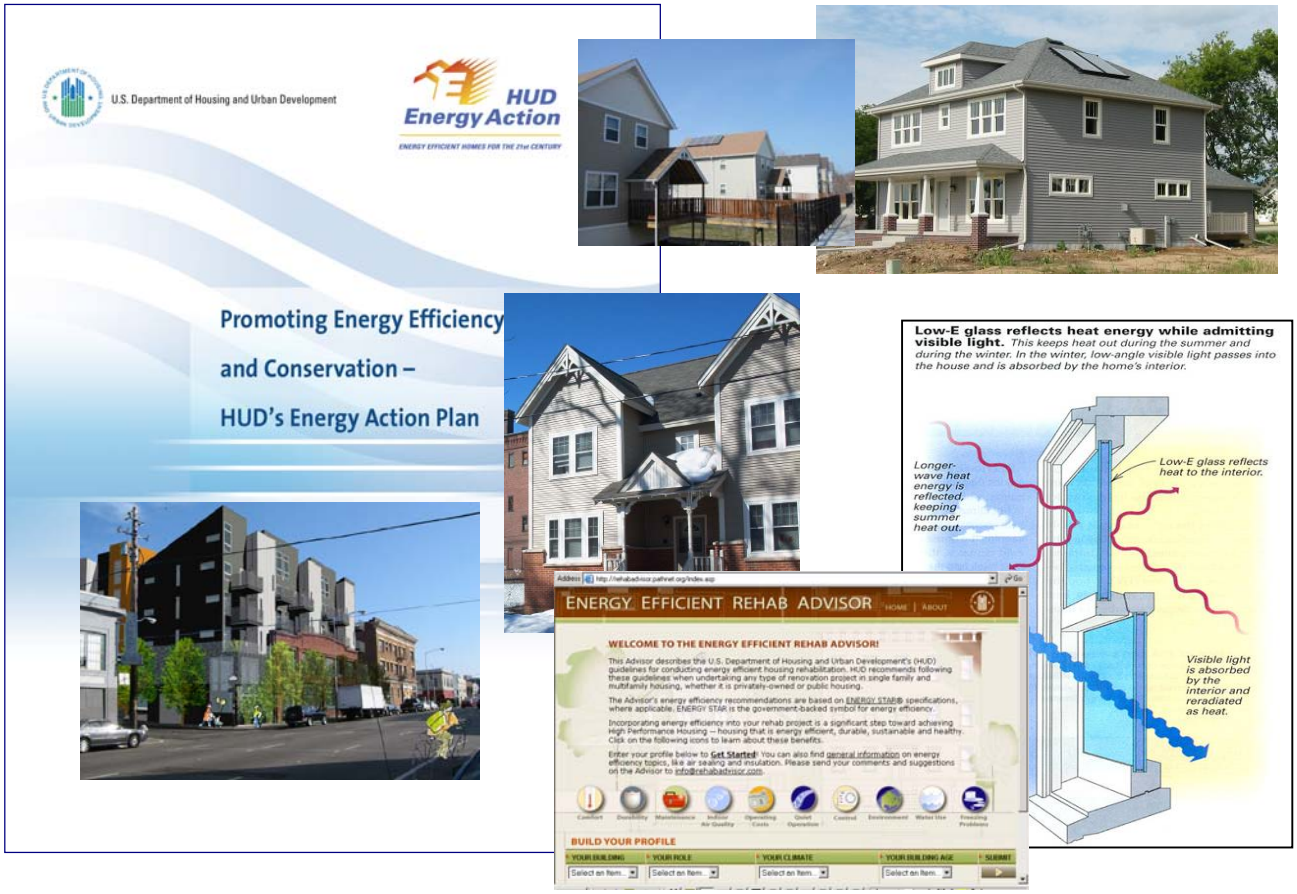
Promoting Energy Efficiency at HUD in a Time of Change

Report to Congress



Submitted Under

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Energy Policy Act of 2005

Energy Task Force
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

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U. S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D.C. 20410-0001

THE SECRETARY

August 8, 2006

I am pleased to present HUD's energy strategy for public and assisted housing. *Promoting Energy Efficiency at HUD in a Time of Change*, as required under Section 154 of the Energy Policy Act of 2005, describes a comprehensive, Departmentwide strategy that HUD is implementing to reduce energy costs in public and assisted housing as well as through HUD's formula and competitive grant programs.

HUD is committed to implementing the actions outlined in this report. With the continuing upward trend of oil prices, the Department is especially concerned with the impact of utility costs on affordable housing. Low- and moderate-income families, because they spend a disproportionately large share of their incomes on utilities, are especially vulnerable to spikes in energy costs.

The added cost of lighting, heating, and cooling our homes affects everyone: homeowners, renters, owners of assisted multifamily properties, public housing agencies (PHAs), and developers of new affordable housing. The containment of HUD's own estimated $4 billion "energy bill" will generate savings for the taxpayers and leverage resources for PHAs and others to address pressing housing needs.

With the historic shift to asset management in public housing, the Department believes that new opportunities present themselves for PHAs to address their energy costs. Under asset management, PHAs will, for the first time, be tracking and reporting financial data on individual projects rather than on an agency-wide basis. These changes will help PHAs better manage utility consumption in individual properties and identify those projects that need priority attention.

The strategy outlined in this report builds on the work that the Department began 4 years ago through its Energy Action Plan to promote energy efficiency through all of HUD's programs. As a result of the work of HUD's Energy Task Force and under the guidance of Deputy Secretary Roy A. Bernardi, the Department has made great strides in increasing awareness of energy efficiency among HUD staff, as well as among HUD's customers and partners.

Almost 5 years ago when I testified before the House Financial Services Committee, the Department made a commitment to making energy efficiency a priority issue. The Department has followed the excellent road map laid out in the President's

National Energy Policy—a road map that called for increased energy efficiency and conservation in homes and especially for increasing the voluntary use of Energy Star-labeled products and homes in the residential sector.

I am pleased to report that HUD has worked closely with the Department of Energy and the Environmental Protection Agency in carrying out these activities. I look forward to working with these agencies, the Congress, and the Department's housing industry partners to implement the many actions described in this report.

Alphonso Jackson

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EXECUTIVE SUMMARY

Americans spend some $160 billion each year to light, cool, and heat their homes. Of that amount, the U.S. Department of Housing and Urban Development (HUD) spends approximately $4 billion—more than 10 percent of its budget—in the form of utility allowances to renters, through Section 8 contracts in privately owned multifamily buildings or through operating grants to public housing agencies (PHAs).

HUD's Energy Strategy identifies actions HUD will take to promote energy efficiency in public and assisted housing and in housing financed through HUD's formula and competitive grant programs. The Department's Energy Action Plan, adopted in 2002, includes measures identified by each of the relevant program offices, as well as policy analysis and research activities. Its goal is to provide information, incentives, and technical assistance to HUD's customers and partners to make informed decisions to reduce energy costs in their buildings, either in the development or design of new housing or in the management, maintenance, or operation of existing housing stock.

As described in Section I, over the past 4 years, HUD has actively promoted energy efficiency through the Energy Action Plan. A Departmentwide Energy Task Force made up of representatives of program offices and regional energy coordinators in each of HUD's ten regional offices, is responsible for implementing the plan. HUD's field offices have also been active in promoting energy efficiency through workshops, homeownership fairs, and other events.

Section II of this report to Congress describes energy use in public and assisted housing and discusses opportunities for energy efficiency in each segment of this housing stock. PHAs spent more than $1.2 billion on PHA-paid utilities in 2004. HUD spends another $3 billion on utility allowances in public housing, and through the tenant- and project-based Section 8 programs.

Section III, besides outlining HUD's planned actions under its Energy Strategy, describes the Department's efforts to date. These have included providing priority rating points for energy efficiency in HUD's annual competitive grant awards; streamlining energy performance contracting in public housing; providing successful training for multifamily building managers on energy-efficient maintenance and operating practices; and strong regional efforts hosting conferences or workshops for customers and partners.

The Energy Strategy has five primary objectives:

1. To strengthen partnerships with federal agencies and local communities to promote adoption of the Energy Star label for products, appliances, and new homes.
2. To strengthen incentives and implement statutory requirements for energy efficiency.
3. To provide training, technical assistance, and information to homeowners, renters, and property owners.
4. To establish measures to track progress in reducing energy consumption and to ensure accountability.
5. To support further policy analysis, research, and technology development.

In public housing, this report is being written at a time of change as housing authorities make the transition to project-based or asset management. This shift will significantly change the regulatory environment for utility management and reporting. HUD also will implement several provisions related to public housing in the Energy Policy Act of 2005. HUD has already issued a notice extending the maximum period for energy performance contracts to 20 years as required by the Act and a notice promoting adoption of Energy Star-labeled products and appliances by PHAs. In addition, among other actions, HUD will continue to provide points for energy efficiency in future HOPE VI grant awards, maintain a robust Public Housing Energy Conservation Clearinghouse, and continue to streamline the energy performance contracting process.

In assisted housing, the Energy Strategy includes providing incentives through competitive awards for new energy-efficient Section 202 and 811 projects, exploring possible incentives for energy efficiency in new mortgage insurance applications, training building managers and maintenance staff in energy-efficient maintenance and operating practices, and replicating successful state or local partnerships that have leveraged federal, state, or local resources for capital investments in energy efficiency.

Finally, Section IV of the report identifies performance measures for public and assisted housing that are included in HUD's current Management Plan. It also identifies additional performance measures that will be considered for future implementation.

I. INTRODUCTION

This report outlines an integrated Energy Strategy for public and assisted housing, as required under Section 154 of the Energy Policy Act of 2005. Section 154 of the Act requires that the U.S. Department of Housing and Urban Development (HUD) develop an "integrated Energy Strategy," as follows:

> The Secretary of Housing and Urban Development shall develop and implement an integrated strategy to reduce utility expenses through cost-effective energy conservation and efficiency measures and energy-efficient design and construction of public and assisted housing. The Energy Strategy shall include the development of energy reduction goals and incentives for public housing agencies. The Secretary shall submit a report to Congress, not later than 1 year after the date of the enactment of this Act, on the Energy Strategy and the actions taken by the Department of Housing and Urban Development to monitor the energy usage of public housing agencies and shall submit an update every 2 years thereafter on progress in implementing the strategy.

The report outlines a number of steps that HUD is already taking and is proposing to take to address rising energy costs through increased energy efficiency in public and assisted housing (as well as in housing financed through its formula and competitive grant programs).

A key part of this effort is to increase the use of energy-efficient technologies in housing through increased procurement of Energy Star products and appliances and the adoption of the Energy Star label for Energy Star Qualified New Homes for new construction and substantial rehabilitation projects.[1] These and other actions rely primarily on voluntary actions, sound business practices, incentives and requirements authorized by Congress, and market-based solutions that leverage private sector resources on the part of PHAs, assisted property owners, and HUD grantees.

Energy and Housing Affordability: Key Drivers

Over the past 4 years, HUD has initiated a comprehensive, Departmentwide effort to address the key role that energy plays in housing affordability—and the potential for energy efficiency to lower the cost of homeownership and rental housing at a time of rapidly rising housing costs in some areas.

HUD's commitment to implementing the President's National Energy Policy in public and assisted housing has been driven by five key factors: (1) rising energy costs, especially in the aftermath of Hurricanes Katrina and Rita in 2005; (2) the age of the existing inventory of public and assisted housing; (3) the disproportionate burden of rising energy prices on low- and moderate-income families; (4) the impact of energy costs on HUD's own budget;

[1] Energy Star is a voluntary product and new home labeling program run by the Department of Energy and the Environmental Protection Agency.

and (5) new opportunities for increasing energy efficiency in public housing through asset management.

