



Siemens Energy Performance Contract helps Housing and Redevelopment Authority of Duluth, Minnesota create positive cash flow

Duluth, Minnesota – The Housing and Redevelopment Authority of Duluth (HRA) strives to ensure that decent, safe, affordable housing conditions are available to all residents of the community, and takes pride in being among the best and highest performing housing agencies in the nation.

In 2001, the HRA had engaged Siemens Industry, Inc., for a 12-year Energy Performance Contract, a guaranteed, performance-based solution to make energy efficient and infrastructure improvements. Because the project has always exceeded the energy savings guarantee, the HRA once again turned to Siemens to develop a second phase of the project and extend the Performance Contract's term to 20 years.

Client Objectives

The Housing and Redevelopment Authority of Duluth wanted to take advantage of a change in regulations for energy performance contracting, and worked with Siemens to carry savings forward from the first phase of the project and generate additional savings through a new project phase. HRA established the following objectives for this second phase of the project:

- Improve facility infrastructure for the HRA's six high-rise residential towers
- Improve individual comfort levels for each family's dwelling
- Reduce energy and utility costs

Siemens Solutions

For the second phase of the HRA's energy performance contract, Siemens designed and implemented the following solutions:

- Implement domestic water upgrades, including new low-flow toilets, showerheads, and faucet aerators
- Replacement of 16 boilers with new high-efficiency boilers

Weather constraints for the Duluth, Minnesota locations meant that boiler replacements needed to be completed on a condensed time frame: during the summer, when the HRA's families would not rely on their heating systems. Typically, boiler work of this nature would require at least six months to complete; Siemens was able to finish the work in less than four months, allowing the new high-efficiency boilers to be ready for the winter.

Because these solutions were implemented as part of an energy performance contract, the HRA was able to make these energy-efficient infrastructure improvements without a capital investment. In addition to the water upgrades and boiler replacements, Siemens assisted the HRA in the writing and development of a grant application through the American Recovery and Reinvestment Act of 2009 (ARRA). Ultimately, the HRA was awarded the grant of more than \$900,000, which allowed Siemens to implement the following solutions for the HRA:

- Replacement of pneumatic controls systems with new electric controls for each apartment
- Addition of computerized direct digital controls in common areas to replace previous pneumatic controls systems

Building Technologies



“In our current environment, it is critically important to manage our residences with reduced resources. We have realized significant energy savings by investing in this energy conservation work. Additionally, we have been able to reduce our carbon footprint, which is an important goal of the HRA.”

Rick Ball
Executive Director
Housing and Redevelopment Authority
of Duluth, Minnesota

- Installation of isolation valves on heating water distribution system
- “Green assessment” and Green Program Implementation Manual
- Green strategy guidance and training for the HRA staff

Some of the HRA’s ARRA funds were also dedicated to make parking lot repairs using recycled paving materials. Siemens helped document the savings and environmental impact of the parking lot improvements, allowing the HRA to retain the excess funds.

Client Results

The water conservation efforts and boiler replacements have combined to deliver the following projected results over the next eight years for the Housing and Redevelopment Authority of Duluth:

- Positive cash flow of \$1 million above program costs over the eight-year extended performance contract term

- Reduction of 25 million gallons of water and sewer use each year
- Annual emissions reductions of approximately:
 - 1.2 million pounds of CO₂
 - 2,000 pounds of NO_x
 - 1,900 pounds of SO₂

Emissions reductions are the equivalent of preserving 3.8 acres of forest, eliminating 2.9 railcars of coal, or taking 101 vehicles off the road for a year.

For each residence, the infrastructure improvements have created more comfortable living conditions. It was important to both the HRA and Siemens that the work—much of which was carried out in people’s homes—be completed with minimum impact on the families’ daily lives. Siemens and HRA worked together to ensure compliance with HUD requirements and to produce the best results in a public housing environment.

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