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UP THE CHIMNEY

HOW HUD'S INACTION COSTS TAXPAYERS MILLIONS AND DRIVES UP UTILITY BILLS FOR LOW-INCOME FAMILIES

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ABOUT THE AUTHOR

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The National Consumer Law Center®, a nonprofit corporation founded in 1969, assists consumers, advocates, and public policy makers nationwide on consumer law issues. NCLC works toward the goal of consumer justice and fair treatment, particularly for those whose poverty renders them powerless to demand accountability from the economic marketplace. NCLC has provided model language and testimony on numerous consumer law issues before federal and state policy makers. NCLC publishes an 18-volume series of treatises on consumer law, and a number of publications for consumers.

EXECUTIVE SUMMARY

The Department of Housing and Urban Development ("HUD") provides housing assistance for more than 3 million American families, 1.3 million living in housing directly owned by public housing authorities ("PHAs") and 2 million living in privately owned housing where the owner or tenant receives rental assistance from HUD. These families are the poorest of the poor, with average annual income of approximately $12,000. The families may live in a high-rise housing-authority owned tower in New York City, or a two-family rental unit in Oakland, or a manufactured home in Maine. Yet no matter where they live, these families share in common not only their poverty, but the fact that the buildings they live in are too often poorly insulated and stocked with antiquated appliances that are in need of replacement and upgrading. Whether the housing authority pays some or all of the energy bills, taxpayers lose because money that could be more productively spent on needed capital repairs is being wasted on inefficient consumption of energy. Where the tenants pay the energy bills, they run the risk of having their utilities being terminated for non-payment and living without heat, air-conditioning or electricity—and even being evicted—because the energy bills are unaffordable. And regardless of who pays the bills, we all lose because our dependence on fossil fuels which contribute to greenhouse gas emissions and other environmental and public health problems is exacerbated.

HUD's annual energy bill for its housing programs easily exceeds $5 billion. Yet in its most recent report on the topic to Congress, it reported shaving off only $33 million of that multi-billion dollar bill, 2/3 of 1%. Clearly, HUD can do better for the taxpayers, for the low-income families it houses, and for our warming planet. In the past 18 months, some good initial steps have been taken with funding made available under the American Recovery and Reinvestment Act ("ARRA"), but that funding is time-limited. In the long run, HUD should be able to reduce its energy bill by 20%—representing $1 billion in savings that could be redirected to high-priority investments in the affordable housing stock.

This paper explores the many ways in which HUD can in fact do better, most of them "free" in the sense that they require no additional appropriations to HUD by Congress—although leadership from HUD as well as technical assistance to subsidized housing owners will surely be required. Seven "free" ways to reduce HUD's energy bill are delineated, including:

1. Tapping more effectively into the estimated $4.5 billion utility companies and energy efficiency program administrators spend each year on energy efficiency so that a proportionate share of the funding reaches low-income, multifamily housing;
2. Providing ongoing support to subsidized housing owners that will allow them to coordinate better with the existing low-income Weatherization Assistance Program ("WAP") which pays for insulation and other energy-efficiency related investments in low-income housing;
3. Better coordination between WAP and HUD's Community Development Block Grant ("CDBG") program so that energy

efficiency investments can be more easily piggy-backed on work already being done on the home through CDBG;

4. Providing assistance to smaller housing authorities so they can utilize "energy performance contracts" that are now almost exclusively used by large, well-staffed housing authorities to improve their energy efficiency;
5. Facilitating greater use of energy efficient "utility allowances," thereby providing better incentives for housing authorities and private, subsidized owners to invest in energy efficiency;
6. Collecting much better data on energy usage in HUD-subsidized housing; and
7. Setting and attaining energy savings targets for HUD's housing stock, as Congress has mandated. A 20% savings goal, which could be met over the next decade, would save $1 billion and more annually.

The paper also recommends that HUD set up an Office of Energy Efficiency Implementation with an annual budget of $20 million, whether through reallocation of existing funding or through a new appropriation line in its annual budget. The primary purpose in calling for a staffed Office is to make sure the 3,300 housing authorities and many thousands more of subsidized owners receive the technical assistance they need to achieve the maximum energy efficiency savings that are feasible, while also providing tenant education that will help achieve even greater savings.

UP THE CHIMNEY

HOW HUD'S INACTION COSTS TAXPAYERS MILLIONS AND DRIVES UP UTILITY BILLS FOR LOW-INCOME FAMILIES

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LIST OF ABBREVIATIONS

ACEEE	American Council for an Energy-Efficient Economy
ARRA	American Recovery and Reinvestment Act
CDBG	Community Development Block Grant
DOE	Department of Energy
EEUA	Energy Efficient Utility Allowance
EPA	Environmental Protection Agency
EPC	Energy Performance Contract
FPL	Federal Poverty Level
HUD	Department of Housing and Urban Development
LIHTC	Low-Income Housing Tax Credit
PHA	Public Housing Authority
RECS	Residential Energy Consumption Survey
WAP	(DOE's) Weatherization Assistance Program

