

Partnerships for Home Energy Efficiency

2006 Annual Report



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Executive Summary



Since its announcement in 2005, the efforts of the Partnerships for Home Energy Efficiency (PHEE) have been front and center in the national effort to promote energy efficiency in housing. The U.S. Department of Energy (DOE), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Environmental Protection Agency (EPA) took the unprecedented step on July 11, 2005, of jointly announcing the goal of a 10-percent savings in residential energy bills and consumption by 2015, with a primary focus on existing homes, which currently represent more than one fifth of U.S. energy consumption. DOE Secretary Samuel Bodman, HUD Secretary Alphonso Jackson, and EPA Administrator Stephen Johnson joined together to announce the Partnerships and their commitment to this goal. These leaders recognized the multiple benefits of decreased energy consumption that result in lower utility bills, an improved environment, and more affordable housing.

This ambitious energy saving goal continues to grow in importance. Energy costs escalated during the summer of 2006, and increasing world demand suggests that prices will remain volatile for a very long time. If energy prices continue to rise it will become more and more imperative that EPA, DOE, and HUD, whose missions are related in full or in part to the consumption of energy, work together to provide a coordinated federal approach that capitalizes on each agency's strengths and extensive network of partnerships throughout the private and public sectors.

THE GOAL OF THE PARTNERSHIPS FOR HOME ENERGY EFFICIENCY IS TO REDUCE RESIDENTIAL ENERGY CONSUMPTION AND COSTS 10% BY 2015

In 2005, Congress passed the Energy Policy Act (EPAct) in response to growing energy concerns and tasked the three agencies with a set of actions that range from implementing tax credits and advancing appliance standards, to enhancing outreach and developing plans to improve the energy efficiency of affordable housing. As each agency undertakes its responsibilities under EPAct, joint cooperation through the Partnership becomes paramount, since many activities are interrelated. For example, ENERGY STAR Qualified New Homes is affected by the tax credit rules developed by the U.S. Department of Treasury and DOE, and HUD's energy strategy for affordable housing will depend on increasing adoption of the DOE- and EPA-sponsored ENERGY STAR label for products, appliances, and new homes. The PHEE provides the framework for the three agencies to work toward the implementation of EPAct and realize the 10 percent energy reduction goal by 2015, that ultimately benefits the consumer.

THE THREE AGENCIES ANNOUNCED FOUR BROAD STRATEGIES

- Expand efforts to promote ENERGY STAR qualified products
- Develop new energy-efficiency services to provide homeowners with greater savings
- Promote energy efficiency in affordable housing
- Continue to invest in innovative research on building science technologies, practices, and policies

2005-06 ACCOMPLISHMENTS UNDER THE STRATEGIES

- ✓ National outreach on energy-efficient lighting is most successful to date.
- ✓ National outreach on heating gets the word out for the third year in a row.
- ✓ Home Performance with ENERGY STAR continues to grow as a whole-house retrofit solution for homeowners with 20,000 homes retrofitted to date.
- ✓ The ENERGY STAR Qualified New Homes specifications were revised to represent more value to new homebuyers.
- ✓ The multi-year project to develop guidelines for remodelers to improve the energy efficiency of homes kicked off in the fall of 2005.
- ✓ HUD completed its Phase I Energy Action Plan and began its Phase II plan to continue its commitment to upgrading energy efficiency in affordable housing.
- ✓ The HVAC Best Practices Guides for home remodelers to promote proper installation were released.
- ✓ The Building Performance Institute finalized its national technician certification and contractor accreditation program through a grant from EPA, DOE, and HUD.
- ✓ The 30 Percent Best Practices Builder Guides for the hot-humid, hot-dry and mixed dry, cold and very cold, and mixed humid climates were released.
- ✓ Proper installation guidelines for technicians were developed, serving as the basis for an ENERGY STAR proper HVAC installation program.
- ✓ Remodelers received Energy-Efficient Remodeler Training about how to add energy-efficient upgrades to remodeling projects.
- ✓ Six new regions adopted Home Performance with ENERGY STAR as their whole-house retrofit program.
- ✓ Eighty percent of all HUD grantees in New England adopted ENERGY STAR Qualified New Homes specifications for new construction and substantial rehabilitation.

Introduction

THE PARTNERSHIPS FOR HOME ENERGY EFFICIENCY

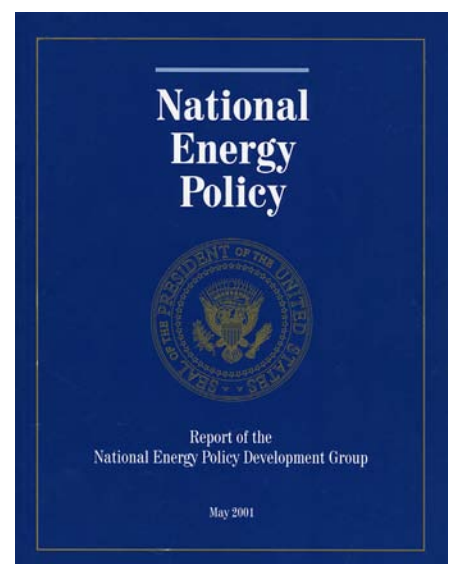
In July 2005, three federal agencies—the U.S. Department of Energy, the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency—announced a collaborative effort to improve the energy efficiency of America’s existing housing stock. This effort is called the Partnerships for Home Energy Efficiency. The PHEE is designed to draw upon the collective resources, expertise and public-private partnerships of the three agencies to develop and execute a multi-pronged effort to reduce energy use by an average of 10 percent in America’s homes over the next nine years.

THE IMPORTANCE OF THE PARTNERSHIPS FOR HOME ENERGY EFFICIENCY

The PHEE is an interagency effort that grew out of the Bush Administration’s 2001 National Energy Policy, which emphasized the nation’s need for a long-term comprehensive energy policy. The Report of the National Energy Policy Group identified the need to develop innovative strategies to advance new environmentally friendly technologies to increase energy supplies, and encourage cleaner, more efficient energy use. Further, the Report noted:

“There are significant opportunities to improve the energy efficiency of buildings and homes through technologies and better practices. For existing homes, immediate options for improving efficiency include reducing air infiltration with caulking and weather stripping, installing modern thermostats, sealing ductwork, and adding insulation. These steps can reduce the 40 percent share of residential energy bills that go toward heating and cooling. Additional savings are possible when efficient appliances are purchased or major home renovations are undertaken. Installing a new, more efficient gas furnace can save up to 20 percent annually on natural gas. New buildings offer the greatest energy-efficiency opportunities and can be designed to be both more comfortable and more efficient, cutting heating and cooling costs by close to 50 percent.” (Report of the National Energy Policy Group, pp. 4/6-4/7)

Over the years, the three agencies that support the PHEE have been working with various private sector groups to promote energy efficiency and advance these goals. Much progress has been made to date—new homes are substantially more efficient on a per-square-foot basis than homes that were built in the 1970s and 1980s. Similarly, refrigerators built in 2006 require less than one-third the energy they did 30 years ago. The goals laid out in the National Energy Policy are ambitious. The PHEE is designed to ensure that the three agencies most responsible for directing the federal government’s response work in a





coordinated and cost-effective manner. Indeed, many of these government efforts work together for the benefit of homeowners. DOE's research into new housing construction assists the ENERGY STAR New Homes Program, providing research into technologies that help builders meet the ENERGY STAR specifications. Conversely, the ENERGY STAR brand helps these builders market their energy-efficient homes. HUD's extensive network of public housing authorities provides a ready-made distribution channel for energy-efficient products and processes for DOE and EPA. Also, HUD's affordable housing network provides considerable purchasing power that can drive the market toward energy efficiency.

The agencies responsible for developing new initiatives under the PHEE will build upon existing partnerships with manufacturers, retailers, home contractors and remodelers, utilities, states, financial organizations, and educational institutions, among others, to leverage the power and creativity of the marketplace. The PHEE is also designed as a platform from which to begin new initiatives, promote public-private coalitions, and eliminate barriers to improving efficiency in existing homes in the U.S.

The initial groundwork for this cooperation was laid out in HUD's Partnership for Advancing Technology in Housing (PATH) *Roadmap for Energy Efficiency in Existing Homes* in 2002. The PATH Roadmap was designed by a cross-industry team of builders, material and product suppliers, academics, researchers, and other home building industry stakeholders. The PATH Roadmap examined ways to strategically advance the adoption of new technologies into home building, and improve systems science and engineering standards in product manufacturing and residential construction.

