



**MOVING TO THE NEXT LEVEL:
INCREASING ENERGY EFFICIENCY IN AFFORDABLE HOUSING**



REPORT TO CONGRESS

Section 154, Energy Policy Act of 2005



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

AUGUST 2016

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U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
THE SECRETARY
WASHINGTON, DC 20410-0001

I am pleased to submit this progress report on the Department of Housing and Urban Development’s energy efficiency and clean energy achievements, as required under section 154 of the Energy Policy Act of 2005. This report provides an update on HUD’s progress in addressing energy consumption and costs in federally-assisted housing.

Energy efficiency and green building is a top priority for HUD. Building on a strong Administration-wide commitment to energy efficiency, we created a new Climate Council at HUD to strengthen the Department’s capacity in the separate but related areas of energy efficiency and climate resilience. The Council reports to me and is staffed by senior-level representatives from key program and support offices.

Several actions described in this report are key components of President Obama’s Climate Action Plan. They are helping to achieve the President’s goal of lowering energy waste in homes and businesses by 50 percent. Equally important are the economic benefits. Energy-efficient homes are more affordable for residents and more cost effective for owners to operate. In addition, as I saw during my tenure as mayor of San Antonio, energy efficiency and renewable energy create jobs and can play an important role in spurring economic development.

For all of these reasons, HUD’s 2014–2018 Strategic Plan included a priority goal for the Department: “Promote energy-efficient buildings and location-efficient communities that are healthy, affordable, and diverse.” We have focused on embedding energy-efficient and healthy practices throughout HUD’s programs, expanding the use of solar and other renewable energy technologies, and collaborating with key stakeholders to spur private investment in these areas. We are also proud of the improvements we have made in our own operations, with the recent Leadership in Energy and Environmental Design (or LEED) Silver certification of HUD’s headquarters, the Robert C. Weaver Federal Building.

I look forward to continued implementation of HUD’s energy strategy, as discussed in this report, to address the key energy challenges facing our nation.

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Julián Castro

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EXECUTIVE SUMMARY

Reducing utility expenditures in public and assisted housing is a key HUD priority.¹ This report outlines key actions HUD is taking to increase energy efficiency or expand the use of renewable energy in affordable housing. Selected accomplishments described in this report are summarized below.

Prioritizing Energy Efficiency Through HUD Programs. Energy-efficient, healthy housing is a key element in HUD's Strategic Plan, and is also one of three Agency Priority Goals. As a result, HUD has made significant progress in increasing the energy efficiency or health of HUD-assisted housing: through 2015, more than 500,000 energy-efficient, healthy retrofits or new green units were reported since the agency first established energy efficiency as an Agency Priority Goal in Fiscal Year (FY) 2010. For the four-year FYs 2012–2015 period covered by this report, HUD has supported the completion of an estimated 316,600 retrofitted or new energy-efficient or healthy housing units.²

Strengthening Incentives for Private Investment in HUD-Assisted Properties. Actions taken include lowering mortgage insurance rates for Federal Housing Administration (FHA)-insured multifamily housing that meet certain energy efficiency performance goals or green standards; initiating a Multifamily Property Assessment Clean Energy (PACE) pilot in California; seeking and securing legislative authority for a “Pay for Success” multifamily energy efficiency pilot program to be launched in 2016; continuing to leverage private sector investments through Energy Performance Contracts in public housing; announcing guidance for FHA-insured single-family mortgages on properties with PACE assessments, and, through the FHA PowerSaver pilot program, closing over 1,000 single-family home energy loans.

Improving Data Collection, Reporting, and Scenario-Planning Tools. Steps taken by HUD include researching and planning methods to promote utility benchmarking. HUD partnered with the Environmental Protection Agency (EPA) and Fannie Mae to support the development of a 1–100 ENERGY STAR benchmarking score for multifamily buildings. This score allows building managers to easily compare their properties' energy consumption to similar buildings and to identify cost-effective opportunities for energy efficiency investments. In addition, HUD has developed an energy savings model that for the first time will allow HUD to estimate energy savings for HUD's portfolio of public and assisted housing. HUD reached out to investor-owned and municipal utilities to increase access by multifamily properties to aggregated whole-building data. Finally, HUD introduced a Physical Needs Assessment (PNA) tool for public housing and is

¹ Throughout this report, the term “utilities” is used to indicate combined energy, water, and sewer expenses, as these expenses are often reported together in HUD programs.

² The 316,600 figure includes 252,600 total for energy-efficient retrofits or new green units only, as shown in Table 1 in this report. Another 63,967 units were lead hazard control or healthy housing retrofits funded through HUD's Office of Lead Hazard Control and Healthy Homes or enforcement of the Lead Safe Housing Rule with Community Development Block Grant or Home Investment Partnership (HOME) funds.

developing the Capital Needs Assessment (CNA) e-Tool for assisted multifamily housing, which will be available later in 2016.

Implementing Training and Technical Assistance. HUD conducted a series of trainings for public housing and multifamily property owners on energy efficiency and green building. In addition, HUD is providing technical assistance (through the Community Compass Capacity Building Initiative) to public and assisted housing owners participating in the Renew300 Federal renewable energy target and the multifamily Better Buildings Challenge.

Updating Minimum Energy Standards. HUD partnered with the U.S. Department of Agriculture (USDA) to adopt the 2009 International Energy Conservation Code (IECC) and ASHRAE 90.1-2007 as minimum energy standards for new construction financed, insured, or guaranteed through one or more HUD and USDA programs. This implements provisions of the Energy Independence and Security Act of 2007. In addition, HUD established minimum ENERGY STAR standards for appliances or new construction, through competitive grant programs such as Choice Neighborhoods, and provided additional incentives to adopt a green building standard such as the Leadership in Energy and Environmental Design (LEED), Enterprise Green Communities, the National Green Building Standard or other recognized national, State or local green building standards. The Self-Help Homeownership Opportunity Program (SHOP) adjusted its requirements to encourage but not require ENERGY STAR standards to reflect the specific challenges facing rural communities.

Partnering for Clean Energy, Green Jobs and Resilient Power. HUD partnered with the Department of Energy (DOE) to launch the multifamily Better Buildings Challenge. Including new partners added in March 2016, 110 affordable and market-rate housing organizations, representing more than 650,000 housing units, have joined the Challenge and pledged to track their energy consumption and reduce energy use, portfolio-wide, by at least 20 percent over the next 10 years. HUD launched the STEM, Energy and Economic Development (SEED) energy literacy program in public housing to provide Science, Technology, Engineering and Mathematics (STEM) education and green jobs training for public housing residents. Setting an ambitious Federal solar and renewable energy target in federally assisted housing, HUD launched Renew300, an initiative with a goal of reaching 300 megawatts of renewable energy in federally assisted housing. To date, commitments of 225 megawatts of renewable energy have been made against the 300-megawatt total. HUD has also provided significant support for a wide range of place-based climate adaptation or resilience initiatives, which often include support for distributed energy or other forms of resilient power.

Strengthening Organizational Capacity and Technical Support. HUD has taken steps to strengthen its organizational capacity to deliver results. HUD launched a new Climate Council, comprised of principals from

program and support offices, to coordinate the Department's energy and green building efforts, along with HUD's climate resilience and adaptation work. This Climate Council, chaired by the Secretary, provides a forum for senior leadership to focus on issues of energy and green building. In addition, a Departmentwide Energy and Green Building Team, in HUD's Office of Economic Resilience, provides technical expertise and alignment across HUD program offices and supports interagency initiatives to more effectively drive energy efficiency, utility cost savings, and clean energy in HUD's portfolio. The Office of Field Operations (OFO) Energy Center expanded its staffing to review and support Energy Performance Contracts in public housing. Finally, Regional Energy Liaisons, based in HUD's regional or field offices, have provided important field-level support for energy efficiency activities across the country.

LEED Silver Certification for HUD Headquarters Building

In May 2016, HUD's headquarters, the Robert C. Weaver Federal Building in Washington, DC, was awarded a LEED for Building Operations and Maintenance (O+M) Silver designation—the result of a multiyear effort to improve the energy efficiency of HUD's own facilities. Significant steps taken to achieve this milestone included retrofitting the entire building with water-efficient fixtures; reducing the number of light fixtures by nearly 50 percent and installing energy-efficient electronic ballasts and motion sensors throughout; decommissioning and replacing the existing steam heating system with gas-fired condensing boilers; and installing new, energy-efficient windows. Much of the work was completed through an Energy Savings Performance Contract with Honeywell. In combination, these efforts reduced annual energy use intensity in the building by approximately 15 percent (compared to a 2003 baseline) and saved approximately \$1.9 million in energy costs annually.

HUD welcomes public comment on this report from any interested party. Please direct comments to energyaction@hud.gov.

I. INTRODUCTION

Section 154 of the Energy Policy Act of 2005 requires HUD to “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 [and] include the development of energy reduction goals and incentives for public housing agencies.” The Act also requires HUD to update Congress on progress in implementing this strategy.³ In addition to the Section 154 reporting requirement, the Act requires HUD to take other actions related to energy efficiency, which are referenced in this report and summarized in Appendix A.

HUD’s programs support a diverse portfolio of multifamily and single-family housing. HUD’s public housing and multifamily assisted programs support nearly 5 million units of housing. They include 1.1 million public housing units, 1.4 million units of privately owned assisted housing, and 2.4 million rental units supported with tenant-based Section 8 vouchers.⁴

Since January 2010, HUD has committed to creating energy-efficient, green, and healthy housing as part of a broader effort to foster the development of inclusive, sustainable communities. HUD spends an estimated \$6.4 billion annually on utilities (both water and energy) in the form of utility allowances for tenant-paid utilities, direct operating grants for public housing, and housing assistance payments for privately owned assisted housing.⁵

Utility costs account for around 22 percent of public housing operating budgets, and a similar share in the assisted housing sector. Reducing these rising costs—and in the process preserving affordability for residents and owners and generating savings for taxpayers—is a key HUD priority.

HUD’s 2014–2018 Strategic Plan continues HUD’s focus on energy and health investments in the residential sector, both in HUD-assisted housing as well as in market-rate housing, to support the goal of President Obama’s Climate Action Plan to cut energy waste in half by 2030. The agency will reduce barriers to financing energy efficiency as well as on-site or community-scale renewable energy, help unlock innovative and traditional sources of capital, and raise the bar on codes and standards that promote energy efficiency and healthy housing.