LIST OF TABLES

I. EIGHT WAYS HUD CAN DRAMATICALLY REDUCE ENERGY COSTS IN ASSISTED HOUSING

A. Seven "Free" Ways . . .

Substantial energy efficiency investments in assisted housing[1] can lead to major annual energy savings. The federal Department of Housing and Urban Development ("HUD") spends more than $5 billion annually on energy bills for assisted housing, representing more than 15% of its annual budget for such housing. Much of this $5 billion-plus is spent on inefficient energy consumption in old, poorly weatherized buildings with outdated heating systems, and also on refrigerators and other major appliances that can consume two or three times the energy of more modern appliances. Scarce HUD dollars are figuratively going right up the chimney in millions of low-income homes, and taxpayers are paying the bill. If HUD were to succeed in reducing energy consumption by a modest 10%, it could save half a billion dollars annually. A 20% savings, as this paper recommends, would save at least $1 billion annually. Setting such a goal would be fully consistent with the President's goals for increasing energy efficiency and reducing greenhouse gas emissions.[2]

The stimulus funding available under the American Recovery and Reinvestment Act ("ARRA") provides significant funding for energy efficiency measures in the short run, but HUD must plan for long-term investments in energy savings—no one-time investment can respond to the full potential of energy savings in assisted housing units across the country. This paper presents seven steps HUD can take to achieve these long-term, continuous investments in energy efficiency *without* the use of federal dollars or new legislation, and requiring only a small re-allocation or addition to existing HUD staffing:

1. Tapping into the $4.5 billion spent annually by utility companies on energy efficiency so that low-income multifamily housing gets its fair share of that funding
2. Providing ongoing support to help eligible assisted housing owners to access federal weatherization funding
3. Better coordinating the Department of Energy ("DOE") weatherization and HUD Community Block Grant ("CDBG") programs so that energy efficiency investments can be more easily piggy-backed on work already being done on the home through CDBG
4. Providing assistance to smaller housing authorities so they can utilize "energy performance contracts" that are now almost exclusively used by large, well-staffed housing authorities to improve their energy efficiency
5. Facilitating greater use of energy efficient "utility allowances," thereby providing better incentives for housing authorities and private, subsidized owners to invest in energy efficiency

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[1] In this paper, "assisted housing" refers both to 1.3 million units of low-income housing owned by public housing authorities that receive HUD operating subsidies (referred to as "public housing") and the more than 2 million units of low-income housing not owned by public housing authorities but that receive HUD rental assistance subsidies ("rental assistance housing").

[2] Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Recovery" (Oct. 5, 2009).

6. Collecting much better data on energy usage in assisted housing
7. Setting energy savings targets.

These seven steps, detailed at § V, below, will significantly increase energy efficiency investment in assisted housing with a limited commitment of federal funding. The resulting energy savings will benefit HUD, housing authorities, and private owners of subsidized housing. Energy savings will also lead to lower energy bills for tenants, increased tenant health and personal comfort, and decreases in evictions of tenants from public housing—tenants face eviction for failure to maintain utility service even if they are current on rent.[3] Energy use reductions also help meet federal greenhouse gas emission targets,[4] reduce dependence on foreign energy sources, and lessen demands on the electric power grid and supplies of natural gas.

B. . . . and One Funded Way

8. Create and fund an Office of Energy Efficiency Implementation with an annual budget of $20 million, whether through reallocation of existing funding or through a new appropriation line in HUD's annual budget. The primary purpose in calling for a staffed Office is to make sure the 3,300 housing authorities and many thousands more of subsidized owners receive the technical assistance they need to achieve the maximum energy efficiency savings that are feasible.

   This step is detailed in § VI, below.

[3] 24 C.F.R. 982.404(b)(i).

[4] HUD itself notes that "Residential buildings alone account for 20 percent of U.S. carbon emissions." FY 10 budget, p. 23.

II. CONGRESSIONAL MANDATE FOR IMPROVED ENERGY SAVINGS

A. HUD Can and Must Do More to Save Energy

The Energy Policy Act of 2005 requires HUD to "implement an integrated strategy to reduce utility expenses through cost-effective energy conservation" including the "development of energy reduction goals."[5] Congress also directed HUD to file a report with Congress every two years on its progress in implementing its strategy.

In its most recent report to Congress in December 2008, HUD noted that the energy bill for assisted units was slightly over $5 billion annually, including $1.8 billion incurred by public housing authorities ("PHAs") and $3.2 billion in utility allowances for tenants in rental assistance housing.[6] In more recent testimony to Congress, HUD Secretary Donovan stated that HUD's energy bill was $6 billion.[7]

HUD's failure thus far to significantly reduce its energy bill represents a costly failure for taxpayers, for those living in assisted housing, and for our much-needed efforts to reduce greenhouse gas emissions. Even though its $5 billion energy bill represents

[5] Pub. L. 109-58, § 154, 119 Stat. 650 (Aug. 8, 2005).

[6] "Implementing HUD's Energy Strategy: Energy Task Force Report, Submitted Pursuant to Section 154, Energy Policy Act of 2005," HUD, Office of PD&R (Dec. 2008), p. 1. ["Energy Task Force Report"].

[7] Written statement of Secretary Shaun Donovan U.S. Department of Housing and Urban Development Hearing before the Subcommittee on Transportation, Housing and Urban Development, and Related Agencies Committee on Appropriations United States House of Representatives (March 18, 2009), available at: www.hud.gov/offices/cir/test090318.cfm.

18% of HUD's $27.5 billion FY 2009 budget for assisted housing,[8] HUD estimates that it shaved off only $33 million of that energy bill in 2007 through energy efficiency efforts, or 2/3 of 1% of the energy bill.[9] Moreover, 97% of the savings came from just 32 energy performance contracts entered into by PHAs.[10] While HUD has significantly improved its energy savings efforts since release of its 2008 report, HUD has barely scratched the surface of what can be accomplished. Given the age and nature of most of HUD's assisted housing stock, HUD should be aiming for hundreds of millions of dollars in energy savings.

