

## **2010 NCSHA ANNUAL AWARDS FOR PROGRAM EXCELLENCE**

Category and Subcategory:  
Management Innovation - Operations

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**30 % Off the Building's Energy Bill is just the beginning-  
The savings don't have to end there!**

### **OVERVIEW**

More than a century ago, the John A. Roebling Industrial Complex produced wire rope and other materials for the bridges and buildings of the United States. The building, abandoned in the 1950s was restored through a cooperative effort of the state and a private developer in 1995 and became the new home to New Jersey Housing and Mortgage Finance Agency. The factory is a vast space with windows and a series of roof monitors that flood the 66,000 square foot interior with light from above.

Like many agencies, New Jersey Housing and Mortgage Finance Agency (HMFA) noticed an increase in energy costs for their building. An energy team consisting of an electrical engineer, architect, administration and building facilities staff met to discuss energy efficiencies that could be achieved as they were concerned about the growing cost to operate the building.

The goal of our project was to save money by making smart, energy efficient upgrades.

### **PROVIDING BENEFITS THAT OUTWEIGH COSTS**

#### **Installation of a 103kW Solar Photovoltaic System**

HMFA has converted its main office building located at 637 South Clinton Avenue in Trenton into a more energy efficient building with the installation of a 103 kW solar photovoltaic system that will reduce the Agency's electrical costs by approximately 30%. This system includes an interactive screen in the lobby that illustrates how solar PV works, how much energy was produced and estimates the amount of reduced carbon emissions. HMFA received a rebate in the amount of \$323,196 from the Board of Public Utilities' Office of Clean Energy for this project.

In converting our building, HMFA, as the administrator of the state's Green Homes Office, is instituting the same energy saving practices that we advocate daily to builders, developers and residents throughout the state through programs that provide financial and technical assistance with sub-metering, solar photovoltaic, healthy interior, and other energy saving materials and practices – for the rehabilitation and construction of affordable, market rate and special needs housing.

An "Energy Team" was assembled to develop concepts, specifications and design approach for the solar PV installation at the HMFA building. A decision was made to provide a solid

galvanized steel mounting system to support the solar panels which can withstand 150 MPH wind load. The system makes innovative use of an unused asset- the roof of the building. This unique system provides the following advantages: minimal roof penetrations resulting in less potential for roof leakage and the ability to maintain and replace the existing roof without any disturbance of solar panels. In addition, the solar system can be expanded easily by adding additional structure and panels.

In November, 2008, HMFA's photovoltaic system went live. Since inception there has been a reduction in the utility energy demand/kWh and consumption. The system has been generating SRECs that are being sold in the marketplace. As of December, 2009 we reduced our energy demand/kWh by 150,000 kWh. Annual electrical energy savings are approximately \$19,500. Through December 2009 the system generated 119 SREC and revenue of \$78,647 for a total savings of \$98,147.

### **Light Sensors**

As simple as it sounds, one of the easiest ways to conserve energy is to turn off things when not in use. At HMFA we installed sensors in every conference room and in every bathroom. When not in use, the lights are off and energy is saved.

### **Installation of Twelve Solar Tubes in Administration Highbay Section and Installation of Three LED Night Lights**

In April, 2010 the Energy team met once again to address the efficiencies that could be obtained by converting nine (9) 400 watts and nine (9) 150 watt metal halide fixtures with twelve (12) solar tubes. A "tubular skylight", or "Tubular Daylighting Device", is the oldest and most widespread type of light tube used for daylighting. A tube lined with highly reflective material leads the light rays through a building, starting from an entrance-point located on its roof or one of its outer walls. At the end point (the point of use), a diffuser spreads the light into the room.

The electrical demand reduction is based on a conservative estimate of operating lights out 59% of the time between the hours of 8-5 pm. HMFA conservatively estimates that we will save approximately \$1,723 per year through the reduction of lights and air-conditioning.

### **Paying the Utility less for each watt used**

HMFA recently participated in a statewide bid for the supply of electricity. Starting with our June 2010 meter reading, HMFA should receive a 35% reduction (average annual savings) in the power supply bills. Even better, this lower price will stay fixed for the next three years, with no increases over that time. As electricity costs continue to rise in the state, we will be able to more effectively budget for our energy needs.

## **ABILITY TO REPLICATE**

Forming a partnership of employees with different skill sets such as our energy team is a valuable tool that can go a long way to determine efficiencies and operations that can be

implemented at any organization. The energy efficiency tasks that we have completed can be replicated by any other HFA.

### **ACHIEVING STRATEGIC OBJECTIVES**

Our energy team, in undertaking these projects, has cut our demand for energy by increasing energy efficiencies, reducing wear and tear on our HVAC and lighting equipment, and getting the best out of our investments in infrastructure. And the transformation does not stop with these improvements. We are evaluating tools that can be used throughout the business day that do not impact people from doing their work.