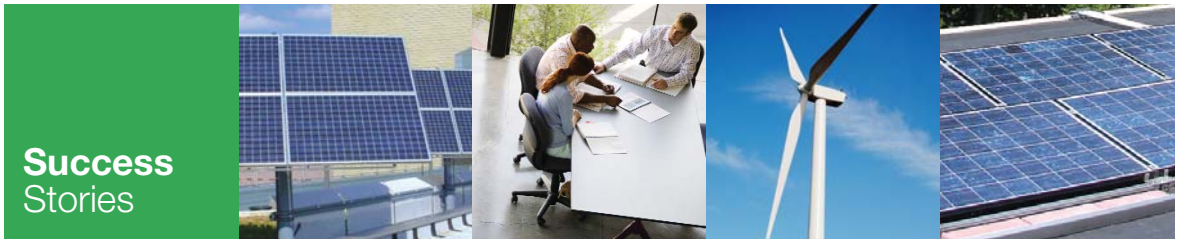
New Jersey's Clean Energy PROGRAM™

Your Power to Save



2006 New Jersey Clean Energy Leader

BASF: The Chemical Company Clean Energy Manufacturer

PROJECT INFORMATION

Organization
- **BASF**

Project Name
- **BASF Near-Zero Energy Home**

Location
- **Paterson, NJ**

Project Contact
- **Jack R. Armstrong, Leader, Building and Construction Markets**

Technologies
- **Zero-Energy Housing (ZEH)**
- **Partnership for Advancing Technology in Housing (PATH)**
- **Building Envelope**
- **Mechanical (HVAC)**
- **Solar Power**

Estimated Annual Savings
- **Reduces energy consumption by 80%**
- **270 therms of gas**
- **4,644 kWh**
- **Demand reduction of 3.22 kW per year from solar panels**

Clean Air Benefits (Emission Reduction Over a 12-Month Period)
- **Removal of 13,600 lbs. of CO_2**
- **Saves 4,760 lbs. of coal or 8.7 barrels of oil**

NJCEP Incentive/Rebate
- **$25,000 rebate via Solar Renewable Energy Certificates**

"BASF's technologies enable high performance in construction meaning: energy efficiency, low maintenance, durability, low life cycle cost, and ecological benefits. This project exemplifies all of these."

Jack Armstrong, Leader
Building and Construction Markets
BASF

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OFFICE OF CLEAN ENERGY

Background

The BASF Near-Zero Energy Home in Paterson, NJ, is a state-of-the-art structure that utilizes energy-efficient and sustainable building practices, while incorporating elements of universal design that can accommodate residents, regardless of age and physical mobility. This single-family home is equipped with a built-in, oversized garage with an elevator to the second floor, wheelchair ramps, and a specially designed suite for a handicapped individual.

The house has been donated to a local, nonprofit charitable organization, St. Michael's Housing Corporation, which has made arrangements to turn over the home to Richard Sosa, a quadriplegic boy, and his family, to accommodate their need for a permanent home capable of handling Richard's medical condition. The family will be in the home in the Spring of 2007.

Challenge

The BASF Near-Zero Energy Home was designed to serve as a model for more than 3,000 housing units to be built in Paterson, NJ. Architects, builders, government officials, and others toured the construction to see how energy-efficient, disaster-resistant housing could be built at an affordable rate.

In order to make the project happen, materials, labor, and support were secured from several sectors. BASF secured donated materials; labor and consulting services from customers, public, and private organizations; and support from municipal, state, and federal agencies including the New Jersey Solar Renewable Energy Certificate (SREC) Program, which provided approximately a $25,000 rebate.

Solution

The BASF Near-Zero Energy Home includes solar panels that allow the residents to produce power that can be sold back to their local utility during the summer months. Furthermore, the materials and design strategies affordably reduce the energy needed to heat and

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Success Stories

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cool the home while providing a structure that can withstand the effects of extreme weather conditions, including hurricane force winds.

Many of the building materials used in the project, including structural insulated panels, insulated concrete forms, metal roofs, solar water heaters, and radiant floor heating systems have been researched and extolled by federal agencies including the Department of Environmental Protection (DEP), and The Department of Housing and Urban Development (HUD).

The BASF Near-Zero Energy Home team created an energy modeling study and projected that when these materials were integrated in a systematic way, the result was a home that demands 80% less energy. The team knew that a traditional mechanical system for a house of equal square footage would cycle on and off unnecessarily and increase the home's energy demand. To solve this challenge, BASF turned to one of HUD's PATH (Partnership for Advancing Technology in Housing) teams to develop an appropriate system that was just the right size.

Benefits

BASF developed a permanent soil erosion and landscaping plan that utilizes more than 65% permeable paving material, a rainwater cistern and terracing, and retaining walls to reduce run-off. This landscaping plan also incorporated recycled stone and mulch as well as drought-resistant native plantings to provide water conservation. In addition to implementing energy-efficient and renewable energy technologies throughout the home, BASF was able to recycle the vast majority of its construction materials.

According to the U.S. EPA's ENERGY STAR® program, the BASF Near-Zero Energy Home will remove more than 13,600 lbs. of carbon dioxide from the atmosphere. This is the equivalent to saving 4,760 lbs. of coal or 8.7 barrels of oil. In addition to these environmental benefits, the Paterson home is expected to achieve maximum energy efficiency, which includes an 80% reduction of energy needed to heat and cool the home on a yearly basis.

The BASF Near-Zero Energy Home is also the first home in New Jersey to be designated Fortified...for safer living®. That means it goes beyond code for added resistance to natural hazards like high wind, hail, and earthquakes. A fortified home can also mean a significant reduction in insurance costs. In fact, the Fortified...for safer living program is sponsored by the Institute for Business & Home Safety, an initiative of the insurance industry.

HUD provided a grant to BASF for the construction of the home's mechanical systems and more than 50 companies provided products and services for the home.

For innovation, foresight, and leadership, BASF was awarded the 2006 Clean Energy Manufacturer at the New Jersey Clean Energy Conference and Leadership Awards.