As of its 2008 report to Congress, HUD had not developed any energy usage reduction goals, despite a clear Congressional mandate to do so, reflecting an alarming lack of urgency. Even though HUD is required by law to implement energy savings, in too many areas HUD's 2008 report to Congress states that certain measures be "considered" or "explored" rather than "required" or "implemented." For example, the report states that HUD will "explore" the "feasibility of identifying suggested energy measures in awarding competitive energy points for energy efficiency activities,"[11] HUD "*may* address energy efficiency technical assistance activities supportive of HUD's HOME program" and "program offices *may* award additional points for energy efficiency in rating grant applications." HUD is only "*encouraging* housing providers to use energy saving devices" or is "*considering*" the inclusion of "energy reduction outcomes or goals" [italics added]. Since the 2008 report was issued, HUD has taken some very positive steps forward with ARRA funding, but those efforts must be continued into the future and vastly expanded.

HUD's failure to address the energy efficiency needs of its assisted housing stock places difficult and unnecessary burdens on the low-income families it assists. HUD houses some of the poorest families in the country. Hundreds of thousands (perhaps millions) of those families are responsible for at least some of their utility bills. Housing authorities and HUD-subsidized owners, not the tenants, choose the heating systems, domestic hot water heaters, and, often, the refrigerators and cooking stoves as well. If those systems and appliances are not efficient, tenants are faced with energy bills they cannot afford and the threat of eviction, because under HUD rules tenants who are current on their rent can still be evicted if they fail to maintain their utility service.

HUD must do more to reduce energy consumption as a matter of economic fairness to those who live in assisted housing—and to preserve the limited funding HUD receives for other high-priority needs such as capital repairs and tenant services. Families with incomes at or below 100% of the federal poverty guideline—which includes most HUD-assisted households—who are responsible for their own heating and utility bills spend 25% to 35% of their household income on energy.[12] Families in HUD-assisted properties often live in homes with little or no insulation, and with major appliances that date back decades. Were HUD to implement aggressive

[8] See HUD FY 2010 budget, p. 3, at www.hud.gov/budgetsummary2010/fy10budget.pdf.
[9] Energy Task Force Report, p. 3.
[10] Energy performance contracts are discussed at § V, #4.
[11] Energy Task Force Report, p. 14.
[12] "The Burden of FY 08 Residential Energy Bills on Low-Income Consumers," Economic Opportunity Studies (Mar. 2008) ["Energy Burdens Study"], Chart 4.

programs to install all cost-effective energy efficiency measures, these households would see substantial reductions in their energy bills and increases in their personal comfort. Lower energy bills would decrease the likelihood that these families would face eviction and lose their housing. Even where the housing authority or subsidized private owner pays some or all of the energy bills, investments in energy efficiency will free up money that can instead be directed to needed capital improvements or services tenants desire. Setting a goal of reducing energy usage in HUD housing by 20% is perfectly reasonable and would save the agency at least $1 billion that could be better spent on other high-priority needs.

HUD can also play a useful role in helping to reduce greenhouse gas emissions by achieving reductions in energy consumption. HUD's housing portfolio is heavily weighted with multifamily housing, and multifamily housing represents a disproportionate share of the oldest housing units in the country.[13] Thus, energy use and greenhouse gas emissions can be reduced by a significant percentage, given that most of these older buildings will be highly inefficient. In addition, by freeing up funds that would otherwise pay for inefficient energy consumption, HUD will have more funding to preserve its existing housing stock. It is worth noting that the greenest building is the one that is already built. Existing buildings have embodied energy: the energy required to derive, deliver, and install the raw materials it takes to construct a building. It takes 65 years for a new energy efficient building to save the energy lost when demolishing an existing building.[14] To the extent that reducing HUD's $5 billion energy bill helps the agency to preserve existing assisted housing, this also helps to reduce greenhouse gas emissions.

B. Assisted Housing Tenants Are the "Poorest of the Poor" and Need HUD's Help to Reduce Energy Bills

Public and rental assistance housing serves some of the lowest income households in the nation. To the extent that HUD is spending its quite limited federal funding on inefficient energy consumption, tenants are being deprived of much-needed amenities, services and capital repairs due to the drain that energy costs place on HUD's budget.

HUD's "Resident Characteristics Report" provides detailed income data on assisted households, for various rental assistance housing programs as well as for public housing units.

Public housing tenants nationwide have an average income of $13,318. With an average household size of 2.2 persons, public housing tenants had income equal to 87% of the Federal Poverty Level ("FPL") in 2009. Tenants living in assisted housing (rental assistance certificates and vouchers) have much lower average income in gross dollar terms - $11,390. However, because the average household size is smaller (1.8 persons per household), the average income of $11,390 is 85% of the FPL by family size.

The subset of rental assistance tenants who receive "tenant-based" mobile vouchers

[13] "U.S. Multifamily Energy Efficiency Potential By 2020," Benningfield Group (Oct. 2008), Fig. 2. ("Benningfield Report"). For example, while multifamily housing represents only 12% to 15% of the housing stock built between 1990 and 2009, it represents 25% to 31% of the pre-1940 housing stock.

[14] "Facts about Preservation & Sustainability," National Trust for Historic Preservation.

that can be used at any location that meets the voucher program rules (rather than rental assistance "certificates" and "project-based" vouchers that are tied to the building in which the tenant lives) have even lower incomes as a percent of the FPL. Nationwide, these households have gross household income of $12,614. With an average household size of 2.5 persons, these households lived at 77% of the FPL in 2009.