The PATH Roadmap details a variety of priority activities for the existing homes market, including:

- Increasing the value homeowners associate with energy efficiency
- Improving retrofit building envelope performance technologies
- Developing a single industry protocol for practitioners
- Motivating practitioners to deliver energy-efficient solutions
- Providing consumer incentives for implementation
- Developing a performance monitoring system for energy-consuming equipment

RESIDENTIAL ENERGY

The average American household pays approximately \$1,900 a year for their energy use, while a typical household on federal assistance pays about \$1,270 a year (2006 Residential Energy Consumption Survey and Lawrence Berkeley National Laboratory). In total, Americans spend more than \$160 billion a year to heat, cool, light, and live in their homes. The price of energy continues to fluctuate. Gasoline prices at the pump were at near-record highs during the summer of 2006, natural gas prices are increasing, and across the country utility rates are making double-digit gains.

Where does it all go? The nation's 110 million homes use more than 22 quads (one quad = one quadrillion btus) of energy (21 percent of the national total), representing 17 percent of total U.S. electricity use and a substantial amount of natural gas (2005 Buildings Energy Data Book, U.S. DOE).

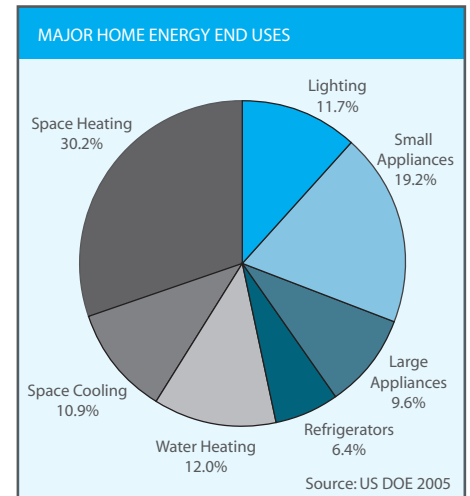
Residential energy consumption can be broken down into the following end uses:

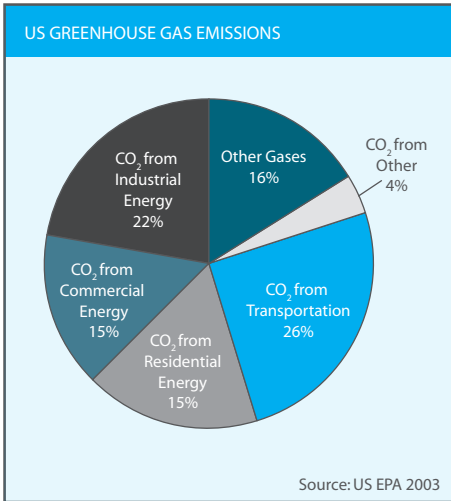
- Heating
- Air-conditioning
- Water heating
- Lighting
- Refrigerators
- Large appliances (clothes washers and dryers, cooking equipment, freezers and dishwashers)
- Small appliances (televisions, other home electronics, and home office equipment, among others)

Home heating, which is typically done with natural gas or oil, represents about 30 percent of home energy consumption and is the single biggest residential end use. This is followed by small appliances, water heating, lighting, and then cooling. Refrigerators alone consume more than 6 percent of total home energy use.

FUTURE HOME ENERGY USE

Much has been done over the past 30 years to successfully improve the energy efficiency of U.S. housing. In fact, while overall energy demands have increased with more electronics and larger homes to heat, cool, and light our energy use per person has remained relatively constant. This stability is attributable to government incentives, programs, and market-based advances in technology. American manufacturers are at the forefront of home energy-efficiency technology globally.





The U.S. housing stock is expected to increase to 130 million units by 2020. This will create an unprecedented opportunity for the building industry, with assistance from governmental programs, to introduce highly energy-efficient homes into the existing stock that will save homeowners an increasing amount on their energy bills. By building more efficient homes, greenhouse gas emissions, the leading cause of global warming, will also be reduced.

Between now and 2020, the major trends in home energy use are expected to include the following:

- Heating and cooling will increase to about 40 percent of total annual home energy use
- Small electronics' total energy use will increase by 70 percent
- Lighting electricity use will grow by 30 percent
- Large home appliances' energy use will increase by 10 percent
- Refrigeration energy use will decrease by 20 percent

BENEFITS OF ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

Opportunities exist for improving home energy efficiency. The federal government estimates that many households can reduce their home energy bills 20 to 30 percent cost effectively by taking the following steps:

- Selecting high-efficiency ENERGY STAR qualified products when shopping for refrigerators, clothes washers, dishwashers, and home electronics, among others
- Using ENERGY STAR qualified light fixtures and bulbs
- Improving the envelope of the home with the appropriate amount of insulation, sealing air leaks, and choosing high-efficiency ENERGY STAR windows
- Improving the energy efficiency of heating and cooling systems through better maintenance, sealing and insulating ducts, installing programmable thermostats, and correctly sizing the system

ENERGY SAVINGS COMPARISON OF NEW ENERGY STAR® QUALIFIED APPLIANCES VS. NEW NON-QUALIFIED APPLIANCES			
APPLIANCE TYPE	ANNUAL KWH SAVINGS	% ENERGY SAVINGS	SAVINGS OVER UNIT LIFE
CLOTHES WASHER	140	56%	\$486
DISHWASHER	72	24%	\$135
REFRIGERATOR ¹	68	13%	\$82
FREEZER ²	44	10%	\$45
ROOM AIR CONDITIONER ³	76	10%	\$71

Appliance Magazine "28th Annual Portrait of the U.S. Appliance Industry" September 2005

¹ Life expectancy of 13 years

² Life expectancy of 11 years

³ Life expectancy of 10 years

Additionally, taking all of these measures together by treating the house as a system will yield even greater energy and dollar savings while improving the overall efficiency of the home. The systematic approach, along with a home energy audit, helps determine the most cost-effective and energy-efficient measures to take first, which is particularly important for homeowners implementing a home improvement project on a budget. DOE and EPA are

working closely with industry, state, and local sponsors to implement Home Performance with ENERGY STAR, a whole-house retrofit program that applies these principles.

Steps taken to reduce energy use often pay for themselves, meaning that homeowners will save more in energy savings over the life of the product than it costs to purchase, install, and maintain. If more Americans took advantage of cost-effective, energy-efficient solutions, they could:

- Save a significant amount of money and improve our economy
- Save energy, including natural gas and electricity
- Reduce the number of new power plants needed
- Improve their quality of life
- Increase our national security
- Help reduce emissions of greenhouse gases



SAVINGS FOR ENERGY STAR® QUALIFIED COMPACT FLUORESCENT LIGHT BULBS

INCANDESCENT LIGHT BULB	COMMON CFL EQUIVALENT	ANNUAL SAVINGS NUMBERS*		SAVINGS OVER UNIT LIFE			
				6,000 HOUR BULB	8,000 HOUR BULB	10,000 HOUR BULB	15,000 HOUR BULB
40 WATT	11 WATT	32 KWH	\$3	\$17	\$23	\$29	\$44
60 WATT	13 WATT	51 KWH	\$5	\$28	\$38	\$47	\$71
75 WATT	20 WATT	60 KWH	\$6	\$33	\$44	\$55	\$83
100 WATT	25 WATT	82 KWH	\$8	\$45	\$60	\$75	\$113

* Annual Savings based on both use of 3 hours/day and a utility rate of \$0.1/kWh