³ U.S. Department of Housing and Urban Development, *Promoting Energy Efficiency at HUD at a Time of Change*, is available at: www.huduser.org/portal/publications/destech/energyefficiency.html. The 2008 report, *Implementing HUD’s Energy Strategy* is available at: www.huduser.org/portal/publications/destech/energyefficiency_08.html.

⁴ HUD, Office of Policy Research and Development, *A Picture of Subsidized Households 2013*, based on 2010 Census data.

⁵ In HUD’s previous Report to Congress (2012), HUD reported annual outlays in excess of \$6.4 billion towards total utility expenditures of \$7.1 billion incurred for utilities in public and assisted housing, as well as through the Housing Choice Voucher (HCV) program. HUD will publish updated energy expenditure data when they become available.

II. PROGRESS REPORT

This section of the report summarizes HUD's energy and green building activities and their results. HUD continues to make significant progress in increasing energy efficiency and renewable energy in HUD-assisted and public housing. As shown in Figure 1 (p.14 below), HUD's energy strategy includes 19 distinct but related actions that fall into one of the following strategies:⁶

- Prioritize energy efficiency through HUD programs.
- Create incentives for private investment.
- Develop tools to support smarter decisions.
- Expand training and technical assistance to key stakeholders.
- Strengthen data collection and reporting systems that drive market-based action.
- Implement Federal statutes and provide regulatory flexibility.
- Strengthen interagency and private sector partnerships.
- Launch voluntary initiatives as part of the President's Climate Action Plan.
- Support place-based initiatives for climate resilience and adaptation.

Strategy 1. Prioritize Energy Efficiency through HUD Programs

1. Implement Energy Efficient and Healthy, Green Building Annual Performance Goal

Beginning in FYs 2010–2011, HUD established energy efficiency and green building as an Agency Priority Goal. The initial FYs 2010–2011 two-year goal was to complete 159,000 energy-efficient and healthy units. Aided by a significant infusion of funds from the American Recovery and Revitalization Act (Recovery Act), HUD exceeded that goal by 33,000 units. HUD subsequently established similar performance goals in FYs 2012–2013 and FYs 2014–2015, and recently established a new two-year target of 160,000 energy-efficient, healthy retrofits or new units for FYs 2016–2017 (Table 1, Column F. See Appendix B for more detail on FYs 2016–2017 targets).

⁶Sixteen of the 19 actions presented here were proposed or discussed in HUD's November 2012 Report to Congress. Two additional strategies (Launching voluntary initiatives, and supporting place-based initiatives for climate resilience and adaptation) and three additional actions (Actions 17, 18, and 19) have been added to reflect new activities initiated in support of the President's Climate Action Plan.

| Figure 1 – HUD’s ENERGY STRATEGY | | | | | | | | |
|--|-----|------------------|-------------------|-----|-------|------|-----|-----|
| | PIH | FHA Multi family | FHA Single Family | CPD | OHHLC | PD&R | OER | FPM |
| Prioritize Energy Efficiency Through HUD Programs | | | | | | | | |
| 1. Implement Energy Efficiency and Healthy Green Building Annual Performance Goal | . | . | . | . | . | | . | . |
| 2. Provide Incentives through Competitive Grant Programs | . | . | | . | . | | | |
| Create Incentives for Private Investment | | | | | | | | |
| 3. Provide Innovative Financing for Single-Family Home Energy Improvements | | | . | | | | . | |
| 4. Implement Innovative Financing for Multifamily Energy Retrofits | | . | | | | | . | |
| 5. Strengthen EPCs and Develop Energy Efficiency Tools for Public Housing Authorities | . | | | | | | | |
| Develop Tools to Support Smarter Decisions | | | | | | | | |
| 6. Expand Use of Green Capital Needs Assessments | . | . | | | | | | |
| 7. Strengthen Benchmarking of Energy and Water Performance | . | . | | | | | | |
| 8. Develop Common Energy and Green Retrofit Standards or Protocols | | | | | | | . | |
| Expand Training and Technical Assistance to Key Stakeholders | | | | | | | | |
| 9. Implement Training and Technical Assistance Through HUD’s Transformation Initiative | | | | . | | . | . | |
| 10. Provide Technical Assistance to Renew300 and Better Buildings Challenge Partners | | | | . | | | . | |
| Strengthen Data and Reporting Systems That Drive Market-Based Action | | | | | | | | |
| 11. Evaluate HUD’s Recovery Act Energy Efficiency Investments | | | | | | . | | |
| 12. Develop Energy Modeling and Scenario Planning Tool | | | | | | | . | |
| 13. Conduct Broad-Based Sustainability Research and Evaluation | | | | | | . | . | |
| Implement Federal Statutes and Provide Regulatory Flexibility | | | | | | | | |
| 14. Update Minimum Code Requirements | . | . | . | . | | | . | |
| Strengthen Public and Private Sector Partnerships | | | | | | | | |
| 15. Continue DOE, EPA, and Other Interagency Partnerships | | | | | | | . | |
| 16. SEED: Expanding Training and Employment | | | | | | | | |
| Launch Voluntary Initiatives and Campaigns | | | | | | | | |
| 17. Launch Multifamily Better Buildings Challenge | | . | | | | | . | . |
| 18. Launch Renew300 Federal Renewable Energy Target | . | . | | | | | . | |
| Support Place-Based Initiatives for Climate Resilience | | | | | | | | |
| 19. Support Resilient Power and Adapt to Severe Weather Events | | | | . | | | . | |

Since the establishment of energy as an Agency Priority Goal at the start of the Obama Administration in FY 2010, more than 500,000 energy-efficient, green or healthy units have been reported in HUD-assisted housing. More specifically, as shown in Table 1, working with its public and assisted housing partners and other key stakeholders, HUD completed a total of 316,584 energy-efficient or healthy units over the FYs 2012–2015 period covered by this report (Column E).⁷ Of these, 252,617 were energy-efficient units (including unit equivalents for Public Housing Capital Fund investments).

**Table 1 – Agency Priority Goal FYs 2012-17
Completed Green or Healthy Units by Program**

| Program | A FYs 2012–13 2-Year Target | B FYs 2012–13 2-Year Actual | C FYs 2014–15 2-Year Target | D FYs 2014–15 2-Year Actual | E FYs 2012–15 4-Year Actual | F FYs 2016–17 2-Year Target |
|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Community Development Block Grant (CDBG) | 425 | 1,376 | 1,200 | 563 | 1,939 | 830 |
| CDBG – Disaster Recovery (Sandy Supplemental) | | N/A | 619 | 2,206 | 2,206 | 2,472 |
| HOME (New Energy Star units) | 9,236 | 17,011 | 14,724 | 13,902 | 30,913 | 11,900 |
| Tax Credit Assistance Program (TCAP) ⁸ | 5,912 | 12,074 | N/A | N/A | 15,573 | N/A |
| TOTAL Community Planning & Development | 15,573 | 30,461 | 16,543 | 16,671 | 47,004 | 15,202 |
| Public Housing Capital Fund ⁹ | 24,461 | 36,040 | 11,750 | 15,105 | 51,145 | 12,761 |
| Energy Performance Contracts | 55,000 | 39,515 | 33,400 | 39,953 | 79,468 | 26,320 |
| HOPE VI, Choice Neighborhoods, Mixed Finance | 1,683 | 1,884 | 2,304 | 3,020 | 4,904 | 2,616 |
| Office of Native American Programs (ONAP) ¹⁰ | 276 | 370 | N/A | N/A | 646 | N/A |
| TOTAL Public and Indian Housing | | 77,809 | 47,454 | 58,078 | 134,633 | 41,697 |
| MULTIFAMILY | | | | | | |
| FHA Endorsements – Multifamily | 4,620 | 12,251 | 21,500 | 22,116 | 34,367 | 24,386 |
| Green Retrofit Program – Multifamily | 3,348 | 4,581 | N/A | N/A | | N/A |
| Green Preservation Plus – Multifamily | | 696 | 700 | 240 | 696 | 0 |
| Mark-to-Market – Multifamily | 5,728 | 6,268 | 5,000 | 4,083 | 10,331 | 5,000 |
| Rental Assistance Demonstration– Multifamily | | N/A | 16,320 | 4,451 | 4451 | 25,700 |
| Section 202/811 Supportive Housing – Multifamily | 3,300 | 4,658 | 2,088 | 3,386 | 7395 | 1,700 |
| SINGLE FAMILY | | | | | | |
| Energy-Efficient Mortgages – Single Family | | N/A | 900 | 682 | 682 | 550 |
| PowerSaver 203(k) & Title I – Single Family ¹¹ | 2,150 | 357 | 525 | 840 | 1188 | N/A |
| 203(k) (non-PowerSaver) – Single Family | | N/A | 5,000 | 5,117 | 5117 | 7,000 |
| TOTAL Housing (Multifamily & Single Family) | 19,146 | 28,811 | 52,033 | 40,915 | 69,726 | 64,336 |
| TOTAL Energy-Efficient and Green Units | 116,139 | 137,166 | 117,361 | 114,325 | 252,617 | 127,000 |
| Lead Hazard Control or Healthy Homes (OLHCHH & CPD) | 24,500 | 23,778 | 46,229 | 40,189 | 63,967 | 33,000 |
| Stretch Units¹² | 18,361 | 0 | 0 | 0 | 0 | 5,765 |
| TOTAL Green or Healthy Units | 159,000 | 160,859 | 162,259 | 155,853 | 316,584 | 160,000 |

⁷ Totals include Public Housing Capital Fund units reported as “unit equivalents,” which are calculated using a methodology developed by HUD, and approved by the Office of Management and Budget, to count only the 10 most cost-effective measures reported by public housing authorities.

⁸ The Tax Credit Assistance Program (TCAP) was a short-term Recovery Act program that expired in FY 2014.

⁹ The FY 2012 Public Housing Capital Fund total includes both Recovery Act-funded and non-Recovery Act units. The Recovery Act program expired after FY 2012. This figure includes equivalent units derived from an OMB-approved methodology adopted by HUD to count the most energy-efficient measures only.

¹⁰ ONAP retrofits were funded by the Recovery Act, expiring in FY 2013.

¹¹ The PowerSaver pilot program was completed in May 2015.

¹² “Stretch” units are not assigned to a specific program and instead represent the Department’s commitment to robust production targets or units that are expected to be completed from new initiatives, for which targets cannot currently be established.