Overall, as Table 1 shows, those living in public housing, or who receive rental assistance in the form of either voucher or certificates, are desperately poor, with incomes well below the poverty line:

The use of averages, however, understates the depth of poverty among assisted households. A significant percentage of all of these assisted households had incomes less than $5,000 per year in 2009. Between 15% and 18% of these households had incomes less than $5,000 annually, somehow getting by on roughly $100 per week. Indeed, roughly half of all HUD-assisted tenants live with incomes less than $10,000 per year. This is less than 100% of Federal Poverty Level ($10,830) for a one-person household in 2009. At the other end of the income distribution scale, only 12% to 17% of HUD-assisted tenants have annual income of $20,000 or more.

Table 1. Income and Poverty Level: Public Housing, Voucher-based Assistance, Combined Voucher and Certificate-based Assistance (2009)

PROGRAM	GROSS HOUSEHOLD INCOME	AVERAGE HOUSEHOLD SIZE	FEDERAL POVERTY LEVEL
Tenant-based vouchers	$12,614	2.5	77%
Combined Project Based Certificates & Vouchers	$11,390	1.8	85%
Public Housing	$13,318	2.2	87%

Source: 2009 Resident Characteristics Report (RCR), United States.

Table 2. Percentage of Public and Assisted Housing Tenants by Gross Annual Household Income (2009)

PROGRAM	$0	$1–$5000	$5–$10,000	$10–$15,000	$15–$20,000	$20–$25,000	>$25,000
Tenant-based vouchers	4%	11%	32%	24%	14%	7%	8%
Combined Project Based Certificates/ Project Based Vouchers	5%	13%	34%	20%	11%	6%	11%
Public Housing	5%	11%	34%	25%	13%	6%	6%

SOURCE: 2009 Resident Characteristics Report (RCR), United States.

III. ASSISTED HOUSING OFFERS LOTS OF LOW-HANGING FRUIT

A. Overview

While the energy efficiency potential of assisted housing units has not been accurately assessed,[15] it is clear that with proper investment and incentives, assisted housing is a prime source of energy savings and greenhouse gas reductions. As noted in the Benningfield report, a 2004 meta-analysis of 11 state and regional studies performed by the American Council for an Energy-Efficient Economy ("ACEEE") concluded that the mean economic potential for energy efficiency improvements in the residential sector was 25%.[16] Oak Ridge National Laboratory estimates that weatherization of natural gas-heated homes reduces gas use for heating by 32%, and overall gas use (including for non-heating uses) by 23%.[17] Similarly, replacing a 20-year old refrigerator cuts energy consumption by 50% or more,[18] and replacing old boilers or furnaces with modern, efficient units can improve efficiency by 50% or more.[19] Of course, energy savings depend on the characteristics of the assisted housing stock. As described in §§ III. B. and III. C. below, assisted housing is disproportionately poorly weatherized and filled with inefficient heating sources and old refrigerators and other appliances.

B. Public Housing Characteristics Point to Large Energy Savings Potential

Recent activities by PHAs and private owners of assisted housing well demonstrate that investments in energy efficiency in assisted housing can yield very significant savings. In March 2010, the Boston Housing Authority (BHA) announced what it considers to be "the largest energy efficiency overhaul in public housing in the nation's history,"[20] a $63 million program that will reach 4,300 apartments in 13 different developments. The energy manager for the BHA estimates that energy savings at typical developments will be in the 30% to 40% range, given how old and inefficient the current systems are. The BHA will achieve this high level of savings doing nothing more sophisticated in most of the buildings than weather-stripping doors, replacing windows, and replacing or upgrading HVAC systems.[21]

Similarly, a major renovation of an assisted housing property in Washington, D.C.

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[15] However, a very recent addendum to the Benningfield Report estimates the total "achievable energy efficiency potential" in all categories of multifamily housing (including non-subsidized units) at "29% of their energy use, or approximately 650 million therms of natural gas, and approximately 12,000 GWH of electricity." "Addendum Report: U.S. Multifamily Housing Stock Energy Efficiency Potential," Benningfield Group (Apr. 9, 2010), p. 1. That same report (Fig. 9) calculates the greenhouse gas reductions at 2 million tons annually.

[16] Benningfield Report (n. 13, *supra*), p. 19.

[17] "Estimating the National Effects of the U.S. Department of Energy's Weatherization Assistance Program with State-level Data: A Metaevaluation Using Studies from 1993 to 2005," ORNL/CON-493 (Sept. 2005), p. xiii.

[18] "Ka-BOOM! The Power of Appliance Efficiency Standards: Opportunities for New Federal Appliance and Equipment Standards," Report ASAP-7/ACEEE-A091 (July 2009), Fig. 1.

[19] For example, more than one-half the gas-fired furnaces sold in many northern states have efficiencies of at least 90%. Old furnaces often run at efficiencies around 60%.

[20] Andrew Ryan, *A $63M push to retrofit housing*, Boston Globe, March 18, 2010.

[21] Conversation with Dan Helms, Boston Housing Authority Energy Manager, Apr. 27, 2010.