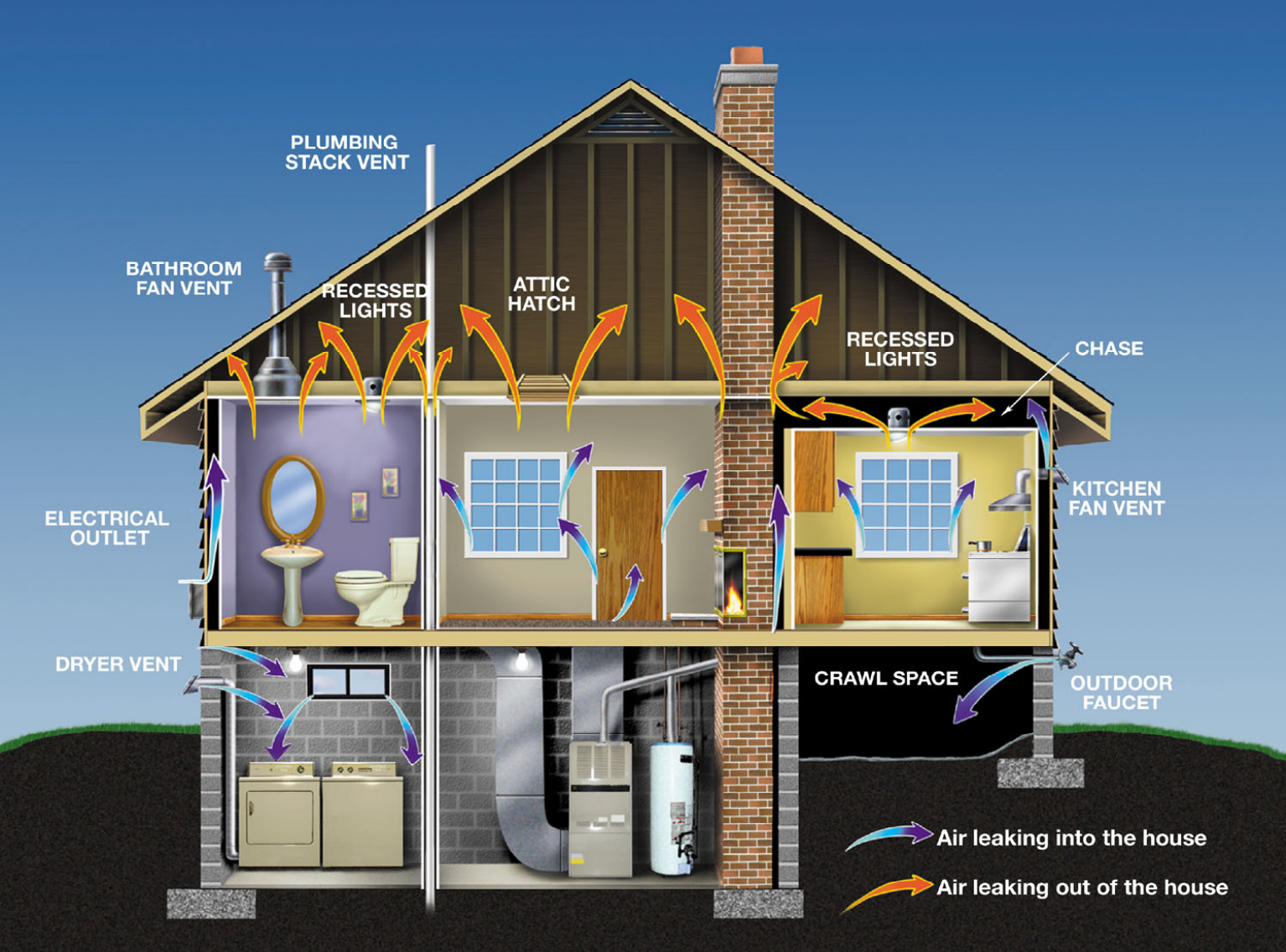
- Replacing a 100-watt incandescent light bulb with a 25-watt ENERGY STAR qualified CFL will save an average of \$60 in electricity costs over the life of the bulb
- One ENERGY STAR qualified CFL will save an average of 51 kWh/year

Source: D&R International, 2006

ANNUAL SAVINGS FOR ENERGY STAR® QUALIFIED WINDOWS

	DOLLAR SAVINGS	HEATING SAVINGS (THERMS)	COOLING SAVINGS (kWh/year)	TOTAL ENERGY SAVED (Btu)	LIFETIME DOLLAR SAVINGS (20 YEAR LIFE EXPECTANCY)
VS. SINGLE PANE	\$276	201	649	22,314,388	\$5,520
VS. DOUBLE PANE: NEW CONSTRUCTION	\$58	21	349	3,336,519	\$1,160
VS. DOUBLE PANE: EXISTING HOMES	\$59	21	389	3,442,384	\$1,180

Source: D&R International, 2006



Common areas of home energy loss
Source: U.S. EPA, 2003

AGENCIES' MISSIONS TO IMPROVE ENERGY EFFICIENCY IN THE RESIDENTIAL SECTOR

Each of the three agencies that direct and implement the PHEE have unique missions and established track records of working with partners to accelerate the adoption of energy-efficient technologies and practices in America's residential buildings. This section details those agency missions and how they contribute to achieving the over-arching PHEE goals.

DOE

The U.S. Department of Energy, through the Office of Energy Efficiency and Renewable Energy's (EERE) Building Technologies program works to improve the energy efficiency of the nation's buildings through innovative new technologies and better building practices.

One of DOE's primary roles is to conduct research and work with partners on demonstration projects that advance the next generation of energy-efficient components, equipment, and materials, while using a whole-building approach that can significantly improve the efficiency and performance of existing homes.

DOE's flagship program in the homes sector is Building America, which advocates a systems engineering approach to home building and rehabilitation.

Building America consortia, consisting of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades, research and implement systems engineering approaches to energy efficiency in homes.



In addition, DOE implements the national Weatherization Assistance Program to improve the energy efficiency of homes and rental units for low-income households. DOE weatherizes about 100,000 homes a year.

Finally, DOE works with EPA to implement the ENERGY STAR Program. DOE is responsible for developing the specifications for ENERGY STAR labeled household appliances, windows, and lighting. EPA and DOE jointly implement Home Performance with ENERGY STAR, a whole-house retrofit program.



EPA

EPA's voluntary partnership programs support the nation's climate change strategy. These partnership programs address market barriers and accelerate the adoption of proven technologies and practices to deliver substantial greenhouse gas emission reductions. Since the early 1990's, EPA has encouraged the development and adoption of energy-efficient technology through the ENERGY STAR Program. The ENERGY STAR Program has grown into a broad partnership with manufacturers, retailers, home builders, utilities, states and households investing in energy efficiency. ENERGY STAR is now recognized by more than 60 percent of the American public, covers more than 50 residential product categories, including appliances, heating and cooling equipment, home electronics, office equipment, and lighting. It is also found on energy-efficient homes and commercial buildings. Today, EPA and DOE jointly manage the ENERGY STAR Program.



HUD

HUD's overall mission is to increase homeownership, support community development, and increase access to affordable housing free from discrimination. Tackling the affordability portion of the mission requires addressing energy costs, which can run as high as 15 percent or more of disposable income in low-income homes in the U.S. In addition, HUD spends \$4 billion each year on utility bills—more than 10 percent of its budget—through subsidies to renters, private building owners, or public housing agencies. Energy-efficiency improvements could yield significant cost savings to the federal government, property owners, and building residents.



Reducing HUD's energy bills by just five percent could yield savings of \$1 billion by fiscal year 2011.

As part of HUD's Energy Action Plan, the department is implementing various efforts to reduce energy and water costs. The Plan includes providing information, technical assistance, and training to HUD customers and partners; promoting Energy Efficient Mortgages for new homebuyers; providing incentives for energy efficiency in competitive grant programs; streamlining performance contracting in public housing; encouraging the adoption of ENERGY STAR Qualified New Homes for new construction or substantially rehabilitated housing; and exploring incentives for energy efficiency in assisted multi-family housing.

In addition to these efforts to address energy efficiency in affordable housing, PATH, HUD's flagship program for examining and improving the durability, affordability and resource efficiency in market-rate housing, continues its support for implementing the *Roadmap for Energy Efficiency in Existing Homes*.

CURRENT ENVIRONMENT FOR ENERGY EFFICIENCY

Due to a number of trends and opportunities that have developed over the last few years, the climate for home energy-efficiency improvements has significantly improved. While energy-efficiency improvements are often cost-effective investments for homeowners, these new trends offer even more reasons why this market is poised for rapid growth.

Energy Costs. Oil prices rose to the \$65 to \$70 a barrel range in 2006. Prices at the pump hovered near \$3.00. Natural gas prices have also risen dramatically. Electricity prices, coupled with natural gas prices, are increasing by double digits around the country. Further, world demand for these energy products is rising significantly, which may suggest high prices could return. As prices

increase, and particularly if they remain high for long periods, energy-efficiency improvements become more valuable to homeowners, since they lead to reduced energy bills and increased home resale values.

Greenhouse Gas Emissions. The residential sector emitted 335 million metric tons of carbon in 2003, representing close to 18 percent of total U.S. emissions. President Bush announced an aggressive strategy in 2002 to reduce the nation’s greenhouse gas intensity by 18 percent by 2012. The Bush Administration is strengthening and expanding partnership programs to deliver substantial emission reductions.

National Energy Security. With the disruption of the nation’s energy supply by Hurricane Katrina in the summer of 2005, there has been increased awareness that energy is a national security issue, and that we must slow our growing dependence on imported energy. The conventional wisdom has been that buildings don’t have much impact on energy imports. This is due, in part, to past concerns over oil imports. The fact is the U.S. now faces the prospect of sharply increased natural gas imports, as growing demand for this clean-burning fuel begins to outpace domestic production. Because buildings are significant users of natural gas for space conditioning, and contribute to increased natural gas demand via their electricity consumption, conservation in this sector is becoming an energy security issue, as well as an environmental and economic issue.

Residential Tax Credits. In 2005, Congress passed EPAct, that addressed the growing public concern for rising energy prices. As part of this legislation, Congress has called for increasing energy-efficiency standards for products and appliances, as well as tax credits for highly energy- efficient homes, products, and appliances.

Green Building Movement. Across the country, homeowners, buyers and builders are learning that building green has more benefits than just saving money. Green buildings can often be more comfortable, have better indoor air quality, cost less to own and operate, and are more in tune with consumers’ environmental values. Consumers are demanding more from their homes, including energy-efficient design and products, and more natural building materials. The agencies look to capitalize on this growing concern for “green.” The first step for any green program is energy efficiency. The agencies have worked closely with the various national green building programs to help define the energy-efficiency requirements of their programs.

