

Northfield's Hillcrest Village Housing Project

Center for Energy and Environment's (CEE) New Homes team helped achieve over \$250,000 in Xcel Energy rebates for this 17-unit, all-electric, affordable, and sustainable housing community in Northfield. From consulting during the early design process and testing throughout, the New Homes team helped this project reach U.S. Department of Energy Zero Energy Ready Homes, U.S. Environmental Protection Agency Indoor airPLUS, and ENERGY STAR Certifications.

Project Background

The New Homes team began working on this 17-unit, all-electric, affordable housing community in November 2020. The team reviewed the building plans and energy models from the architect before construction began, which allowed them to make early recommendations regarding the energy efficiency components of each building's design. This review process included early meetings to incorporate ENERGY STAR, Indoor airPLUS, and DOE Zero Energy Ready standards into the plans and align the entire building team to ensure all program requirements would be met. At the end of the review process, the team recommended revising insulation levels, air sealing details, ventilation systems, and mechanical systems.

Inspection/Testing

After the buildings were constructed and before drywalling, each unit was inspected and tested for quality insulation and air sealing per Zero Energy Ready requirements. The testing included blower door tests, duct leakage tests, and performance tests on exhaust and ventilation systems. If any units did not initially meet the certification requirements, the construction partners made the necessary corrections and the units were retested.

Results

Once all units successfully met Zero Energy Ready standards, the team updated the energy models and submitted results to a third-party quality assurance provider for final certification. The team helped the project earn over \$250,000 in Xcel Energy rebates and achieve certifications for U.S. Department of Energy Zero Energy Ready Homes, U.S. Environmental Protection Agency Indoor airPLUS, and ENERGY STAR. At the end of this process, all units were HERS and Energy Star certified with an overall average HERS score of 33. Each unit is predicted to receive an average annual savings of \$1,387.

Learn more about our work at mncee.org/newhomes.

Contact

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Center for Energy and Environment



Home Certifications, Ratings, and Potential Savings

- DOE Zero Energy Ready Homes
- EPA Indoor airPLUS
- RESNET HERS
- Energy Star New Construction (version 3.1)
- Average HERS score: **33**
- Average annual savings per unit: **\$1,387**
- Airtightness, average ACH50 per unit: **1.28 ACH50**
 - **57.33% more airtight** than a 3.0 ACH50 code-built home
- Total predicted CO2 reductions: **56.5 tons/year**
 - Based on ENERGY STAR Version 3.1 Reference Home (2012 IECC)

Energy Efficient Features

- Air-tight construction
- Cold climate air source heat pump (Electric • 10.2 HSPF • 19 SEER)
- Residential Water Heater • Electric • **3.42 UEF**
- R40 walls, R50 attic
- Triple-pane windows/Low-E 272 (U-Value: **0.17**, SHGC: **0.27**)
- Heat recovery ventilation (90 CFM)

Partners

- Community Action Center of Northfield
- Northfield Construction Company
- Schmidt Homes
- Johnson-Reiland Builders & Remodelers
- City of Northfield
- Carleton College
- University of Minnesota: Center for Sustainable Building Research
- Sweetgrass Design Studio
- Precipitate Architecture