Table 3. Public Housing Units by Census Division (2002)

	PERCENT OF PUBLIC HOUSING UNITS NATIONWIDE	HEATING DEGREE DAYS	COOLING DEGREE DAYS
New England	5%	6,099	570
Mid Atlantic	19%	5,372	863
E. North Central	22%	6,122	933
W. North Central	5%	6,465	1,087
South Atlantic	18%	2,671	2,209
East South Central	6%	3,420	1,808
West South Central	8%	2,370	2,545
Mountain	5%	5,018	1,543
Pacific	12%	3,132	739

Sources: American Community Survey, 2001; Energy Information Administration

carried out by the National Housing Trust/ Enterprise Preservation Corporation in 2008 resulted in a 59% reduction in electricity usage, while also rescuing and restoring 84 dilapidated homes. [22] There is no reason to believe that similar reductions cannot be widely obtained in assisted housing throughout the country.

Public housing is disproportionately located in colder states and is older on average than the overall housing stock in the country. The opportunity for savings is there for the taking, given that older buildings in cold climates offer huge potential energy savings.

Data on the characteristics of public housing units are generally much more robust than for rental assistance housing, so that the following discussion focuses on public housing. Public housing stock is disproportionately located in states with the highest winter energy burdens. As Table 3 shows, four Census Divisions that have more than 50% of all public housing units (New England, Mid Atlantic, East North Central, and West North Central) experience the highest energy burdens as a result of their cold climates (averaging more than 6,000 Heating Degree Days[23] per winter) and relatively high energy prices.

The same regions have the oldest public housing units. In both the New England and Mid-Atlantic census divisions, between 40% and 47% of public housing units were built in 1959 or before, and only 8% were built in the past 20 years. (See Table 4.)

Moreover, the coldest regions also tend to have the oldest and least efficient heating systems, particularly for larger buildings. In the cold Northeast, 43% of the heating systems were installed more than 20 years ago,

[22] For more information about Galen Terrace, go to: www.nhtinc.org/galen_terrace_apartments.php

[23] Heating Degree Days (HDDs) measure the extreme of winter temperatures by summing the difference between average daily temperatures and a prescribed threshold (generally, 65 degrees F).

Table 4. Age of Public Housing Units by Census Division (2002)

DECADE CONSTRUCTED	NE	MA	ENC	WNC	SA	ESC	WSC	MTN	PAC
Total	256,758	632,542	503,757	269,267	515,732	232,360	326,626	158,840	427,790
1990 or later	8%	8%	15%	17%	23%	16%	16%	24%	21%
1960–1989	52%	43%	56%	60%	55%	57%	62%	59%	54%
1959 or before	40%	47%	29%	22%	22%	27%	21%	17%	25%

Sources: American Community Survey: 2002

Table 5. Heating Systems > 20 Years Old in Public Housing by Various Factors

CENSUS REGION		HOUSING UNIT TYPE	
Northeast	43%	1-family detached	0%
Midwest	36%	1-family attached	15%
South	26%	Apartment (2-4)	23%
West	24%	Apartment (5+)	43%

Source: 2005 Residential Energy Consumption Survey

almost double the percentage (24%) of older heating systems in the much warmer West. In buildings with 5 or more units, which are disproportionately represented in the colder states (see Table 7), 43% of the heating systems are more than 20 years old, double or more the percentage for heating systems in smaller buildings. Replacing old heating systems in larger multifamily family buildings, particularly in colder regions, represent low-hanging fruit ripe for the picking.

Public housing in all regions of the country frequently has older heating systems. Moreover, no matter the region or age, public housing extensively uses electric resistance space heating—the least efficient heating source in cold regions. The fact that electric space heating represents the most common heating system in almost every region of the country from 1970 forward represents a major failure of public policy—and may reflect public bidding processes that push PHAs to install the cheapest initial-cost heating system (electric resistance heating) despite the much higher operating costs.[24] Electric resistance space heating is far less common in residential housing as a whole: 40% of all U.S. households

[24] Notably, natural gas has been the most commonly used heating fuel in the Northeast for the past several years, no doubt reflecting that region's extremely high electric costs.

Table 6. Penetration of Most Commonly Used Heating Fuel in Public Housing by Decade of Construction and Census Division (2002)

	NE	MA	ENC	WNC	SA	ESC	WSC	MTN	PAC
Decade of Construction	**Most Commonly Used Heating Fuel**								
1999–2002	Gas (58%)	Gas/ Electric Tied (42%)	Electric (51%)	Electric (64%)	Electric (84%)	Electric (55%)	Electric (68%)	Gas (51%)	Electric (65%)
1995–1998	Gas (38%)	Gas (44%)	Gas (61%)	Electric (68%)	Electric (75%)	Electric (67%)	Electric (68%)	Electric (54%)	Electric (49%)
1990–1994	Gas (43%)	Electric (42%)	Electric (54%)	Electric (53%)	Electric (76%)	Electric (65%)	Electric (55%)	Gas (47%)	Electric (62%)
1980–1989	Electric (43%)	Electric (57%)	Electric (56%)	Electric (70%)	Electric (75%)	Electric (70%)	Electric (66%)	Electric (51%)	Electric (60%)
1970–1979	Electric (44%)	Electric (40%)	Electric (52%)	Electric (56%)	Electric (70%)	Electric (61%)	Electric (66%)	Electric (54%)	Electric (61%)
1960–1969	Gas (45%)	Gas (47%)	Gas (58%)	Electric (60%)	Electric (57%)	Gas (58%)	Electric (53%)	Gas (51%)	Tied (49%)
1950–1959	Gas (49%)	Fuel oil (41%)	Gas (70%)	Gas (50%)	Gas (49%)	Gas (55%)	Electric (60%)	Gas (51%)	Gas (50%)
1940–1949	Gas (40%)	Gas (44%)	Gas (65%)	Gas (63%)	Electric (60%)	Electric (54%)	Electric (59%)	Electric (53%)	Gas (52%)
1939 or earlier	Gas (40%)	Gas (42%)	Gas (61%)	Electric (53%)	Gas (49%)	Electric (63%)	Gas (67%)	Gas (71%)	Electric (54%)