The Role of the Partnerships with Stakeholders



The success of the Partnerships for Home Energy Efficiency depends on the breadth and strength of its public-private relationships. These partnerships serve as the foundation for a concerted effort to improve the energy efficiency of the nation's housing stock. Together, HUD, DOE, and EPA, have worked closely over the last year to reinforce their relationships and build off one another's strengths. While doing so, the agencies continue to work with private and public sector stakeholders to aggressively meet the goals of the PHEE.

The theme of partnerships runs deep across the three agencies. EPA and DOE jointly implement Home Performance with ENERGY STAR, a retrofit program that promotes whole-house improvements. To date, over 20,000 homes have undergone Home Performance with ENERGY STAR upgrades. Yet, the growth of Home Performance with ENERGY STAR is due to partnering organizations such as New York State Energy Research & Development Authority, Austin Energy, the State of Wisconsin, Southface Energy Institute, the California Building Contractors Association, and others who have solidly committed to the whole-house approach. The partners are delivering results; so much so that private national companies are now entering the home improvement market in key regions, recognizing the value that ENERGY STAR brings coupled with these state and local partners.

HUD, DOE, and EPA jointly support the Building Performance Institute (BPI) through a million dollar three-year grant. As a non-profit organization that certifies technicians and accredits contractors, BPI has completed its technician certification requirements and has developed a strong contractor accreditation program. BPI, through its affiliate programs, is now poised to serve as a quality assurance provider for various stakeholder programs, such as Home Performance with ENERGY STAR, state-based weatherization programs, and utility energy conservation programs. With BPI in this role, partners can now use their resources for other important program elements.



DOE and EPA have teamed with HUD to integrate energy efficiency into HUD's affordable housing programs under the HUD Energy Action Plan. The Plan allows DOE to extend its bulk purchasing program for ENERGY STAR appliances to HUD's affordable housing network. Furthermore, DOE and HUD are working cooperatively to bring DOE's weatherization program to HUD's multi-family programs. Both DOE and EPA participate in an aggressive outreach program to public housing authorities throughout the country under the auspices of HUD's Energy Action Plan. Lastly, EPA is working closely with HUD's Office of Public and Indian Housing to see how energy use benchmarking may help building operators more effectively manage their buildings.

The three agencies also work in conjunction with outside stakeholders.

PATH, managed by HUD, continues into its sixth year promoting innovative housing technologies in cooperation with the nation's largest homebuilders. Every year PATH highlights its partnerships with the home building industry at the International Builders' Show. Energy efficiency is a key focus of PATH, through the implementation of the *Technology Roadmap for Energy Efficiency in Existing Homes* in partnership with the remodeling industry. A significant number of energy-efficient technologies are featured in the PATH Technology Inventory at www.pathnet.org.

Over the last year, EPA has worked with the Air-Conditioning Contractors of America (ACCA) and the Consortium for Energy Efficiency (CEE) as these two organizations developed industry guidelines for the proper installation of heating and cooling equipment. Thanks to this effort, EPA is now working with California utilities to develop an ENERGY STAR Proper HVAC Installation program. The industry-based guidelines serve as a solid foundation for this program, and emphasize the important role that partnerships bring to the PHEE effort. EPA has also worked with a national working group of state officials to develop an ENERGY STAR Program for multi-family high rise. A pilot program is currently underway.

DOE's Building America program continues to work with the country's top builders to develop innovative construction techniques that improve the energy efficiency of new homes. As the program moves toward its goal of cost-effective "Zero Energy Homes" design for every climate zone in the country, owners of these homes are realizing real dividends. In addition, DOE helped the Internal Revenue Service craft the rules for the federal tax credits for new and existing homes, working closely with industry suppliers, energy auditors, and non-governmental organizations. These tax incentives are intended to reward builders and homeowners for energy efficiency.

Lastly, the success of DOE's and EPA's ENERGY STAR Program is due to partnerships with industry. Major retailers (such as The Home Depot, Lowe's, and Sears) and appliance manufacturers (such as Whirlpool and General Electric) have long recognized the market power of ENERGY STAR and devoted marketing dollars for its promotion. The ENERGY STAR Qualified New Homes Program boasts 2,000 plus builder partners that have constructed more than half a million energy-efficient homes to date.

Builders have constructed over half a million ENERGY STAR Qualified New Homes to date. This success is due to ENERGY STAR's partnership with Building America, RESNET, utilities, and associations such as NAHB, EEBA, NASEO, MHRA, NAIMA.

The Air Conditioning Contractors of America and the Consortium for Energy Efficiency established national guidelines for the installation of HVAC equipment. These guidelines will serve as the basis for EPA's ENERGY STAR Proper HVAC Installation pilot.



The Four Strategies of the PHEE

HUD, DOE, and EPA are extending their existing partnerships and building these partnerships will encourage greater use of efficient products; develop and promote a new suite of energy-efficiency services; deliver energy efficiency to affordable housing; improve access to financing; provide technical assistance and training to building professionals; and continue to integrate the results of innovative research in building science technologies, practices, and policies into residential buildings.

More detailed discussions of the strategies and the projects accomplished over the past year are outlined below.

TEGY: EXPAND EFFORTS TO PROMOTE ENERGY STAR PRODUCTS

Consumer recognition of ENERGY STAR continues to grow with 60 percent of the public recognizing the mark as the symbol for energy efficiency. In some regional markets, recognition of ENERGY STAR is much higher. Both DOE and EPA will continue to expand their educational campaigns to reach the ultimate goal of 100 percent recognition.

PROJECT UPDATE: NATIONAL OUTREACH ON ENERGY-EFFICIENT LIGHTING

The ENERGY STAR *Change a Light, Change the World* Campaign is a national challenge to encourage every American to help change the world, one light—one step—at a time. The campaign culminated around ENERGY STAR Change a Light Day in October, with promotions running locally and nationally throughout the month.

EPA and DOE, together with organizations around the country, encourage Americans to join a growing number of people taking the online Pledge year-round to change a light and initiate steps at home to save energy and prevent greenhouse gas emissions.

The *Change a Light, Change the World* Campaign is a proven platform with the goal of raising awareness and increasing sales of ENERGY STAR qualified lighting. In 2005, partner advertising reached more than 39 million customers. More than 70,000 people in all 50 states took the Pledge in 2005: If all 70,000 follow through, their actions will prevent the use of over 23 million kWh.

Take the ENERGY STAR
Change a Light
Pledge

Energy is on everyone's mind these days. Here's a simple step we can each take to preserve energy resources, save money, and help protect our environment. Join us in changing the world, one light—one step—at a time.

PROJECT UPDATE: NATIONAL OUTREACH ON HEATING

This past year, winter heating costs were front and center for consumers due to predictions for record-high home heating costs, a nationwide energy scare, and even Hurricane Katrina. ENERGY STAR provides Americans with energy-efficient options and solutions to combat higher winter bills through proactive outreach via the “First Frost” campaign. In 2005, the third year of winter heating outreach, media placements were the most successful to date.

The objective of the “First Frost” initiative was to provide simple steps for homeowners to reduce energy usage with ENERGY STAR qualified heating products and home sealing. To accomplish this objective, campaign organizers issued a national press release, wrote articles for syndicate distribution, conducted radio media tours, and provided radio news releases.

By targeting 13 northern metropolitan areas and the national press, the First Frost campaign garnered more than 1,300 placements, resulting in 36 million media impressions, and reaching Americans with ENERGY STAR heating messages. EPA secured more consumer magazine coverage than ever before. Such magazines as House Beautiful, US News & World Report, Good Housekeeping, Natural Home and Garden, and Real Simple placed prominent promotions from the “First Frost” campaign in 2005.

PROJECT UPDATE: REVISED ENERGY-EFFICIENCY SPECIFICATIONS FOR ENERGY STAR QUALIFIED NEW HOMES

Over 160,000 homes were constructed in 2005, making it a banner year for the ENERGY STAR Qualified New Homes market. Americans who have purchased an ENERGY STAR Qualified New Home now save over \$120 million annually.

With its growing success, ENERGY STAR continues to provide value to both builders and homebuyers. To continue this promise, in November 2005, EPA announced new specifications for ENERGY STAR Qualified Homes. EPA worked for nearly one year developing specifications in conjunction with the Residential Energy Services Network (RESNET) and in consultation with the National Association of Home Builders (NAHB), and Building America’s Consortium of Building Scientists, holding two public comment periods to ensure as much public discussion of the new specifications as possible.