The remaining 63,967 units were lead hazard control or healthy housing retrofits funded through HUD's Office of Lead Hazard Control and Healthy Homes or through the implementation of the Lead Safe Housing Rule by the Office of Community Planning and Development (CPD) with CDBG or HOME funds.

A total of 20 HUD programs contributed to these results. Four programs accounted for three quarters of all the energy-efficient units reported in the FYs 2012–2015 period: 79,000 units through Energy Performance Contracts in public housing; 51,400 public housing (equivalent) units retrofitted with Public Housing Capital Fund funds; 34,000 FHA-insured multifamily units with energy-efficient or other green features; and almost 31,000 new HOME-funded units meeting the ENERGY STAR Certified New Homes standard. (Column E).

For the two-year FYs 2012–2013 period, HUD exceeded its target of 159,000 units, completing an estimated 160,859 units (Table 1, Columns A and B). For the most recent FYs 2014–2015 period, HUD completed another 155,853 units against a target of approximately 162,000 units (Columns C and D). For more details on these results, see HUD's FY 2015 Annual Performance Report and FY 2017 Annual Performance Plan.¹³

2. Provide Incentives Through Competitive Grant Programs

HUD continues to provide incentives or establish minimum requirements for energy efficiency and green building through its competitive grant programs, as follows:

- **Competitive Grant Incentives.** Energy-efficient, healthy housing is one of four designated priorities that qualify for additional rating points when applying for HUD's FY 2016 competitive grant funds. Through FY 2016, the General Section of HUD's annual Notices of Funds Availability (NOFAs) has provided for additional Policy Priority points for applicants who participate in the multifamily Better Buildings Challenge, commit to adopting a green building standard, or install solar or other renewable energy technologies.¹⁴ Specific grant programs that provide incentives for energy efficiency or renewable energy include Section 811 Supportive Housing for Persons with Disabilities and Choice Neighborhoods Implementation grants. These programs set a minimum standard of ENERGY STAR Certified New Homes for new construction, with additional points for proposals that

¹³ HUD, *FY 2015 Annual Performance Report and FY 2017 Annual Performance Plan*, April 2016, p. 83ff. See https://portal.hud.gov/hudportal/documents/huddoc?id=2017_APP_2015_APR_Final.pdf.

¹⁴ See, for example, the 2015 General Section for HUD's NOFAs at http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/grants/fundsavail/2015gensec. Beginning in FY 2017, Policy Priority points are no longer specified in the General Section, but individual NOFAs continue to offer these point incentives.

meet a green building standard.¹⁵ The SHOP program currently encourages, but does not require, a minimum ENERGY STAR Certified New Homes standard.¹⁶

- **CDBG Disaster Recovery.** In 2013, HUD established minimum green building standards for recipients of Community Development Block Grant Disaster Recovery (CDBG-DR) funds appropriated under Public Law 113-2. Minimum green standards were established for replacing or building new housing in the aftermath of Hurricane Sandy and other severe weather events. In addition, HUD developed the CPD Green Building Retrofit Checklist for residential buildings incurring less substantial damage. (See Appendix C for HUD's current minimum energy standards and incentives, including CDBG-DR.)
- **Healthy Homes and Lead Hazard Control.** In 2013, the Office of Lead Hazard Control and Healthy Homes began to offer a priority point in their Lead Paint Hazard Control Grant programs for projects that undertake comprehensive assessments of, and interventions in, homes across the disciplines of health, energy, and housing.
- **Housing Opportunities for Persons With AIDS (HOPWA).** Acquisition, new construction, conversion, and repair of housing facilities are eligible activities under the HOPWA Program. HOPWA formula and competitive grantees report the number of new units that meet ENERGY STAR in their annual reports to HUD. In Program Year 2014–15, HOPWA grantees reported that 91 units acquired, constructed, or rehabbed with HOPWA funds were ENERGY STAR compliant.

Strategy 2. Create Incentives for Private Investment

HUD seeks to identify new forms of financing to support retrofits of single-family homes and multifamily apartments, implement new incentives that allow owners of multifamily housing to access third-party capital, and continue the use of Energy Performance Contracts in public housing.

3. Provide Innovative Financing for Single-Family Home Energy Improvements

FHA has taken several actions to promote energy efficiency in single-family FHA-insured homes:

¹⁵ Qualifying green building standards are: Enterprise Green Communities Criteria; the ICC 700 National Green Building Standard; LEED ND, LEED-H, LEED-H Mid-Rise, LEED-NC, or a regionally recognized green building standard such as Earthcraft House, Earthcraft, Multifamily, Earth Advantage Home Certification (New Home), GreenPoint Rated New Home, GreenPoint Rated Existing Home (Whole House or Whole Building label), or other industry-recognized green building standards.

¹⁶ Previous SHOP NOFAs had established Energy Star Certified New Homes as the minimum standard, but affordable housing developers had difficulty in meeting the new Version 3.0 Energy Star requirements in some rural locations.

- **FHA PowerSaver.** HUD launched the FHA PowerSaver pilot to help deliver affordable financing for home energy improvements in single-family homes.¹⁷ Beginning in November 2011, two PowerSaver products were offered: energy-efficient Title I home improvement loans, and the PowerSaver 203(k) mortgage, a first mortgage product that finances home improvements at the time of purchase or refinance of an existing mortgage.¹⁸ HUD also entered into an Interagency Agreement with DOE and the National Renewable Energy Laboratory to increase market traction for the product by connecting FHA-approved PowerSaver lenders with programs that currently provide home energy services for the single-family market. These included DOE-supported Home Performance with ENERGY STAR programs, currently operating in some 50 communities nationwide, DOE's Better Buildings Neighborhood Program, as well as additional utility-sponsored or other home energy programs.

The PowerSaver pilot ended in May 2015. A total of 1,127 PowerSaver loans were originated, financing energy efficiency improvements valued at an estimated \$19.1 million. Of these, 914 were Title I loans with a dollar value of \$9.0 million; 629 were Title I unsecured loans (less than \$7,500) and 285 were secured second mortgages (above \$7,500 but less than \$25,000). Approximately 20 percent, or 276 loans, were Section 203(k) purchase-rehab mortgages valued at \$38 million, with the share invested in PowerSaver energy measures estimated to be at least \$10.1 million. Three lenders were responsible for originating more than 90 percent of these loans: AFC First (partnering with Efficiency Maine and other energy service providers), the University of Virginia Credit Union (partnering with the Local Energy Alliance Program), and AmeriFirst Financial.

The single largest measure financed through PowerSaver consisted of energy-efficient air conditioners or heat pump replacements (approximately one-third of all Title I PowerSaver loans). Other frequent installations were attic and wall insulation; whole house air sealing; new energy-efficient windows; and energy-efficient heating systems and domestic hot water heaters. HUD is currently assessing results of the pilot, and, based on this assessment, plans to introduce a modified PowerSaver product in the future.

- **White House Green Mortgage Roundtables.** FHA and HUD's Office of Economic Resilience joined with the White House Council on Environmental Quality to host two green mortgage roundtables, one on green appraisals and another on green mortgage underwriting. The roundtables brought together key industry and energy efficiency stakeholders to discuss and recommend ways to overcome barriers to recognizing the value of energy efficiency and renewable energy when underwriting and appraising FHA-

¹⁷ <http://energy.gov/eere/buildings/powersaver-loans>

¹⁸ The Consolidated Appropriations Act of 2010 (Public Law 111-117) included an appropriation of \$50 million to establish an "Energy Innovation Fund" to "catalyze innovations in the residential energy efficiency sector that have promise of replicability and help create a standardized home energy-efficient retrofit market." The Act targeted \$25 million to the single family market and \$25 million to multifamily housing.

insured mortgages. A number of recommendations made at the roundtables were addressed in the updated FHA Handbook referenced below.

- **Handbook Update—Green Appraisals.** FHA included several energy-related updates to the Single Family Housing Policy Handbook (HUD Handbook 4000.1), as part of a comprehensive update to the Handbook and in response to recommendations from the Green Mortgage roundtables. An important clarification was recognition of alternative cost and income appraisal methods, in addition to sales comparisons, when valuing energy efficiency and solar energy installations.¹⁹ This will signal to both appraisers and lenders that these alternative methods are acceptable when assessing the contributory value of solar and other green features of a home.
- **DOE Home Energy Score.** FHA extended FHA’s Energy Efficient Homes (EEH) mortgage to existing homes. Borrowers may now qualify for a two-percent “stretch” qualifying ratio if their home achieves an above-average energy score of at least 6 on DOE’s Home Energy Score 1–10 scale. (The stretch ratio was previously available only for new homes).²⁰ The widely used Home Energy Rating System (HERS) rating continues to be recognized for FHA’s Energy Efficient Mortgage.²¹ FHA-insured mortgages with qualifying Home Energy Scores must currently be manually underwritten; however, FHA hopes to collect sufficient data on the performance of these or similar loans to consider automated underwriting of the EEH product in FHA’s Total Scorecard.
- **PACE Guidance.** FHA published guidance on FHA mortgage insurance for single-family properties with Property-Assessed Clean Energy (PACE) assessments in July 2016.²² The FHA guidance will allow lenders to evaluate the conditions under which borrowers purchasing or refinancing properties with existing PACE assessments will be eligible for FHA-insured financing.

¹⁹ http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/sfh/handbook_4000-1.

²⁰ See Mortgagee Letter 2015-22, published September 2015, at <https://portal.hud.gov/hudportal/documents/huddoc?id=15-22ml.pdf>. See also <http://energy.gov/eere/buildings/home-energy-score> for DOE’s Home Energy Score and <https://www.resnet.us/hers-index> for the HERS rating.

²¹ The Home Energy Score applies only to existing homes. New homes must be built to the 2009 IECC standard in order to qualify for the stretch ratio.

²² See <http://portal.hud.gov/hudportal/documents/huddoc?id=FTDO.pdf> and http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2015/HUDNo_15-112. Mortgagee Letter 2016-11 was published on July 19, 2016. See <http://portal.hud.gov/hudportal/documents/huddoc?id=16-11ml.pdf>

4. Implement Innovative Financing for Multifamily Energy Retrofits

HUD is taking several steps to expand the availability of financing for energy efficiency in multifamily housing.

