving thermal energy services through the district energy system should be encouraged to continue doing so. Also, customers unable to electrify their heating uses on their own should be incentivized to obtain their thermal energy needs by connecting to Vicinity's district energy system.

Strategy 5: Decarbonize and Modernize New Jersey's Energy System

(Q2) How should the state incorporate emerging and existing technologies such as long-duration energy storage, clean hydrogen, and demand response in net-zero emission modelling scenarios that align state emission reductions with the Global Warming Response Act of 2009?

The 2019 NJEMP outlines several benefits of electrification, including energy storage. Vicinity is supportive of the NJBPU's efforts to incentivize energy storage as it further aligns the state with our own GHG reduction goals by incentivizing utilities to purchase renewable power during non-peak times, when prices are low. More specifically, Vicinity supports the inclusion of thermal storage as a qualifying electric storage technology in the development of an energy storage incentive program. Vicinity's current use of thermal storage technology in our chilled water system successfully reduces energy costs for our customers and shifts peak demand on the grid.

Like electric energy storage systems, thermal energy storage systems allow Vicinity to procure the greenest, most affordable electricity when it is available (typically overnight, offshore wind). Currently, Vicinity supplies several buildings in downtown Trenton with reliable chilled water services – offering a cost-effective alternative to replacing, operating, and maintaining in-house cooling equipment. By reducing electricity use during peak demand, Vicinity takes pressure off the electrical grid when power usage is at its highest, while also helping to reduce costs for customers.

Because there is a several-hour disconnect between our morning peak thermal generation and peak renewable generation, our plans to further decarbonize our district energy system will include the installation of up to 1,000 MWh of thermal storage. Using molten rock technology, thermal storage will allow us to mitigate the cost and carbon content of electrified thermal energy by procuring renewable energy during the overnight hours when demand is low and storing it in the thermal battery until district heating demand is high, typically the early morning hours as buildings heat up for the workday. As a result, Vicinity will dramatically lower the average cost of renewable thermal energy for our customers.

As the state is already aware, additional clean energy resources are likely to be needed to ensure there are sufficient balancing resources available when intermittent renewable energy is not available. District energy systems contribute to a more flexible and stable energy grid by integrating various energy sources and storage options. This integration helps balance supply and demand, reducing the risk of blackouts and enhancing overall grid resilience.

Conclusion

Vicinity's district energy system is critical to helping the State of New Jersey achieve its GHG emissions reduction goals. While our customer base consists of several vital institutions with mission-critical energy requirements, the environmental benefits extend to all corners of Trenton, including the environmental justice neighborhoods that are disproportionately affected by fossil fuel pollution.

Vicinity thanks the NJBPU staff for the opportunity to comment on the 2024 updates to the NJEMP. We share your commitment to addressing climate change and achieving net zero carbon emissions and, as usual, welcome the opportunity to discuss our responses in greater detail.

Sincerely,

Jeannie Morris
Vice President, Government Affairs