EPA increased the stringency of its home specifications in response to increasing energy-efficiency levels of the national energy code and HVAC equipment standards. EPA estimates that the new ENERGY STAR specifications are 15 to 20 percent more stringent than a home built to the International Energy

The Frost Campaign garnered 36 million media impressions

2005 CHANGE A LIGHT, CHANGE THE WORLD CAMPAIGN:

- Nearly 109 million media impressions
- 39 million customers reached
- 5.2 million impressions through PSAs
- 70,000 people took the Pledge to:
 - Save more than 23 million kWh
 - Save 33 million lbs. of GHGs



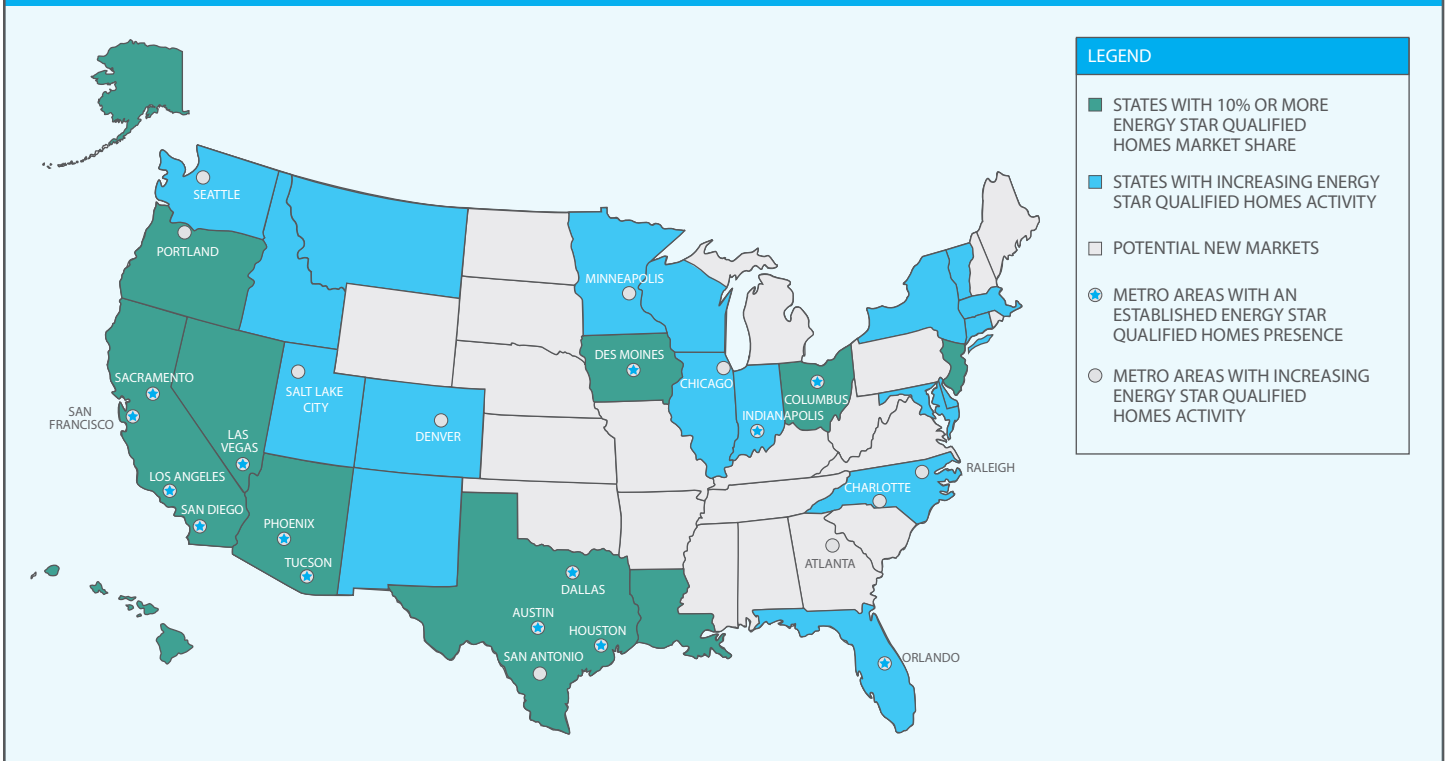
Conservation Code (IECC). In addition to these higher energy-efficiency levels, EPA is also requiring that builders address major energy-loss problems through completing a Thermal By-Pass Checklist.

The new ENERGY STAR Qualified Homes specifications will have a staggered phase-in period throughout 2006. By January 2007, all qualifying homes must be constructed to the new specification.

STRATEGY: DEVELOP NEW ENERGY-EFFICIENCY SERVICES TO PROVIDE HOMEOWNERS WITH GREATER SAVINGS

There are important savings opportunities in a home, beyond the choice of products, that entail improving the efficiency of the home itself. The federal government is working to assist the energy services, remodeling, and rehab industry in developing new energy-efficiency services to more readily provide these savings opportunities to homeowners.

ENERGY STAR® NEW HOMES ACTIVITY THROUGHOUT THE U.S.



STATE AND REGIONAL PARTNERS IN HOME PERFORMANCE WITH ENERGY STAR

ESTABLISHED PROGRAMS

- Austin Energy - Austin, TX
- California Building Performance Contractor Association (CBPCA) - CA
- Efficiency Vermont - VT
- E-Star Colorado - Ft. Collins, City of Boulder, Colorado Springs, CO
- Focus on Energy - WI
- Gateway Center - St. Louis, MO
- Idaho Energy Division - ID
- Metropolitan Energy Center - Kansas City, MO
- New York State Energy Research and Development Authority - NY
- National Grid, NStar, Berkshire Gas - MA & RI
- Southface - Atlanta, GA

LAUNCHING PROGRAMS

- Department of Commerce and Economic Opportunity & Tricon - Peoria, IL
- Energy Trust of Oregon - OR
- First Energy - OH
- Long Island Power Authority - NY
- Maine Office of Energy Independence and Security - ME
- Wyoming Energy Council - WY

EXPLORING PROGRAMS

- City of Anaheim - CA
- Delta-Montrose Electric Association - CO
- North Carolina
- New Hampshire
- New Jersey
- Rhode Island

PROJECT UPDATE: EXPANSION OF HOME PERFORMANCE WITH ENERGY STAR

Regional organizations are increasingly seeing the potential value of the Home Performance with ENERGY STAR Program, and in the fall of 2005, several new local sponsors launched Home Performance with ENERGY STAR Programs. In Colorado, E-Star Colorado expanded its network of preferred contractors to add contractors in Ft. Collins and Boulder to the existing contractors in Colorado Springs. In Wyoming, the Wyoming Energy Council launched a Home Performance with ENERGY STAR Program in the Cheyenne and Laramie areas with plans to expand the program statewide. Energy Trust of Oregon started a Home Performance with ENERGY STAR Program for the greater Portland area. In addition to these programs, TRICON



Utility, the Wyoming Energy Council, Maine's Office of Energy Independence and Security, and the Long Island Power Authority have signed partnership agreements to implement Home Performance with ENERGY STAR. EPA and DOE anticipate programs shortly in Anaheim, California, and statewide in New Jersey.

PROJECT UPDATE: PROTOCOLS FOR ENERGY-EFFICIENT REMODELING OF EXISTING HOMES

In partnership with the remodeling industry, HUD has initiated a multi-year project aimed at developing voluntary guidelines, or protocols, for energy-efficient remodeling of existing homes. The protocols will provide guidance to contractors and homeowners, help ensure that dollars invested in energy upgrades result in maximum savings, and provide a consistent, high-quality approach that can be used by those who work in the remodeling and rehabilitation industry and can significantly impact energy-efficiency decision making by property owners. The initial protocols are expected to be available for testing in late 2006. Phase II of the project, which will involve drafting and testing final protocols, will be completed in September 2007.

PROJECT UPDATE: DOE RELEASE OF HVAC BEST PRACTICES GUIDES FOR HOME REMODELERS

The HVAC Best Practices Guide consists of a set of diagnostic tools and specifications that will make it easier for HVAC contractors to make home HVAC systems more energy-efficient. The Best Practices Guide includes a checklist that requires measurement of airflow, duct leakage, and refrigerant charge, along with an audit of duct insulation, envelope insulation, windows, moisture problems, and home energy bills. The items in the checklist are described in detail so a contractor can perform an accurate assessment of the current condition of the home and the HVAC system. The retrofit or improvement packages are selected according to the climate, and provide recommendations for the HVAC system only or for the HVAC system plus envelope improvements. All of the recommendations include sealing the ducts or moving them inside the conditioned space, and correcting the refrigerant charge. This guide served as a reference document for the industry working group that developed the HVAC proper installation specifications, which are serving as the basis for the ENERGY STAR Proper HVAC Installation program.

PROJECT UPDATE: NEW CERTIFICATION AND ACCREDITATION STANDARDS AND QUALITY ASSURANCE CRITERIA FOR HOME PERFORMANCE CONTRACTORS

The Building Performance Institute—under a grant provided by DOE, EPA, and HUD—released guidance on certification, accreditation, quality assurance, and affiliation. To date, BPI has over 2,500 certified professionals in 33 states, and over 160 accredited contractors. Professional certifications are now available in the following disciplines: Building Analyst, Mechanical (including heating and air conditioning/heat pump), Envelope, and Multi-family.