Rising Energy Prices. Americans spend $161 billion on heating, lighting, and cooling their homes. According to the Energy Information Administration, over the past 5 years the cost of home heating has more than doubled in some parts of the country; natural gas users spent 115 percent more in winter heating costs in 2005–06 than they did in 2001–02, and heating oil users spent 135 percent more. Post-Katrina energy costs were especially high this past winter; the cost of home heating increased by 41 percent over the previous year in the Midwest and by 24 percent in the Northeast. Nationally, the average household paid an average of $257 more last winter for heating their homes than they did the year before.[2]

Older Housing Stock. Approximately 65 percent of public housing units were built before 1970. Almost half (47 percent) of these older units are located in climate zone 2, which, with 5,500 to 7,000 Heating Degree Days, is the second coldest climate zone in the country.[3] The majority of all housing units are located in this climate zone or in zone 5, the warmest climate zone. The assisted housing stock is also older, built at a time with less attention on energy efficiency. According to the Harvard University Graduate School of Design's (GSD) *Public Housing Operating Cost Study*, more than 80 percent of HUD-assisted housing stock is 15 to 30 years old.[4]

Energy Burden. Low- and moderate-income families are especially vulnerable to rising energy prices. As noted in the President's National Energy Policy, "the energy burden on low-income households, as a proportion of income, is four times greater than for other American households. Many working households accommodate large increases in energy by cutting back on other needs. However, low-income households often have more difficult choices to make."[5]

Budget Outlays. HUD's own budget is directly affected by utility costs. HUD spends an estimated $4 billion on energy, more than 10 percent of its budget, either directly in the form of public housing operating subsidies or indirectly through utility allowances and Section 8 contracts in assisted multifamily housing. This area is where significant cost savings are possible; such savings would result in generating revenue for other important capital

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[2] Energy Information Administration, Energy Forecast, January 2006.

[3] U.S. Department of Housing and Urban Development, Energy Expenditures in Public Housing, Report to the Senate Committee on Appropriations, June 1999.
For climate zone map see www.eia.doe.gov/emeu/cbecs/climate_zones.html, as defined by the National Oceanic and Atmospheric Administration (NOAA). Each NOAA climate division is placed into one of five zones based on its 30-year average heating degree-days (HDD) and cooling degree-days (CDD) for the period 1971 through 2000. An HDD is a measure of how cold a location was over a period of time, relative to a base temperature (in CBECS, 65 degrees Fahrenheit). Similarly, a CDD is a measure of how hot a location was over a period of time, relative to a base temperature (65 degrees Fahrenheit).

[4] Harvard University Graduate School of Design, *Public Housing Operating Cost Study*, June 2003.

[5] President's National Energy Policy, May 2001.

investments or rental assistance needs. A modest savings of just 5 percent per year, for example, could generate a savings of $1 billion over the next 5 years.

Harvard Study and Asset Management. The shift to asset management in public housing provides an opportunity for housing authorities to more directly address and monitor energy costs. As documented in the Harvard University GSD's *Public Housing Operating Cost Study*, the Operating Fund system was not effective in encouraging energy conservation.[6] The Harvard study observed that the shared savings approach (in which PHAs retained 75 percent of the energy savings for a period of 3 years) did not by itself "make a difference" in creating incentives for housing authorities to reduce utility use or costs.[7] Under asset management, tracking and management of energy consumption will be enhanced since PHAs will report both energy consumption and expenditures for individual projects.

HUD's Energy Action Plan

In response to these pressing concerns, in 2001 Secretary Alphonso Jackson committed HUD to supporting the energy efficiency elements of the President's National Energy Policy in four key areas:[8]

1. Increasing energy efficiency in HUD-assisted or HUD-financed rental housing.
2. Expanding the use of Federal Housing Administration (FHA) Energy Efficient Mortgages, consistent with sound underwriting principles.
3. Providing technical assistance to nonprofit and faith-based organizations.
4. Continuing HUD's role in research and development of new technologies.

The President's National Energy Policy emphasized the central role of energy conservation and energy efficiency in addressing the nation's energy needs. The National Energy Policy report makes it clear that housing is an important part of this effort. The report noted "there are significant opportunities to improve the energy efficiency of buildings and homes through technologies and better practices."

Secretary Jackson established a Departmentwide Energy Task Force to prepare an Action Plan to implement these initiatives. The Energy Task Force identified a series of actions that HUD could undertake to address the need for energy conservation and energy efficiency in HUD's own programs. Some of these proposed actions were specific to individual programs,

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[6] Harvard University Graduate School of Design (GSD), *Public Housing Operating Cost Study*, Final Report (June 2003).
[7] Harvard University GSD, *Public Housing Operating Cost Study*, Final Report (June 2003), p. 77. The effect of the 75/25 split is that over 4 years, a PHA that permanently reduced its consumption below the rolling base receives a 225 percent "payback" of the equivalent of retaining the consumption savings for 2-1/4 years. After 4-plus years, the lower consumption level became the new rolling base, and the PHA no longer benefits financially from the lower savings. The study observed that none of the PHAs it examined had a current or ongoing process to reduce utility use or costs and that as a result, the shared savings approach alone under the funding system was not an effective incentive and did not by itself make a difference in agency behavior.
[8] Testimony before the House Financial Services Committee in June 2001.

while others were Departmentwide or interagency in scope (in partnership with the Environmental Protection Agency and the Department of Energy).

The Department subsequently adopted an Energy Action Plan (in April 2002) that contained 21 actions aimed at promoting energy efficiency in public and assisted housing, and in housing financed through a range of competitive and formula grant programs. Many of these actions have been successfully implemented, including several Departmentwide actions aimed at institutionalizing energy efficiency in HUD's programs and program-specific measures for each program office. As a result of these activities, awareness of energy efficiency has steadily increased among HUD's customers and partners.[9]

Key offices represented on the Energy Task Force have included the Office of Policy Development and Research (co-chair), the Office of Community Planning and Development (co-chair), the Office of Public and Indian Housing, the Office of Housing (Single Family and Multifamily), the Office of Healthy Homes and Lead Hazard Control, and the Office of Field Policy and Management. The Office of Departmental Operations and Coordination has provided valuable support. The Energy Task Force also includes regional energy coordinators located in, or who represent, each of HUD's ten regional offices.

Scope of This Report

Because HUD is addressing energy efficiency comprehensively through a Departmentwide effort, this report to Congress addresses public and assisted housing as well as related HUD actions to integrate energy efficiency in its programs. For the purpose of this report, this includes approximately 1.2 million existing public housing units, HOPE VI new construction, Housing Choice Vouchers, FHA-insured or FHA-assisted multifamily housing, and Section 202 housing for the elderly. In addition, this report addresses the Office of Native American Programs' initiatives to promote energy conservation and housing built or rehabilitated through the HOME and Community Development Block Grant (CDBG) formula grant programs.

[9] These efforts are not the first to address energy efficiency at the U.S. Department of Housing and Urban Development (HUD). For example, in 1990 HUD worked with the Department of Energy (DOE) to undertake the DOE-HUD Initiative, a 5-year collaboration to demonstrate how energy improvements could be undertaken through all HUD programs. Some 27 projects were undertaken. The 1990 Affordable Housing Act, Sections 944 and 945, required HUD to prepare an assessment of its energy activities and a 5-year plan for energy efficiency. Three such plans were submitted. The plans addressed energy aspects of all HUD programs and activities. In June 1999, HUD submitted a Report to the Senate Committee on Appropriations, *Strategies for Reducing Energy Expenditures and Consumption in Public Housing.*

Vision for the Future

Overall Goal: Significantly reduce energy use in HUD's inventory of public and assisted housing and in HUD-financed housing.

Public Housing

- PHAs adopt Energy Star as the standard for purchasing appliances and equipment.
- Newly built HOPE VI projects have an energy performance rating equivalent to the standards for Energy Star Qualified New Homes.
- Federally assisted housing on Indian lands promotes energy conservation.

Community Planning and Development

- Community Development Block Grant (CDBG) grantees adopt energy efficiency guidelines for housing rehabilitation that incorporate Energy Star product and construction standards.
- HOME grantees adopt energy efficiency guidelines for new construction or substantial rehabilitation and incorporate Energy Star product and construction standards.

FHA Single Family

- The Federal Housing Administration (FHA) takes steps to increase consumer awareness of Energy Efficient Mortgages and energy efficiency in the "Streamlined (k)" Limited Repair Program.
- FHA-approved housing counseling agencies provide counseling and information on opportunities for residential energy efficiency.

FHA Multifamily

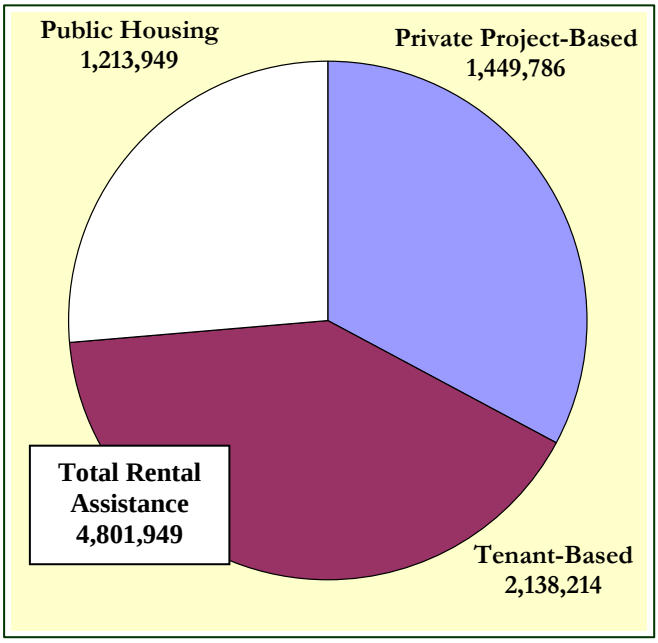
- Assisted multifamily properties are operated and maintained in an energy-efficient manner.
- Section 202 and 811 projects meet or exceed Energy Star building energy performance standards.
- Newly insured multifamily properties achieve energy efficiency performance levels equivalent to the 2003 International Energy Conservation Code or to Energy Star.

Other

- New energy partnerships are formed with cities, states, counties, other federal agencies, and nonprofit and private-sector stakeholders.

II. ENERGY USE IN PUBLIC AND ASSISTED HOUSING

Figure 1. HUD's Rental Assistance Programs (2005) (Number of Units)



Each year, HUD spends an estimated $4 billion on utilities in direct operating grants to PHAs and through Section 8 (both project- and tenant-based) utility allowances. In addition, assisted multifamily property owners report $903 million in owner-paid utilities.

Public Housing

Public housing consists of approximately 1.2 million units in 13,000 properties, managed by some 3,100 PHAs. Utility expenditures are tracked and reported by PHAs in the Financial Assessment Subsystem for public housing (FASS-PH).

The most recent period for which PHAs have submitted audited financial statements is for 2004, covering PHAs whose fiscal years ended between September 30, 2004, and June 30, 2005.[10]

As illustrated in Table 1-A, the overall cost of PHA-paid utilities in public housing (including water and sewer charges) for 2004 totaled $1.277 billion. This cost represents approximately 22 percent of total operating expenses. When combined with the most recent available estimate of tenant-paid utilities ($411.2 million, see Table 2), total estimated utility expenditures in public housing are $1.69 billion.

