Lendlease secures $4m NYSERDA grant for NY’s largest geothermal heat exchange system for residential building at 1 Java St.

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Java Street from India Street Pier:
Located on the Greenpoint waterfront,

Brooklyn, NY Lendlease and joint venture partner Aware Super acquired $4 million in support from the New York State Energy Research and Development Authority (NYSERDA) to build a geoexchange system at 1 Java St. Once completed, the all-electric property will be the largest residential project in New York State to use a geothermal heat exchange system, according to NYSERDA.

Situated on a 2.6-acre site, 1 Java St. will comprise five interconnected buildings, including 37-story and 20-story towers. Based on square footage, building height, the 834 residential units and number of boreholes, the geothermal system will be the largest multifamily project in New York State. It is believed to be the largest high-rise residential geoexchange system in the country.

“1 Java St. presents us with the opportunity to establish a pioneering model for geothermal energy – aligning with New York’s ambitious climate goals, as well as our global targets of absolute zero carbon by 2040,” said Scott Walsh, project director, New York development for Lendlease. “Our decision to use geothermal was driven not only by the environmental benefits and cost savings, but also enhanced marketability upon completion.”

The $4 million in funding was obtained through a competitive grant from NYSERDA’s Community Heat Pump Systems Pilot Program. The project – which has received support by local elected officials and the North Brooklyn Neighbors community planning organization – included a feasibility analysis, design work and the currently-underway installation of a community heat pump system, also known as a thermal energy network.

NYSERDA director of clean heating and cooling Donovan Gordon said, “Community thermal networks are an important step in scaling building electrification and helping more residents benefit from clean energy infrastructure that can lead to long-term energy savings. Our support for this innovative project using the latest in clean heating and cooling technology will help us meet New York State’s climate and clean energy goals while reducing emissions in Brooklyn.”

Once completed, the geothermal system at 1 Java St. will reduce annual carbon emissions from heating and cooling by 53% compared with typical residential systems. As an all-electric building, 1 Java St. will also avoid carbon emissions related to the use of natural gas.

The on-site geothermal and all-electric systems of 1 Java St. ensure the project will meet or exceed Local Law 97, New York’s decarbonization legislation, and align with Mission Zero, Lendlease’s industry-leading initiative to reach absolute zero carbon – extending to its supply chain – by 2040. 1 Java St. will also target a range of sustainability initiatives including LEED Gold, Fitwel and Waterfront Edge Design Guidelines certification.

Slated for completion in late 2025, 1 Java St. is the sixth project developed and operated as part of the Aware Super and Lendlease joint venture Americas multifamily portfolio, which achieved net zero carbon in 2021. The joint venture's stabilized assets were also recently recognized by GRESB as Regional Sector Leader for superior ESG performance.

Aware Super senior portfolio manager – property, Alek Misev said, "We're excited to celebrate the geothermal project that 1 Java Street is delivering for our property portfolio. The sustainable benefits to be generated from New York City's largest residential geothermal project will not only demand less energy from the grid at peak times, but also reduce carbon emissions, both of which are expected to uplift the value of this asset."Thirty percent of 1 Java St.'s residential units have been designated as affordable housing under the Affordable New York Housing Program. In addition, over 13,000 s/f of space at the ground floor will be activated with retail. The property will also encompass a reimagined, 18,000 s/f public waterfront esplanade that connects to the India St. Pier, which is served by the East River Ferry.

1 Java Street geothermal graphic
(Winter Season Shown)

Overview of 1 Java St.'s Geothermal System

The geothermal system at 1 Java Street is a vertical closed loop system with underground pipes that circulate a water solution to be heated or cooled by the earth; a heat pump will utilize that temperature differential to help heat or cool the building, reducing the need for utility power. In the winter, when the underground temperature exceeds the surface air temperature, the water solution is used to transfer heat from the ground to building interiors. The process is reversed in the summer, when heat from the building is released underground using the same system.

1 Java St. benefits from its 2.6-acre, full-block location, allowing for the drilling of 320 boreholes. As a closed loop system requires no future access or maintenance, 1 Java St.'s borefield is located beneath the building. The site's underground geology, which is largely composed of bedrock, provides an ideal medium for efficient thermal exchange.

Compared to conventional technologies, closed loop geothermal systems are more energy efficient and emit fewer carbon emissions. The geothermal system designed for 1 Java St. will account for 1,050 fewer metric tons of CO_2 equivalent emissions than if the building used a traditional boiler/tower system. This is equivalent to planting over 5,200 trees.

The geothermal system will provide all the space heating, water heating and cooling for the project. In addition, 1 Java St. will be fully electric, with all cooking, clothes drying and other functions performed by electric appliances and building systems. This means the property will comply with New York City's Local Law 154 – the city's legislation that mandates most new buildings over seven stories be fully electric by 2027.

1 Java Street’s public esplanade will connect to the India Street Pier, which is served by the East River Ferry.

At 1 Java Street, a geothermal ground source heat pump system utilizes the stored temperature in the ground for heat exchange, which is required to operate HVAC heating and cooling systems in the building. In the winter, when the underground temperature exceeds the surface air temperature, water is used to transfer heat from the ground to building interiors. The process is reversed in the summer, when heat from the building is transferred underground using the same system.