

# HEAT PUMPS PROVIDE COMFORT TO 0°F IN OLDER HOME



**Kim Slack and Amanda Mujica completely removed their oil boiler and found greater comfort and peace of mind.**

Homeowners: Kim Slack & Amanda Mujica

Year Built: 1955

Style: Cape

Size: 2200 sq.ft.

Weatherization:

15" cellulose insulation in attic (R-52)

1" fiberglass insulation in most walls (R-3)

vinyl double-pane windows (R-3)

moderately sealed

Other features:

Electric Car Charger

Solar Panels

The Slack family has been helping create more sustainable living for themselves and communities for many years. They moved to Concord partially because of its reputation for promoting sustainable practices. By choosing to heat and cool entirely with air-source heat pumps, they've been able to reduce their home's carbon emissions significantly. They estimate that the operating costs of their heat pumps are nearly 5% lower than they would have been had they replaced their oil burner with a high efficiency one.



## Additional weatherization

After a free energy audit from Concord Light, the Slacks followed the auditor's recommendations to replace the faulty crawl space insulation, seal basement rim joists, and replace leaky recessed lighting fixtures with LED spots. They found the audit report confusing when it mentioned heat pumps, since it treats them either as a cooling appliance or for heating, but not for both.

## Choosing and Installing Heat Pumps

They received proposals from four HVAC companies. Some proposals were two paragraphs in an email, others were a few pages of fairly technical specifications. There was over 25% variation in costs between the low and high bidders. They chose a contractor that had done many installs in Concord and had gotten positive testimonials.

The Slack's had two multizone cold climate ductless heat pumps installed. One outdoor unit fed three inside air handlers to heat five rooms, and another fed three air handlers to serve six rooms (including bathrooms). Installation took two days. The Slack family was confident they'd be comfortable, since their cold climate heat pumps could produce heat to -15°F, a temperature not experienced in the Concord area for many decades.

Two noisy, drafty wall AC units were removed, since the heat pumps would provide cooling as well as heating, for year-round comfort.

***During a cold spell in 2019, when January temperatures went to 0°F and rarely went above 5°F for a few days, the Slack family saw no change in the comfort of their home. "We keep the thermostat set at 68°F continuously, and did not see any problems in performance, all rooms were warm."***



**70%**

Greenhouse Emission  
Reduction

**25%**

Variation in  
installation costs

"Thinking long term,  
if your heating  
system is near the  
end, replace it with  
heat pumps."



### **Lessons Learned**

None of the contractors assessed the heat load of the home. Had they done a heat load calculation, they might have recommended smaller sized equipment and had a more competitive, lower priced proposal.

A heat load estimate was done by the homeowners a few years after installation: They learned their equipment was oversized by nearly 50%.

They calculated that their heat pumps reduced the amount of greenhouse gas emissions nearly 70% from their old oil burner. Emissions will continue to decrease as the Concord Municipal Light Plant meets ambitious goals to reduce emissions from the electricity it supplies.

The Slacks removed their 40+ year old oil tank and boiler, and rested easier knowing there was no risk of an oil spill. "Thinking long term, there's no need to maintain an old system. With today's heat pump technology, you don't need a backup heating system."

### **Advice for others**

For whole home heating with heat pumps, the Slacks suggest asking installers to describe the heat load and the capacity of the equipment (in BTU/hr.) at 5°F and 95°F to determine appropriate sizing. Also, get at least three proposals. Each contractor may have different design approaches and costs that may be beneficial.

The Slack family believes air-source heat pumps have made a big improvement in their older home's year-round comfort, operating costs and climate impact. "We have absolutely no regrets replacing the boiler for air source heat pumps!"

Interested in how heat pumps can make your home more comfortable and sustainable?  
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