Per-unit month utility expenditures in 2004 total $97.78, a 14.9 percent increase since 2000.[11] Preliminary, unaudited utility expenditures reported in 2005 for approximately 70 percent of public housing units (covering PHA fiscal years ending between September 30, 2005, and

[10] Audited financial statements for PHAs with fiscal years ending on June 30, 2005, were submitted in March 2006. PHAs submit unaudited financial statements including utility expenditures through the Financial Assessment Subsystem (FASS) within 60 days of the end of their fiscal year. They submit audited financial statements 9 months after the end of their fiscal year. The 2004 period covers PHAs with fiscal years ending September 30, 2004, December 31, 2004, March 31, 2005, and June 30, 2005. Utility expenses reflect expenses incurred 12 months prior to each PHA's fiscal year end. The first FASS reporting period was 1999 and is known as FASS Cycle 1; 2004 is FASS Cycle 6.

[11] Note that these figures are not normalized for weather conditions.

June 30, 2006) show a significant increase in utility costs. Monthly utility expenditures increased to $119.21 per unit, or a 21.9 percent increase over the previous year.

Table 1-A. PHA-Paid Utility Expenditures 2000–04
(Including Water and Sewer Charges)

Line Item	2000	2001	2002	2003	2004
Total Utilities ($ in millions)	$1,202	$1,219	$1,158	$1,252	$1,277
Total Operating Expenses ($ in millions)	$5,412	$5,657	$5,754	$5,891	$5,885
Utilities as a Percentage of Operating Expenditures	22%	22%	20%	21%	22%
Total Utilities Per Unit/Month	$85.09	$87.82	$84.09	$93.02	$97.78
% Change		3.21%	–4.25%	10.63%	5.11%
% Change since 2000					14.9%

Source: 2000–04 Financial Assessment Subsystem for public housing (FASS-PH) financial data (FASS Cycles 2-6). The following line items were used in totaling the data for utilities: water, electricity, gas, fuel, and other utility expenses.

Table 1-B provides more detailed information on energy-related utilities, excluding water and sewer charges. Total reported PHA-paid utility costs for electricity, gas, and fuel oil in 2004 were $878.8 million, of which $402.5 million (46 percent) was for electricity, $311.5 million (35 percent) was for natural gas, and $164.8 million (19 percent) was for fuel oil. Over the past 5 years, PHA-paid energy-related utilities have generally made up approximately 14 to 15 percent of total operating expenditures.

Table 1-B. PHA-Paid Energy Expenditures 2000–04
(Electricity, Natural Gas, and Fuel Oil)

Line Item	Total ($ million)	Per Unit Month ($)	% of Total
Electricity	402.5	30.82	46
Natural Gas	311.5	23.85	35
Fuel Oil	164.8	12.61	19
Total PHA-Paid Utilities Energy Expenditures	878.8	67.28	100

Source: 2004–05 FASS-PH financial data (FASS Cycle 6).

Assisted Housing

HUD's assisted housing stock consists of approximately 2.3 million units in 31,000 properties, of which approximately 1.4 million receive project-based Section 8 rental assistance. Each year, HUD insures a significant number of new mortgages or refinances existing mortgages. In fiscal year (FY) 2005, HUD provided $5.9 billion in insurance for 1,041 multifamily loans with 122,800 units. HUD also provides capital grants and rental

assistance for Section 202 and 811 housing for seniors and disabled people, respectively, each year.

According to data compiled from HUD's Online Property Integrated Information Suite, average owner-paid, per-unit utility costs have increased by 28 percent between FY 2000 and FY 2005 (Figure 2). This increase varies from each region of the country from a high of 39 percent for properties served by the Seattle Multifamily Regional Office and 37 percent for Detroit to a low of 17 percent in Los Angeles and 12 percent in Fort Worth. As shown in Figure 3, natural gas costs have increased by an average of 56 percent over the past 5 years.

Figure 2. Increased Energy Costs for Total Utilities in Assisted Multifamily Housing

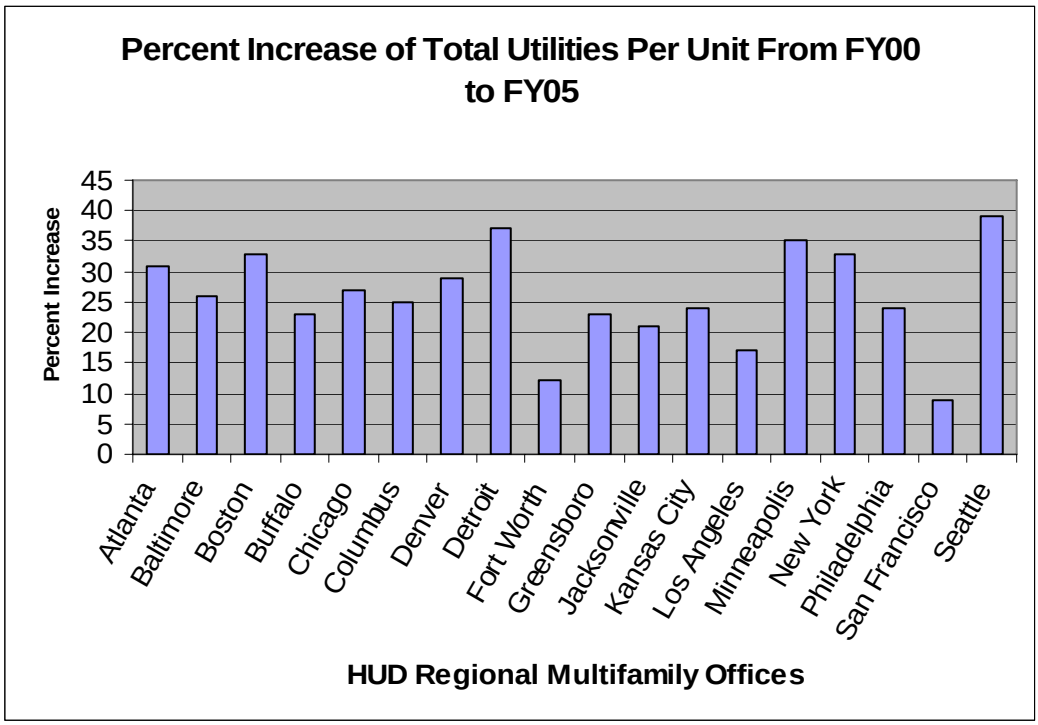
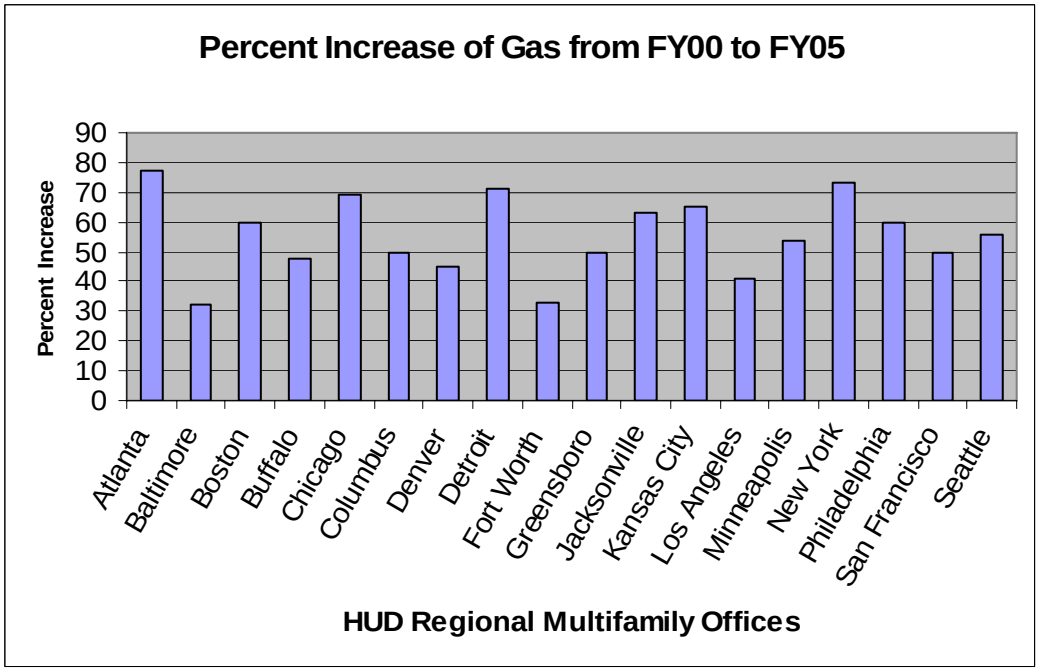


Figure 3. Increased Energy Costs for Gas in Assisted Multifamily Housing



Utility Allowances

As indicated in Table 2, HUD spent an estimated $3.1 billion on project- and tenant-based utility allowances in 2005, including $411 million in public housing, $2.1 billion in tenant-based Section 8 vouchers, and $586 million in project-based Section 8 assistance in assisted multifamily housing.

Table 2. Utility Allowance Expenditures (2005)

	Subsidized Housing Units	Occupied Units	% Units With Utility Allowances	# Units With Utility Allowances	Annual Spent ($M)
Public Housing	1,213,949	1,090,579	46	501,666	411.2
Section 8 Housing Choice Vouchers	2,138,214	1,805,498	91	1,643,003	2,122.0
Section 8 Moderate Rehabilitation	39,337	37,764	61	23,036	19.8
Section 8 New + Substantial Rehabilitation	845,832	811,999	69	560,279	357.1
Section 236	174,175	167,208	54	90,292	65.5
Other	390,442	374,824	59	221,146	163.0
Total	4,801,949	4,287,872	61	3,039,423	3,139.0

Sources: Office of Policy Development and Research, 2005 data from Tenant Rental Assistance System; Real Estate Management System; Public Housing Information Center—Resident Characteristics Report, HUD-50058 and HUD-50059. Occupied/Leased Section 8 Moderate, New, and Substantial Rehabilitation, Section 236 and Other assume 96 percent occupancy rate.

Opportunities for Energy Savings

The opportunities for energy efficiency in public and assisted housing vary widely, depending on the climate zone where the property is located, the age of the building and the type of construction, and the requirements and incentives of the HUD program involved. Nevertheless, because much of HUD-financed housing is pre-1980 housing, there are greater opportunities for energy savings in HUD-assisted buildings than in the overall housing stock.

Single-family Housing

A study of energy savings in single-family homes through the Department of Energy's (DOE's) Weatherization Assistance program from 1993 to 2005 found that the program achieved savings of 23 percent in gas-heated, single-family detached homes.[12] DOE and

[12] Schweitzer, Martin, *Estimating the National Effects of U.S. DOE's Weatherization Assistance Program With State Level Data: A Meta Evaluation 1993–2005*, Oak Ridge National Laboratory, September 2005.

the EPA's Energy Star "Home Energy Saver" program showed a 16 percent savings as a result of installing 10 Energy Star upgrades in a single-family home. These levels of savings can be expected in single-family homes insured or assisted through HUD programs when similar products or construction techniques are used.

Multifamily Housing

A study conducted by Lawrence Berkeley National Laboratory of energy retrofits in 25,000 units of multifamily housing showed that energy savings ranged from 10 to 22 percent of preretrofit consumption.[13] The median energy savings was 15 percent, equating to 1,450 kilowatt-hours per unit in electrically heated buildings and 14 million British thermal units per unit in gas- or oil-heated buildings. Simple payback on energy conservation measures was 6 years in gas- or oil-heated buildings. Increasing the energy efficiency of public housing by a similar level would save PHAs as much as $165 million per year.[14] A significant portion of these savings could be achieved through relatively low-cost measures or through sound operating and management practices.

[13] Goldman, et al., *Retrofit Experience in U.S. Multifamily Buildings: Energy Savings, Costs and Economics*, 1988.
[14] U.S. Department of Housing and Urban Development, *Energy Expenditures in Public Housing: Current Consumption and Opportunities for Savings*, Report to the U.S. Senate Committee on Appropriations, June 1999.

