Aeon’s Sienna Green I Apartments is a 120-unit, moderate renovation project of a 1965, five-building apartment complex in suburban Saint Paul. Formerly known as the Har Mar Apartments, the development provides rents affordable for households earning 50 percent of the area median income (AMI), and has 17 units without income restrictions. The project also includes six units designated for individuals transitioning out of homelessness earning 30 percent or less of the AMI. The renovation was the first phase of a project that included construction of a 50-unit apartment building consisting of one- two- and three-bedroom apartments to serve area families.

Sienna Green I Apartments were in need of significant upgrading. The project undertook replacement of all major mechanical systems, and improved the building envelope. The project team took on the challenge of maximizing the investment with pre-design assistance from the Center for Energy and Environment and Xcel’s Energy Design Assistance program. The project included improvements to the envelope, mechanical, and plumbing.

SOLUTIONS
Due to the poor condition of the existing mechanical systems, their replacement was a forgone conclusion. Thus decision making focused on finding additional incremental energy and cost savings above code minimums. The existing boilers were original to the buildings. The buildings were overheated due to multiple controls and thermostats. New 95 percent efficient condensing gas boilers now feed the...
CASE STUDY: Moderate Renovation for Affordable Suburban Living

"...preserving and investing in existing buildings is a key part of sustainability."
— James Lehnhoff, Aeon, Vice President of Housing Development

PROJECT OVERVIEW

DEVELOPER/OWNER Aeon
UNITS 120 BUILDINGS 5
YEAR OF CONSTRUCTION 1965
YEAR OF RENOVATIONS 2010
UTILITY PROVIDER Xcel Energy
ELECTRICITY/GAS Master-metered
HEATING Hot water boiler
COOLING Through-wall A/C units
UTILITY PAYMENT STRUCTURE Owner-paid heat and hot water

PROJECT SUMMARY

<table>
<thead>
<tr>
<th>Incremental Energy Improvement Cost</th>
<th>Rebate</th>
<th>Annual Cost Savings</th>
<th>Annual Energy Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH-EFFICIENCY BOILER $76,045</td>
<td>$4,676</td>
<td>$5,082</td>
<td>466,200 kBtu</td>
</tr>
<tr>
<td>&gt;92% EFFICIENT WATER HEATER $6,430</td>
<td>$872</td>
<td>$1,864</td>
<td>171,000 kBtu</td>
</tr>
<tr>
<td>PROJECT TOTALS $82,475</td>
<td>$5,548</td>
<td>$6,946</td>
<td>637,200 kBtu</td>
</tr>
</tbody>
</table>

For more information and ways to act, visit: [http://www.mnshi.umn.edu/program/EE4A](http://www.mnshi.umn.edu/program/EE4A)
To learn more about the importance of choosing healthy, non-toxic building materials for energy efficiency retrofits, visit: [http://www.bgadata.org/EEHousingProducts/about/about-database](http://www.bgadata.org/EEHousingProducts/about/about-database)

baseboard radiators controlled in the units by thermostats. They provided the largest portion of total cost savings with an estimated payback of 15 years without incentives. New ENERGY STAR® wall air conditioning units (EER 9.4) and sleeves were also installed.

The new domestic hot water heaters run at more than 92 percent efficiency and replace heaters of various ages and efficiencies. The incremental cost of improving the efficiency from a code based 80 percent to high efficiency was $6,430. The resulting annual energy cost savings of $1,864 produces a payback of 3.4 years.

The lighting retrofit included indoor and outdoor common areas, and the installation of new ENERGY STAR® fixtures and of CFLs in the remaining fixtures in the units. The lighting upgrades not only reduced energy costs with short paybacks of a few months to a year, but also improved the quality of light in the units and across the development.

BACKGROUND

Aeon’s Sienna Green I was a sustainable development pilot project. In addition to producing energy and cost savings, the renovation significantly improved the quality of the indoor environment. The project transformed existing, sprawling parking lots into a vibrant apartment community surrounded by green spaces laced with rain gardens and a new play area.