

Air-Source Heat Pumps

Jonathan and Rebecca's Net-Zero Beebe Lake Home



From Steam to Air-Source Dream! *2018 Ithaca Retrofit Case Study*

Major energy efficiency improvements, year-round comfort, and aesthetically pleasing design.



Homeowner quote: "One of the things we were most concerned with at the very beginning was marring the look of the house....The radiators are pretty and integrated into the house and the way we've furnished takes them into account as well. We thought having plastic blowers would be an aesthetic detriment...but we got used to them very quickly."

- Jonathan, Homeowner

Project Specifics:

Area of Home:	2,800 sqft
Age of Home:	Built in 1902 Lake House
Installer Partner:	NP Environmental
Other Info:	The home originally heated (without any cooling) via 13 radiators throughout the home, which were replaced by just 2 outdoor and 6 indoor air-source units

Previous Systems: Natural Gas Steam-Boiler Fed Radiant Heat

New Systems: 2 Outdoor Air-Source Units, Each Connected to Three Blower-Heads in the Home

Heating: The home was originally heated by coal, and then by a steam boiler located in the basement and distributed via radiant heat.

Cooling: The home did not have A/C before the two air-source heat pumps were installed.

Jonathan and Rebecca wanted to improve their home's energy performance by replacing their steam boiler with something more environmentally friendly and efficient, reducing their carbon footprint, and adding cooling features into their space.

Aesthetics played a major role in their considerations and felt that, while the air-source indoor units did not fully fit with their taste, they were easy for the eye to get used to, and well worth it by cutting their indoor unit needs in half from 13 radiators to 6 air-source heads.

Net-Zero Home Jonathan and Rebecca installed their air-source heat pumps *along with two solar Energy Service Companies (ESCOs)*, making their home net-zero

Renovus Energy Solar Farm

Total of 8 Solar Panels serving the home
Receives extra tax credit

Energy Cooperative of America

Provides Hydro, Wind, and Biogas from NYS
Supplements all electricity not provided by Renovus

Project Cost (reflects 2018 incentives):

Cost Category	Initial Cost	Incentives	Final Cost
Installation of Two Air-Source Heat Pump Hyper Heat Multi-Zone Units	\$25,650	\$1,000 (NYS Rebate)	\$24,500
		\$150 (Federal Tax Credit)	

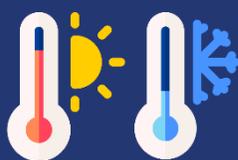
Project Specifications

2 2.5-ton Mitsubishi MXZ-3C30NAHZ2 air source heat pump units
5 Mitsubishi wall-mounted mini-splits
1 Mitsubishi floor-mounted mini-split

Project Highlights:



Improved Energy Efficiency



Year-Round Comfort with Heating, Cooling, and Dehumidification



Net-Zero Home

Jonathan's home was ready to accept city gas at a very low price and with little necessary maintenance. Though natural gas would have been a more affordable option upfront, Jonathan and NP Environmental decided that a ductless air-source installation would be the right fit for a few reasons. The first, geothermal systems cost more money to install and ended up not being feasible with the geology of the property anyway. Another reason was the reduction of carbon emissions and addition of cooling and dehumidifying features all included in the air-source units.

The payback period for this situation is null considering that natural gas is so cheap to run. The beauty of the investment is rather found in all the additional comfort benefits from the triple threat of heating, cooling (which the home did not have before), and dehumidifying included with the air-source heat pumps. To choose natural gas would have meant cheap heat, but that heat contributed to the CO2 emissions of the home, and additional costly projects would have had to be undertaken to ensure the same amount of comfort.

The bottom line for Jonathan was doing what was best for the environment. In this case, and many cases like this, what is best for the natural environment is also best for the livability of the home's indoor environment. Unlike this case, many people who switch from fossil fuels to heat pumps can expect operational savings on energy bills and may feel economic relief immediately!

For questions about this project or program, contact:
607-500-HEAT or visit HeatSmartTompkins.org

