COLONIAL *Farmhouse*

Honeoye Falls, New York

"We look out the windows at the snow blowing, and it's like we are watching it on TV," says Matt Bowers, principal of Rochester Passive House Consulting and the happy occupant with his family of the Colonial Farmhouse. Completed in 2016, the incredibly comfortable two-story, three-bedroom Passive House is performing even better than expected.

Bowers, a Passive House and energy consultant, as well as a blower door trainer, has been keeping a close eye on the home's monitored energy data. In its first year of operation, the almost 3,000-ft² home cost $41 to cool and less than $200 to heat. These very modest heating and cooling bills bear out Bowers's early calculations that the cost premium for building a Passive House, rolled into his mortgage, would be balanced out by his energy cost savings. As he points out, his experience refutes the misperception that Passive House is expensive.

The home's traditional farmhouse aesthetic cloaks a 16-inch double-wall assembly that is insulated with dense-packed cellulose, achieving an R-55. The interior load-bearing 2 x 4 wall acts as a service cavity. A carefully sealed OSB layer exterior side of the double-wall assembly guard against moisture intrusion.

The 24-inch foundation wall was constructed using an ICF block and a 2 x 4 wall separated by 8 inches of cellulose insulation, achieving a total R-value of 63. Eight inches of EPS lie under and at the perimeter of the 4-inch slab. The raised-heel truss roof assembly holds 24 inches of blown-in cellulose.

Because icy winds blow down periodically from nearby Lake Ontario, a 200-foot subsoil brine loop was installed to temper the air arriving at the HRV; in summer the loop precools the incoming fresh air. Two ductless mini-split heat pumps deliver the heating in winter. In summer, they are used mostly for dehumidification, for the times when temperatures don't exceed 80°F but humidity hits 85%.

Although last winter was a bit mild by Rochester standards, this very energy-efficient house achieves remarkable comfort even on the more extreme days. Bowers jokes that he has to hand out T-shirts on Christmas when family gatherings bring in more than enough body heat to compensate for the cold winds blowing outdoors—which are only noticeable by looking out through the triple-pane windows and watching the tree branches sway.

Team

Passive House Consulting
Rochester Passive House Consulting

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Construction
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Photos courtesy of Matthew Bowers

Products

Windows & Doors
Zola

Air/Moisture Control
ZIP System Sheathing and Tape

Water Heating
Sanden

Drain Water Heat Recovery
RenewABILITY Energy Inc

Passive House Metrics

Specific space heating demand	4.7 kBtu/ft²/yr	14.7 kWh/m²/yr
Specific space cooling demand	0.4 kBtu/ft²/yr	1.3 kWh/m²/yr
Source energy use intensity (EUI)	28.6 kBtu/ft²/yr	90.2 kWh/m²/yr
Air changes per hour	0.1 ACH_{50}	