These include:

- **Lower Mortgage Insurance Rates.** In April 2016, FHA implemented lower mortgage insurance rates for FHA-insured multifamily properties that met a recognized green building standard and also achieved an ENERGY STAR Performance Score of at least 75 through EPA's Portfolio Manager. Mortgage insurance rates for these projects were lowered from the current 45–70 basis points to just 25 basis points.²³
- **Energy Innovation Fund – Multifamily Energy Pilot Program.** HUD launched the Multifamily Energy Innovation Fund in March 2012 with \$23 million in grant awards to 12 organizations to demonstrate innovative solutions to financing energy retrofits in assisted multifamily housing.²⁴ These awards leveraged an additional \$60 million in philanthropic, local, and private capital. Examples of projects funded through this program include the development of a financial tool by the Stewards of Affordable Housing for the Future that allows an owner to determine which energy upgrades would be most suitable for a property without the time or expense of an energy audit; submetering of a master-metered building by Jonathan Rose Companies, along with activities focused on resident behavior, including a “smart” thermostat in each unit; and installation of Internet-connected boiler controls by Heat Watch to remotely monitor and adjust the boiler to better account for actual weather conditions.
- **Pay for Success Demonstration.** As part of the Fixing America's Surface Transportation (FAST) Act, enacted in December 2015, Congress authorized an important and innovative Pay for Success demonstration to support energy efficiency investments in up to 20,000 units of HUD-assisted multifamily housing. The demonstration will allow HUD to enter into contracts with outside entities to raise private capital for water and energy upgrades in privately owned HUD-assisted multifamily rental housing. Investors are paid back only when certain cost savings are realized, as verified by a third party.
- **Multifamily PACE.** HUD and the State of California launched a multifamily PACE pilot in January 2015.²⁵ The pilot will enable commercial PACE financing to be used in certain HUD-assisted or FHA-insured multifamily properties, thereby potentially opening up energy retrofit financing to an entirely new

²³ See http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2016/HUDNo_16-008 and http://www.regulations.gov/#!documentDetail;D=HUD_FRDOC_0001-4339.

²⁴ HUD Press Release 12-051, *HUD Awards \$23 Million To Test New Energy Saving Approaches In Older Multifamily Housing Developments*, March 8, 2012. See http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2012/HUDNo.12-051.

²⁵ See <https://www.whitehouse.gov/the-press-office/2015/01/29/fact-sheet-administration-and-california-partner-drive-renewable-energy> and <https://www.hudexchange.info/resource/4506/background-on-new-guidance-on-multifamily-pace-in-california/>.

segment of the multifamily market. HUD published guidance that outlined a path for obtaining approval for PACE funding for HUD-assisted or FHA-insured multifamily properties in California.

- **Green Preservation Plus.** In May 2011, HUD and Fannie Mae jointly launched Green Preservation Plus, an expansion of the longstanding FHA-Fannie Mae Risk Sharing program. Under this initiative, loans may be at least 5 percent greater than otherwise allowed, in order to finance energy efficiency investments.²⁶ Properties must prepare a Capital Needs Assessment using the Green Physical Condition Assessment developed by HUD for the Recovery Act Green Retrofit Program, or a comparable tool.

5. Strengthen EPCs and Develop Energy Efficiency Tools for Public Housing Authorities

Energy Performance Contracts have proven to be an effective tool for reducing utility costs in public housing, primarily in medium- to large-sized housing authorities.

- **Energy Performance Contracts in Small PHAs.** In HUD's 2012 Report to Congress, the Department proposed to identify strategies to expand the Energy Performance Contract model to smaller public housing authorities (PHAs). A multifamily Energy Innovation Fund grant, described in Action 4 above, was awarded to the University of Illinois at Urbana-Champaign to pilot a simplified model for smaller housing authorities.
- **OFO Energy Center.** HUD has taken steps to strengthen support for the Energy Performance Contract program, including adding staff to the Office of Field Operations (OFO) Energy Center, which works with field offices to review and approve proposals from PHAs.
- **FYs 2016 and 2017 Budget Proposal: Utilities Conservation Pilot.** HUD's FYs 2016 and 2017 Budgets proposed a Utilities Conservation Pilot in public housing. If authorized by Congress, the Pilot would strengthen incentives for housing authorities to invest their Capital Fund dollars in energy efficiency, and reduce the amount of debt financing that would be required to implement repairs, or eliminate the need for debt altogether. The Pilot would allow public housing authorities to freeze their Federal operating subsidies, which reflect current utility consumption costs, in return for committing to reduce energy consumption. This base operating subsidy would be reduced by one percent per year until it is equal to the PHA's actual energy consumption.

²⁶ HUD also signed a new Risk-Sharing Agreement with Freddie Mac, which may increase the opportunity for green risk-sharing transactions.

Strategy 3. Develop New Tools to Support Smarter Decisions

HUD has developed or worked in partnership with other organizations to develop tools that allow for more accurate tracking of utility consumption and costs so that opportunities for cost-effective energy improvement investments can be more readily identified and implemented.

6. Expand Use of Capital Needs Assessments (CNAs)

Building on the success of the Green Retrofit Physical Condition Assessment originally developed for the Mark-to-Market Green Initiative, HUD is in the process of expanding its CNA tools for both public and multifamily housing as follows:

- **Multifamily CNA e-Tool.** In 2010, the Interagency Rental Policy Working Group recommended creation of a common electronic template for CNA to be used when financing or refinancing FHA-insured and other multifamily mortgages. HUD and USDA worked with State and local housing agencies, lenders and subject matter experts to develop a suite of interrelated tools, all of which together have been given the name “CNA e-Tool.” The CNA e-Tool is both an electronic template that incorporates a data standard for CNAs and an automated process for preparation, review, submission, approval and periodic updating of CNAs. In 2014, HUD released elements of the CNA e-Tool in order to help industry partners prepare for the pending release of an operational CNA e-Tool projected in 2016.²⁷
- **Public Housing Physical Needs Assessment.** HUD developed a similar Green Physical Needs Assessment tool (Green PNA tool) for public housing, aimed at fulfilling the requirement of section 151 of the Energy Conservation and Policy Act of 2005 to achieve “...integrated utility management and capital planning...” in public housing.²⁸ The PNA tool organizes and automates the entry of capital needs and potential energy conservation measures to help PHAs recognize synergies and efficiencies over a 20-year planning horizon.²⁹ HUD has made the Green PNA tool available to PHAs for use on a voluntary basis. Since making the PNA tool available to PHAs in 2013, more than 1,000 PHAs, or approximately one-third of PHAs with public housing under management, have commenced some work with the PNA tool. Congress has, however, stipulated that HUD funds may not be used to require or enforce its use, but at the same time sees the PNA as a “useful tool” and “encourages PHAs to utilize this resource to help assess

²⁷ U.S. Department of Housing and Urban Development, Release of Three Key Elements of CNA E-Tool. Memorandum, August 22, 2014, http://portal.hud.gov/hudportal/documents/huddoc?id=DAS_CNA_Etool_FINAL_MEMO.pdf.

²⁸ The study acknowledged the need for less administrative burden for PHAs in performing a PNA for strategic planning purposes and the appropriateness of a different scope and tool than for multifamily housing. The study stated that “PHAs would only infrequently use the CNA e-Tool for capital planning as the level of sophistication and complexity associated with it would be greater than with the PNA.”

²⁹ See http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph/caofund/gpnatool.

the physical quality of their public housing stock.”³⁰ Accordingly, HUD will continue to encourage the use of the tool on a voluntary basis. As of FY 2015, 173 PHAs of all sizes, representing approximately 4 percent of the public housing inventory, had completed a Green PNA by electronic data submission to HUD through the PNA tool on a voluntary basis.

7. Strengthen Benchmarking of Energy and Water Performance

An increasing number of local jurisdictions have enacted ordinances requiring commercial or institutional buildings to benchmark their utility consumption. Cities such as New York, Chicago, and Washington, DC, have extended this to multifamily buildings, in part as a result of the availability of EPA’s Portfolio Manager or similar commercially available utility benchmarking tools. Portfolio Manager allows building owners to track and monitor utility consumption and cost data, and to compare these results across like buildings.

HUD is also exploring the feasibility of utility benchmarking of both energy and water in public and assisted housing. A number of PHAs and multifamily properties are already benchmarking their energy use as a result of the local ordinances cited above; others are beginning to do so as part of their participation in the multifamily Better Buildings Challenge. The Better Buildings Challenge has introduced a water-benchmarking program that HUD-assisted properties may participate in as part of the Better Buildings Challenge Partnership.

- **ENERGY STAR Performance Score.** In the fall of 2014, EPA, using data provided by Fannie Mae as well as HUD, released a new module for Portfolio Manager that, for the first time, allowed existing multifamily residential buildings to receive a 1–100 ENERGY STAR Score for energy performance and become certified as an ENERGY STAR building with a valid score of 70 or above. The release of the ENERGY STAR 1–100 score is another step toward the goal of ensuring reliable energy consumption and cost data for HUD-assisted and -insured properties.
- **Utility Data Access for Multifamily Properties.** HUD has also begun to explore ways to improve access to utility data in multifamily buildings and, where possible, to leverage utility resources for HUD-assisted, affordable housing. Secretary Castro reached out to utilities with a request for improved access to whole-building utility data to enable property owners to benchmark their properties, and improved access to individual resident data (with release forms), for the purpose of setting more accurate utility allowances.

³⁰ Section 230 of the Transportation, Housing and Urban Development and Related Agencies Appropriations Act of 2016 prohibits the use of funds to require or enforce the PNA. The Act’s congressional directives, however, states as follows: “The [appropriations] agreement prohibits HUD from requiring or enforcing the physical needs assessment (PNA), but does not prohibit HUD from continuing to make the PNA available as a useful tool, and encourages PHAs to utilize this resource to help assess the physical quality of their public housing stock.”

HUD will continue to work with both municipal and investor-owned utilities to improve access to critically needed utility data in multifamily properties.

- **Utility Allowance Memo and Guidance.** As part of HUD's work on data access, HUD published guidance to standardize the approach to utility allowances and thereby help owners and performance-based contract administrators appropriately assess subsidy levels needed to offset tenant paid utilities. This guidance, *Methodology for Completing a Multifamily Housing Utility Analysis*, (Notice H-2015-04) was published in June, 2015 and updated in September 2015.

8. Develop Common Energy and Green Retrofit Standards or Protocols

In its 2012 Report to Congress, HUD proposed to explore options for developing more uniform guidelines and standards for energy efficiency and green building investments in HUD-assisted properties. Currently, a variety of program-defined standards and guidelines exist, reflecting different program requirements and historical practices and procedures for each program.

