

Creating and piloting a city-wide, behavior-based energy efficiency program

According to the U.S. Department of Energy (DOE), commercial buildings represent just under one-fifth of U.S. energy consumption, with office space, retail space, and educational facilities representing about half of commercial sector energy consumption.¹ ENERGY STAR® estimates that it is often possible to reduce energy use by 10 percent through low- or no-cost operational or behavioral strategies.²

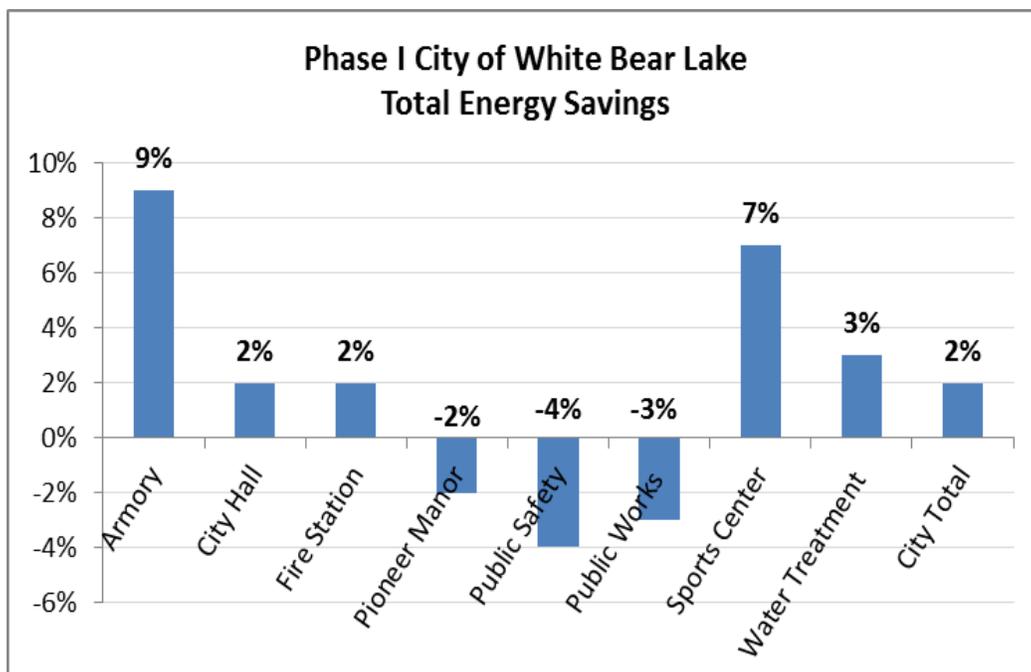
In 2011, [Class 5 Energy](#) received a CARD grant to develop and implement a citywide, behavior-based energy efficiency program to capture some of those low- and no-cost energy savings. The goal was to establish a program that would lead to broad participation and significant and sustainable energy savings by coordinating a comprehensive program through city administrators and the businesses serving the community. The grant focused on creating and testing various program and support components during three distinct phases.

Phase I

Class 5 selected the [City of White Bear Lake \(WBL\)](#) as a pilot partner based on their previous sustainability efforts and their enthusiasm for adding a behavioral component. Beginning in March 2012 and running approximately 27 months, a Class 5 program consultant worked closely with WBL's assistant city manager and a designated energy efficiency coordinator (EEC) to design, implement and evaluate the program in eight city-owned facilities.

For this phase, Class 5 created an "energy program in a box," which included a 10-step program guide intended to walk the EEC through the steps of the program with only light support provided by Class 5. The intention was to explore an approach that would lower the cost of the program while still providing all the details and materials needed for successful implementation. WBL saved more than \$36,300 and reduced overall energy use by 2 percent. Savings ranged from -4 to 9 percent for the various city-owned buildings that participated in the pilot (Figure 1).