Accreditation is now tied closely to the BPI Quality Assurance Program, an independent, third-party evaluation of the accredited contractor’s commitment to implementing systems to ensure conformance with BPI Standards. With the revised model changes, BPI is positioned to actively expand during the months remaining in the grant. BPI is working closely with EPA and DOE as they expand the Home Performance with ENERGY STAR Program nationwide.

PROJECT UPDATE: NEW ENERGY STAR GUIDELINES FOR PROPER INSTALLATION AND VERIFICATION OF HVAC EQUIPMENT

On April 15, 2006, the residential HVAC industry announced draft specifications for the proper installation of heating and cooling equipment. This landmark announcement defines for the first time industry-consensus specifications for HVAC systems to operate at peak performance. The Air Conditioning Contractors of America (ACCA) championed this effort, working in partnership with a dedicated group of equipment manufacturers, utility groups, and Non-governmental organizations (NGO’s). ACCA has submitted the specification for American National Standards Institute (ANSI) approval.

This industry-led partnership now paves the way for the development of a proper HVAC installation program under the ENERGY STAR Program, using these specifications as the foundation. Industry experts have long known that many HVAC systems are incorrectly installed, leaving the system’s efficiency impaired. Industry studies suggest that more than half the systems in U.S. homes are poorly installed and are running inefficiently, raising utility bills, creating consumer complaints and increasing contractor callbacks.

In the summer of 2006, EPA worked with utilities to test drive the specifications with contractors and technicians. As part of this pilot, both EPA and the utilities, examined costs associated with the proper installation procedures and tested the ENERGY STAR messages concerning proper installation.





Public Housing Authorities have aggressively pursued energy performance contracting, investing close to \$350 million with an estimated savings of \$37 million in 2006. The number of PHAs investing in performance contracting has increased by an average of 24 percent since 2000.

STRATEGY: PROMOTE ENERGY EFFICIENCY IN AFFORDABLE HOUSING

This strategy is best embodied in HUD's Energy Action Plan, an initiative spurred by HUD Secretary Jackson to improve the energy efficiency of HUD's housing stock. Under the Plan, HUD is working to reduce the estimated \$4 billion annual utility bill of the nation's public and federally assisted housing. DOE provides technical support and training to Habitat for Humanity and Rebuilding Together in their efforts to build quality affordable homes for low income families. HUD is also implementing various provisions enacted by Congress to increase energy efficiency in public housing.

PROJECT UPDATE: HUD PHASE II ENERGY ACTION PLAN FOR AFFORDABLE SINGLE AND MULTI-FAMILY HOMES

The Phase II Plan includes 26 measures aimed at reducing energy costs in HUD-assisted or public housing, as well as in housing financed through HUD's competitive or formula grant programs. The Plan also includes an expanded multi-family strategy, as well as implementation of provisions contained in EPAct 2005. HUD has submitted a report to Congress outlining an integrated energy strategy for assisted and public housing, as required by the Act. In addition, HUD's program offices identified energy performance measures in the fiscal year 2006 Management Plan that are consistent with the proposals contained in the Phase II Plan, and identified energy efficiency as an objective in its fiscal year 2006-2011 Five Year Strategic Plan.

STRATEGY: CONTINUE TO INVEST IN INNOVATIVE RESEARCH ON BUILDING SCIENCE TECHNOLOGIES, PRACTICES, AND POLICIES

DOE and HUD continue to conduct building research programs. Through DOE's Building America and Climate Vision programs, and HUD's PATH program, the agencies continue to build partnerships with industry to develop new, cost-effective technologies, practices, and policies, with the goal of improving the efficiency of the nation's homes.

PROJECT UPDATE: DOE RELEASE OF BEST PRACTICES SERIES OF BUILDER GUIDES

The Building America program has completed six Best Practices Guides that describe how to build a home to achieve 30 percent greater energy efficiency in five types of climates: hot-humid, hot-dry, mixed-dry, cold and very cold, marine, and mixed-humid. Each guide in the Best Practices series describes the

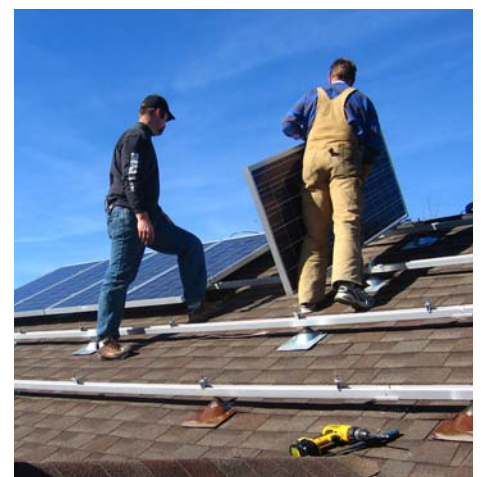
benefits of energy efficiency from a whole-house point of view, and describes how to build energy-efficient homes using a systems engineering approach. The guides have sections specifically targeted for homeowners, managers, marketers, developers, designers, site supervisors, and trade contractors. A separate section of case studies helps to maintain the whole-house perspective, and a two-page homebuyer checklist provides a quick assessment of the energy-efficient features of any home. In 2007, Building America will publish a Best Practices Guide for Existing Homes, two Best Practices Guides for 40 percent energy savings levels, and a Best Practices Guide on Solar Integration.

PROJECT UPDATE: DOE RELEASE OF ENERGY-EFFICIENT REMODELER TRAINING

The Energy-efficient Remodeler training course is designed to provide instruction to remodelers on how to add energy-efficient upgrades to several common types of remodeling projects. The goal of the course is to train remodeling contractors on how to market energy efficiency and the benefits of improved comfort as they enhance the home with the remodeled space. The course emphasizes the ability to recognize problem areas, market energy efficiency and the improved comfort and durability it provides, and understand basic building science. DOE is partnering with the National Association of Home Builders (NAHB), the National Association of the Remodeling Industry (NARI), State Energy Offices (SEOs), major national retailers, and other interested parties to expand the training provided at the local level.

HUD projects that with greater consumer awareness and lender participation, the number of energy-efficient mortgages insured by FHA will increase in fiscal year 2006.

Building America works with builders to develop innovative solutions for energy-efficient construction. Builders have found an average savings of close to 30 percent per home thanks to Building America research.



Future Projects

Many projects from the past year will continue into the coming year. These include:

- National outreach on energy-efficient lighting
- National outreach on heating and cooling
- National implementation of the ENERGY STAR Qualified Homes specifications
- Continued expansion of Home Performance with ENERGY STAR
- Promotion of national certification, accreditation standards, and quality assurance criteria for home performance contractors through the Building Performance Institute
- Expanding energy efficiency in federally subsidized affordable housing

In addition to these continuing projects, the three agencies will embark on new activities under the strategies of the Partnerships for Home Energy Efficiency.

RELEASE OF HOME IMPROVEMENT PROTOCOLS FOR REMODELER INDUSTRY

In the coming year, HUD will complete the first phase of PATH uniform protocols for energy-efficient remodeling—one of the priority strategies identified in the *PATH Roadmap for Energy Efficiency in Existing Homes*.



HUD will post the initial sample protocols for energy-efficient remodeling on the PATH Web site for public comment and input. In addition, HUD will initiate the Second Phase of the remodeling project which will consist of pilot testing these protocols and finalizing the protocols by September 2007. It is anticipated that the protocols will be used by remodelers and trade contractors to help homeowners make the best energy-efficiency choices for home improvement projects. Users will be able to identify and evaluate potential energy improvements, either as stand-alone projects that can improve comfort and reduce energy bills, in conjunction with other work (such as room additions, bathroom or kitchen remodeling), or as whole-house energy retrofits. The protocols will provide a consistent, high-quality approach that can be used by those who work in the remodeling and rehabilitation industry and will significantly impact decision-making by property owners regarding energy efficiency.

MULTI-FAMILY ENERGY STUDY AND ASSESSMENT

HUD, through an interagency agreement with EPA, will examine the potential for energy efficiency in the existing, privately owned multi-family housing stock. The project will model and test certain energy improvements, and identify possible incentives for energy efficiency in new FHA-insured multi-family projects.

ENERGY STAR PILOT PROGRAM FOR MULTI-FAMILY HIGH RISE BUILDINGS

EPA will launch an ENERGY STAR pilot program for multi-family high rise buildings, working closely with the states of New York, Wisconsin, and Oregon. Over the past year, a national working group from across the country has developed energy targets, benchmarking tools, and verification protocols for this pilot. EPA will work with stakeholder partners, as well as HUD and DOE, to develop the pilot program for ENERGY STAR for multi-family high rise buildings over the coming year.

ENERGY STAR HVAC PROPER INSTALLATION PROGRAM

EPA will propose an ENERGY STAR Proper HVAC Installation program in 2007, based on the results of the current pilot underway in California. Proper HVAC installation, as well as maintenance, can provide considerable savings to both homeowners and the environment. This program will build off the work of the ACCA, as well as the Consortium for Energy Efficiency, which together established proper installation guidelines and specifications for contractor accreditation and quality assurance in 2006.