TABLE 7. Pubic Housing Units by Type of Structure and Census Division (2002)*

	NE	MA	ENC	WNC	SA	ESC	WSC	MTN	PAC
20+ units (%)	42%	63%	41%	37%	23%	14%	22%	33%	45%
50+ units %	29%	47%	29%	21%	16%	10%	16%	19%	32%

* In Table 7, all regions except South Atlantic (SA), East South Central (ESC) and West South Central (WSC) have 33% or more of their PHA units in buildings with 20 or more units. The Mid-Atlantic has 63% of its public housing units in these larger (20+) multifamily buildings.
Source: American Community Survey: 2002 public use microdata extract.

Table 8. Energy Star Refrigerators in Assisted Housing*

	NO	YES	DON'T KNOW	TOO OLD TO BE ENERGY STAR[a]
Public Housing				
Northeast (all ages)	23%	15%	7%	55%
Less than 2 years old	50%	26%	23%	0%
2–4 years old	53%	38%	9%	0%
Midwest (all ages)	5%	22%	1%	71%
Less than 2 years old	23%	71%	6%	0%
2–4 years old	14%	82%	4%	0%
South (all ages)	20%	3%	13%	63%
Less than 2 years old	57%	11%	31%	0%
2–4 years old	54%	5%	40%	0%
West (all ages)	16%	29%	15%	40%
Less than 2 years old	15%	59%	26%	0%
2–4 years old	78%	0%	22%	0%
Total U.S. (all ages)	18%	15%	9%	58%
Assisted housing				
Northeast (all ages)	17%	20%	5%	58%
Less than 2 years old	49%	47%	4%	0%
2–4 years old	25%	51%	24%	0%
Midwest (all ages)	14%	7%	14%	65%
Less than 2 years old	13%	48%	39%	0%
2–4 years old	54%	6%	40%	0%
South (all ages)	24%	24%	0%	53%
Less than 2 years old	63%	37%	0%	0%
2–4 years old	36%	64%	0%	0%
West (all ages)	15%	40%	2%	43%
Less than 2 years old	7%	86%	7%	0%
2–4 years old	49%	51%	0%	0%
Total U.S. (all ages)	17%	24%	5%	54%

* Because the most recent reported data is from the 2005 RECS survey, it is likely that the penetration of Energy Star refrigerators in assisted housing has increased, but there is no way of knowing by how much.
Source: 2005 RECS

use electric resistance heating as a main or secondary heating source.[25]

Moreover, in every region of the country, multifamily housing buildings (3 units or more) represent at least 68% of the PHA housing stock, and large multifamily buildings (20 units or more) represent at least 33% of the housing stock (and as much as 63%) in 6 of the 9 Census Division regions. Multifamily housing provides a significant opportunity for substantial efficiency improvements, particularly since it is on average much older than single family units.[26]

C. *Public Housing Contains Older, Inefficient Refrigerators and Other Appliances*

Assisted housing tenants not only live in older buildings with less efficient heating systems, but also use more antiquated appliances and equipment than the average American household. This means that investments in energy efficiency will on average produce larger percentage savings than similar investments in other housing units. A targeted program of replacing major appliances and equipment would yield substantial energy savings. Replacing old and inefficient refrigerators is a good example of what can be achieved.

Refrigerators, especially older refrigerators, are often a housing unit's single largest plug load. Fortunately, over time refrigerator energy consumption has fallen even as size has increased. The average 1975 refrigerator used approximately 1,800 kWh/year and had an average capacity of 18 cubic feet. By 2007, the average capacity was 22 cubic feet (more than 20% larger), yet consumed roughly 500 kWh per year. Just between 2001 and 2007, energy consumption has dropped 30% for refrigerators sold.[27]

The potential for energy savings to replace refrigerators in assisted housing is significant because of the age and size of existing refrigerators in such units. In all regions, approximately 80% to 90% of all public housing and rental assistance households have medium to large refrigerators (15–22 cu. ft.). Moreover, as detailed in Table 8, above, more than half of refrigerators in assisted housing are too old to be Energy Star rated, and even most PHA-purchased refrigerators new enough to achieve that rating did not, as the housing authorities apparently chose to purchase less efficient units.

IV. HUD HAS RECENTLY INCREASED ITS INVESTMENTS IN ENERGY EFFICIENCY—BUT MUCH MORE NEEDS TO BE DONE

The most direct way to invest in energy efficiency in assisted housing is for the federal government to provide financial assistance or to directly participate in those investments. This section briefly describes such federal funding for energy efficiency investments in assisted housing, while the next section lists seven "free" ways in which HUD can

[25] Energy Information Administration, "2001 Residential Energy Consumption Survey," Table 3.

[26] Benningfield Report, Fig. 2. For example, while multifamily housing represents only 12% to 15% of the housing stock built between 1990 and 2009, it represents 25% to 31% of the pre-1940 housing stock.

[27] "KaBoom! The Power of Appliance Efficiency Standards: Opportunities for New Appliance and Equipment Standards," Report ASAP-7/ACEEE-A091 (July 2009).

encourage those investments without additional federal funding.