Figure 1: Phase I Total Energy Savings for White Bear Lake

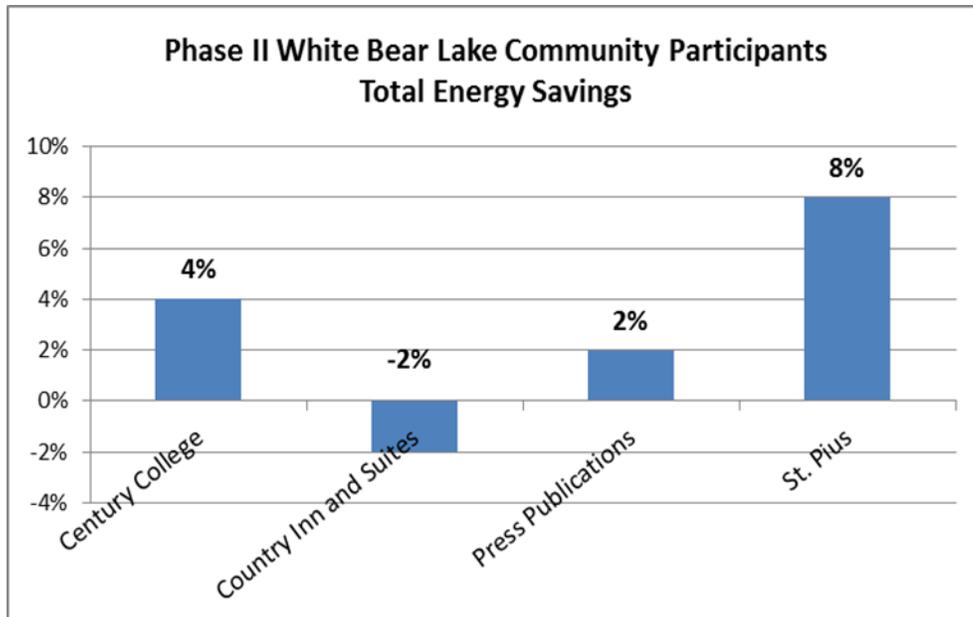


Phase II

Class 5 worked with city leaders and the [WBL Area Chamber of Commerce](#) to identify eight area businesses that were interested in participating. These businesses included the local newspaper, two hotels, a manufacturing plant, two private schools, a community college, and a clinic. This phase lasted from January 2013 to August 2014. As with Phase I, each participating organization received an “energy program in a box,” as well as start-up training and light support from Class 5 Energy.

At the end of 12 months, as a result of staff turnover within the participating organizations, only four participants remained. The four participants achieved savings ranging from -2% to 8% (Figure 2).

Figure 2: Phase II Total Energy Savings for White Bear Lake Community Participants



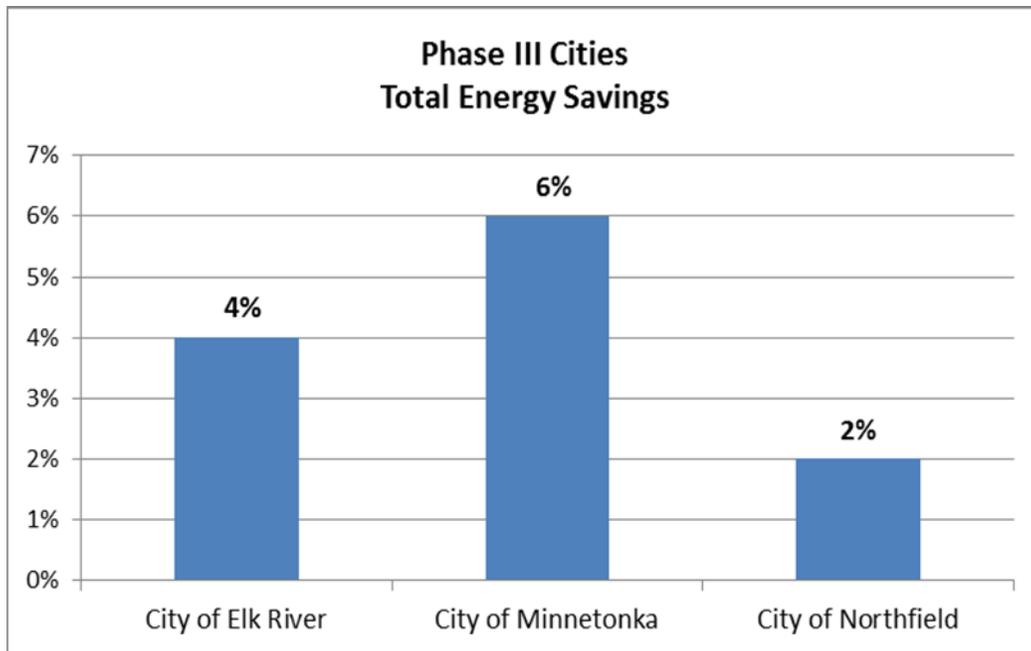
Although three of the four participants who stayed with the pilot for at least 12 months experienced reductions in energy use and costs, several key challenges became apparent during Phases I and II:

- Staffing is an issue for cities. After years of cutbacks, most cities are short-staffed. Even when a person has been assigned to work as the EEC, it is difficult for them to dedicate sufficient time to the energy program as they are often putting out other, higher priority “fires.” Also, many cities do not have a dedicated facilities team, and certainly don’t have individual building operators. In White Bear Lake, one engineer was in charge of monitoring and maintaining all city-owned buildings with the help of a few maintenance workers.
- Employee turnover was higher than expected based on previous experience in the education or healthcare sector. Of the nine organizations that agreed to participate in Phase II of the pilot, three experienced leadership turnover that resulted in them dropping out of the pilot.
- The do-it-yourself approach of the “energy program in a box” failed to provide adequate motivation and accountability for participating organizations. In the absence of ongoing reminders and “nudging,” assigned tasks simply did not get accomplished.

Phase III

In the third phase, Class 5 incorporated learnings from earlier phases to test a new coaching-based approach that provided a greater level of ongoing implementation support while still keeping program costs low. Class 5 sent out invitations to participate in the pilot through the [Minnesota GreenStep Cities](#) program. More than 15 cities applied and after interviewing eight, four cities were selected to participate: [Duluth](#), [Elk River](#), [Northfield](#) and [Minnetonka](#). Three of these four cities piloted the program from September 2014 to September 2015; Duluth, unfortunately, was forced to drop the pilot when their EEC abruptly resigned, but savings for the remaining three cities ranged from 2% to 6% (Figure 3).

Figure 3: Phase III Total Energy Savings for GreenStep Cities Participants



During the course of the pilot, Class 5 and the EECs developed various creative strategies and activities to communicate the ongoing message of reducing energy use in city buildings and businesses, including:

- Shut-off stickers to be used on monitors, light switches, printers, etc.;
- Take 5 – tip sheets with five simple ways to save energy developed for specific audiences;
- Educational and awareness posters;
- Weekly “green update” emails focused on energy facts, statistics and tips;
- “Soup and sustainability” lunches;
- “I am here but conserving energy” door hangers;
- YouTube videos focusing on energy tips and sent to all employees (one example is: [Vampire Energy](#)); and
- Online competitions for all employees with a prize drawing for participants.

Figure 4: Example of door hangers developed by the City of Elk River during the pilot



Based on the results of Phase III, Class 5 is optimistic that the new coaching model is a key component to successfully implementing a behavior-based energy program. This new approach allows an implementer to essentially build a custom program for a specific end-user as they go. Presenting the information in several modules rather than in one large guide makes it easier for the EECs to digest the information as they need it. And the ongoing documentation makes it easier to see what tasks have been completed and which are still outstanding. This approach also adds a level of accountability and a deeper sense of ownership within the organization.

Based on exit interviews, the majority of participants in all three phases acknowledged that Class 5's program made them aware that individuals can have an impact on organizational energy costs and that they are more likely to engage in energy-saving behavior.

To find more specifics on this project, see the full report, [Class 5 Plan for Cities: Creating and piloting a city-wide, behavior-based energy efficiency program](#), or contact project manager and CARD program administrator [Mary Sue Lobenstein](#).

References

¹ DOE, [2011 Building Energy Data Book](#), Section 3, 2011. Accessed May 6, 2016.

² ENERGY STAR, [Improve Energy Use in Commercial Buildings](#). Accessed May 6, 2016.