ENERGY STAR Success Story: Reuben H. Fleet Science Center

The Reuben H. Fleet Science Center (the Fleet) is one of twenty-four arts, science, and cultural institutions that are part of San Diego's Balboa Park Cultural Partnership. The Partnership launched a sustainability initiative in 2008 along with the City of San Diego and San Diego Gas & Electric® (SDG&E) with the goal of improving energy efficiency and reducing resource consumption at the Park's cultural institutions. To date, Balboa Park venues have decreased electricity usage by more than 3.5 million kWh and 87,000 therms of natural gas, realizing savings of $530,000.

Built in 1973, the Fleet serves as a leader and a model in environmental sustainability to venues of Balboa Park and other entertainment facilities across the country. For over a decade, the Fleet has implemented a number of energy efficiency initiatives, and continues to realize significant energy savings on an annual basis. By promoting and engaging staff and visitors in these initiatives, the Fleet plays a key role in demonstrating the importance of energy efficiency and greenhouse gas emissions reductions to the public.

Energy Management with ENERGY STAR

The Fleet uses the U.S. Environmental Protection Agency's (EPA) Portfolio Manager tool to identify energy performance differences in their building, prioritize investments, and track post-investment performance. Portfolio Manager has been especially useful in demonstrating the building's improvement over time. The Fleet began using Portfolio Manager to benchmark in early 2009, but entered energy consumption and cost information going back to 2006. By using Portfolio Manager, the Fleet's energy manager was able to quantify that the building's weather normalized energy use intensity from June 2008 through May 2009 decreased significantly, and is performing 46 percent better than the national average for entertainment facilities across the country.[1] Projects that have been implemented by the Fleet are reflected in the matrix below.

Completed Energy Efficiency Projects at the Fleet Center: 2003-2009

Project	Date Completed	Energy Savings
Installed Turbocor Smart Chillers	March 2007	33,700 therms
Installed VFD's on old Air Handlers	September 2007	62,930 kWh
Theater Halogen Floods replaced with LED's	December 2008	22,416 kWh
50 Watt Halogen lamps replaced with LED's	January 2009	5,727 kWh
Converted Behind Dome Lights From T-12's to T-8's	January 2009	6,898 kWh
Changed 50 & 70 watt mercury vapor with CFL's	July 2009	3,000 kWh

In addition to these measures, the Fleet partnered with San Diego Gas & Electric (SDG&E) and the City of San Diego to install 10,000 square feet of photovoltaic panels (PV) on its rooftop in 2007, with a capacity to generate up to 100 kW of renewable energy. All of the energy produced by the project goes directly to the power grid.

[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."

The Fleet continues to set the bar high to reach additional levels of efficiency. The facility director is accountable for monitoring energy usage and identifying opportunities for performance improvements.

Regular meetings are held between the facility director and the Fleet's chief operating officer to explore new opportunities and identify measures to help meet goals of decreasing energy use by 15% during the next two years. These measures include:

- Replacing 24 hour T-8 lighting to more energy efficient T-5 lighting fixtures and reducing the number of lights by one half
- Changing theater step lights to CFLs
- Upgrading HVAC controls and variable frequency drives on boilers

These replacements and upgrades are estimated to save an additional 137,000 kWh of electricity and 2,300 therms of natural gas.

Employee and Visitor Engagement

The Fleet understands that capturing the attention of both staff and visitors is important to encourage participation and inspire individual actions. Formal training has been held for custodial staff on specific policies regarding green cleaning practices and waste disposal options. Whenever possible, the purchasing team buys environmentally-preferable materials including recycled office paper, low-VOC paints, and ENERGY STAR appliances.

The Fleet's interactive exhibits, including the *SoWatt!* exhibit highlighting the museum's rooftop PV panels, are used to educate visitors about renewable energy. A second exhibit, *San Diego's Water: From Tap to Source,* stresses the importance of the city's water conservation efforts. The Fleet has also hosted a sustainability workshop series co-sponsored with SDG&E to increase awareness among the public.

The Reuben H. Fleet Science Center continues to expand its sustainability efforts and hopes to serve as a model entertainment venue for urban museums across the country and meets regularly with the other museums of the Balboa Park Cultural Partnership to share project ideas and best practices, and to provide mentoring support.

"We are proud to be a part of the ENERGY STAR partnership to benchmark museums," says David McGrew, Director of Facilities & Engineering at the Fleet. "Through ENERGY STAR, we are tracking our energy conservation efforts over time and will be able to measure our success and compare our results to other similar institutions. Our goal is to educate the community about energy conservation and to lead by example. We have reduced our power usage by approximately 25 percent over the last ten years, and during the summer months alone, by about 20 percent." McGrew continues, "Conserving energy can be as simple as changing a light bulb or turning off lights, and that is an aspect that we want to show the public. Our next big step is to become LEED EB O&M certified by December of 2009. But, our job will never be done because there are always ways to be more energy efficient."