There are significant benefits to more uniform requirements: ease of reporting for grantees and partners, ability for HUD and building owners to consistently measure and track results against uniform metrics, and ease of use for program partners.

As part of the Interagency Rental Policy Working Group and in partnership with USDA, DOE, and other agencies, HUD established a framework for minimum energy standards for new and rehabilitated housing.³¹ HUD continues to implement these standards across program areas, especially for new construction. (See Appendix C). The most challenging area continues to be the development of uniform energy efficiency protocols or guidelines for moderate and minor rehabilitation developments. Few HUD programs have established energy guidelines in these kinds of developments.

Strategy 4. Expand Training and Technical Assistance to Key Stakeholders

³¹ http://www.huduser.org/portal/aff_rental_hsg/RPWG_Conceptual_Proposals_Fall_2011.pdf

HUD has provided technical assistance to public housing agencies, multifamily apartment owners, and other HUD partners to test new HUD incentives and meet energy goals.

9. Implement Transformation Initiative Training and Technical Assistance for HUD partners

HUD's Transformation Initiative included a significant commitment to increasing the capacity of HUD's grantees and partners to adopt energy-efficient and green building practices. Following through on this commitment, in 2012 HUD launched a three-pronged training, capacity building, and technical assistance initiative in support of HUD's energy efficiency and green building strategic objectives:

- **Green Training and Certification.** The program provided a series of trainings—each consisting of a two-day core course plus four one-day topic-specific courses—on Energy Efficiency and Green Building for Affordable Housing. The objective of this training was to provide a basic understanding of energy efficiency and the use of best green building practices in the construction, rehabilitation, operations, and maintenance of neighborhoods and buildings. HUD delivered training to over 800 individuals in 20 locations.
- **Green Accreditation Initiative.** In partnership with the Sustainable Performance Institute, this program piloted an Energy Efficiency and Green Accreditation initiative. The purpose of this initiative was to recognize PHAs and other interested HUD grantees/partners that have established comprehensive energy-efficient management, operations, and development practices, and demonstrated a commitment to institutionalize these practices throughout their organization. Forty-one stakeholders participated in a voluntary pilot accreditation program, including PHAs, HOME Community Housing Development Organizations, and assisted multifamily portfolio managers/owners.
- **Green Technical Assistance Provider Corps.** This program provided direct project- and place-based technical assistance to HUD grantees and partners. The initiative supported a national cadre of highly skilled experts who provided support to HUD grantees and partners in carrying out energy efficiency and green building projects. These experts were selected for their expertise in the particular building types and climate conditions associated with each HUD region. An effort was made to align the training with DOE's Guidelines for Home Professionals and Standard Work Specifications for both single family and multifamily housing, as appropriate.³² Technical assistance was provided to 98 organizations.

10. Provide Technical Assistance to Renew300 and Better Buildings Challenge Partners

³² For further information on these DOE initiatives, see http://www1.eere.energy.gov/wip/retrofit_guidelines_overview.html; and http://www1.eere.energy.gov/wip/retrofit_guidelines.html.

HUD has restructured the delivery of technical assistance under the Community Compass Technical Assistance and Capacity Building program. Community Compass represents a fundamental change in the way HUD's traditional program-specific technical assistance (TA) has been structured. Managed by the Office of Community Planning and Development, the program includes cross-cutting funding for energy efficiency: one of the objectives in the FY 2014 NOFA was to "Increase understanding of strategies to reduce energy consumption, on-site renewable energy deployment and related financing to accelerate clean energy solutions," and to enable HUD funding recipients to "Track and benchmark energy and water usage in order to realize cost savings and improve energy and water efficiency . . ."³³

The FY 2014 NOFA resulted in a cooperative agreement with three TA providers to provide \$2 million in renewable energy and energy efficiency technical assistance and guidance for HUD grant recipients. Another \$700,000 was awarded in FY 2015.³⁴ HUD is currently using these resources to provide technical assistance to participants in the multifamily Better Buildings Challenge and the Renew300 renewable energy target.

Strategy 5. Strengthen Data Collection and Reporting Systems

HUD has developed tools to evaluate current investments, and has strengthened data reporting systems on the costs and benefits of energy efficiency investments in HUD's portfolio of public and assisted housing, as well as in the residential sector generally.

11. Conduct Evaluations of HUD's Recovery Act Energy Efficiency Investments

- **Evaluation of Recovery Act programs.** In 2011, HUD's Office of Policy Development and Research (PD&R) initiated an evaluation of certain energy and green programs funded through HUD's Recovery Act investments. The evaluation focused on three HUD programs: (1) Public Housing Capital Fund—Competition, (2) Public Housing Capital Fund—Formula, and (3) Green Retrofit Program for Multifamily Housing. PD&R will complete the evaluation and publish the resulting report in 2016.
- **Green Retrofit Program Evaluation.** The \$250 million Green Retrofit Program provided retrofit grants and low-cost loans to affordable housing property owners of 221 properties with 19,000 units in 37 States. An evaluation by Bright Power and Stewards for Affordable Housing for the Future funded by the MacArthur Foundation reported that the properties achieved an average energy savings of 18 percent.³⁵ Installed energy savings measures resulted in an average simple payback of 15 years and produced

³³ See p. 6, the 2014 NOFA, at <http://portal.hud.gov/hudportal/documents/huddoc?id=2014HCCTAnofa.pdf>. The 2015 NOFA is at <http://portal.hud.gov/hudportal/documents/huddoc?id=2015cctacbnofa.pdf>

³⁴ ICF International, Enterprise Community Partners and TDA Consulting.

³⁵ Braman, Jon *et al*, *Energy and Water Savings in Multifamily Retrofits: Results from the U.S. Department of Housing and Urban Development's Green Retrofit Program and the Energy Savers Program in Illinois*. Funded by the John D. and Catherine T. MacArthur Foundation. See http://www.sahfnet.org/multifamilyretrofitreport_2_1287596736.pdf.

estimated electricity and gas savings of \$213 per unit, per year, for a total of \$3.1 million annual savings in 179 properties.

12. Develop Energy Modeling and Scenario Planning Tool

HUD recently developed an energy savings model to enable the Department to model the utility and cost savings realized through many of the initiatives described in this report, and to demonstrate additional benefits, such as reductions in carbon emissions, water savings, and job creation. A shortage of reliable pre- and post-retrofit consumption data has limited HUD's ability to prioritize policies, incentives, standards, and performance measures that will maximize energy savings over time. As noted in a report from the American Council for an Energy Efficient Economy:

Without good data, sound energy policy decisions cannot be appropriately made nor can the effectiveness of their implementation be properly measured. . . . When policies are designed without proper data and forecasting, energy savings opportunities can be lost, resulting in billions of dollars of lost savings to the U.S. economy.³⁶

The new energy savings model will enable HUD to undertake long-range energy modeling of its portfolio through the year 2030. The model indicates that the green and healthy homes initiatives counted towards HUD's Agency Priority Goal (Action 1 above) over the past 6 years (2010–15) have resulted in an estimated energy savings of \$147 million, including \$51 million in FY 2014 alone; a reduction in energy consumption of 6.7 trillion BTUs of energy; greenhouse gas reductions of 377,900 tons; and 4,300 jobs created or retained. If HUD continues the current pace of energy-efficient retrofitted or new units over the next 10 years, the cumulative savings through 2025 will be as much as \$1.2 billion, with HUD savings estimated at \$175 million. If all current and proposed initiatives are implemented, savings are estimated to reach \$7.2 billion by 2025, with an estimated carbon reduction of 15.2 million tons by 2025, equivalent to taking 32,300 cars off the road every year for 10 years.

13. Conduct Broad-Based Sustainability Research

Beginning in 2011, HUD's Office of Policy Development and Research (PD&R) initiated a competitive Sustainable Communities Research Grant Program to support research in the broad area of sustainability.

³⁶ Rachel Gold and R. Neal Elliot, *Where have all the Data Gone: The Crisis of Missing Energy Efficiency Data*, American Council for an Energy-Efficient Economy, February 2010.

An initial round of grants was awarded in 2011 for research projects that addressed one or more of the following research topics: (1) evaluating tools and strategies that promote and implement more effective policies that preserve housing affordability; (2) improving accessibility through effective transit systems that create neighborhoods of opportunity for all residents; (3) reducing regulatory barriers to sustainable development and strengthening land use planning and urban design standards; (4) advancing economic opportunities that create jobs and promote diverse communities; and (5) addressing the health of the environment by reducing carbon emissions and conserving energy.³⁷ (See Appendix D for a list of grant recipients and research projects.)

Funding was provided through HUD's Fiscal Year 2010 Appropriations Act. PD&R reserved \$1.5 million in Transformation Initiative funds, and an additional \$1 million was added under the Sustainable Communities Initiative appropriation, bringing the total program amount to \$2.5 million. A second round of grants was awarded in 2013.³⁸

- **FY 2017 Budget Request: Research on Behavior Change.** HUD's proposed FY 2017 Budget expands HUD's clean energy Research & Development efforts, focusing on behavior change among builders, property owners, and tenants. A proposed \$10 million research project includes the creation of an advisory group of researchers, builders, tenants, and homeowners to design and implement studies on how to facilitate long-term behavior change in the housing sector, and the evaluation of a clean energy pilot intended to incentivize multifamily property owners and tenants to reduce energy consumption.

Strategy 6. Implement Federal Statutes and Provide Regulatory Flexibility

HUD implements statutory requirements for energy standards and codes for HUD-assisted properties, while providing flexibility for property owners and builders to both accelerate market acceptance and help ensure that policy goals are achieved.

14. Update Minimum Code Requirements

- **Energy Standards for HUD-assisted housing.** The Energy Independence and Security Act of 2007 (EISA) requires HUD and USDA to jointly adopt the latest version of the International Energy

³⁷ HUD Press Release No. 11-219, *HUD Awards \$2.5 Million For Sustainable Communities Research Grant Program*, September 16, 2011. See http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2011/HUDNo.11-219.

³⁸ HUD NOFA, *FY 2013 Transformation Initiative: Sustainable Communities Research Grant Program*, April 16, 2013. See http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/grants/fundsavail/nofa13/scrgpee. Also see Appendix D.

