Southwest Energy Efficiency Project
Saving Money and Reducing Pollution through Energy Conservation

High Performance Homes in the Southwest: Savings Potential, Cost Effectiveness and Policy Options Fact Sheet – November 2007

Overview

The southwest region—including the states of Arizona, Colorado, Nevada, New Mexico, and Utah —is the fastest growing region in the country. Approximately 2 million new single family homes are expected to be built in the region by 2020.

High Performance Homes in the Southwest: Savings Potential, Cost Effectiveness and Policy Options evaluates the energy and cost savings potential from constructing more efficient new homes in five Southwest states, and makes policy recommendations to achieve greater energy savings in new homes. This report analyzes the energy savings and net economic benefits of three tiers of home performance: ENERGY STAR (20-30% savings), Best Practice Homes (30-50% savings) and Net Zero-Energy Homes (50-60% savings) using the Building Energy Optimization model (BEopt) developed by the National Renewable Energy Laboratory (NREL).

Benefits of High Performance Homes

High performance homes are capable of achieving 40-60% energy savings by combining energy-efficient technologies and solar energy systems. These homes save homeowners an average of $1,600 annually on their energy bills, with positive monthly cash flow immediately.

Homebuyers benefit by having lower energy bills and a home that is more energy efficient, comfortable, durable, and environmentally friendly.

Homebuilders benefit by marketing a higher quality, higher value product, and one that costs less to own and operate.

States and cities benefit by having desirable communities that reduce demand for energy and natural resources.

Findings

The energy, economic and environmental benefits of improving the efficiency of new homes in the Southwest region are significant. Achieving the high performance home scenario analyzed in this report would result in the following energy and cost savings between 2008 and 2020:

- Over 2.7 billion kilowatt hours (kWh) of grid electricity savings – enough power to meet the annual electricity needs of approximately 25,000 typical households for 10 years.
- Reduction in residential natural gas consumption of 228 million therms (up to a 50% reduction in natural gas use per household).
- Summertime peak electricity demand would be reduced by 1,400 megawatts (MW), and average hourly summertime peak loads per home would be reduced 50-67%.
- A net economic benefit to Southwest households of $4.8 billion.
- Electricity from customer-sited solar PV systems would generate more than 500 million kWhs of electricity from 2008 to 2020, worth $52 million to homeowners.
- Emissions of greenhouse gases from power plants would be reduced by 2.4 million tons of CO_2 over 13 years.

The energy savings and net economic benefits by state are summarized in Table 1.

Table 1. Energy and Cost Savings by State: Cumulative Savings Between 2008 and 2020

State	Cumulative Energy Savings		Avoided Peak Demand (MW)	Net Economic Benefits (million 2008 $)	Benefit-Cost Ratio: EE Measures	Benefit-Cost Ratio: EE and RE Measures
	Electricity, Gigawatt Hours (GWhs)	Natural Gas (million therms)				
Arizona	1,159	34	592	$1,455	3.2	1.4
Colorado	606	106	293	$1,493	3.2	1.5
Nevada	425	13	309	$699	3.1	1.2
New Mexico	166	20	68	$366	3.6	1.9
Utah	354	55	153	$802	3.3	1.5
Region	**2,710**	**228**	**1,416**	**$4,815**	**3.3**	**1.5**

Recommendations for Utilities, States and Local Governments

Utilities, states and local governments all play an important role in advancing high performance homes. The report identifies best practices, implementation strategies and incentive programs that can significantly improve the energy efficiency of new homes. The report recommends the following actions for utilities, states and local governments:

Utilities

- Offer a 3-tiered incentive package for high performance homes, including incentives for best practice and net zero-energy homes.
- Support high performance building practices by providing technical assistance, training and marketing and outreach support to the building industry.
- Conduct evaluation and field monitoring studies to document home performance.

State governments

- Provide financial incentives for high performance homes, including tax credits and exemptions for high performing homes, energy efficient products and renewable energy systems.
- Adopt residential building codes that achieve at least 15% energy savings over typical energy codes.
- Partner with utilities and local governments to offer technical assistance, training and outreach to builders and homebuyers.

Local governments

- Adopt a green building program with mandatory energy efficiency criteria for new homes.
- Offer incentives such as expedited plan reviews or inspections to builders for constructing high performance homes.
- Educate homeowners about the features and benefits of high performance homes.

For more information
Copies of the complete study as well as the Executive Summary are available on the SWEEP Web site at: www.swenergy.org.