Energy Efficiency Programs in Action

Case Study: WELLFLEET FIRE AND RESCUE FACILITY

PROJECT DESCRIPTION

Recognizing the need for a modern Fire and Rescue facility, the Town of Wellfleet purchased property in 2006 and approved funding to move forward with building the new structure. Chief Dan Silverman, a former builder with a keen eye for excellence in construction, took a leadership role and championed plans to build a superior facility that would serve taxpayers 50 years into the future. Forming a team of like minded individuals, which included Tom Ferreira and Adam Levinson from the station, George Moe and Hugh Guilderson of the Town Building and Need Assessment Committee, the first task was to conceptualize a functional facility that was highly energy efficient with a comfortable and inviting work atmosphere.

PROJECT FACTS

- Area: ***21,389 SF***
- Fuel: ***Propane***
- Total project cost: ***$8 million***
- Cape Light Compact incentive: ***$13,778.00***
- Annual kilowatt hours saved: ***67,155 kWh***
- Approximate annual savings (based on $0.20 kWh): ***$13,431.00***

Cape Light Compact was engaged in the early planning stages to provide a custom report detailing savings opportunities through energy efficient upgrades and incentive funding for implementing recommended measures.

In March of 2009, the facility was occupied and meeting the needs of the community. The result of this collective effort produced one of the most energy efficient Fire and Rescue stations in the region with room to grow with the town. The building and grounds are easy to maintain and use the latest "green" technology to enhance the essential business of Chief Silverman and his staff – to serve and protect.

"Cape Light Compact worked with the Wellfleet Fire Department to suggest the use of more energy efficient ballasts and bulbs throughout our new fire station. Not only did this let us qualify for a nice incentive, but it will lower the energy costs for the Town over the life of the building and reduce our impact on the environment. The Compact was very helpful to us as we looked for ways to minimize the operating costs and environmental effects of our new station."

Chief Dan Silverman
Wellfleet Fire Department

PROJECT TEAM

Dan Silverman:	Chief, Wellfleet Fire Department
Architect:	Keenan and Kenny
Alan R. Mulak:	Energy Engineer and Consultant, Alan R. Mulak, PE LLC
John Burns:	Commercial & Industrial Energy Efficiency Program Planner, Cape Light Compact
Vicki Marchant:	Commercial & Industrial Energy Efficiency Program Analyst, Cape Light Compact

ENERGY EFFICIENCY FEATURES

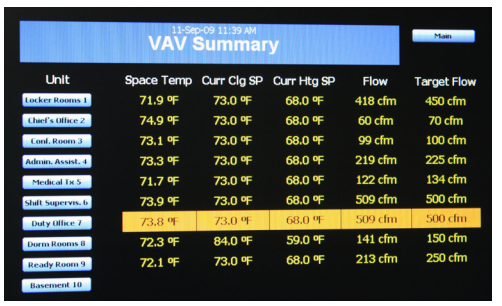
Solar Thermal
The water is heated via three solar thermal panels made by Viessmann. These panels are so effective, that two have been turned away from the sun as one panel is sufficient to provide all domestic hot water needs. In the future, the other two panels will provide hot water for the radiant heating system in the apparatus bay (pictured at left).

Lighting
All lighting is High Performance T8s in direct/indirect fixtures, LED, and together, well below the Massachusetts Energy Code for Lighting Power Density.

Occupancy Sensors
Sixteen (16) dual sensing occupancy sensors were installed on ceilings and wall switches.

Variable Frequency Drives
All fans and Variable Air Volume boxes have drives to match output with required load.

Full Condensing Boiler
Water for the apparatus bay radiant is heated via a 95% efficient Viessmann boiler (pictured at right).



Air Conditioning / Building Management System
The HVAC system is controlled by a computerized Building Management System. This room-by-room control allows the HVAC load to match occupancy patterns, thus promoting energy efficiency and comfort (pictured at left).

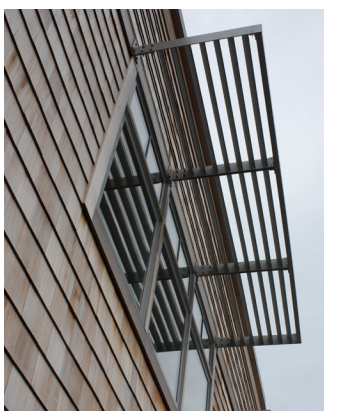
GREEN FEATURES

Interior Insulation
Being adjacent to a highway, the road noise could have been an issue to staff and occupants. To mitigate this potential issue, interior walls were insulated, thus absorbing sound and reducing stress levels for staff as well as providing thermal building shell benefits. The impact of this upgrade cannot be minimized as the nature of the work performed by the on-site professionals can be extremely stressful.

Water Storage Capacity
Two underground water storage tanks provide water for the sprinkler system and pump testing and training.

White Roof
The white roof reduces interior radiated heat in the summer, thus reducing HVAC load.

LEED style shading
Utilizing metal shades, solar gain is reduced without running the air conditioning (pictured at right).



Landscaping
The Wellfleet Fire and Rescue building blends into the local landscape in a pleasing manner. Several large trees on the property (some are Chinese Redwoods) were protected during construction. The remainder of the property was propagated with local plant varieties which thrive in the region with little maintenance.

ENERGY PERFORMANCE

The bar chart below indicates preliminary results comparing the Wellfleet Fire and Rescue to other similar facilities. This study group covers the local region as well as other areas of the country. The tool used to calculate energy intensity is Energy Star® Portfolio Manager. Facility type chosen is "office" (Fire and Rescue facilities are not recognized by the Energy Star® Building program). This superior energy performance will be improved further once the "tuning" of the air handling system is completed. In the future, if the solar hot water panels are used to preheat the water in the radiant system, the energy intensity will again be reduced.