Conservation Code (IECC) or the American Society of Heating, Refrigeration and Air Conditioning Standard 90.1 (ASHRAE 90.1) for certain HUD programs, subject to two tests: (1) a determination by DOE that the most recent energy codes represent an increase in energy efficiency over the prior code and (2) a determination by HUD and USDA that the new code does not negatively impact the “affordability and availability” of covered housing.

In May 2015, HUD and USDA updated the minimum energy standard for certain HUD- and USDA-financed, -insured, or -assisted properties to comply with the 2009 IECC and ASHRAE 90.1-2007.³⁹ The agencies determined that adoption of these standards would be overwhelmingly cost effective and would not negatively affect the affordability or availability of the impacted housing. The standards apply to new construction only of FHA-insured single family and multifamily housing, as well as for new homes financed through the HOME program. Thirty-six States and the District of Columbia have already adopted these standards; the new standards will most directly influence those States that have not yet adopted them.

The updated standards took effect in December 2015—the first time in more than 20 years that HUD has proactively updated minimum energy standards in compliance with statutory mandates. The responsible code bodies update or revise the standards on a 3-year cycle; HUD and USDA are currently assessing the more recently published 2012 and 2015 editions of the IECC and ASHRAE 90.1-2010 and 90.1-2013. The time required to implement these standards reflects the lengthy regulatory clearance and approval processes for both USDA and HUD to meet the requirements of the EISA statute, including the provisions that require the agencies to complete an assessment of the cost effectiveness of these standards. (See Appendix C for a current list of minimum HUD standards and incentives for green building.)

- **Energy Standards for Manufactured Housing.** EISA also requires DOE to establish energy efficiency standards for HUD-Code manufactured housing. Specifically, EISA directs that DOE base the standards on the most recent version of the IECC, except in cases in which DOE finds that the IECC is not cost-effective, or a more stringent standard would be more cost-effective. In June 2014, DOE published a notice of intent to establish a negotiated rulemaking with a Manufactured Housing Working Group to discuss and, if possible, reach consensus on a proposed rule for the energy efficiency of manufactured homes.⁴⁰ A broad-based working group composed of a range of representatives of the manufactured housing industry was established; the working group included members of HUD’s Manufactured Housing Consensus Committee. Energy and building science experts were also included, and the working group

³⁹ HUD and USDA, *Final Affordability Determination—Energy Efficiency Standards*, Federal Register Notice, May 6, 2015. http://portal.hud.gov/hudportal/HUD?src=/program_offices/economic_resilience/New_HUD-USDA_Energy_Codes.

⁴⁰ <https://www.federalregister.gov/regulations/1904-AC11/energy-efficiency-standards-for-manufactured-housing> and <http://www.regulations.gov/#!docketDetail;D=EERE-2009-BT-BC-0021>

successfully negotiated proposed Federal standards with DOE.⁴¹ DOE subsequently published a proposed rule for public comment in May 2016.⁴²

Strategy 7. Strengthen Interagency and Private Sector Partnerships

15. Continue DOE, EPA, and Other Interagency Partnerships

HUD has maintained or strengthened strong partnerships with other Federal agencies to implement many of the initiatives described in this report, including the following:

- **Department of Energy (DOE).** HUD has partnered with DOE on several fronts, including a joint Agency Priority Goal: the SEED initiative (Action 16 below); the FHA PowerSaver loan program; analysis of IECC and ASHRAE energy codes; the multifamily Better Buildings Challenge; the Weatherization Assistance Program; utility data collection efforts; the Home Energy Score; and with DOE's SunShot Initiative on the Community Solar Initiative as well as the Renew300 renewable energy target.
- **Environment Protection Agency (EPA).** HUD partnered with EPA to develop the ENERGY STAR 1–100 score for multifamily buildings, as well as on the implementation of the new ENERGY STAR Certified New Homes standard (Version 3.0), in addition to partnering with EPA's WaterSense program to hold "Water Wednesday" webinars for HUD-assisted housing managers responding to water shortages in California and other States.
- **U.S. Department of Agriculture (USDA).** HUD partnered with USDA on developing uniform energy efficiency requirements for federally assisted multifamily housing, and updating minimum energy codes for HUD- and USDA-assisted housing as required by the Energy Independence and Security Act of 2007. (Action 14 above).
- **U.S. Department of the Treasury (Treasury).** Where feasible and appropriate, HUD works with Treasury to align minimum energy standards or protocols with those of the Low-Income Housing Tax Credit (LIHTC) program. LIHTC properties are also included in the Renew300 Federal Renewable Energy Target.

16. SEED: Expand Energy Literacy and Economic Opportunity in Public Housing

⁴¹ The Working Group was established by DOE; the Manufactured Housing Consensus Committee was created by Congress to advise HUD on regulating HUD Code manufactured homes.

⁴² See https://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx?ruleid=97.

The Department's Office of Public and Indian Housing (PIH) executed a Memorandum of Understanding with DOE on STEM (Science, Technology, Engineering, and Mathematics) to support energy literacy and employment in clean energy for public housing residents.⁴³ HUD launched STEM, Energy and Economic Development (SEED) pilots in five communities in October 2015. SEED focuses on STEM education, job skill development, and energy literacy for residents of public housing. In partnership with PHAs, SEED will create local coalitions of public-private partners to create or expand programs in these areas. The initiative is being piloted in five communities: Cleveland, Denver, San Antonio, Tampa, and Washington, DC, with the goal to expand to 20 cities by 2018.

The initiative brings together DOE-funded programs, HUD-assisted communities, DOE resources, and nonprofit and for-profit organizations to create locally designed and managed partnerships, which can serve as examples of public-private partnerships that can be replicated by communities around the country.⁴⁴ This initiative also addresses several of the Obama Administration's key goals: to prepare current and future workers for in-demand STEM jobs; to use Federal resources as a catalyst for investment in this area; to reach climate change objectives, and to address inequality issues by increasing awareness and opportunity in STEM fields.

The SEED initiative links existing Federal investments and activities to local coalitions to expand or launch programs based on three pillars:

- **Energy Literacy.** Through online and in-person outreach including webinars, videos, workshops, and informational materials, public housing residents learn about measures they can take to reduce energy consumption.
- **STEM Education.** In partnership with national organizations that support STEM education and teaching, this initiative links youth and young adults living in public housing to opportunities in STEM education and energy-related fields.
- **Job-Driven Skills Training.** Through this initiative, partners in targeted cities link established workforce training programs and partners, aimed at identifying flexible, place-based career pathways for public housing residents.

Strategy 8. Launch Industry Challenges in Support of the President's Climate Action Plan

⁴³ See http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/seed.

⁴⁴ See also <https://www.clintonfoundation.org/clinton-global-initiative/commitments/seed-coalitions-community-growth> and <http://sites.ed.gov/octae/2015/11/06/seed-coalitions-for-community-growth/>.

17. Launch Multifamily Better Buildings Challenge

In June 2013, HUD partnered with DOE to expand the Better Buildings Challenge to multifamily housing.⁴⁵ The Better Buildings Challenge is a voluntary initiative that asks building owners and managers to commit to lowering energy use across their portfolio by 20 percent over the next 10 years. Multifamily partners include owners or managers of market rate as well as well as affordable housing. As of March 2016, 110 partners representing more than 650,000 units with 600 million square feet have joined the Challenge.⁴⁶

HUD has offered incentives for multifamily owners as well as PHAs to join the multifamily Better Buildings Challenge:

- **Incentives for Better Building Challenge Partners.** HUD has implemented several incentives or flexibilities for HUD-assisted properties participating in the multifamily Better Buildings Challenge.⁴⁷ Current incentives include a Management Fee Add-On, Expedited Reserve for Replacement Account Releases, a Mark-to-Market Incentive Performance Fee Increase, and a Project Rental Assistance Contract (PRAC) Shared Savings Administrative incentive. HUD hopes to test two additional incentives in 2016: an On-Bill Financing and Repayment Incentive, and Increased Distributions for for-profit and nonprofit Section 8 multifamily properties.⁴⁸
- **Streamlined EPC Reviews.** The Office of Public and Indian Housing committed to a streamlined 45-day review of Energy Performance Contract applications submitted by PHAs participating in the Better Buildings Challenge.
- **Direct Technical Assistance.** HUD also offered \$1.5 million of direct technical assistance resources for all multifamily partners to help them reach their energy commitments.

18. Renew300: Solar and Other Renewable Energy Resources in Federally Assisted Housing

The Renew300 target, a joint effort by HUD, USDA, and Treasury, represents a significant effort by HUD to expand the use of solar energy and other renewable energy resources in federally assisted housing.⁴⁹ In July 2015, HUD and DOE announced an expansion of the Federal renewable energy target from 100 megawatts to

⁴⁵ See http://portal.hud.gov/hudportal/documents/huddoc?id=BBC_MFFactSheet.pdf.

⁴⁶ See video at https://www.youtube.com/watch?v=yhZH3e0LLT0&list=PLoLJ9m9zEh3NmV-yB7zFEhBHIdN_RilG&index=3. For partner profiles see http://betterbuildingsolutioncenter.energy.gov/search?f%5B0%5D=type%3Apartner_profile&f%5B1%5D=field_sector%3A34.

⁴⁷ See http://portal.hud.gov/hudportal/HUD?src=/program_offices/economic_resilience/eegb/challenge.

⁴⁸ See https://portal.hud.gov/hudportal/documents/huddoc?id=BBC_Incentive.pdf.

⁴⁹ <https://www.hudexchange.info/programs/renewable-energy/>

300 megawatts of solar and other renewable energy resources in federally assisted housing. The two agencies also broadened the goal to include community and shared solar installations.

One successful model is the 2.5-megawatt solar system installed by the Denver Housing Authority. The Housing Authority launched a public-private partnership to install a solar photovoltaic (PV) system across its portfolio of scattered site, single family residential buildings: 10,000 solar panels on 666 buildings. The installation was financed through a Power Purchase Agreement (PPA) with a solar provider that enables the PHA to avoid paying the up-front capital cost of solar installations. To defray the cost of the PPA, the Housing Authority was able to take advantage of State-issued Qualified Energy Conservation Bonds. HUD is now working to support similar projects in other housing authorities and multifamily assisted housing across the country. HUD is also working with DOE's SunShot program to provide technical expertise and resources for building owners, policy makers, and community members on solar deployment.