RESEARCH ON HOMES THAT ACHIEVE 50 PERCENT ENERGY SAVINGS

DOE's Building America is currently focusing on developing solutions for homes to use 40 percent less energy than the Building America Benchmark in all climates. Building America uses a whole-house systems engineering approach involving field evaluation of various systems, construction and evaluation of prototype houses, and finally evaluation of the energy-efficiency strategies in whole communities. The three system engineering stages overlap each other to allow issues to be quickly resolved as they are identified. Each stage requires three to four years per climate region, and for more advanced energy-efficiency levels at and above 40 percent, the system research process is expected to take additional iterations of whole-house testing before implementation in production-ready homes. At the 50 percent whole-house level and above, the system research stages will likely require four to five years to complete for each climate region. DOE will also continue to evaluate the potential for the application of successful new home energy-efficiency strategies to increase the efficiency of existing homes.

MEASUREMENT OF ENERGY SAVINGS FROM WHOLE-HOUSE RETROFITTING PROGRAMS

A monitoring project on home performance improvements will be conducted to obtain performance data in existing homes (e.g., temperature, relative humidity, and pressure differentials, etc). Energy-efficiency improvement data will be collected and analyzed with respect to predicted and actual energy savings validated through monitoring and utility bills. Smart data loggers will be used to collect various data. Building America will partner with existing Home Performance with ENERGY STAR sponsors from around the country to monitor several homes' pre- and post-improvement installations in several homes.

MODEL VALIDATION FOR EXISTING HOMES

In addition to the monitoring project on existing homes, Building America will address the phenomenon that home performance simulation models tend to over predict energy use and determine if model algorithms need modification to better reflect real-world observations.

FINANCING

Various financing packages have been developed for the home improvement market. In order to maximize the benefit to the homeowner, and to maximize the comprehensiveness of the energy retrofit, DOE will examine various packages

of financing that currently are or could be applied to a whole-house retrofit (including financing for solar energy technologies) and work with identified national corporate partners to determine need and design of a pilot for national expansion of their financing offerings.

WEATHERIZATION PLUS

For fiscal year 2007, DOE will expand the Weatherization Assistance Program to enable further development and implementation of Weatherization *Plus*. The “plus” reflects the program’s evolution from its traditional focus on heating and cooling energy conservation to an expanded focus on whole-house energy usage and whole-community efforts. The whole-house approach incorporates advanced technologies; addresses comprehensive energy use in low-income homes; and addresses related health and safety improvements.

MULTI-FAMILY RESEARCH

DOE will conduct research on multi-family buildings under the Building America program and the Asia Pacific Agreement. The research strategy is to apply the whole-buildings systems engineering approach to multi-family buildings.

BUILDING AMERICA OUTREACH

In fiscal year 2007, DOE will conduct research and offer limited technical assistance to States in partnership with the National Center for Energy Management and Building Technologies. The focus of this effort will be on HUD-subsidized, low-income multi-family housing. DOE has recently begun meetings with HUD and the National Center to design the approach to be used for this effort. Other partners in this effort include the University of Nevada at Las Vegas, the National Energy Management Institute (NEMI); University of Illinois at Chicago; the Building Diagnostics Research Institute; the International Training Institute; the Sheet Metal Workers’ International Association; and the Sheet Metal and Air Conditioning Contractors National Association (SMACNA). In fiscal year 2007 DOE will launch outreach through community colleges, trade schools, four-year colleges, and universities to expand the tech transfer of the Building America research to architects, engineers, builders and trades.

ENERGY EFFICIENCY IN AFFORDABLE HOUSING

In cooperation with EPA and DOE, HUD will implement technical assistance, training, and other outreach activities to extend the resources developed through the PHEE to the affordable housing sector. The goal of these activities is to ensure that the affordable housing sector has full access to PHEE resources. These resources include Home Performance with ENERGY STAR, DOE’s



Remodeling Best Practices, and EPA's ENERGY STAR guidelines for proper installation and verification of HVAC equipment. This will be accomplished through a four-part training program that HUD will implement in fiscal year 2007 on energy-efficient rehabilitation and maintenance of single family and rental properties, through an enhanced HOME training curriculum, and through other training and technical opportunities to be explored with EPA and DOE. HUD will also involve public housing authorities, assisted housing managers and other affordable housing constituencies in national outreach campaigns such as the ENERGY STAR *Change a Light, Change the World* Campaign.

LOCAL PARTNERSHIPS

HUD will develop partnerships with national affordable housing trade organizations to provide information and resources to affordable housing constituencies or to develop local energy partnerships. HUD's network of field offices and its Regional Energy Coordinators located in each of its regions can be especially helpful in developing local partnerships, disseminating informational materials, and implementing other capacity-building activities working with state and local agencies and non-profit organizations.

BULK PURCHASING

In 2007, HUD will work with DOE on a national roll out of the Web-based bulk purchasing tool that it developed in partnership with DOE. Initially developed for public housing authorities and other large buyers of residential products and appliances, the bulk purchasing tool will enable users to solicit and receive quotations for bulk purchasing of a variety of ENERGY STAR products and appliances. Bulk purchasing will enable affordable housing sponsors to address one of the impediments facing widespread adoption of ENERGY STAR products in this sector: the additional cost of these products.

MANUFACTURED HOUSING

Through the Manufactured Home Construction and Safety Standards (the "HUD Code") HUD regulates the design, construction and energy efficiency of manufactured housing. New rules for manufacturers took effect in October 1994, including upgraded energy standards. The *PATH Factory Built Housing Roadmap*, published in January 2006, identified 6.75 million manufactured homes built prior to 1994 that are relatively inefficient. To address this stock, PATH published a guide to retrofitting older manufactured homes that provides energy-saving tips, techniques, and recommendations for owners of existing manufactured homes.

To address energy costs in new manufactured homes, HUD is interested in exploring the potential for new national standards that would reduce energy consumption in manufactured homes. Such standards could require:

- Increasing the amount of insulation to be used in the thermal envelope and air supply ducts
- Thorough testing and sealing of air supply ducts to minimize leakage
- Establishing limits that would avoid over-sizing of HVAC systems
- Thorough use of enhanced glazing requirements

These changes would require notice and comment rulemaking. A growing number of manufactured homes are already being built to ENERGY STAR Qualified Home specifications, spurred in part by a new \$1,000 tax credit defined in EAct 2005.

PUBLIC AND ASSISTED HOUSING

HUD will implement a wide range of actions described in its Phase II Energy Action Plan. As reported to Congress pursuant to Section 154 of EAct 2005, these actions will include:

- Continuing incentives for adopting ENERGY STAR specifications in the construction or rehabilitation of housing financed through HUD's competitive grant programs
- Promoting Energy Efficient Mortgages
- Expanding incentives for energy efficiency in assisted multi-family housing
- Expanding adoption of ENERGY STAR as the guideline for new construction and housing rehabilitation under HUD's Community Development Block Grant (CDBG) and HOME grant programs
- Extending energy performance contracting to smaller public housing authorities
- Promoting energy efficiency in Native American housing
- Improving energy efficiency in HUD-code manufactured housing

Metrics for the Partnerships for Home Energy Efficiency (PHEE)

The following chart presents metrics for the PHEE to measure progress toward a 10 percent reduction in energy use and costs for the average family. Many of these metrics are for the individual programs and projects associated with the PHEE. These metrics measure the success of these efforts, and provide guidance to program managers on whether activities associated with these programs are useful. The last row of the chart marks the nation’s progress in meeting the goal of reducing the average annual energy consumption per household in the United States by 10 percent.