III. HUD'S ENERGY STRATEGY

A. Objectives

The U.S. Department of Housing and Urban Development's (HUD's) Energy Strategy contains 25 actions designed to accomplish the following five objectives:

4 Actions	*OBJECTIVE 1:* *Strengthen partnerships with federal agencies and local communities to promote Energy Star and energy efficiency in the residential sector.*
6 Actions	*OBJECTIVE 2:* *Strengthen incentives and implement new statutory requirements for energy efficiency through HUD programs.*
9 Actions	*OBJECTIVE 3:* *Provide training and technical assistance on energy efficiency to homeowners, renters, and property owners.*
3 Actions	*OBJECTIVE 4:* *Establish measures to track progress in reducing energy consumption and ensure accountability.*
3 Actions	*OBJECTIVE 5:* *Support further research and technology development.*

B. Planned Actions

1. Departmentwide

1.1	**Provide incentives for energy efficiency in housing financed through HUD's competitive grant programs.**

Progress to Date: Each year, HUD awards more than $2 billion in competitive grant awards for a wide range of housing and community development initiatives. HUD creates incentives for energy efficiency in its annual Super Notice of Funding Availability (SuperNOFA), which announces the availability of these funds. For the past 3 years, HUD has included Energy Star and energy efficiency as one of seven policy priorities eligible

HUD's ENERGY STRATEGY—SUMMARY OF ACTIONS

Departmentwide

1.1 Provide incentives for energy efficiency in housing financed through HUD's competitive grant programs.
1.2 Include energy efficiency performance measures in HUD's Annual Performance Plan (APP) and Management Plan.
1.3 Promote the use of Energy Star products and standards through HUD's new Partnership for Home Energy Efficiency with DOE and EPA.
1.4 Provide residents or organizations with training or information on energy efficiency for building or rehabilitating affordable housing.
1.5 Establish residential energy partnerships with cities, counties, states, and other local partners.

Community Planning and Development

2.1 Encourage energy efficiency in HOME- and CDBG-funded new construction and housing rehabilitation projects.
2.2 Identify opportunities and assist with feasibility analysis for Combined Heat and Power in public or assisted housing.

Public and Indian Housing

3.1 Base appliance and product purchases in public housing on Energy Star standards, unless the purchases are not cost effective.
3.2 Build HOPE VI developments to a high level of energy efficiency.
3.3 Improve tracking and monitoring of energy efficiency in public housing.
3.4 Streamline energy performance contracting in public housing.
3.5 Promote energy conservation in federally assisted housing on Indian tribal lands.

Housing—Single Family

4.1 Feature the Energy Efficient Mortgage as a priority loan product.
4.2 Provide training on how FHA single-family programs can be effectively used to promote energy efficiency.
4.3 Continue improved tracking and evaluate performance of Energy Efficient Mortgages.

Housing—Multifamily

5.1 Promote energy efficiency in multifamily-assisted housing and multifamily programs.
5.2 Continue HUD-DOE multifamily weatherization partnerships.
5.3 Encourage use of Energy Star new home standards in the design, construction and refinancing of Section 202 and 811 projects.
5.4 Develop incentives for energy efficiency through FHA multifamily insurance programs.
5.5 Explore asset management strategies and guidance for energy efficiency in HUD-subsidized multifamily properties.
5.6 Support energy efficiency training for multifamily managers and maintenance staff.

Housing—Manufactured Homes

6.1 Implement energy efficiency recommendations of the Consensus Committee in HUD-code homes.

Field Policy and Management

7.1 Partner with local energy efficiency groups, HUD program offices, and other agencies to educate HUD customers about ways to reduce energy costs.

Policy Development and Research

8.1 Conduct energy-related policy analysis and research to support Departmental energy efficiency actions.

Office of Healthy Homes and Lead Hazard Control

9.1 Develop computerized assessment tool for integrated energy and environmental retrofits.

for additional rating points in the SuperNOFA. Nine programs have provided incentives for applicants who agreed to make use of the Energy Star label for homes or products in designing or operating their projects. These included the Section 202 housing program for seniors, the Section 811 program for people with disabilities, the Brownfields Economic Development Initiative, the Rural Housing Economic Development Program, Housing Opportunities for Persons with AIDS, Youthbuild, and University Partnerships. Separately, HOPE VI provided a point for energy efficiency in its FY 2005 and FY 2006 Notices of Funding Availability (NOFAs). Especially important, from the point of view of assisted housing, was the rating point for energy efficiency included in the FY 2005 and FY 2006 Section 202/811 NOFAs.

Planned Action: Energy efficiency will continue to be a policy priority in the FY 2007 and FY 2008 SuperNOFAs. Individual competitive grant programs will continue to award rating points for proposals that adopt energy-efficient products and practices in planned housing projects. To improve the process, HUD's Energy Task Force will explore with program offices the feasibility of identifying suggested energy measures in awarding competitive points for energy efficiency activities and assist applicants in addressing energy efficiency. In addition, during FY 2007 the Energy Task Force will review its experience with the previous year's incentives. The Office of Community Planning and Development's NOFA for its technical assistance programs may address energy efficiency technical assistance activities supportive of HUD's HOME and Community Development Block Grant (CDBG) programs.

1.2	**Include energy efficiency performance measures in HUD's Annual Performance Plan and Management Plan.**

Progress to Date: In FY 2005 and FY 2006, energy efficiency was included in HUD's Annual Performance Plans (APPs) and the supporting Management Plans. Also, most of HUD's field offices included energy efficiency measures in their Management Plans, resulting in more than 250 energy-related events or activities being reported through the HUD Integrated Performance Reporting System.

Planned Action: As will be discussed in Section IV of this report to Congress, performance measures that set energy reduction outcomes or goals and gauge improvements in energy efficiency will be considered for inclusion in HUD's future APPs and, where feasible, in future Management Plans. Performance measures that involve a change to Indian Housing Plans must be submitted for tribal consultation before adoption.

1.3	**Promote the use of Energy Star products and standards through HUD's new Partnership for Home Energy Efficiency with DOE and EPA.**

Energy Star is a voluntary labeling program that identifies and promotes energy-efficient products in the marketplace. The 31 types of Energy Star-labeled products together can improve the energy efficiency of an average home by as much as 30 to 40 percent.[15] Energy Star-labeled products include washers and dryers, refrigerators, windows, heating and cooling equipment, and lighting fixtures and bulbs.

Progress to Date: Information on Energy Star products and standards for new homes has been placed on HUD's website at www.hud.gov/energy, and Energy Star brochures were distributed to HUD field offices for dissemination at homeownership fairs and other events. In addition, the Office of Public and Indian Housing (PIH) created a Public Housing Energy Conservation Clearinghouse for PHAs that included information on Energy Star. Then-HUD Secretary Mel Martinez signed a memorandum of understanding on Energy Star with the EPA and DOE in September 2002 that resulted in a website that could be used by public and assisted housing for bulk purchasing of Energy Star products and other joint activities. In July 2005, HUD Secretary Alphonso Jackson announced a new Partnership for Home Energy Efficiency with DOE and EPA to promote the use of Energy Star products in existing housing by homeowners, renters, PHAs, and others.

Planned Action: HUD will work with EPA and DOE to ensure that information on Energy Star products and appliances, Energy Star Qualified New Homes, and "Home Performance with Energy Star" (for existing homes) is available for distribution to field staff, PHAs, formula and competitive grant recipients, property managers, and, where feasible, new Federal Housing Administration (FHA) homebuyers.[16]

[15] U.S. Environmental Protection Agency and U.S. Department of Energy, *Saving With Energy Star*, EPA 430-F-97-037, February 1997. For savings for individual Energy Star-labeled products, see www.energystar.gov.
[16] Home Performance with Energy Star is a whole-house Energy Star retrofit initiative aimed at existing homes in selected U.S. markets.

1.4	**Provide training or information on energy efficiency to residents or organizations building or rehabilitating affordable housing.**

Progress to Date: A significant effort has been undertaken to coordinate outreach and information to educate HUD customers and partners on opportunities for energy efficiency. Actions included: distributing 100,000 *Owning Is Just the Beginning* booklets to housing counseling agencies to assist them in counseling homebuyers and homeowners on proper budgeting for, and management of, utilities as a key cost of homeownership; developing an Internet-based training curriculum for HOME grantees; developing a new web tool, the *Energy Rehab Advisor*, to provide homeowners, multifamily property owners, and PHAs with guidelines for incorporating energy efficiency in their housing rehabilitation projects; creating a new website for HUD customers and grantees at www.hud.gov/energy; and issuing a quarterly e-newsletter to provide information on events and resources of interest to HUD staff and partners.

Over the past 2 years, regional or statewide energy conferences were held in Birmingham; Los Angeles; Pittsburgh; Indianapolis; Charlotte; Richmond; Wilmington, Delaware; and several other locations. In addition, several specialized training workshops were conducted on energy efficiency operations and energy performance contracting. A national training workshop and satellite broadcast to HUD field offices was held at HUD Headquarters, during which Deputy Secretary Roy A. Bernardi delivered the keynote speech.

Planned Action: HUD's Energy Task Force will develop standard training program modules to promote energy efficiency in both new and existing HUD-assisted and financed housing. The training program and plan will be developed in conjunction with national intermediaries, including the Local Initiatives Support Corporation, Habitat for Humanity, Enterprise Community Partners, and the Neighborhood Reinvestment Corporation. The training will address no-cost or low-cost energy efficiency strategies, best practices in energy-efficient asset management, energy efficiency financing strategies, HUD program options for promoting energy efficiency, resource leveraging opportunities, energy efficiency strategies and techniques for nonprofit and faith-based organizations, and green building practices. PIH will develop materials for PHAs to disseminate to residents on ways to improve household energy efficiency.

1.5	**Establish residential energy partnerships with cities, counties, states, and other local partners.**

Planned Action: The Energy Task Force will identify opportunities to implement energy partnerships with local communities (cities, counties, states, the private sector, and nonprofit partners) as part of the HUD-DOE-EPA Partnership for Home Energy Efficiency. These partnerships will facilitate the implementation of HUD activities to reduce energy consumption in residential buildings. The task force will work with federal and state agencies to develop regional strategies for providing technical and program resources and services to external partners (industry, local governments, and nonprofit agencies) and to promote more extensive use of Energy Star-labeled products and construction practices. Energy partnerships will be developed by program offices with their customers and partners or with the Office of Field Policy and Management playing a facilitating role. Specific partnership goals will be considered for inclusion in the FY 2007 and FY 2008 Management Plans.

2. Community Planning and Development (CPD)

2.1	**Encourage energy efficiency in HOME- and CDBG-funded new construction and housing rehabilitation projects.**

High energy costs significantly affect the affordability of housing and may contribute to housing defaults and homelessness. High energy costs also can have an adverse affect on local government programs and service and—since a large share of every dollar spent on energy leaves the communities—can dampen local economic conditions. Conversely, energy efficiency programs create opportunities for increasing housing affordability, improving local fiscal conditions, and promoting economic growth.

Progress to Date: The HOME program has developed an Internet-based training module on energy efficiency. Each Community Planning and Development (CPD) field office distributed Energy Star information to CDBG and HOME grantees in their areas. One field office, Boston, followed up with a training workshop and telephone consultations, resulting in the adoption of Energy Star by 39 grantees and a reported 2,700 affordable housing units in the region that met the Energy Star Qualified New Home label. In North Carolina, HOME funds have been used to finance energy-efficient, high-performance new construction in more than 800 new homes.

