

# TRANSITIONING FROM OIL TO GROUND-SOURCE HEAT PUMPS



The Terrys chose a ground-source heat pump to provide reliable heat even in the coldest weather.

Homeowner: Jim and Judy Terry

Year Built: 1977

Style: Acorn Design Solar Cape

Size: 2,700 square feet

Electric home features:

- Ground-source heat pumps
- Rooftop photovoltaic panels (9.3kw)
- Electric water heater
- Induction stove
- EV Level 2 Charging

The Terrys installed solar in 2012 and in 2018 transitioned to a ground-source heat pump system. They are very happy with the improved level of comfort as well as having done the right thing for the environment.



## Sustainable from the start

Jim and Judy Terry bought their solar cape in 1978. At that time, solar heat meant panels with water coils on the roof, which heated water for domestic use as well as for pre-heating the return air in ducts to be further heated by their oil furnace. It was less than ideal as their domestic hot water was only partially heated during the colder months and got so hot in the summer that the system turned off when the stored water reached 160 degrees. They had to be aware when they used hot water to mix it with cold water. They installed air-conditioning but because the ducting system was designed for heating, the air-conditioning was poor on the 2nd floor. In 2012, when the house was in need of a new roof, the Terrys researched solar providers, chose New England Clean Energy who took down the hot water panels on the roof and installed 39 photovoltaic (PV) panels, providing 9.3 kW.

## The decision to go with heat pumps

In 2018, the Terrys were concerned that their old oil furnace was reaching the end of its life. They attended Concord's HeatSmart presentations and decided to install a ground-source heat pump (GSHP) rather than an air-source heat pump (ASHP) system because they felt that it would give reliable heat even in the coldest weather. Also, GSHP could use the existing duct system and they would not need air-handlers (mini-splits) to be installed on the walls, as is typical of ASHP systems. The HeatSmart program provided advice from heat-pump coaches and recommended a provider, Achieve Renewable Energy. Before they started the transition, they got an energy audit and followed the auditor's recommendation to have insulating foam blown in around the sill in the basement as well as in the attic and behind the knee walls.

***The Terrys advise others to seriously consider installing a GSHP, especially if they have an older oil furnace that is likely to fail soon. They also recommend first getting an energy audit and acting on their recommendations to get their house as energy efficient as possible.***

**30%**

Costs covered by federal rebates

**\$26,500**

Total cost of GSHP system after rebates

**<\$2,000**

Total cost of insulation

### **Preparing for the heat pumps**

In preparation for the installation of the GSHP, they had to have some duct-work in the basement rearranged to accommodate the new system. Once that was done, Achieve drilled the well, installed the piping into the house, and removed the oil tank and furnace in one day. The Terrys were left with restoring the landscaping, which entailed more work than they expected because the drilling process left piles of tailings in their yard. They had to find a contractor to remove this material before they could re-landscape. Apart from that, they were very happy with the work that Achieve did.

### **Very happy post-installation**

The Terrys are very happy with their new GSHP heating and cooling system, which has had no service issues. It is quieter than their old oil-heating system and they find it to be more comfortable. They are grateful that they no longer have to check to see how much oil they have and then to schedule oil deliveries. In addition, the air conditioning does a reasonable job on the second floor. As anticipated, their heating and cooling costs are about \$500–700 lower than they were despite turning up their thermostat by two degrees to 70°F and using more A/C. They also have the advantage of being able to control the thermostat setting remotely with an iPad, which can be useful especially when they are traveling. Overall, they are very happy with the improved level of comfort as well as having done the right thing for the environment.

### **An investment in the future and for their kids**

Jim Terry says that several people have asked him what happens when the power goes out. He points out that GSHP is no different from gas or oil heat, both of which depend on electricity to work. He also said that the CMLP restores electrical service very quickly and so he sees no need for a generator or back-up battery storage.



Interested in how heat pumps can make your home more comfortable and sustainable? Visit [ConcordCleanComfort.org](http://ConcordCleanComfort.org) for information about coaching, rebates, and more.