

## ***SYNOPSIS***

The City of Brooklyn Park underwent a complete redesign of the two ice rinks located at the Community Activity Center (CAC). The improvements use geothermal heat from the city's water system to efficiently cool the rinks and heat portions of the building. The project was completed in October 2010 and is one of the most energy efficient ice rinks in the world.

The ice rink project is part of a larger energy efficiency retrofit project that used a combination of stimulus money from the federal government's Energy Efficiency and Conservation Block Grants, Heritage Infrastructure Funds, sale of bonds and utility rebates related to energy savings. The City hired an outside firm, McKinstry, to complete the arena overhaul as part of a \$6.3 million citywide energy-efficiency project. The whole project will pay for itself in just over twelve years.

The purpose of the project was simply to extend the life of our ice arenas. However, it quickly evolved into something much more. The Project did extend the life of the rink by 20 plus years; but because of the innovative design of the new system, we have the most energy efficient ice operations in the nation – and likely the world.

The ice arena was opened in October 2010. Highlights of the project include:

- Project will provide positive cash flow to city budget after 4 years.
- Project will reduce the city's carbon footprint and environmental impact.
- Reduction of 1.7 million pounds of CO<sub>2</sub> annually. Carbon reduction is equivalent to taking 141 cars off the road.
- Reduction in city's electric consumption of 317,000 kWh. Electric reductions are equivalent to 30 average households.
- Reduction in city's natural gas of 111,000 therms. Gas reduction equivalent to 117 average households.

The \$4.5 million overhaul of the arena requires half the energy it once did to perform at the same capacity. The total project will save the city more than \$250,000 per year in utility and operational costs. \$60,000 of these savings will come from the changes being made to the CAC ice rinks.

## ***INNOVATION STUDY COMPONENTS***

### **1. Innovation/Creativity**

a. How did the idea/program/project/service improve the organization?

The City of Brooklyn Park now spends \$250,000 less each year on energy and utilities.

b. Were new technologies used?

YES

- If yes, what methods and/or applications were implemented?

The compressors that run the refrigeration system now can do so more efficiently because they are constantly cooled by a stream of untreated 51-degree water that the activity center intercepts as water flows between the city's well and treatment plant, about half a mile away.

The system also can react to, and make use of, warm and cold outdoor air and it is able to employ excess heat and cold, for example, by using waste heat to warm the water used to resurface the rinks, or to provide heating or cooling elsewhere in the Community Activity Center

b. Was a consultant used?

- If yes, describe their involvement; and
- Identify the consultant and/or firm, including contact information

The McKinstry Company led the project in cooperation with our Operations and Maintenance Staff.

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## 2. Outcomes Achieved

a. What customer/community needs and expectations were identified and fulfilled?

- Saved the city more than \$250,000 per year in utility and operational costs and reduced 1.7 million pounds of CO<sub>2</sub> annually. Carbon reduction is equivalent to taking 141 cars off the road.
- Reduction in city's electric consumption of 317,000 kWh. Electric reductions are equivalent to 30 average households.
- Reduction in city's natural gas of 111,000 therms. Gas reduction equivalent to 117 average households.

b. Has service delivery been enhanced?

c. Did the initiative improve access to your government?

- If yes, how?

c. Has the health of the community improved as a result?

- If yes, how?

This facility also uses electric resurfacing machines and carbon monoxide monitors to make sure the air quality inside is safe -- this has been a problem at many indoor rinks

## 3. Applicable Results and Real World Practicality

a. What practical applications will be shared?

We will share how to use innovative financing to leverage projects and how to capture heating/cooling benefits of geothermal in the water supply.

- b. How applicable is the idea/program/project/service to other local governments?
- c. What results/outcomes will you share?
- d. Include any applicable performance measures, if any.

•**1.7 million pounds:** Annual carbon reduction, the equivalent of taking 141 cars off the road.

•**317,000 kilowatt hours:** Annual reduction in electric energy consumption, the equivalent of 30 average households' use.

•**111,000 therms:** Annual reduction in natural gas consumption, the equivalent of 117 average households' use.

•**1.3 billion gallons:** Amount of well water annually flowing past the center to a treatment facility, providing rink equipment cooling along the way.

#### **4. Innovation Study Presentation**

- a. Describe your innovation study presentation. For example:
  - PowerPoint, video
  - Interactive group activity
  - Handout materials
  - Live demonstration(s)

PowerPoint and video with some handout materials.