Planned Action: Beginning in FY 2007, CPD will track the number of units built with HOME and CDBG funds to Energy Star standards through the Integrated Disbursement and Information System (IDIS). A final rule on the IDIS performance measures that was published in February 2006 will implement the new reporting requirements in FY 2007. Actions that CPD will take to promote Energy Star will include holding workshop sessions that present an "Energy Star for Grantees" presentation[17] using knowledge from Energy Star experts and grantees who have adopted Energy Star for new homes (or its equivalent for multifamily buildings) as the guideline for construction or major rehabilitation; revising the basic HOME training course to strengthen Energy Star coverage; and providing Energy Star guidance in the 15 workshops to be held in rollout sessions on the new IDIS performance measurement system.

2.2	**Identify opportunities and assist with feasibility analysis for Combined Heat and Power in public or assisted housing.**

Combined heat and power (CHP), also known as cogeneration, is a highly efficient form of electric generation that recycles and uses heat that is normally lost by conventional power generation methods. The President's National Energy Policy recommends expanding the use of this form of energy.

Progress to Date: CPD signed an interagency agreement with the Oak Ridge National Laboratory (Oak Ridge) to promote CHP in public and assisted housing. Two guides were developed that answered questions regarding CHP in multifamily housing and included worksheets to conduct feasibility screening and determine estimated paybacks. Oak Ridge developed the software for the feasibility analysis worksheets for use by multifamily owners. DOE's Regional Application Centers participated in a variety of workshops and other educational activities, including a congressional briefing on CHP in multifamily housing in September 2005.

Planned Action: CPD will extend the interagency agreement with Oak Ridge and continue to work with DOE and EPA to support the use of CHP in public and assisted multifamily housing.

3. Public and Indian Housing (PIH)

In addition to funding incentives related to conservation, there are four major regulations on utility conservation in public housing. HUD requires PHAs to conduct energy audits at least every 5 years (24 CFR 965.302) and to undertake all identified cost-savings measures

[17] See http://www.hud.gov/offices/cpd/library/energy/energystargrantees.ppt.

as funds become available (965.307). PHAs must also purchase equipment that meets DOE standards for energy efficiency (965.306) and individually meter household utilities where feasible (965.402).

Transition to Asset Management

HUD's revised Operating Fund rule at 24 CFR 990 establishes a new formula for determining operating subsidies for PHAs and introduces asset management as a new business model for public housing.[18] Implementing asset management will lead to better management and oversight of public housing by providing improved information about the operating costs and performance levels of each public housing project.[19]

The move to asset management represents a significant change, and is designed to bring public housing more in line with building operation and management models commonly found in private housing to increase accountability and reduce expenditures. According to the new Operating Fund rule, HUD will calculate and obligate operating subsidies on a property-by-property basis. PHAs will submit annual financial statements for each property and charge properties for services actually performed.

The revised rule affects all PHAs. PHAs with fewer than 250 units that do not choose to adopt asset management will still be subject to the new funding formula. One of the rule's primary goals is to give greater attention to the financial, physical, and management performance of each public housing project or property. Under the Operating Fund system, housing authorities are funded on the basis of agency-wide costs and expenses. Beginning in FY 2008, they will be funded on a project-by-project basis.

The shift to asset management will take place over the next several years, while the new funding formula for determining operating subsidies will be implemented in calendar year 2007. In that first year, to assist with the transition, the new formula will be applied at the agency level, using a weighted-average project expense level. In calendar year 2008, the new formula will be applied at the project level. The new project-based accounting budgeting and management requirements will take effect beginning July 1, 2007, and "cost reasonableness" provisions will take effect beginning July 1, 2008. The new project-based performance assessment system will be implemented no later than the second year of project-based accounting.

[18] "Revisions to the Public Housing Operating Fund Program, Final Rule," published in the Federal Register on September 19, 2005 (79 FR 54983), and "Revisions to the Public Housing Operating Fund Program; Correction to Formula Implementation Date," published in the Federal Register on October 24, 2005 (70 FR 61366).
[19] U.S. Department of Housing and Urban Development, *Preparing for Asset Management Under the New Public Housing Operating Fund Rule,* p. 1, June 1, 2006.

Implications for energy management

The change to property-level reporting will fill an information gap for utility data. Reporting utility consumption by property will enable PHAs and HUD to gather data to more correctly determine utility costs, prove cause and effect in cost and energy reduction, and apportion funds fairly. The move to asset management will encourage additional PHAs to take advantage of financial incentives and strategies for reducing utility consumption, such as energy performance contracts.

Energy Policy Act Provisions

The Energy Policy Act of 2005 (the Act) enacted by Congress in 2005 contains several provisions that affect public housing. HUD has issued a notice implementing Section 151 of the Act, which increases the allowable term for energy performance contracts to 20 years, to "allow longer payback periods for retrofits, including windows, heating system replacements, wall insulation, site-based generation, advanced energy savings technologies, including renewable energy generation, and other such retrofits."

HUD expects to implement additional provisions of the Act through regulation. In FY 2007, Section 152 of the Act requires that "in purchasing appliances, a public housing agency shall purchase energy-efficient appliances that are Energy Star products or FEMP-designated…unless the purchase of energy-efficient appliances is not cost-effective."[20] Section 153 of the Act requires HUD to establish the 2003 International Energy Conservation Code (IECC), a higher standard than the current 1992 Model Energy Code (MEC), as the standard for new HOPE VI projects.

3.1	**Base appliance and product purchases in public housing on Energy Star standards, unless the purchases are not cost effective.**

As noted above, the Act requires PHAs to adopt Energy Star or Federal Energy Management Program-designated products as the standard for procuring products and appliances (unless it is not cost effective to do so). Products purchased by PHAs likely to be impacted by this provision will include lighting, refrigerators, washers and dryers, windows, furnaces, and other products receiving the Energy Star label.[21]

Progress to Date: In July 2005, PIH issued a notice that encourages PHAs to purchase Energy Star products. PIH did so after determining that, absent formal rulemaking or statutory authority, a more prescriptive requirement was not feasible. The notice (PIH 2005-

[20] FEMP—Federal Energy Management Program.
[21] For a full list of Energy Star-labeled products and appliances, see www.energystar.gov.

25) encouraged PHAs to buy Energy Star appliances when it is cost effective to do so, stating that "PHAs should purchase Energy Star equipment (e.g., refrigerators and air conditioners) unless this results in energy savings to the authority that are insufficient to repay the initial higher costs over the expected life of the equipment."[22] The notice also states that PHAs "should purchase Energy Star-labeled products (e.g., windows), and ensure that any new buildings are constructed to Energy Star standards (unless the PHA determines that the incremental cost results in a negative life cycle cost)." In addition, PIH promoted the use of Energy Star through PHECC.

Planned Action: In FY 2007, PIH will publish a regulation to implement the provision of the Act establishing Energy Star as the standard for PHA procurements, unless it is not cost effective. The regulation will establish Energy Star as the standard for purchasing refrigerators, lighting, furnaces, washers and dryers, and other equipment when such purchases result in energy savings that, over the expected life of the equipment, meet or exceed any incremental cost increase of purchasing and maintaining Energy Star products. Field offices will host events promoting Energy Star and other energy efficiency opportunities. In addition, PIH will continue to provide information to PHAs through PHECC, and HUD Headquarters will contract to conduct an analysis of the impact of Energy Star on PHAs.

3.2	**Build HOPE VI developments to a high level of energy efficiency.**

The 2005 Energy Policy Act requires that all HOPE VI projects be built to an energy standard that meets or exceeds the standards set by the 2003 International Energy Conservation Code (IECC). This requirement represents a significant increase in energy efficiency over the existing standard for construction of new housing built with HUD funds, the 1992 Model Energy Code.

Progress to Date: For the past 3 years, HUD has included language in its NOFAs encouraging the adoption of Energy Star in new HOPE VI projects, and for the past 2 years (FY 2005 and FY 2006) has provided a rating point incentive in its NOFA for energy efficiency. During FY 2005, 10 percent of HOPE VI construction projects were surveyed to determine implementation of Energy Star initiatives, and best practices were compiled for distribution to all PHAs. PIH staff provided information on EPA's Builder Option Packages and additional Energy Star information during initial site visits for new grantees. One project, Maverick Gardens in Boston, with support from the State of Massachusetts, is an outstanding example of energy efficiency and includes a renewable energy component (photovoltaics), as well as cogeneration. In addition, several HOPE VI projects in

[22] PIH Notice 2005-25, *Using Energy Star to Promote Energy Efficiency in Public Housing*, July 13, 2005.

New Jersey have adopted the standard for Energy Star Qualified New Homes (using state rebates) as have additional projects in Milwaukee, Louisville, and other locations.

Planned Action: Pursuant to the Act, PIH will publish a proposed regulation establishing the 2003 IECC as the minimum standard for HOPE VI housing. At the same time, PIH will continue to provide a rating point incentive for new HOPE VI grant awards, for projects meeting the higher standard for Energy Star Qualified New Homes. PIH will also encourage Energy Star as the standard for previously awarded HOPE VI projects that are still in the planning stages. PIH will also monitor 15 current HOPE VI construction projects to assess implementation of energy conservation measures as part of the construction phase and encourage the use of Energy Star appliances and equipment where it is cost effective to do so. Best practices compiled in FY 2005 and FY 2006 will be distributed to PHAs and project sponsors, who will be encouraged to emphasize implementation of energy conservation in all aspects of HOPE VI construction and operation.

3.3	**Improve tracking and monitoring of energy efficiency in public housing.**

PIH regulations require PHAs to conduct an energy audit every 5 years and incorporate the most cost-effective energy efficiency measures into their capital plans. PHAs report agency-wide utility expenditures to HUD in their annual financial reports. The absence of project level data in the PHA-wide reports on utility expenditures has made it difficult to set benchmarks for energy efficiency outcomes or goals, to identify top or poor performers, or to track performance over time.

Progress to Date: PIH has initiated a long-term project to benchmark energy use in public housing. PIH contracted with a firm to initially benchmark energy use in the Northeast and, subsequently, in all regions. This long-term project is being developed as part of the shift to asset management in public housing and will enable PHAs to focus their resources on those projects and buildings that are high energy users.

In addition, under asset management, PHAs will report project-based utility consumption and expenditures in an automated system. This system will provide PHAs with data that, when adjusted for weather conditions, will provide an indicator of the relative efficiency of individual properties, and their potential for energy savings. It will also provide a baseline to enable PHAs to measure savings in the future.

Planned Action: PIH will provide guidance through notices on energy auditing standards, through approaches for leveraging PHA operating and capital resources to implement energy efficiency programs, and through information on Public Housing Energy

Conservation Clearinghouse. PIH will continue its benchmarking initiative as part of the overall shift to asset management.

3.4	**Streamline energy performance contracting in public housing.**

Authorized by Congress in 1987, energy performance contracting is an important vehicle for carrying out energy efficiency in public housing. An energy performance contract is an agreement with a private energy services company that, after performing an energy audit, provides financing for energy efficiency measures, oversees the installation of these measures, and provides long-term services, such as monitoring of energy use, training of maintenance staff, and energy education of residents. Typically, the company guarantees a certain level of savings and "shares" the savings with the PHA.

Progress to Date: In response to the call in HUD's Energy Action Plan for streamlining the approval process for energy performance contracts, PIH has developed new protocols and instituted a streamlined review process for energy performance contracts. The new protocols require field offices to review contract proposals within 45 days of receipt, and waivers are no longer required for tenant-paid utilities. In addition, PHA and PIH staff have participated in numerous workshops, providing training on energy performance contracting for interested PHAs. As a result, the number of requests for proposals from PHAs for energy performance contracts has increased significantly. Rather than consolidating the review of performance contracts into one or more field offices, PIH took steps through training workshops, technical support, and new protocols to strengthen field office capacity to review proposals.

