

# Affordable Housing: Low Cost with High Efficiency

## Building smarter

Affordable housing for families in the suburbs can be tough to find. Affordable housing that's environmentally friendly and energy efficient is even tougher.

A new housing development in Roseville, Minnesota, just northeast of Minneapolis is accomplishing both. Aeon's Sienna Green Phase II was built from the ground up with sustainability and efficiency in mind. From the lights, to the flooring, to the envelope itself, various partners in the process worked together to ensure it met the needs of the residents while keeping energy bills low.

## Compiling a consortium

Aeon Vice President of Housing Development, Gina Ciganik, had just finished completing the first phase of affordable housing units called Sienna Green Phase I from five existing buildings that needed retrofitting and upgrading. She liked the idea of starting from scratch for Phase II because she could employ efficiency initiatives into the design process and determine which measures would make the most sense.

She worked with the University of Minnesota – Center for Sustainable Building Research and Xcel Energy's Energy Design Assistance program (EDA) to gather ideas. They considered things like extra insulation, triple glazing on windows, day-lighting controls and occupancy sensors. They identified zone-specific options for the heating and cooling systems, and looked for durable and cleanable materials that simply last longer and require less maintenance.

"It's all very practical," explains Ciganik. "We want these buildings to last and we want to expand so we can serve more families. That means we simply have to conserve where we can and put the money saved into future projects."

## Final selection

"There are always some ideas that come up but don't make the cut. They might be cost prohibitive and not worth the extra effort. But others," Ciganik says, "are worth trying."

"We weren't sure if the white roof would be effective or not so we used it on two of the five buildings," Ciganik says. "We'll compare the energy data from the buildings over time to determine the best practice."

In the end, Phase II is expected to achieve nearly \$40,000 in annual energy savings. Additionally, they qualified for nearly \$30,000 in rebates from Xcel Energy by implementing a range of architectural, mechanical and electrical/lighting strategies. The result is a building that's

32 percent more efficient than a baseline, code-compliant building.



Sienna Green Phase II employed the following measures:

- Improved insulation in roof, windows and walls
- Automated day-lighting controls in selected public spaces
- Installed occupancy sensor controls of lighting in most public spaces
- Reduced lighting power density (59% reduction in apartments, 36% reduction in public spaces)
- Improved cooling efficiencies in apartment and public spaces
- Improved gas furnace efficiencies in public areas and garage
- Utilized carbon monoxide sensor control of garage ventilation to reduce the need to heat outside air
- Improved condensing gas boiler efficiency for service water heating (97% efficient)
- Used clothes washers and refrigerators that exceed the ENERGY STAR® standard
- Installed low flow showerheads (40% reduction in hot water use)
- Chose luxury vinyl tile instead of carpet for extended durability

"It's nice to have things happen automatically like the lights dimming on sunnier days," Ciganik says. "The more automatic things we can build in, the less people have to change their behavior."

Ciganik loves other things about the building, too.

"We worked with an architect to design the building so that the stairways are adjacent to the elevator, are easily accessible and not creepy," she says. "They're bright and open with big windows and nice flooring throughout. It's not only welcoming, but gives a great option for active living."

They also added an exercise room and large gathering room, available to the entire campus, to foster community connections.

### Engage, involve and look to the future

"Part of our plan is to connect with the residents to create a culture of sustainability," Ciganik says. "We find opportunities to engage them, so they adopt energy efficiency practices on their own and become role models for others."

Future plans include adding solar panels on the roof when economically feasible, and continuing to look for ways to educate the residents. Everything the development team learns along the way, it plans to share with the broader community so that others have the confidence to implement similar strategies.

"We're not interested in keeping our cards close," Ciganik says. "The more we share, the more others can learn."

To learn more about Xcel Energy's Energy Design Assistance program and other rebate programs, visit [xcelenergy.com/EDAMN](http://xcelenergy.com/EDAMN).

**Xcel Energy's EDA program is available for new construction, major renovation or building additional projects that are 50,000 square feet or more and are in the early design phase.**

- Energy consulting services and predictive energy modeling, free to participants.
- Enhanced services including help toward a green building certification with early analyses in areas such as massing, day-lighting, lighting and HVAC.
- Construction rebates for various whole building energy opportunities from envelope, lighting, controls and cooling to heat recovery and solar water heating.
- Measurement and verification including construction document review, on-site walk-through and data logging.
- Design team reimbursement for participating in the EDA program.