The Mark to Market Green Pilot operates under the Mark to Market program, which authorizes Section 8 property owners with both HUD insured mortgages and expiring Section 8 contracts bearing above-market rents to restructure their financing and continue to provide affordable housing through the Section 8 program for at least a 30-year term.[28] The Green Pilot, launched in July of 2007, operates within that framework, encouraging Mark to Market owners to also pursue energy efficiency and other "green" improvements to improve health and living conditions for tenants, while minimizing waste and promoting energy conservation.[29]

HUD defines "significant additions" under Mark to Market to include green replacements that reduce energy consumption, thus qualifying the owner for special financial incentives—reducing the owner's share of capital costs to as low as 3%, rather than the normal Mark to Market level of 20%. Owners demonstrating that their property manager has LEED (Leadership in Energy and Environmental Design) certification from the U.S. Green Building Council may receive an increased Incentive Performance Fee up to 50% over ordinary levels. Participating owners have additional incentives in the form of capturing energy cost savings in the form of increased future cash flow, as well as administrative fees for seeking other funding sources.

The Green Pilot also offers HUD the opportunity to collect "benchmark" data from participating owners. As of the last quarter of 2009, approximately 75 properties with 7,000 units are participating, but only a handful have completed improvements and turned on their monitoring equipment.[30]

The American Recovery and Reinvestment Act ("ARRA") includes $4 billion for a "Public Housing Capital Fund" of which $1 billion is allocated for competitively-bid proposals to make "priority investments, including investments . . . for renovations and energy conservation retrofit investments."[31] HUD has set aside $600 million of this amount to "facilitate transformational energy efficiency and 'green' retrofits to substantially increase energy efficiency and environmental performance of public housing properties."[32] To the credit of Congress and the Administration, this represents a significant new investment in energy efficiency, and should be expanded into the future.

ARRA also provides $250 million in grants or loans for energy retrofit and green investments in low-income rental housing receiving assistance from HUD,[33] and HUD uses these funds for the Green Retrofit Program ("GRP") to provide loans and grants for energy retrofits at eligible properties selected by HUD through a competitive process.[34]

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[28] Pub. L. No. 105-65, Title V (1998), codified at 42 U.S.C. §1437f note ("Multifamily Housing Assistance"). For an overview of the Mark to Market program, see www.hud.gov/offices/hsg/omhar/.

[29] *See* HUD, Office of Affordable Housing Preservation, "M2M Green Initiative: The Greening of the M2M Portfolio," (July 20, 2007).

[30] Communication with Theodore Toon, HUD Deputy Assistant Secretary for Affordable Housing Preservation (October, 2009).

[31] ARRA, Pub. L. 111-5, Title XII, 123 Stat. 215 (Feb. 17, 2009).

[32] "Program-Level Plan—Public Housing Capital Fund (Competitive)", available at http://portal.hud.gov/portal/page/portal/RECOVERY/guidelines.

[33] Pub. L. 111-5, Title XII, 123 Stat. 222 (Feb. 17, 2009).

[34] HUD Notice 09-02, Green Retrofit Program for Multifamily Housing (GRP) (May 13, 2009).

Pete Souza, White House photographer

President Obama signs into law the American Recovery and Reinvestment Act of 2009 as Vice President Joe Biden looks on.

With a per-unit cap of $15,000 and an expected average of $10,000, HUD has funding for more than 20,000 units in about 250 properties. In addition to receiving a loan or grant toward the costs of the energy improvements, participating owners receive a pre-development incentive fee of 1% of the estimated costs for the project, capped at $10,000. On completion of the retrofit, owners will receive an additional incentive of 3% of costs, capped at $30,000. Retrofits completed within one year can receive an additional 3% "efficiency incentive," similarly capped, decreasing by 10% of that amount for each additional month required beyond one year. An additional GRP Incentive Performance Fee, payable from operating cash flow, is also available, set at 3% of effective gross income. In addition to proposing qualifying improvements and satisfying project underwriting criteria, owners must agree to extend project affordability commitments by renewing Section 8 assistance for an additional 15 years.

Both the Mark to Market Green Pilot and GRP contain important elements of responsible incentive plans. Owners must establish baseline consumption by obtaining tenant utility bills—unlike public housing, the owner cannot just review and update required allowances. This benchmarking at the project level will be very useful for future policy development. After completion of energy improvements, the owner then determines new lower

allowances. Participating owners are also required to renew their housing affordability commitments for significant periods.

Climate change legislation may also result in increased federal funding for energy investments in assisted housing. The House-passed climate change bill known as the ACES Act[35] creates a Retrofit for Energy and Environmental Performance ("REEP") program with substantial funding for energy efficiency investments in public and rental assistance housing.[36] The actual amount of funding will depend on the value of carbon emissions allowances directed to public and rental assistance housing under REEP. One very positive REEP attribute is that the Environmental Protection Agency and HUD are required to coordinate energy efficiency work under REEP with any housing repair programs that may be funded under other federal programs.[37] As discussed below, HUD can leverage significant energy savings by careful targeting of its Community Development Block Grant ("CDBG") funding to homes in which energy upgrades can be made at the same time. REEP provides funding for both PHA-owned public housing and privately-owned rental assistance units which HUD subsidizes. Should REEP become law, this would be an important step in the right direction for reducing energy consumption in the low-income housing stock.

But HUD cannot wait on the uncertain passage of a climate change bill. Ramped-up, near-term efforts are required. HUD must obtain funding to allow it to implement the recommendations discussed immediately below, either through reallocation of existing funding or through Congressional appropriation. HUD should locate efforts to increase energy efficiency in a separate Office of Energy Efficiency Implementation. (See § VI).

