Cape Light Compact

Project Case Studies: Green Affordable Homes

Gull's Nest, Provincetown, MA

May 4, 2008 Documented by Ben Winterhalter

Overview

Gull's Nest is the first Platinum LEED-H-certified moderate- and median-income housing complex in the nation. Located in Provincetown, it is comprised of 9 1-bedroom apartments available for $117,000, 5 more 1-bedroom apartments available for $165,000, and 3 2-bedroom apartments, one of which is available for $179,000, the other two of which are available for $199,000. The housing is intended for 1st-time homeowners of moderate to median income as defined by Barnstable County. The apartments were made available via a housing lottery hosted by Barnstable County's Community Housing Resource in Provincetown Town Hall. Partial funding for the project was provided by the Cape Light Compact, through a grant of $1.5 million from the Massachusetts Technology Collaborative.

The building is equipped with many energy-saving features, including spray-foam insulation, compact fluorescent light-bulbs, and a system of solar panels that help provide the building's power. Residents will be educated about energy conservation and the building's green features, and asked to commit to help in trying to conserve energy while living there.

Gull's Nest Energy-Efficiency Top 10

1. Photovoltaic system
2. Sray-foam insulation
3. Reused and recycled building materials
4. Liquid propane heaters
5. Instant hot water heater
6. Low-flow water fixtures
7. LoE windows
8. ENERGY STAR-certified appliances
9. Low-water landscaping
10. Compact flourescent lighting

Technical Specifications

Materials

The housing complex is built on the original foundation of the motel that once stood on the site, and salvageable wood from the existing structure was reused in the construction of the new housing, thereby reducing the amount of new materials required for its construction. The siding and trim is plastic, which, unlike wood siding, doesn't need to be replaced very often. Plastic siding also offers low maintenance costs, requiring only occasional pressure-washing. The siding is manufactured by Cedar Impressions and the trim by AZEK. The decks on the second floor of some units are constructed from recycled milk cartons and sawdust, thereby further reducing the new materials required. The building uses Lo-E windows manufactured by SilverLine, a division of Anderson Windows (model 1400 double-hung windows). The argon coating on these windows helps to retain heat. Bamboo, a more abundantly available resource than hardwood, is used for the flooring. The houses are well-insulated with spray-foam insulation, which helps to prevent air-infiltration and loss of heat. The countertops are granite,

This project funded by Cape Light Compact Energy Efficiency Programs

Cape Light Compact

Project Case Studies: Green Affordable Homes

Gull's Nest, Provincetown, MA

Solar Panels

The complex's photovoltaic panels are mounted on the South-facing side of the roof (this is the best direction from which to get sunlight). Each panel is capable of producing 175 watts, and the entire system is capable of generating 17.5 kilowatts of electricity. In reality, the system will be able to generate approximately 15 kilowatts on a sunny day and approximately 10 kilowatts on a cloudy day. Offsetting the loss in cloudy weather, the system's output increases as temperature decreases, thereby providing helping provide more energy during the cold winter months for heating. The complex is also connected to the main power grid, but priority is given to energy from the panels. And if the total demand for electricity in the building is less than the amount the panels produce, any excess energy is sold back to the main power grid. Mass Energy purchases the green energy credits from the building's excess output.

The panels are grouped into 11 strings: there are 10 strings which contain 9 panels each, and 1 string with 10 panels. The panels produce direct current, which is converted to alternating current for use in the building by a cluster of inverters mounted on the Western wall. The single 10-panel string is in the only area of the building where shade may block the

panels. Its output is converted separately, so that the minimum energy loss occurs when shade obscures the panel. The panels were installed by SolarWrights, Inc. a company based in Bristol, Rhode Island, and funding for them, totalling approximately $150,000 was provided by the Cape Light Compact.

Water

The building uses an instant hot water heater from Rinnai, which is more energy-efficient than a conventional water heater because it instantaneously heats water according to demand rather than maintaining a large tank of hot water. All toilets, faucets, and showerheads in the building are low-flow, thereby reducing overall water usage. In addition, runoff water from the rain gutters on the roof of the house is used to water the plants in the building's lawn and garden.

Heating and Ventilation

The building's heat is provided by liquid propane heaters, also manufactured by Rinnai. There are open floor vents which conduct heat from the ground floor, where the heating units are located, to the second floor. Ceiling fans on the second floor help to circulate heat. The liquid propane is stored in a centralized tank, though each resident controls his or her own heating via a thermostat.

Cape Light Compact

Project Case Studies: Green Affordable Homes

Gull's Nest, Provincetown, MA

The only ducts in the building are exhaust ducts for the shower and the kitchen range, thereby helping to keep air leakage to a minimum. The shower is equipped with a fan programmed to run 2 hours a day to help control moisture and thus prevent damage to the structure.

Lighting

All light-bulbs used in the building are compact fluorescents certified by Energy Star; this includes recessed lighting in the kitchen and other overhead lights. In addition, residents will be encouraged to use compact fluorescents in their appliances. Compact flouresents use, on average, about at rhird of the energy of incandescent bulbs, and last much longer.

Landscaping and Location

All landscaping on the property is done using non-invasive species, including birch trees and blueberry bushes. These plants also require little water, thereby reducing the amount of water required to maintain the property. The complex borders open space on the North and West sides, which is wooded land owned by the Cape Cod National Seashore. Residents will be able to access this land for recreational and other uses. Gull's Nest is located just a few miles from Provincetown center, providing easy access to post offices, restaurants, grocery stores, and other businesses.

LEED RATING	
PLATINUM	81
Sustainable sites	21/21
Water efficiency	10/15
Indoor Environmental Quality	9/20
Materials & Resources	2/14
Locations and Linkages	10/10
Energy & Atmosphere	21/38
Awareness & Education	3/3
Innovation & Design	5/9

Photos: Ben Winterhalter

Funding provided by the Cape Light Compact.