Additional ways HUD plans to meet the 300-megawatt target include: innovative financing mechanisms; guidance and/or standards; desktop solar analyses; place-based solutions where incentives align; public-private partnerships with the financial community; promoting programs such as the CDBG Section 108 loan guarantee; as well as the redesigned rate reduction incentive in public housing described below:

Rate Reduction Incentive for Renewable Energy. In support of the Renew300 target, HUD expanded the use of the Rate Reduction Incentive to cover the use of solar and other renewable energy resources, and provided new guidance to encourage the use of onsite renewable energy technologies in public housing.⁵⁰ The Rate Reduction Incentive typically allows PHAs to retain 50 percent of the utility cost savings achieved each year due to their special and significant efforts toward utility rate reduction. The guidance clarifies the methods for using the Rate Reduction Incentive in concert with energy and water efficiency retrofits and Energy Performance Contract incentives, during which a PHA can retain 100 percent of the savings.

Strategy 9. Place-Based Initiatives for Climate Resilience and Adaptation

19. Adapting to severe weather events: climate adaptation and resilient power

In addition to the building-specific activities described in this report that are aimed at lowering energy use in public and assisted housing, HUD has also undertaken a wide range of place-based initiatives aimed at enabling communities to better adapt to climate change and withstand the impact of severe weather events. An important element of these initiatives is to enable PHAs, HUD-assisted multifamily properties, and their

⁵⁰ PIH Notice PIH-2014-18 (HA), *Guidance on On-Site Utility Technologies And the Rate Reduction Incentive in Public Housing*, August 8, 2014, <http://portal.hud.gov/huddoc/pih2014-18.pdf>.

surrounding communities to better withstand power outages or brownouts by increased adoption of distributed energy generation, microgrids and other forms of resilient power.

- **Sustainable Communities Grants.** Beginning in FY 2010, and again in FY 2011, HUD awarded \$240 million to 143 communities to develop regional sustainability plans and implement a range of Community Challenge projects. Several of these grant awards supported energy-related grid resilience or community-scale clean energy or building energy efficiency plans. For example, the Rural Economic Area Partnership (REAP) Investment Fund of North Dakota developed a Western North Dakota Sustainability Plan that included plans for local infrastructure that addressed transmission and distribution issues in the region. The City of Austin developed a master plan for the Colony Park neighborhood incorporating energy-efficient design, water conservation, zero waste technology and standards. The Northwoods Nijii Enterprise Community, a partnership of three Native American tribes in northern Wisconsin, completed planning for several green and energy efficiency projects in their strategic plan. The Thunder Valley Regenerative Community initiative, a 34-acre site on the Oglala Sioux Pine Ridge Reservation, included the testing of straw-bale and other green building prototypes to maximize energy use and enhance indoor air quality.
- **Hurricane Sandy Rebuilding Strategy.** In response to Executive Order 13632, in August 2013, the Federal Hurricane Sandy Rebuilding Task Force published a Hurricane Sandy Rebuilding Strategy that stressed the importance of energy grid resilience and described how Combined Heat and Power (CHP) played a successful role in keeping a number of college campuses, multifamily housing, critical medical facilities, sewage treatment plants, and other facilities running during the storm and its aftermath. The strategy offered two recommendations to bolster CHP, district energy and other forms of clean distributed generation, including “ensuring that Sandy recovery energy investments in critical infrastructure are resilient” (Recommendation 12), and also “encourage Federal and State cooperation to improve electric grid policies and standards” (Recommendation 14).
- **Resilience Bank.** One State, New Jersey, utilized \$200 million of its Hurricane Sandy Supplemental (Public Law 113-2) from HUD to capitalize an Energy Resilience Bank. The Resilience Bank was designed to support the development of distributed energy resources at critical facilities throughout the State that will enable them to remain operational during future outages. Eligible technologies must be able to operate independently of the electric utility grid, must be able to start up without a direct connection to the electric grid when the grid is down due to extreme weather events, and have the capability to operate at critical load.
- **National Disaster Resilience Competition.** In June 2014, President Obama announced the National Disaster Resilience Competition (NDRC). Responding to demand from State, local, and tribal leaders

working to increase the safety and security of their communities, and building on the success of the previous Hurricane Sandy-specific Rebuild by Design competition,⁵¹ the nearly \$1 billion, national competition was designed to help communities that have experienced natural disasters to rebuild and, at the same time, increase their resilience to future disasters, including energy resilience. In January 2016, NDRC grants were awarded to eight States and five cities or counties.⁵²

- **Resilient Power Guide and Outreach.** In late 2013 HUD, EPA, and DOE published a *Guide to Using Combined Heat and Power for Enhancing Reliability and Resiliency in Buildings*.⁵³ The Guide provides an introduction to the role that CHP, microgrids and district energy systems can effectively contribute to State and local planning efforts to build resiliency for both critical infrastructure and other facilities, including multifamily housing. Key facilities across sectors can be protected from disruptions to the electricity grid using CHP and other forms of distributed energy. HUD and EPA subsequently hosted a webcast on this topic.

III. STRENGTHENING CAPACITY AND MEASURING PROGRESS

HUD has taken several actions to strengthen the management, oversight, and coordination of the energy initiatives described in this report.

- In October 2015, Secretary Castro convened the first meeting of the agencywide Climate Council, consisting of Assistant Secretary-level representation from 13 key program and support offices. The Council meets bimonthly, and is responsible for implementing HUD's role in the President's Climate Action Plan and other climate-related executive actions. Two staff-level working groups support the Council: a Resilience Group and an Energy Efficiency and Green Building group. The Council provides oversight for meeting HUD's Strategic Objective 4B (Green and Healthy Homes), for supporting the multifamily Better Buildings Challenge and the Renew300 Federal renewable energy target, and for engaging internal and external partners and allies to inform and leverage HUD's green building work.
- Through the HUDStat process, HUD tracks quarterly progress towards the Agency Priority Goal of approximately 160,000 energy-efficient or healthy units every 2 years. Managed by the Office of Strategic Planning and Management, the Priority Goal includes four key program offices and utilizes CPD's Office of Economic Resilience as program lead. The reported results can be found at www.performance.gov.

⁵¹ See <http://www.rebuildbydesign.org/>.

⁵² See grant announcement at http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2016/HUDNo_16-006. For more information on the NDRC, see <https://www.hudexchange.info/programs/cdbg-dr/resilient-recovery/>.

⁵³ HUD, DOE, EPA, *Guide to Using Combined Heat and Power for Enhancing Reliability and Resiliency in Buildings* September 2013

- New or strengthened reporting systems were created to enhance accountability and transparency of Recovery Act funds, and these have been extended for use in some of HUD's ongoing programs. A notable example is the Energy Performance Information Center (EPIC) reporting system, which for the first time reports Public Housing Capital Fund expenditures on energy efficiency improvements.
- Staffing has been strengthened in several areas. PIH's OFO Energy Center has increased its capacity to review Energy Performance Contract proposals. Regional Energy Liaisons were established in each of HUD's 10 regions as collateral duty assignments to support outreach to, and technical assistance for, key stakeholders. CPD's Office of Economic Resilience provides as-needed technical support and coordination to program offices. In some cases, program offices retained energy specialists to manage and advance key initiatives described in this report.

Appendix A: Congressional Requirements
To Increase Energy Efficiency in Affordable Housing

Energy Policy Act of 2005. The Energy Policy Act of 2005 included several provisions related to energy efficiency in public housing, including: energy efficiency product purchasing requirements; greater integration of energy efficiency in ongoing capital investment planning; and extending the financing period for Energy Performance Contracting in public housing from 12 to 20 years.

| Energy Policy Act of 2005 |
|---|
| (1) PUBLIC HOUSING CAPITAL FUND CAPITAL PLANNING (section 151). Required integrated utility management and capital planning, processes to maximize energy conservation and efficiency measures; extends contract period for Energy Performance Contracts; and requires installation of fixtures and fittings that meet ASME/ASI standards. |
| (2) PURCHASE OF ENERGY-EFFICIENT APPLIANCES (section 152). Required public housing to purchase energy-efficient appliances that are ENERGY STAR products or FEMP-designated products. |
| (3) ENERGY CONSTRUCTION FOR HOPE VI (section 153). Required adoption of the International Energy Conservation Code for HOPE VI new construction and rehabilitation projects. |
| (4) ENERGY EFFICIENCY IN FEDERALLY ASSISTED INDIAN HOUSING (section 506). Required HUD to promote energy conservation in housing that is located on Indian land (and assisted with Federal resources) through the use of energy-efficient technologies and innovations, shared savings contracts, and other similar technologies and innovations. ⁵⁴ |

Energy Independence and Security Act of 2007 (EISA). The Energy Independence and Security Act of 2007 enacted substantial updates to Federal energy building performance standards for new construction projects supported by HUD’s housing programs and financing products and for manufactured housing.

| Energy Independence and Security Act of 2007 |
|---|
| (1) APPLICATION OF INTERNATIONAL ENERGY CONSERVATION CODE TO PUBLIC AND ASSISTED HOUSING (section 481). Required HUD to “meet or exceed” the International Energy Conservation Code (IECC 2006, or for multifamily high rises, ASHRAE 90.1-2004) for new construction for public housing, assisted housing, single family and multifamily residential housing (other than manufactured homes) subject to mortgages insured under the National Housing Act, and new construction and rehabilitation of HOPE VI projects, and to “meet or exceed” revisions to these codes subject to certain determinations. |
| (2) ENERGY CODE IMPROVEMENTS FOR MANUFACTURED HOUSING (section 413). Required DOE, in consultation with HUD, to establish standards for energy efficiency in manufactured housing within 4 years based on most recent IECC except where code is not cost-effective. |

Housing and Economic Recovery Act of 2008 (HERA). The Housing and Economic Recovery Act of 2008 brought new attention to energy efficiency in existing single family residential markets, particularly with respect to FHA-insured, market-rate housing transactions and the growing inventory of foreclosed and abandoned properties in communities.