PROGRAM METRICS											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ENERGY STAR Qualified New Homes constructed annually ¹	163,000										
Homes weatherized under WAP annually ²	167,000										
Homes retrofitted under Home Performance with ENERGY STAR annually ³	7,000										
Energy savings from ENERGY STAR qualified products and appliances (billion KWh) ⁴	8										
Number of media impressions under <i>Change A Light, Change the World</i> Campaign ⁵	109 million										
Number of media impressions under “First Frost” Campaign ⁵	36 million										
Public recognition of ENERGY STAR ⁶	60%										
Number of FHA Energy Efficient Mortgages	580										
Dollars saved through performance contracting in public housing	\$37 million										
Number of HOME or CDBG units certified or being built to ENERGY STAR ⁷	2,700										
Annual energy use for an average household (million Btus) ⁸	101										

¹EPA, ENERGY STAR Residential Branch

²DOE, Weatherization Assistance Program

³EPA, ENERGY STAR Residential Branch

⁴Lawrence Berkeley National Laboratory

⁵EPA, ENERGY STAR Labeling Branch

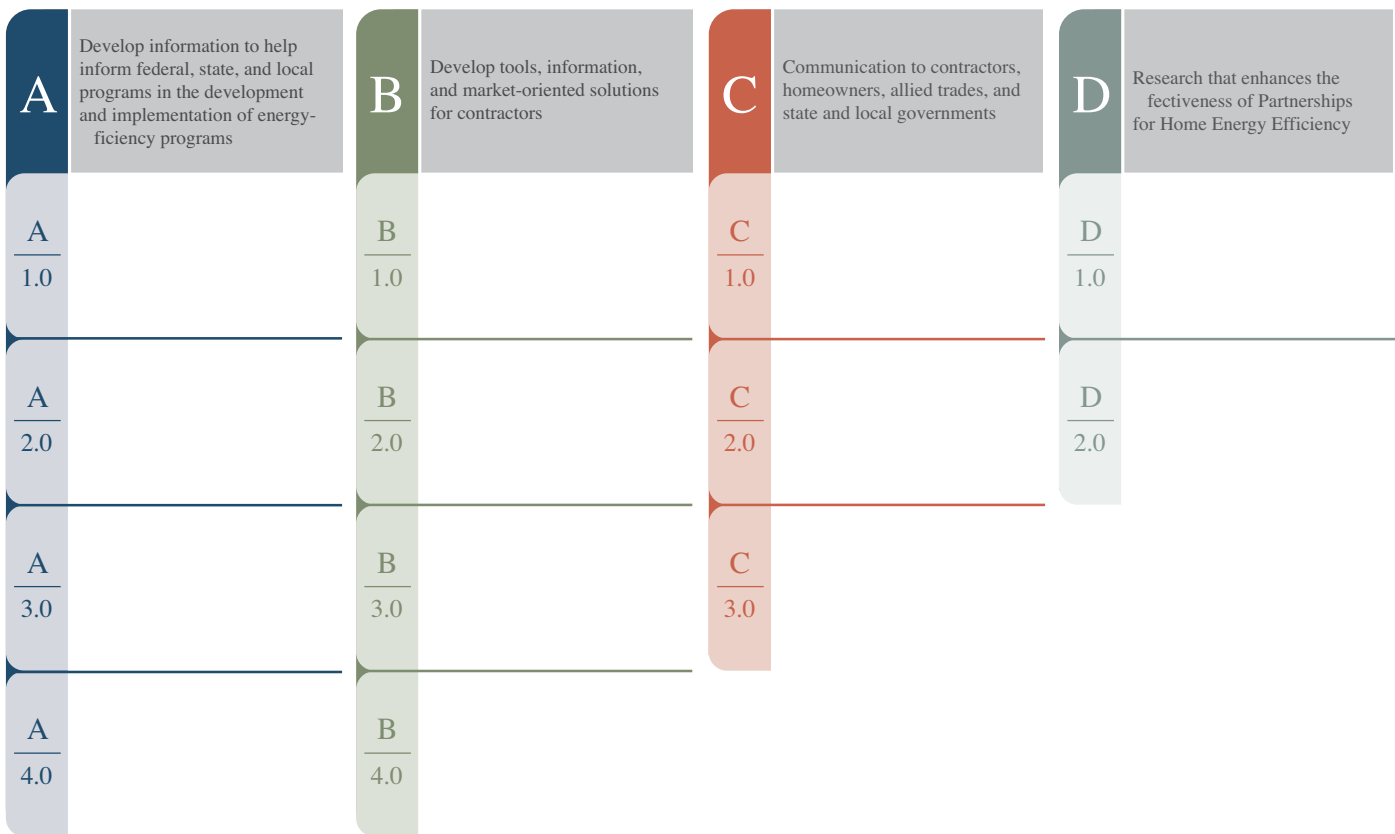
⁶EPA Climate Protection Partnerships Division

⁷HUD Region I only. Nationwide data on CDBG and HOME units built to ENERGY STAR to be reported and tracked beginning 2007

⁸Energy Information Administration, Annual Energy Outlook, 2007

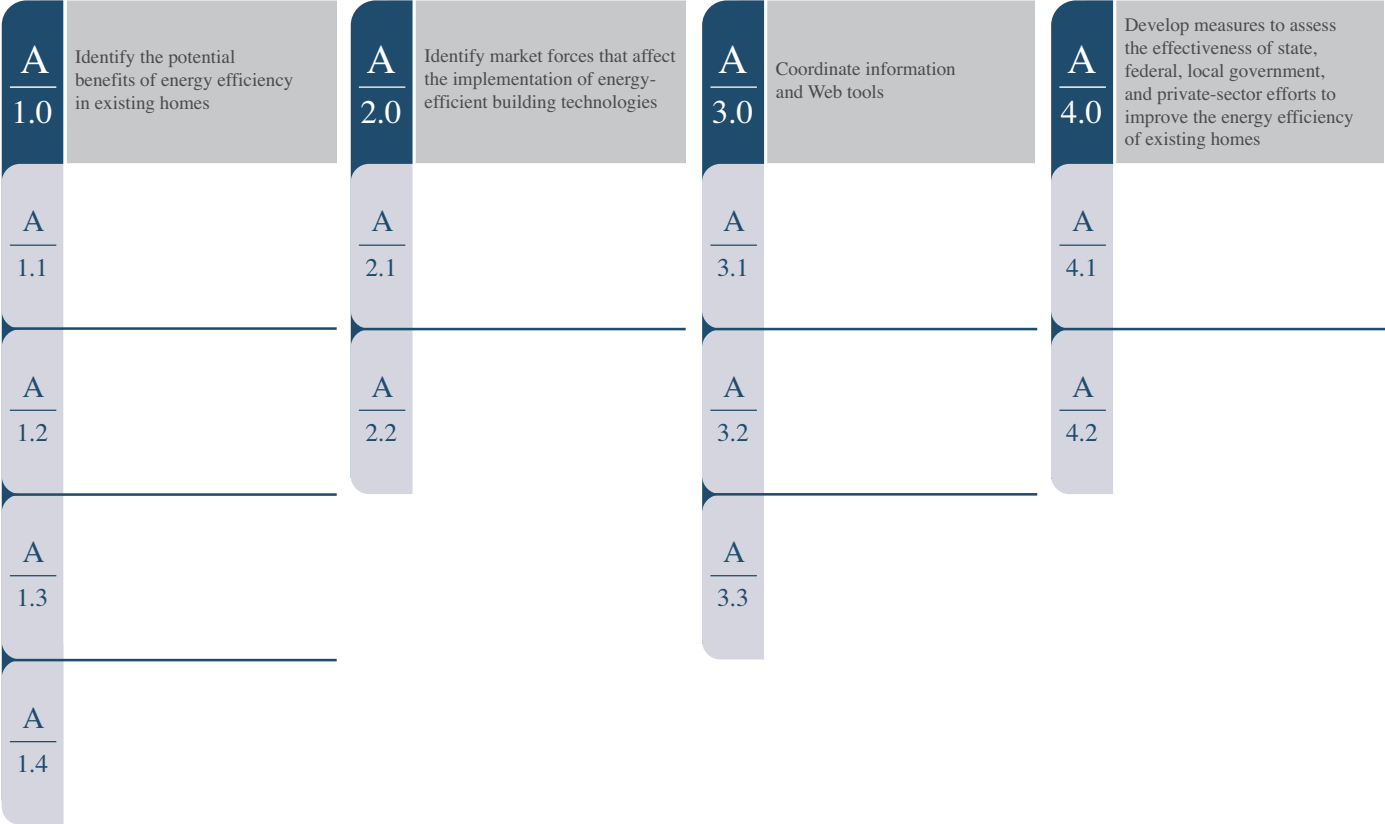
Schematics

PARTNERSHIPS FOR HOME ENERGY EFFICIENCY



A DEVELOP INFORMATION

to help inform federal, state, and local programs in the development and implementation of energy-efficiency programs



B DEVELOP TOOLS, INFORMATION, AND MARKET-ORIENTED SOLUTIONS
and market oriented solutions for contractors

B
1.0
Develop and promote technical solutions for contractors

B
1.1

B
1.2

B
1.3

B
1.4

B
1.5

B
2.0
Develop business case for incorporating energy-efficiency improvement practices in home contracting businesses

B
2.1

B
2.2

B
3.0
Establish and promote technician certification and contractor accreditation programs

B
3.1

B
4.0
Develop contractor recognition program

B
4.1

C

COMMUNICATE TOOLS, INFORMATION, AND SOLUTIONS

to contractors, homeowners, allied trades, and state and local governments

C 1.0

Outreach to contractors

C 1.1

C 2.0

Outreach to Homeowners and Affordable Housing Networks

C 2.1

C 2.2

C 2.3

C 2.4

C 2.5

C 2.6

C 2.7

C 2.8

C 2.9

C 2.10

C 2.11

C 3.0

Communicate with trade allies

C 3.1

C 3.1

D RESEARCH
that enhances the Partnerships for Home Energy Efficiency Effectiveness

D
1.0 Document and communicate research results broadly and directly to key players

D
2.0 Research that enhances program effectiveness

D
1.1

D
2.1

D
1.2

D
2.2

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