LIVING IN A NEW CONSTRUCTION NET-ZERO READY HOME

Janet Miller has reaped the benefits of living in her net-zero ready cottage home in Riverwalk since 2011.

Homeowner: Janet Miller
Year Built: 2011
Style: Cottage
Size: 1,500 square feet plus 450 sq ft finished basement
Electric home features:

- Air-source heat pumps for heating and cooling
- LowE Triple-pane windows
- Super insulated walls, floors, and roof
- Electric induction cooking
- Rooftop solar PV

When Janet was looking for a house in Concord in 2011, she wanted to be in walking distance of shops and public transport. She found that and far more in Concord Riverwalk, an energy-efficient housing development that was under construction. She has always been an environmentalist and this was perfect to her. Janet is happy to report that she now been happily ensconced in her comfortable, energy-efficient house for almost a decade!

Designed for energy efficiency and all-electric

The houses in Concord Riverwalk are all-electric with heating and cooling from air-source heat pumps, with a ducted system in the main living area and minisplits in the other rooms. The houses were built with 2" x 6" studs, which meant that they have a bigger wall cavity for a combination of foam board and cellulose insulation to achieve an R value of 40 minimum. There is 2" insulation below the basement concrete slab floor and two layers of 2" Dow Thermax insulation on the concrete basement walls, with an R value of 26. The roof has 4" closed cell spray foam insulation and cavity fill insulation with at R value of 50 minimum. The windows are triple-pane with low-E glass. The houses are designed to be tight, with minimal air infiltration, which was achieved with the aid of taped weatherboard and extruded foam insulation around the basement sills. Because it is so tight, the house has a heat-recovery system to bring in fresh air, which warms the incoming air in the winter and cools it in the summer.

Solar power

The home was solar-ready, but there were not yet solar panels. The south-facing roof was ideal for solar so Janet decided to install both photovoltaic (PV) panels as well as solar hot water panels. She chose SunBug solar to install a 5.64 kW system. The total cost of $34,986 was offset by a 30% Federal Tax rebate, a $2,000 State Tax rebate, and a $1,725 rebate from the CMLP. The cost of solar panels has dropped considerably since she purchased them in 2011. Even still, Janet calculated that the PV panels paid for themselves within 8 years.

Thanks to the power generated by Janet's solar panels, her energy costs are minimal. She produces considerably more energy than she consumes in the warmer months and in the winter months her bills are lower than her gas bills in her previous house, which was smaller than where she lives now. Annually, her electric bill for her house is about $800 and, because she has no fossil fuels for heat or cooking, she has no other energy bills.

$800
Total annual energy bills

5.64 KW
Solar PV system installed in 2011

52.2 MWH
Total electricity generated since 2011

Janet also hired Renewable Energy Systems to install a solar thermal hot water system. After rebates, the cost was $5,230. The sun pre-heats her water in the winter months and from early July into September or October, she is able to switch of the electric heater and depend solely on the sun for her hot water needs. While solar hot water heaters are not general recommended anymore, Janet is happy to have the ability to store hot water.

Induction cooking

Because Janet's home has no fossil fuels, she uses an induction stove. Janet loves it! The cooktop is fast, easy to control and, because the induction heats the pans not the cooktop, nothing burns on the cook top. So, it is quick and easy to clean with a damp cloth and spray cleaner. Air quality is also better without burning gas.

Advice for others

Janet's advice for others is if you are building a new house, it really makes sense to build something that is as energy-efficient as possible. It may be a little more expensive to build but the living costs are so low, it will pay for itself in a few years.

Comfort, cost, and environmental benefits

Janet is very happy to be living in a comfortable house that costs so little to run. And she is also happy to be leading the charge by no longer being dependent on fossil fuels to heat and cool her house. She is also glad to know that as the CMLP converts to renewable sources for electricity, her indirect dependency on fossil fuels lessens every year. Many people think that air-source heat pumps alone are not adequate in a New England winter. With a well-insulated and weathertight house, it is perfectly possible to stay warm and comfortable with no additional back-up.

Interested in how heat pumps can make your home more comfortable and sustainable?
Visit **ConcordCleanComfort.org** for information about coaching, rebates, and more.