⁵⁴ http://energy.gov/sites/prod/files/2013/10/f3/epact_2005.pdf

Housing and Economic Recovery Act of 2008

- (1) ENERGY-EFFICIENT MORTGAGE (EEM) (section 2123). Eliminated previous \$8,000 cap, and required HUD to change lending limits on EEMs to 5 percent of property value or 2 percent of the limit established under section 203(b)(2)(B) of the Act; and limits EEM production not to exceed 5 percent of the aggregate number of mortgages insured by HUD.
- (2) INCREASING ACCESS AND UNDERSTANDING OF ENERGY-EFFICIENT MORTGAGES (section 2902). Required HUD to consult with the residential mortgage industry and States to develop recommendations to eliminate the barriers that exist to increasing the availability, use, and purchase of energy-efficient mortgages; submit a report to Congress that summarizes the recommendations and includes any recommendations for statutory, regulatory, or administrative changes necessary to institute such recommendations; and carry out an education and outreach campaign, in consultation with the Department of Energy, to inform and educate consumers, home builders, residential lenders, and other real estate professionals on the availability, benefits, and advantages of improved energy efficiency in housing; and energy-efficient mortgages.
- (3) EMERGENCY ASSISTANCE FOR REDEVELOPMENT OF FORECLOSED AND ABANDONED PROPERTIES (section 2301). This statute established the Neighborhood Stabilization Program (NSP). It provided that rehabilitation may include improvements to increase the energy efficiency or conservation of participating homes and properties or provide a renewable energy source or sources for such homes and properties.
- (4) ENERGY EFFICIENCY IN LIHTC PROGRAM QUALIFIED ALLOCATION PLANS (section 3004). Statutory amendments include reforms to the Low-Income Housing Tax Credit program requiring State Housing Finance Agencies to consider energy efficiency in making tax credit allocations and to include energy efficiency considerations in State plans for the allocation of credit among projects.

Consolidated Appropriations Act of 2010. The law included an appropriation of \$50 million to establish an Energy Innovation Fund at HUD. Congress intended “to catalyze innovations in the residential energy efficiency sector that have promise of replicability and help create a standardized home energy-efficient retrofit market.” Of the \$50 million appropriated, Congress directed HUD to target \$25 million to the single family market and \$25 million to the multifamily market. Congress provided that funds would remain available until 2013.

Appendix B
FYs 2016–17 Annual Performance Goal: Energy Efficient and Green Units
(Housing Units)

| Program | FY 2016 Goal | FY 2017 Goal | Cumulative Goal FYs 2016–17 |
|---|---------------------|---------------------|------------------------------------|
| Public Housing Capital Fund | 6,442 | 6,319 | 12,761 |
| Energy Performance Contracts | 13,220 | 13,100 | 26,320 |
| Choice Neighborhoods, Mixed Finance | 1,823 | 793 | 11,900 |
| Total Public and Indian Housing | 22,063 | 20,914 | 41,697 |
| Community Development Block Grant-Disaster Recovery | 1,236 | 1,236 | 2,472 |
| HOME Investment Partnerships | 6,000 | 5,900 | 11,900 |
| Community Development Block Grants | 415 | 415 | 830 |
| Total Community Planning and Development | 7,651 | 7,551 | 15,202 |
| Multifamily Endorsements with Green Features | 12,193 | 12,193 | 24,386 |
| Sections 202 (Elderly) and 811 (Persons with Disabilities) Supportive Housing | 850 | 850 | 1,700 |
| Mark-to-Market Green Initiative | 2,500 | 2,500 | 5,000 |
| Rental Assistance Demonstration (RAD) | 11,700 | 14,000 | 25,700 |
| Energy-Efficient Mortgages | 275 | 275 | 550 |
| Section 203(k) | 3,500 | 3,500 | 7,000 |
| Total Housing | 31,018 | 33,318 | 64,336 |
| Other Units | 2,883 | 2,882 | 5,765 |
| Total Energy Retrofits | 62,975 | 64,025 | 127,000 |
| Healthy Homes and Lead Hazard Control | 16,500 | 16,500 | 33,000 |
| Total Energy and Green Retrofits/New Units | 79,475 | 80,525 | 160,000 |

**Appendix C
Minimum Energy Standards or Requirements
(New Construction)**

| Program | Program Type | Minimum Requirements | Additional Points or Incentives |
|---|---|---|---|
| FHA MULTIFAMILY | | | |
| Multifamily Mortgage Insurance | Mortgage Insurance Sections 213, 220, 221(d)(4), 231, 232, 241(a). | MF Low-Rise: 2009 IECC effective 9/15* MF Mid- or High-Rise: ASHRAE 90.1-2007 effective 9/15* | |
| Section 811 Supportive Housing for Persons with Disabilities Demonstration | Competitive Grant for Rental Assistance Contracts | SF: Energy Star Certified Homes MF: Energy Star for Multifamily High-Rise AND Energy Star appliances AND WaterSense products | NOFA provides 3 points for a recognized green building standard (2013) |
| Rental Assistance Demonstration (RAD) | Conversions To Project Based Rental Assistance (Section 8) Contract | <i>New Construction:</i> SF and MF Low-Rise: 2009 IECC effective 12/15. MF Mid- or High-Rise : ASHRAE 90.1-2007 effective 9/15. Applicants encouraged to build to Energy Star Certified New Homes or Multifamily High-Rise standards <i>Rehabilitation:</i> Energy Star appliances AND WaterSense or FEMP-designated products AND most cost-effective measures identified in energy audit from green Capital Needs Assessment. | Revision 2 of the RAD Notice (published 6/15/15) provides incentive for property owner to retain savings when energy/water efficient improvements will reduce Utility Allowances/tenant-paid utilities |
| FHA SINGLE FAMILY | | | |
| Single Family Mortgage Insurance | Mortgage Insurance | 2006 IECC 2009 IECC effective 12/15 | |
| | | Condos/coops in mid-rise or high-rise: ASHRAE 90.1-2007 | |
| PUBLIC AND INDIAN HOUSING (PIH) | | | |
| Choice Neighborhoods – Implementation Grants | Competitive Grant | SF: Energy Star for New Homes MF: Energy Star for Multifamily High-Rise AND Energy Star products | NOFA provides up to 3 points if project meets recognized green building standard including Enterprise Green Communities, National Green Building Standard, LEED or local/regional standard; 2 points for Energy Star Indoor Air Package AND 2 points for Stage 1 Certification of LEED-ND or similar neighborhood sustainability standard (2014) |
| Choice Neighborhoods – Planning Grants | Competitive Grant | Eligible for LEED-ND Stage 1 Conditional Approval or similar standard Plan should maximize energy efficiency techniques and practices and improve the health of residents by adopting green | NOFA provides 1 point for renewable energy (2014) |

| Program | Program Type | Minimum Requirements | Additional Points or Incentives |
|---|--|--|--|
| | | building practices or standards to the extent feasible and affordable, including but not limited to incorporating renewable energy systems (2014 NOFA) | |
| Rental Assistance Demonstration (RAD) | Conversions to Housing Choice Vouchers | Same as RAD, above | Same as RAD, above |
| Public Housing Capital Fund | Formula Grant | SF and MF Low-Rise: IECC 2009 MF: ASHRAE 90.1-2010 AND Energy Star appliances when cost effective | |
| Public Housing Capital Financing Program (CFFP) | Private Sector Capital | SF and MF Low-Rise: IECC 2009 MF: ASHRAE 90.1-2010 AND Energy Star appliances when cost effective | |
| Indian Housing Block Grants (IHBG) Indian Community Development Block Grants (ICDBG) | Formula and Competitive Grants | Meet applicable State, local, or tribal codes | ICDBG NOFA provides 1 policy priority point for a recognized green building standard OR for renewable energy (2014 NOFFFA) |
| COMMUNITY PLANNING AND DEVELOPMENT (CPD) | | | |
| HOME | Formula Grant | SF: 2006 IECC (2009 IECC Effective when guidance is issued) MF: ASHRAE 90.1-2004 (90.1-2007 effective when guidance is issued) (Participating Jurisdictions (PJs) required to report new units that meet Energy Star Certified Homes standard) | |
| CDBG | Formula Grant | Meet local codes (Grant recipients required to report new units that meet Energy Star Certified Homes standard) | |
| Self Help Ownership Program (SHOP) | Competitive Grant | Energy Star for New Homes encouraged but not required AND Energy Star products and appliances AND WaterSense products | 2015 NOFA provides 1 Policy Priority Point if at least 50% of SHOP units are built to Energy Star or a recognized green building standard; plus up to 4 additional points for assessing feasibility of achieving Energy Star for New Homes |
| CDBG-DR (Sandy) | Disaster Recovery Grant | For new or replacement housing: Green building standard, including Energy Star Certified Homes or Energy Star for Multifamily High-Rise and other specified green building standards For moderate rehab: CPD Retrofit Checklist AND Energy Star appliances, WaterSense or FEMP products, if replaced (2013 Notice) | |

Key: MF = Multifamily; SF = Single Family; Low-rise = up to 3 stories; Mid- or High-rise = 4+ stories;
IECC = International Energy Conservation Code (for SF and low-rise multifamily)
ASHRAE = American Society of Heating, Refrigeration and Air Conditioning Engineers

**Appendix D:
Sustainable Communities Research Grant Program
FY 2011 and FY 2013**

- **Arizona State University**
Affordable Housing and Walkable Neighborhoods: A National Urban Analysis
- **The International City/County Management Association (ICMA)**
Local Government Sustainable Communities Research Program: Advancing Social Equity Goals to Achieve Sustainability
- **National Housing Trust**
How Does and How Can the Low Income Housing Tax Credit (LIHTC) Program Most Effectively Be Used to Promote the Preservation of Affordable Rental Housing Near Transit?
- **University of Miami**
Health Impacts of the Built Environment among Miami Medicare/Medicaid Beneficiaries
- **The Urban Institute**
Driving to Opportunity: Understanding Links among Transportation Access, Residential Outcomes, and Economic Opportunity for Housing Voucher Recipients
- **Virginia Polytechnic Institute and State University (VA Tech)**
Impact of Market Behavior on the Adoption and Diffusion of Innovative Green Building Technologies in Residential Firms
- **State University of New York at Buffalo (SUNY)**
Sustainable Affordable Housing in Shrinking U.S. Cities: Developing an Analytic Tool for Siting Subsidized Housing and Evaluating HUD Program Outcomes
- **University of Texas at Austin**
Creating Green and Inclusive Corridors: Preservation and Rehabilitation of Unsubsidized Affordable Rental Housing on Core Transit Corridors
- **University of Utah at Salt Lake City**
Assessing the Impact of Streetcars on Economics, Equity, and Quality of Urban Life
- **Bright Power, Inc.**
Can Energy Benchmarking Deliver Lower Costs, Higher Quality Utility Reporting to Drive Efficiency in Public Housing? A Survey and Comparative Evaluation