



GEOTHERMAL HEAT PUMP CASE STUDY:

## Medford Site Veterans Home

Energy-Efficient Housing for a  
Military Veteran Family



**Name:** United Way of Long Island Housing  
for Heroes

**Location:** Medford, New York

**Completed:** 2021

**Size:**

- One heat pump for 1,936 square feet of building space
- Two boreholes, 500 feet deep

**Unique Features:**

- Geothermal system works in concert with a heat pump water heater and energy recovery ventilator to deliver hot water and preconditioned air
- With conduit in place and space on its electric panel, the home can accommodate a future solar photovoltaic (PV) system

**Cost Savings:** (vs. typical new homes) \$2,900,  
13,400 kWh annually

**Funding Sources:**

- National Grid, via New York State Public Service Commission
- New York State Energy Research and Development Authority
- New York State Office of Temporary Disabilities Homeless Housing Assistance Program
- Public Service Enterprise Group Long Island

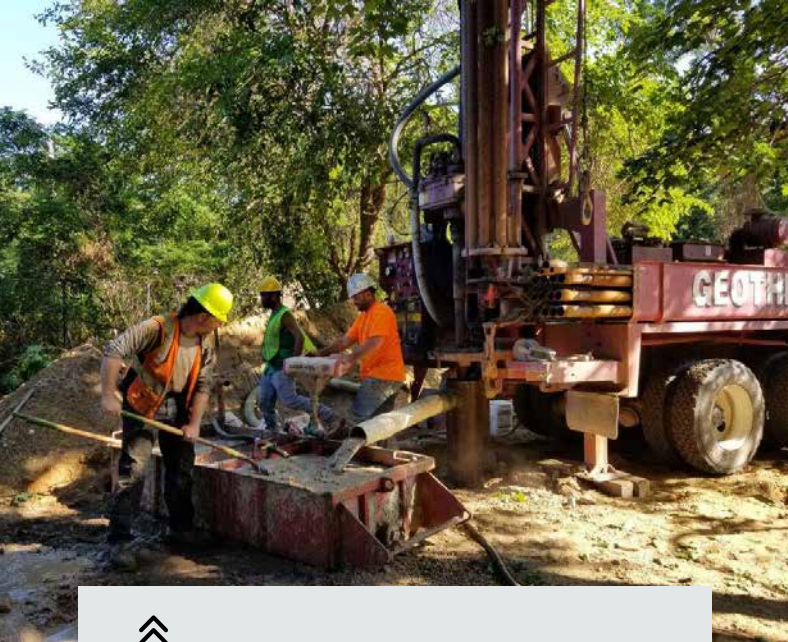
United Way of Long Island's award-winning, energy-efficient home in Medford, New York, features advanced green technologies and provides a sustainable and cost-effective living space for a military veteran family. *Photo from United Way of Long Island*

### Energy-Efficient Housing for a Veteran Family

In 2021, United Way of Long Island completed construction of a nearly 2,000-square foot, single-family home for a U.S. military veteran and their family in Medford, New York. The award-winning home includes several energy-saving features like triple-pane windows, a gable roof and vented attic, an insulated basement, a smart thermostat, and a geothermal heat pump (GHP) system.

The Medford home is part of United Way of Long Island's portfolio of Zero Energy Ready Homes, which use advanced technology to provide greater energy efficiency and significantly reduce or even eliminate residents' utility costs. Known as "code plus," the homes in this portfolio feature advanced heating, ventilating, and air-conditioning systems, and exceed state and federal mandates for residential construction.

To build the home, United Way partnered with Suffolk County, the New York State Energy and



Constructed in part by participants in United Way's VetsBuild; Power Up! Wind, Solar & Renewables; and YouthBuild programs, the Medford home highlights United Way's commitment to training the future workforce in green building practices, including geothermal. *Photo from Medford Site Veterans Home*

Research Development Authority (NYSERDA), and National Grid. The home is built on one of six properties that Suffolk County donated for two nonprofit agencies to develop with United Way as contractors to transform into housing for homeless veterans. NYSERDA and National Grid helped secure some of the funding for the home's geothermal system.

## Enhanced Comfort and 30% Energy Savings

The Medford home's 3-ton, water-to-air geothermal heat pump heats and cools the home by using the relatively constant temperatures in the subsurface outside to transfer heat between the ground and the home through a vertical, closed-loop system. The heat pump heats the home's water and works with an energy recovery ventilator to precondition incoming fresh air. These features work together to reduce the load on the home's geothermal system and enhance overall energy efficiency and indoor comfort.

In addition, a whole-house dehumidifier, connected to the geothermal system's ductwork, manages indoor moisture levels during swing seasons when there may not be a need for heating or cooling. The Medford home's code-plus energy-efficient features, including its geothermal system, deliver at least 30% in energy savings compared to a home without the same features.

## Community Lessons in Green Construction

The Medford home supports the public good by providing energy-efficient housing for a formerly homeless veteran and their family. The home also represents a larger effort by United Way to deliver the benefits of green building practices, including geothermal heat pumps, to the Long Island community.

The home—and others in the Zero Energy Ready Homes portfolio—was built in part by participants in United Way's VetsBuild, Power Up! Wind, Solar & Renewables, and YouthBuild programs. These programs train students in building science, energy efficiency, and green construction, providing valuable geothermal experience for the renewable industry workforce of the future.



The Medford home's geothermal system harnesses nearly boundless energy from the Earth and requires very little maintenance. This, along with the home's other energy-efficient features, makes the home more affordable for the folks who live there. We call that 'being firewalled from energy poverty.'

Rick Wertheim, Senior Vice President of Housing Development, Sustainability & Training, United Way of Long Island

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