A recent survey of energy performance contracts of HUD field offices showed the following gains between FY 2000 and FY 2006:[23]

- The number of PHAs with energy performance contracts has increased by an average of 20.4 percent per year.
- The number of energy performance contracts has increased by an average of 22.7 percent per year.
- Total energy performance contract investment has increased by an average of 24.2 percent per year.

The number of PHAs with such contracts has doubled since 2002. Table 3 illustrates the distribution of these contracts. As of 2006, 117 PHAs have undertaken or are implementing 132 performance contracts. Note that only 10 of these, less than 10 percent of all contracts, are with smaller PHAs of fewer than 250 units, which make up almost two-thirds of all PHAs. Of the 151 larger PHAs (those with more than 1,250 units), approximately one-third has initiated energy performance contracts.

Table 3. Number of PHAs With Energy Performance Contracts

	PHAs	2000	2002	2004	2006	Percent
Very Small (<250)	2,341	2	2	5	10	0.4
Small (250–499)	433	14	18	20	29	6.7
Medium (500–1,249)	249	6	13	27	35	14.0
Large (1,250–6,599)	133	16	21	28	37	28.0
Very Large (>6,599)	18	4	4	6	6	33.0
Total	3,174	42	58	86	117	3.7

Note: Includes all PHAs with multiphase projects.
PHAs = public housing agencies.

The dollar investment (and accompanying energy savings) has also dramatically increased since 2002. As shown in Table 4, total investment increased from $170.6 million in 2002 to $350.7 million in 2006, with a projected guaranteed annual energy savings of $37.6 million, up from $13.4 million in 2000, as shown in Table 5.

[23] Survey conducted in 2006 by Office of Public and Indian Housing.

Table 4. Investment in Energy Performance Contracts by PHAs ($M)

	2000 ($)	2002 ($)	2004 ($)	2006 ($)
Very Small (<250)	2.0	2.0	3.0	6.1
Small (250–499)	6.2	8.9	9.9	20.5
Medium (500–1,249)	10.7	21.7	45.2	65.0
Large (1,250–6,599)	53.7	87.8	119.5	191.2
Very Large (>6,599)	35.2	50.2	68.0	68.0
Total	107.8	170.6	245.6	350.7

Note: Includes energy financing and other known sources.
PHAs = public housing agencies.

Table 5. Savings Through Energy Performance Contracts by PHAs ($M)

	2000 ($)	2002 ($)	2004 ($)	2006 ($)
Very Small (<250)	0.2	0.2	0.3	0.6
Small (250–499)	0.9	1.5	1.6	2.7
Medium (500–1,249)	0.8	2.1	4.5	6.5
Large (1,250–6,599)	7.2	10.2	13.6	20.7
Very Large (>6,599)	4.3	5.7	7.1	7.1
Total	13.4	19.7	27.1	37.6

Note: Includes energy financing and other known sources.
PHAs = public housing agencies.

Planned Action: PIH will continue to support energy performance contracting as a vehicle for implementing energy efficiency. Field offices will continue to streamline the procedures for reviewing energy performance contracts so that they are reviewed in a timely manner. Actions to be taken will include revising regulations at 24 CFR 965 to address the provisions of the Act, implementing the provisions of the notice extending performance contracts from 12 to 20 years as required by the Act, implementing new quality assurance initiatives that will track energy performance contract activity, and updating regulations to ensure consistency with other regulatory changes. PIH also will support extending energy performance contracts to smaller PHAs through "aggregated" contracts involving multiple smaller PHAs.

To further encourage energy and utilities conservation, HUD is working with PHAs wishing to act as their own agent and serve as their own performance contractor. The PHA

is required to use independent professional engineering support before entering into a performance contract or incurring its own debt for an energy project. PHAs normally accomplish the work handled by performance contractors, such as conducting energy audits installing insulation and more efficient heating equipment. The Harvard University Graduate School of Design's *Public Housing Operating Cost Study* recommended that PHAs be allowed to use the same incentives available under performance contracting. Expanding opportunities for energy performance contracts have the benefits of serving a larger number of PHAs, particularly small- to medium-sized PHAs, thereby increasing competition in the marketplace and job creation in the local economy.

3.5	**Promote energy conservation in federally assisted housing on Indian tribal lands.**

Title V, "Indian Energy," of the Act contains Section 506, "Energy Efficiency in Federally Assisted Housing." This section directs the HUD Secretary to promote energy conservation for federally assisted housing on Indian lands through, among other things, the use of energy-efficient appliances, technologies, innovations, and the promotion of shared energy savings contracts.

Progress to Date: HUD's Office of Native American Programs (ONAP) has undertaken a wide range of activities, as detailed below, that promote energy efficiency in Indian housing.

Planned Action: ONAP will continue its ongoing energy-related activities and accomplish these objectives through a wide range of actions. ONAP will offer a one-point incentive in its competitive grant programs for applications that address Energy Star goals. In the FY 2006 Indian Community Development Block Grant NOFA, Rating Factor 3 (Soundness of Approach) will offer a one-point incentive for applications that address HUD's Energy Star goal.

The Northern Plains ONAP will work with EPA's Office of Pollution Prevention and Toxics on a Green Team training collaboration. The Northwest Plains ONAP will provide technical assistance to emphasize green/energy-efficient design and construction with a focus on assessing existing "green housing," developing a training program, providing technical assistance, and conducting workshops to share information on innovative projects that are occurring in the Pacific Northwest. A training manual will be developed for use in all other ONAP regions.

ONAP's current Mold Prevention Initiative includes onsite technical assistance and the physical inspection of housing units. This process includes the use of blower door tests to monitor the airflow through housing units. Blower door tests help identify air leaks and

the need for additional weatherization. In addition, training sessions conducted under the Mold Prevention Initiative include a thorough discussion of recommendations for tribes and Tribally Designated Housing Entities (TDHEs) to become more energy efficient without compromising indoor environmental quality.

To support energy efficiency, the Northern Plains ONAP is establishing relationships with the DOE Tribal Energy Program, the Department of the Interior's (DOI) Division of Energy and Mineral Development, the University of Colorado, the National Renewable Energy Laboratory, and others.

ONAP has retained a contractor to perform energy surveys at housing entities. As an adjunct to its study of Indian housing costs, ONAP will expand its onsite work to conduct a more complete review of housing-related utility costs. The study will include an analysis of utility costs and recommendations for reducing those costs. The contractor will provide onsite expertise and submit a written report to the housing entity. On completion of the surveys, the contractor will provide a more comprehensive report to HUD addressing common problem areas and recommended solutions. ONAP will forward the report to all tribes and TDHEs.

ONAP's Section 184 Indian Housing Loan Guarantee program will explore marketing Energy Efficient Mortgages (EEMs) as a priority loan product. ONAP will also continue discussing collaboration and potential partnerships on renewable energy resources and geothermal energy with DOI's Office of Indian Energy Resource Development and the Bureau of Indian Affairs' Office of Policy and Economic Development.

ONAP's 2005 National Indian Housing Summit featured a parallel 3-day track on "Designing and Building Healthy Communities." It emphasized intertribal and interagency collaboration and networking on these subjects. The participants could form the core for future discussions on those topics.

4. Housing—FHA Single Family

4.1	**Feature the Energy Efficient Mortgage (EEM) as a priority loan product.**

FHA's Energy Efficient Mortgage helps homeowners reduce energy costs by providing a means to finance energy improvements during time-of-sale, refinancing, and rehabilitation transactions. An EEM enables homebuyers to borrow a minimum of $4,000 and a maximum of 5 percent (up to $8,000) of the home's appraised value to finance energy efficiency improvements. Cost-effective energy improvements result in lower utility bills, thereby freeing up additional household income for mortgage payments.

Progress to Date: During 2005, FHA issued Mortgagee Letter 2005-21, which consolidated existing policies and established the 2000 IECC as the standard for energy-efficient residential construction. In addition, Mortgagee Letter 2005-50 was issued, enhancing the "Streamlined (k)" Limited Repair Program. The program encourages homebuyers and owners to undertake weatherization measures that may help conserve energy and reduce utility expenses. FHA also provided training to lenders as part of their regular lender training programs and developed a brochure (HUD 2005–07-FHA) titled "HUD's Energy Efficient Mortgage Program." FHA also improved its reporting procedures, providing a more accurate count of FHA-insured EEMs. (See Action 4.3 below).

Planned Action: Through HUD's four Homeownership Centers, FHA will take steps to increase consumer awareness of EEMs, including promoting the use of the EEM with the 203(k) rehabilitation program, as well as other single-family loan products. FHA will continue EEM marketing efforts, providing information to industry partners, such as lenders, housing counseling agencies, and real estate agents.

4.2	**Provide training on how FHA single-family programs can be effectively used to promote energy efficiency.**

Planned Action: FHA will conduct outreach and provide guidance and training for housing professionals (for example, underwriters, realtors, appraisers, home inspectors, and program support staff) on FHA's programs promoting energy efficiency. HUD's Office of Single Family Housing has developed an effective and comprehensive presentation on the Energy Efficient Mortgage program that is available for use in promoting the program at industry events. FHA guidance and training will provide recommendations for facilitating energy efficiency as part of time-of-sale, rehabilitation, and refinance transactions.

4.3	**Continue improved tracking and evaluate performance of Energy Efficient Mortgages.**

Progress to Date: FHA implemented revised tracking procedures for EEMs and, as a result, generated much more accurate counts of EEM activity in the Computerized Homes Underwriting Management System (CHUMS). The new reporting procedures indicate that 441 EEMs were insured in FY 2005 and 470 have been insured in FY 2006 (through June 2006).

Planned Action: FHA will continue to implement the improved method for tracking EEMs through CHUMS that was developed in 2004. FHA will generate quarterly reports documenting the number of EEMs insured each quarter, broken down by region and state. Subject to funding availability, the Office of Policy Development and Research (PD&R) and FHA will also assess FHA's experience with EEMs to determine the relative risk of default and claims for this mortgage product compared to other types of FHA mortgages.

5. Housing—FHA Multifamily

5.1	**Promote energy efficiency in assisted multifamily housing programs.**

Progress to Date: The Office of Multifamily Housing helped organize a number of energy training workshops for managers and operators of multifamily buildings.

Planned Action: To promote energy efficiency in multifamily housing, the Office of Multifamily Housing will incorporate the Energy Action Plan in meetings with industry partners to promote energy efficiency in HUD-assisted properties and encourage FHA mortgage insurance applicants to utilize Energy Star products and new construction standards.

5.2	**Continue HUD-DOE multifamily weatherization partnerships.**

Many low- to moderate-income recipients of HUD assistance also qualify for DOE's Low-Income Weatherization Assistance program. Accordingly, HUD has initiated partnerships with the overall DOE weatherization program to improve the energy efficiency of HUD properties. The partnerships are modeled on those that successfully leveraged millions of DOE funds for assisted properties in New York.

Progress to Date: HUD continues to partner with the New York State Energy Research and Development Authority on retrofits of assisted multifamily buildings in the State of New York through the Assisted Multifamily Program. In addition, new multifamily pilot projects were initiated, including one in St. Louis, Missouri. The other was initiated in Fresno, California, where a local weatherization program funded through utility public benefit charges was tapped for this purpose.

Planned Action: HUD and DOE will continue to identify additional weatherization partnership opportunities. The Office of Multifamily Housing will recommend suitable candidate projects to participate in the Weatherization Pilot Partnership, based on information provided to the Office of Multifamily Housing by DOE through PD&R. The Energy Task Force will identify energy partnership opportunities to assist multifamily properties to undertake energy efficiency improvements. The resources will include, in addition to DOE-Weatherization Assistance program funds, low-income housing energy assistance weatherization funds, Clean Energy Funds, utility-sponsored energy efficiency programs, and other state and local energy efficiency programs and services. To the extent feasible, the Office of Multifamily Housing will consider options to capitalize energy efficiency improvements, including flexible use of reserves, rent increases, budget adjustments, or other suitable asset management strategies.

