ENERGY STAR Success Story:
Mark Twain House & Museum

The Mark Twain House & Museum

Built in 1874, the Mark Twain House & Museum is considered one of the premier tourist attractions in the State of Connecticut. This 19-room Victorian home changed owners numerous times before the Mark Twain Memorial and Library Commission, a non-profit organization chartered by the State of Connecticut, purchased and restored the house in 1929 for historical and educational purposes. The Museum comprises the 12,298-square-foot Main House (the historic house of Mark Twain) and the 4,935-square-foot Carriage House (the location of all staff offices). The state-of-the-art 33,000-square-foot Museum Center was added in 2003, thrusting the Mark Twain House & Museum into the 21st Century. The Main House became a dedicated historic landmark in 1963 and attracts more than 60,000 visitors a year.

As part of its restoration efforts, the Mark Twain House & Museum has developed an energy management program as part of a larger sustainability initiative, achieving significant energy savings and earning a number of environmental awards for their dedication to resource conservation and environmental education.

Energy Management with ENERGY STAR
In 2007, the Museum implemented an energy management program using the Environmental Protection Agency's (EPA) ENERGY STAR Guidelines for Energy Management as a foundation to identify low-cost/no-cost conservation measures. Under the direction of the Museum's Director, Jeff Nichols, a green team was established consisting of the Accounting Manager Lynn Gregor, Energy Manager Daryl DeJean of Emerging Technologies Associates, Inc, and Museum ENERGY STAR consultant Lee Stevens of Emerging Technologies Associates, Inc. The green team works closely with staff, board members, visitors and other museums to identify and expand energy efficiency measures.

In January of 2009, the Museum began to benchmark the energy use of the Museum Center using EPA's online energy management and tracking tool, Portfolio Manager. By using the tool to establish a historical baseline for energy consumption of January 2008, the Museum has been able to set reduction targets and focus on low-cost/no-cost measures.

Examples of these efforts include:

- Replacing incandescent and halogen based lighting with LED lamps
- Turning off and unplugging equipment when not in use
- Recommissioning the HVAC and boiler systems to a more appropriate operating schedule
- Installing occupancy sensors throughout building.

These efforts have resulted in energy and cost savings, extension of equipment and lamp life and a decrease in maintenance needs. As of September 2009, the Museum has realized a reduction of 138 kBtu/sq ft. when compared to their baseline period. The Museum's electricity and natural gas costs during this time period fell almost 38%. By using Portfolio Manager and ENERGY STAR's staged approach in implementing energy efficiency measures, the Museum was able to demonstrate a significant decrease in their weather normalized energy use intensity from October 2008 through September 2009, showing that the Museum was performing 24% better than the national average for entertainment facilities across the country.[1] In October 2009, the Mark Twain House & Museum became one of the first museums in the country to become an ENERGY STAR partner and is incorporating the ENERGY STAR partner logo into all promotional materials.

The Museum is dedicated to continuous improvement using ENERGY STAR's staged approach and plans to research a number of additional measures in order to achieve the deepest energy savings possible. As such, the green team has identified the following projects under consideration for 2010:
Potential projects include:

- Upgrading additional lighting fixtures in the Museum Center
- Retrofitting the HVAC unit in the Main House

[1] "The Energy Information Administration's Commercial Building Energy Consumption Survey (CBECS) 2003 indicates that the average energy intensity of an entertainment facility is 265 kbtu/sf/year."

- Incorporating renewable energy sources into the Center, including solar panels

Implementation of these projects will be based on energy and cost savings calculations as determined by the green team.

Other Green Initiatives and Accomplishments
In 2004, the Mark Twain House & Museum became the first museum in the United States, and the first building in Connecticut to earn Leadership in Energy and Environmental Design (LEED) certification for the Museum Center from the U.S. Green Building Council. This honor demonstrates the Museum's dedication to sustainable site development, water and energy conservation, materials selection, and indoor environmental quality. In addition, the Museum was presented with the *Environmental Leadership Award* from the Connecticut Green Building Council and in 2004, the *Green Circle Certificate* from the Connecticut Department of Environmental Protection. In 2009, the Museum received the *Connecticut Green Business Award* from Business New Haven, a non-profit organization recognizing green projects in the state.

Employee and Visitor Engagement
The Museum is dedicated to educating staff and the public about their conservation efforts. Director Nichols and Curator Patti Philippon give regular presentations to members of the business community on implemented projects. ENERGY STAR brochures are distributed to employees during staff meetings and to visitors upon entrance of the Museum.

In the fall of 2009, the Director and Energy Manager presented at two Connecticut Energy Efficiency Fund seminars which were attended by over 200 facility managers, directors of engineering, and CL&P staff. Additional seminars are planned for 2010 on the topics of ENERGY STAR and lighting retrofits. The curator regularly meets with other museums in the area as well as the Rockefeller Foundation to promote the Museum's energy efficiency efforts.

Continuous Improvement
The Museum is planning to implement additional energy efficiency measures in 2010 including:

- Performing feasibility study to incorporate solar energy at the Museum,
- Replacing incandescent lamps to LED's or cold cathode lamps in the historic Main House,
- Replacing inefficient high intensity discharge (HID) lighting to high efficiency, induction or LED, parking lot lights and other outdoor area lighting.

As such, the Mark Twain House and Museum remains committed to improving energy performance, reducing greenhouse gas emissions, pursuing sustainability excellence and serving as a role model to other museums across the country.