Mattituck Park District –
Bailie Beach Electrification Project

What Are Heat Pumps and How Do They Work?

Heat pumps use electricity to provide indoor heating and cooling. These versatile systems operate by transferring heat from one area to another. Heat pumps achieve this through a cycle of four main processes: evaporation, compression, condensation, and expansion. In warmer months, heat pumps extract heat from inside the home and expel it outside to cool indoor spaces. During the colder months, the operation process is reversed. Heat pumps in heating mode extract heat from outdoors (via air, ground, or water) and move it inside to provide indoor heating.

The Mattituck Park District intends to use the next generation of home heating:
Bosch IDS Ultra - Inverter Ducted Split Cold Climate Heat Pump
A fully electric heat pump solution for climates with freezing temperatures.

- **Delivers up to 100% Heating** capacity down to 5°F at 2.1 COP
- **Lower Operating Costs**\ Heat pumps transfer heat rather than generate it, making them significantly more energy-efficient than oil-fired systems. This reduces monthly heating and cooling expenses.
- **Elimination of Fuel Costs**\ Switching from oil to an all-electric system eliminates the need for fuel deliveries and the volatility of oil prices.
- **Solar-Powered Energy**\ The system will be powered by solar panels installed on the building's south-facing roof. This renewable energy source offsets electricity costs, reducing or eliminating utility bills over time. The high efficiency of the heat pump means fewer panels are needed, lowering installation costs.
- **Reduced Maintenance**\ Electric heat pumps have fewer moving parts and no combustion process, resulting in lower maintenance and repair costs compared to oil systems.
- **Incentives and Rebates**\ Cold-climate heat pumps and solar installations often qualify for federal, state, and utility incentives, which can significantly reduce upfront costs.
- **Efficient Operation** Up to 19 SEER2 and 10 HSPF2"
- **Passed the U.S. Department of Energy** (DOE) Residential Cold Climate Heat Pump Challenge
- **Demand Response** (AHRI 1380); Equipped with an A2L refrigerant, R-454B

This state-of-the-art type system will replace an existing oil-fired system with clean efficient heating and will add needed air conditioning to greatly enhance the usage and value of the property.

The energy needed to power this system, as well as all other electricity needs for the entire facility will be provided by renewable energy produced by solar panels installed on the roof of the building. The southern facing roof of the building provides a perfect situation for using solar panels to make electricity. The efficiency of the system is extremely high, allowing a smaller number of panels (lower cost) to produce the needed energy.

Mattituck Park District

Bailie Beach Electrification Project

Planned System

The Mattituck Park District will install the **Bosch IDS Ultra – Inverter Ducted Split Cold Climate Heat Pump**, a fully electric solution designed for freezing temperatures. Key features include:

- Maintains 100% heating capacity down to 5°F at 2.1 COP
- Up to 19 SEER2 and 10 HSPF2
- DOE Residential Cold Climate Heat Pump Challenge certified
- Demand Response capable (AHRI 1380)
- Uses A2L refrigerant (R-454B)

This advanced system will replace the existing oil-fired unit, deliver clean, efficient heating while adding needed air conditioning to enhance property value and usability.

Renewable Energy Integration

All electricity for the heat pump and facility will come from solar panels installed on the building's south-facing roof—an ideal location for maximum efficiency. The Solar system's high efficiency performance minimizes the number of panels required, reducing costs while meeting all future energy needs.

Mattituck Park District –
Bailie Beach Electrification Project

A Computer rendering of the Solar Panels on the Roof at Bailie Beach

Mattituck Park District –
Bailie Beach Electrification Project

Mattituck Park District –
Bailie Beach Electrification Project

Estimation of Energy Production vs. Usage