5.3	**Encourage use of Energy Star new home standards in the design, construction, and refinancing of Sections 202 and 811 projects.**

HUD Sections 202 and 811 projects for elderly and disabled people provide housing to many low-income households on fixed incomes. As a result, many nonprofit providers cover utility costs as part of tenant rent. Undertaking energy efficiency improvements to lower operating costs and mitigate risks associated with rising utility costs is an essential step for ensuring the long-term viability of these properties.

Progress to Date: A rating point was included in the 2005 and 2006 Section 202 and 811 NOFAs to create an incentive to achieve energy efficiency in new housing for seniors and people with disabilities. As a result, all applicants who propose to promote energy efficiency in the design and operation of the project (including the adoption of Energy Star Qualified New Homes as the standard for new construction) receive one point in the rating of their applications.

Planned Action: HUD will encourage energy efficiency in housing developed under the Section 202 and 811 programs and will continue to include competitive points for energy efficiency in the annual NOFAs. The Office of Multifamily Housing will work with the Energy Task Force in establishing energy efficiency rating criteria for future NOFAs. For projects undergoing refinancing, the Office of Multifamily Housing will consider encouraging energy audits in conjunction with physical assessments, by encouraging property owners to undertake energy efficiency improvements in conjunction with refinancing transactions. The Energy Task Force will assist the Office of Multifamily Housing in identifying possible technical resources to help property owners design effective energy improvement strategies.

5.4	**Develop incentives for energy efficiency through FHA multifamily insurance programs.**

Planned Action: HUD will explore incentives for new applications for mortgage insurance or projects seeking refinancing to adopt Energy Star (or its equivalent for mid- or low-rise multifamily buildings). For affordable housing projects developed by nonprofit or faith-based organizations, the Office of Multifamily Housing will examine the feasibility of providing incentives to capitalize Energy Star new construction requirements.

5.5	**Explore asset management strategies and guidance for energy efficiency in HUD-subsidized multifamily properties.**

Planned Action: HUD's Energy Task Force, with assistance from the Office of Multifamily Housing, will explore the development of informational guidelines for both property managers and HUD staff involved in implementing energy efficiency improvements. The guidelines for property managers will describe "low cost/no cost" energy efficiency strategies and techniques, including adopting Energy Star product purchasing policies. Guidelines for staff will discuss approaches HUD staff or contractors can use to support energy efficiency improvements such as flexible use of reserves for replacement. The guidelines will also discuss conditions under which project budget adjustments and project rent increases can be employed to finance improvements that reduce energy consumption, and conditions under which properties can secure low-interest financing from outside lending sources for energy-related improvements. The Office of Multifamily Housing will review these guidelines for possible incorporation in a revised Chapter 12 (Energy Conservation) of Multifamily Handbook 4350.1.[24]

[24] Chapter 12, *Energy Conservation*, of Multifamily Handbook 4350.1, Rev.1, *Multifamily Asset Management and Project Servicing.*

5.6	**Support energy efficiency training for multifamily managers and maintenance staff.**

Because energy expenditures account for as much as 40 percent of total multifamily building operating costs, significant energy savings can be achieved by improving monitoring and maintaining existing equipment. A program sponsored by New York State has successfully trained multifamily building managers and maintenance staff in low- or no-cost energy management techniques using a workbook developed by HUD in 1998.

Progress to Date: In 2005, four training workshops for property managers and maintenance staff were held in Pittsburgh, Chicago, Boston, and Denver. In addition, several multifamily training workshops were conducted in California through a program approved by the California Public Commission and funded by utility-rate payers.

Planned Action: Subject to available funds, HUD will work with multifamily trade organizations to offer, promote, and advertise hands-on training on energy-efficient property management practices for multifamily building managers and operators. The Office of Multifamily Housing will help the Energy Task Force and trade associations organize effective training programs. With limited sources of funding to support training of this kind, the Energy Task Force will explore possible cosponsorships or partnerships with trade and other organizations to carry out this activity.

6. Housing—Manufactured Housing

6.1	**Implement energy efficiency recommendations of the Consensus Committee in HUD-code homes.**

The HUD Code regulates the design and construction, strength and durability, transportability, fire resistance, energy efficiency, and quality control of manufactured housing. New rules for manufacturers took effect in October 1994, including upgraded energy standards. Manufactured homes built after that date must have the following: higher insulation levels for ceilings, floors, or walls (from R-11 for floors and walls in Thermal Zone 1 to R22 in Thermal Zone 3); double-pane windows in Thermal Zone 3; ventilation fans in kitchens and bathrooms; and a whole-house ventilation rate of 0.10 air changes per hour.[25] HUD also updated the climate zone maps for manufactured housing.

[25] When added to the average natural ventilation rate for new manufactured homes of 0.25 air changes per hour, this ventilation rate meets the 0.35 air changes per hour rate recommended by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers for residences.

Under the Manufactured Housing Improvement Act of 2000, recommendations for additional upgrades to the manufactured housing standards are the responsibility of a private sector committee, the Manufactured Housing Consensus Committee (Consensus Committee). The Manufactured Housing Improvement Act also permits the Department to propose changes to the standards. A growing number of manufactured homes are being built voluntarily to the standard for Energy Star Qualified New Homes, spurred in part by a new $1,000 tax credit enacted by Congress in 2005.

Progress to Date: In November 2005, HUD published a final rule implementing the first group of recommendations of the Consensus Committee, including particular energy-efficiency improvements, such as updating whole house ventilation standards; adding an option for condensation control; and installation of vapor retarders in hot, humid climates. HUD also updated the reference to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers Handbook of Fundamentals from the 1989 version to the 1997 version.

Addressing the large number of units built before the adoption of the 1994 energy standards, the Partnership for Advancing Technology in Housing (PATH) Technology Roadmap for Factory Built Housing, published in January 2006, identified 6.75 million manufactured homes that were built before 1994 and that are relatively inefficient.[26] To address this stock, PATH published a guide to retrofitting older manufactured homes.[27] This practical guide contains energy-saving tips, techniques, and recommendations for owners of existing manufactured homes.

[26] See Road map on www.pathnet.org.
[27] Manufactured Housing Research Alliance, *Manufactured Housing: Saving Energy is Saving Money*, August 2005, is available at www.huduser.org.

Planned Action: To improve particular energy efficiency aspects of manufactured home construction. HUD will issue two proposed rules that revise the Manufactured Home Construction and Safety Standards and which will include provisions recommended by the Consensus Committee.[28] In addition, HUD has recently requested that the Consensus Committee consider comprehensive updates to Subpart F—Thermal Protection and Other Construction and Safety Standards to improve the energy efficiency of manufactured homes. To address existing manufactured housing, the HUD's Energy Task Force will distribute and publicize the availability of the booklet, *Manufactured Homes: Saving Money by Saving Energy.*

[28] Proposed Changes to Manufactured Home Construction and Safety Standards (MHCSS).

Second Group

1. §3280.505 Air infiltration has been edited.
2. §3280.707(a)(2) would require gas and oil burning comfort heating appliances meet or exceed the National Appliance Energy Conservation Act of 1987.
3. §3280.707(d) updates the energy efficiency requirements for water heaters to the National Appliance Energy Conservation Act of 1987.
4. §§3280.714(a)(i) and (ii) propose changes to energy efficiency requirements for air-conditioners, and heat pumps must comply with National Appliance Energy Conservation Act of 1987.
5. §3280.715(a)(7) would require R-4 duct insulation for Thermal Zone 1 and 2, and R-8 duct insulation for Thermal Zone 3. (Note: the proposed changes to the MHCSS in Third Group would require R-8 duct insulation for all ducts exposed to the outside air).

Third Group

1. §3280.103(a)(3) would require lineal fluorescent fixtures to use T-8 lamps or lamps of equal or greater efficiency.
2. §3280.508(e) would require U values for glazing to be determined using the values in Table 5 in Chapter 29 of the 1997 American Society of Heating, Refrigerating, and Air-Conditioning Engineers Handbook of Fundamentals.
3. §3280.715(a)(4)(i) provides air leakage limits for ducts.
4. §3280.715(a)(7) would require R-8 duct insulation for all ducts exposed to the outside air. (Note: the proposed changes to the MHCSS in Second Group would require R-4 duct insulation for Thermal Zone 1 and 2, and R-8 duct insulation for Thermal Zone 3).
5. §3280.715(c) increases the requirements for sealing joints in ducts and references UL 181A, Closure Systems for Use with Rigid Air Ducts and Connectors.

7. Field Policy and Management (FPM)

7.1	**Partner with local energy efficiency groups, HUD program offices, and other agencies to educate HUD customers about ways to reduce energy costs.**

Progress to Date: In FY 2005, the Office of Field Policy and Management (FPM) played an active role in promoting the Energy Action Plan. In FY 2005, FPM played an active role in promoting the Energy Action Plan, with field offices conducting more than 250 events in support of it.

Planned Action: In cooperation with program areas and other federal and state agencies, FPM will develop regional strategies to educate external partners (industry, local governments, and relevant nonprofit agencies) about Energy Star and HUD's Energy Action Plan. To support the energy efficiency objectives and actions of HUD program offices, FPM will help them develop local energy partnerships that facilitate implementation of HUD activities to reduce energy consumption.

8. Policy Development and Research (PD&R)

8.1	**Conduct energy-related policy analysis and research to support Departmental energy efficiency actions.**

Progress to Date: Through PATH field evaluations and demonstrations, the Office of Policy Development and Research demonstrated and evaluated energy-efficient technologies in new housing. Energy-efficient technologies that have been demonstrated include a package of new technologies that, when combined in a single project, have the potential for reducing energy consumption by 50 percent or more. These energy efficient technologies include optimum value engineering framing; tankless domestic hot water heaters; structural insulated panels; advanced panelized framing; low-emissivity glass (low-e) windows; construction; insulation-buried ducts; sealed ducts; downsized heating, ventilation, and air conditioning (HVAC) systems, including proper sizing using Manual J guidelines; and other technologies.

Examples of PATH demonstrations that featured energy-efficient products or construction techniques include an affordable, starter home north of Atlanta, Georgia, that achieved a home energy rating system score of 89 (50 percent more efficient than conventional construction) with panelized advanced framing, low-e windows, stud cavities with blown-in cellulose, an inside-the-envelope air handling unit, and foamed and insulation-buried ducts. Another PATH demonstration in Melbourne, Florida, featured energy efficient, hurricane-

resistant construction that included cast-in-place concrete walls, low-e windows, compact duct design, and location of the air handling unit in conditioned space. In Warwick, New York, a PATH demonstration project achieved a 50-percent energy savings over conventional construction by including advanced framing, unvented crawlspaces, optimized HVAC, tankless gas hot water heaters, and Energy Star appliances.[29]

Planned Action: Through the PATH program, PD&R will continue to undertake and promote research into energy efficiency technologies. In the area of affordable housing, PATH will sponsor research to implement the PATH Roadmap for Energy Efficiency in Existing Homes, including a 3-year initiative to develop protocols for energy-efficient remodeling. These protocols could be used in public or assisted housing or in rehabilitation houses funded through HUD's competitive or formula grant programs. In addition, PATH will conduct a study, through an interagency agreement with EPA, of opportunities for investing in energy efficiency in assisted multifamily housing.

9. Office of Healthy Homes and Lead Hazard Control (OHHLHC)

9.1	**Develop computerized assessment tool for integrated energy and environmental retrofits.**

The Office of Healthy Homes and Lead Hazard Control (OHHLHC) will encourage cost-effective techniques that jointly address energy efficiency and environmental, health, and safety hazards in the home.

Progress to Date: OHHLHC published a report on the feasibility of an integrated energy-efficient healthy home retrofit initiative to reduce home energy consumption by 30 percent in 15 million homes, increase awareness of Energy Star products and performance requirements, and also address a variety of housing-based environmental hazards, such as lead, carbon-monoxide, residential fires, and allergens (including mold) associated with asthma. OHHLHC also funded the development of Weatherization Plus Health protocols for a combined weatherization/environmental Healthy Homes energy audit.

Planned Action: OHHLHC will fund the development of a computerized assessment tool that combines energy efficiency, safety, and healthy homes measurements (referred to as the Healthy Homes Energy Efficiency Assessment Tool). The tool will use criteria for assessing existing healthy homes and integrate energy audit in one computerized program. It is expected that the work will build on existing inspection, assessment, and energy audit protocols. OHHLHC will finalize the computerized energy-efficient assessment tool and pilot this tool in six residences at two locations (Greensboro, North Carolina, and Boston, Massachusetts).

[29] See Tech Practices, www.pathnet.org.

IV. ENERGY REDUCTION GOALS AND INCENTIVES

Section 154 of the Energy Policy Act of 2005 requires that the U.S. Department of Housing and Urban Development's (HUD's) Energy Strategy include the development of energy reduction goals and incentives for PHAs.

Reduction Goals in Public Housing Under Asset Management

Energy reduction goals for public housing are meaningful if PHAs have a baseline against which to measure performance against such goals. Such a baseline must provide consumption data (for example, therms and kilowatt hours) in order to normalize energy use for changes in weather conditions and fluctuating energy rates. Under the new asset management rule at 24 CFR 1990, beginning in FY 2007 PHAs will begin to report utility consumption data for individual properties in an automated system, the Subsidy and Grants Information System, which is being tested for operating subsidies in 2007 and will be implemented in 2008. Actual consumption data reported for individual properties will provide the baseline information for each PHA to monitor the results of its energy conservation programs.

HUD is evaluating a benchmarking approach that will enable PHAs to focus their resources on those projects and buildings that are high-energy users. During FY 2007 and FY 2008, HUD will use the results of the property consumption data reported under asset management to consider establishing realistic energy reduction goals.

Tracking Indicators Included in the FY 2006 Management Plan

Table 6 identifies several energy-related performance indicators that are included in the current (FY 2006) Management Plan.

Table 6. Performance Measures Included in the FY 2006 Management Plan

Office	Indicator/Activity	Data Source	Goal/ Outcome
Community Planning and Development	Support of Energy Task Force as co-chair	Reported by headquarters (HQ)	100%
	Workshop sessions on Energy Star	Reported by field offices	6
	Number of Combined Heat and Power feasibility assessments completed	Reported by HQ	6
Office of Public and Indian Housing	Review energy performance contracts within standard time frames	Contractor to conduct survey	100%
	Hold two Energy Star events per field office	Reported by field offices	92 events
	Monitor 15 HOPE VI construction projects	Reported by field offices	15 HOPE VI projects
	Determine if current audit exists, and ensure an audit is completed within 12 months	Reported by field offices	500
Federal Housing Administration (FHA) Single Family	Develop training that promotes energy efficiency; Take other actions to encourage Energy Efficient Mortgages	Reported by HQ	None
FHA Multifamily	Number of applicants encouraged to adopt Energy Star; Number of industry presentations	Reported by field offices and HQ	100%
Office of Field Policy and Management	Number of events conducted with program office participation; Number of events conducted with interagency participation	Reported by field offices	10 events
Office of Policy Development and Research	Continue support of Energy Task Force; Develop measures to track and monitor energy savings; Provide technical support	Reported by HQ	100%

In addition to the above activities that are specifically referenced in the FY 2006 Management Plan, the performance measures in Table 7 are being tracked separately by program offices. These tracking indicators will provide data for calculating or estimating energy saved.

Table 7. Additional Performance Measures Being Tracked in FY 2006

Office	Indicator	Data Source
Office of Public and Indian Housing	**Number of PHSs adopting Energy Star**	**Survey**
	Number of energy performance contracts and projected savings	**Survey**
Federal Housing Administration (FHA) Single Family	**Number of Energy Efficient Mortgages**	**Computerized Housing Underwriting Management System**
FHA Multifamily	**Number of Section 202 and 811 projects adopting Energy Star**	**Grant applications**

Reduction Goals To Be Explored in FY 2007 and FY 2008

The Energy Task Force has identified possible tracking indicators that would allow tracking of actual or estimated energy savings. These measures will be explored in FY 2007 for possible implementation beginning in FY 2007 and FY 2008. A working group will be established to explore the feasibility of these measures and to determine: (1) whether there are systems in place (or that can be developed) to gather the information needed, (2) that they do not impose extensive additional reporting requirements on grantees, and (3) that they do not establish additional data collection or monitoring requirements on field office or headquarters staff.

Table 8. Possible Performance Measures To Be Evaluated in FY 2007 and FY 2008

Community Planning and Development

Performance Measure	**Energy savings attained in Community Development Block Grant (CDBG)- and HOME-funded new construction or substantial rehab projects**
Action Item	Encourage energy efficiency through HOME- and CDBG-funded projects
Tracking Indicator	Number of units reported adopting Energy Star for new homes (or its equivalent for multifamily buildings) as the guideline for substantial rehabilitation or new construction, multiplied by projected energy savings
Data Source	Integrated Disbursement and Information System
Performance Goal	To be determined

Public Housing

Performance Measure	**Energy savings attained by PHAs through energy efficiency and conservation**
Action Items	3.1 PHAs will base equipment purchases on Energy Star products 3.2 HOPE VI developments will be built to a high level of energy efficiency 3.3 Streamline energy performance contracting in public housing
Tracking Indicator	Per-unit month utility consumption and expenses, adjusted for weather and energy rates
Data Source	Consumption data reported on Form HUD-52722
Performance Goal	To be determined

Single-family Housing

Performance Measure	**Through HUD's four Homeownership Centers, the Federal Housing Administration (FHA) will take steps to increase consumer awareness of Energy Efficient Mortgages (EEMs), including promoting the use of the EEM with "Streamlined (k)" Program and other single-family loan products**
Action Item	Feature EEM as a priority loan product
Tracking Indicator	FHA will generate quarterly reports documenting the number of new construction and existing property EEMs insured each quarter, broken down by region or state
Data Source	Computerized Housing Underwriting Management System
Performance Goal	To be determined

Multifamily Housing

Performance Measure	**Energy savings achieved in assisted multifamily housing participating in energy weatherization pilots**
Action Item	Continue HUD-Department of Energy multifamily weatherization partnerships
Tracking Indicator	Savings will be the estimated annual energy consumption reductions or savings reported for the pilot project as reported by the energy service provider initiating the energy retrofits or energy audit or assessment conducted before the retrofit
Data Source	To be determined
Performance Goal	To be determined
Performance Measure	**Energy savings attained in Section 202 or Section 811 housing for elderly and disabled people**
Action Item	Encourage use of Energy Star new home standards in the design, construction, and refinancing of Section 202 and 811 projects
Tracking Indicator	Number of grantees who report adopting Energy Star for new homes (or its equivalent for multifamily construction), multiplied by a projected average energy savings associated with Energy Star measures undertaken
Data Source	Section 202 and 811 grant applications
Performance Goal	To be determined

Performance Measure	**Energy savings attained from projects built to the 2003 International Energy Conservation Code (IECC) or Energy Star building standards**
Action Item	Explore incentives for energy efficiency through the Federal Housing Administration (FHA) multifamily insurance programs
Tracking Indicator	Number of properties built to 2003 IECC standards or Energy Star compared with 1992 Model Energy Code , multiplied by the number of FHA-insured projects built to a standard that meets or exceed the 2003 IECC
Data Source	Possible use of development application processing
Performance Goal	To be determined
Performance Measure	**Energy savings based on HUD-assisted housing commitments to adopt Energy Star purchasing standards**
Action Item	Develop asset management strategies and guidance for energy efficiency in HUD-subsidized multifamily properties
Tracking Indicator	Number of subsidized multifamily properties that adopt Energy Star as a procurement guideline for refrigerators and other appliances (multiplied by estimated savings based on standard equipment replacement rates)
Data Source	To be determined
Performance Goal	To be determined

Energy Partnerships

Performance Measure	**Energy partnerships assisting HUD projects**
Action Item	Establish energy partnerships to support HUD energy efficiency actions
Tracking Indicator	Number of HUD projects assisted through energy partnerships
Data Source	Partnership progress reports and case studies
Performance Goal	To be determined

APPENDIX
ANNUAL PERFORMANCE PLAN FY 2007

A1.10: Reduce energy costs in building or operating HUD-financed, HUD-assisted, or HUD-insured housing.

Indicator background and context. This indicator tracks an increasingly important public outcome: the savings in energy costs achieved through the U.S. Department of Housing's (HUD's) Energy Action Plan (FYs 2002–05) and Phase II Energy Action Plan (FY 2006–07) in support of the President's National Energy Policy. HUD spends some $4 billion each year on energy—more than 10 percent of its budget—primarily through utility allowances to renters, housing assistance payments to private building owners, and operating grants to PHAs. Energy efficiency improvements could yield significant cost savings; a 5 percent reduction could save $2 billion over the next 10 years.

In support of the Energy Action Plan, HUD has signed a memorandum of understanding with the Environmental Protection Agency (EPA) and the Department of Energy (DOE) to promote the use of Energy Star products and appliances through HUD programs. HUD's Energy Task Force has worked closely with these agencies in developing and implementing the Action Plan. In addition, in July 2005 Secretary Alphonso Jackson announced a new "Partnership for Home Energy Efficiency" with EPA and DOE to reduce the cost of utilities by 10 percent in existing housing by 2010.

HUD's Action Plan is primarily an operational plan aimed at upgrading the energy efficiency of new and existing housing using an established inventory of proven energy-efficient products and appliances. These products are being put to work in existing programs through consumer education and outreach, interagency cooperation, market-based incentives, public-private partnerships, and research and development of energy-efficient technologies.

During FYs 2005 and 2006, HUD successfully completed numerous activities under the Action Plan and initiated the implementation of the Phase II Energy Action Plan. During FY 2007, HUD will continue to implement the Phase II Energy Action Plan and implement or identify tracking indicators that will allow HUD to assess actual performance in reducing energy costs associated with HUD program activities.

Data source. Energy savings will be estimated by the Office of Policy Development and Research based on the extent to which Energy Star appliance and construction standards are in place or other energy efficiency practices have been adopted in HUD-assisted, HUD-insured, or HUD-financed housing, including public housing. Average savings produced through Energy Star will be based on studies conducted by EPA and DOE. Energy efficiency in public housing achieved through energy performance contracting will be based on reports from PHAs. The number of Energy Efficient Mortgages will be tracked through the Federal Housing Administration's Computerized Housing Underwriting Management System. The number of HOME- or Community Development Block Grant-funded units meeting Energy Star guidelines will be tracked by the Integrated Disbursement and Information System.

Limitations and advantages of the data. Actual savings achieved through Energy Star may vary from estimates developed through EPA and DOE research (that is, the standard for Energy Star Qualified New Homes is intended to generate savings of 30 percent over the 1993 Model Energy Code, but actual savings may be less, depending on quality of construction, sound property management, and other factors). Data from energy performance contracting in public housing will generally reflect activity only in larger PHAs since smaller PHAs generally have not been able to take advantage of this mechanism.

Validation, verification, and improvement of measure. EPA and DOE continue to conduct research to verify savings produced through Energy Star. HUD will review baseline reports of Energy Star application to assess data reliability and will seek to improve reporting mechanisms based on initial results.