[35] The American Clean Energy and Security Act, HR 2454 (2009).
[36] Id. § 202.
[37] Id. § 202(d)(2).

V. SEVEN "FREE" WAYS TO INVEST IN ENERGY EFFICIENCY

#1. Tapping into Existing Utility Spending on Energy Efficiency

(a) Multifamily Housing Does Not Get its Fair Share of Existing Efficiency Funding

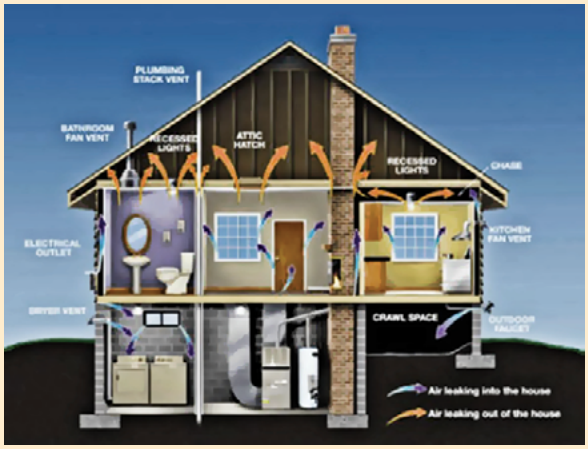
Nationally, gas and electric utilities and other regional energy efficiency program administrators invest an estimated $4.5 billion annually of ratepayer funds on energy efficiency.[38] Little data is collected on the portion of utility energy efficiency spending that goes to multifamily housing, but those familiar with energy efficiency spending report that the multifamily sector is under-served. Residential energy efficiency programs, whether utility or government funded, focus on one-family homes, and secondarily on tenants living in small multi-

[38] "The 2009 State Energy Efficiency Scorecard," ACEEE Report E097 (Oct. 2009) estimated energy efficiency expenditures at $2.5 billion, but this is a conservative estimate because the report excludes some expenditures on low-income energy efficiency programs and programs that are in development or only recently implemented. A more recent report estimates 2009 energy efficiency spending, excluding load management, at $4.5 billion by U.S. electric and gas companies. The authors believe that this estimate is conservative as well. M. Nevius, R. Eldridge, and J. Krouk, "The State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts 2009," Consortium for Energy Efficiency (March 2010), available at: www.cee1.org/files/StateofEEIndustry2009.pdf.

family properties whose building envelope is similar in construction to a one-family home. Large multifamily properties are often a distant third priority, if they are served at all.

Consider the following example. Public Service Company of Colorado, a company with an overall 2010 budget for energy efficiency of $80 million (for residential, small commercial and industrial customers),[39] serves 1.1 million electric and 1.1 million gas customers. Within its low-income residential programs,[40] only 7.4% of the electric energy efficiency budget and 9.3% of the gas energy efficiency budget is devoted to multifamily weatherization. Yet 26% of Colorado households live in multifamily housing,[41] and this percentage is almost certainly larger for low-income households.[42] If PSC of Colorado were to spend its low-income residential energy efficiency funds based on where those families actually lived, it would have to at least triple the current percentage devoted to multifamily weatherization. Yet PSC may well be doing a much better job than many other utilities in terms of serving low-income multifamily housing.

Since residential natural gas deliveries comprise one-third (33%) of all natural gas deliveries (exclusive of gas used for electrical generation),[43] and about one-quarter of



http://2slenergy.com

Ensuring that your home is properly weatherized will help your save energy when the temperatures drop. Insulation also reduces cool air flowing out of your home during the summer months.

families live in multifamily housing, about 8%[44] of all utility company energy efficiency expenditures in the combined residential, small commercial, and industrial sectors should be on multifamily properties. Similarly, just under 40% of end-use electricity sales are to residential customers,[45] and, again, 25% of families live in multifamily housing, so that as much as 10% of electric companies' energy efficiency expenditures should be for multifamily housing. With annual utility energy efficiency expenditures over $4.5 billion (and growing), multifamily housing would receive approximately $340 - $450 million per year if spending was allocated

[39] 2009/2010 Demand-Side Management Biennial Plan, Electric and Natural Gas, Public Service Company of Colorado, docket no. 08A-366EG Revised 2009.
[40] The company does not report its non-low-income expenditures in a way that spending on multifamily can be broken out.
[41] http://quickfacts.census.gov/qfd/states/08000.html.
[42] The average income of renters is roughly half that of homeowners. Benningfield Report, p. 16, n. 16 (citing "The State of the Nation's Housing 2008").
[43] www.aga.org/Research/statistics/annualstats/consumption/EnergyConsumptionSummary.htm
[44] Derived as one quarter of the 33% just mentioned.
[45] Table 7b., "U.S. Regional Electricity Sales," Energy Information Administration.

www.csd.ca.gov

Community Services & Development, a state department of the California Health and Human Services Agency, challenged its existing energy providers to design a program to install rooftop solar systems on low-income homes. The program will result in 1,000 new systems installed on low-income homes throughout California.

proportionately to each sector. While these are only rough estimates, assisted multifamily housing should receive its fair share of the total amount of utility-generated efficiency funding every year.

Moreover, the existing utility company energy efficiency investments in multifamily housing are often narrow in scope, and could be expanded to include measures that achieve deeper energy savings. Those running most residential energy efficiency programs have little experience in the work that must be done in the larger multifamily buildings,[46] and there has been far more technical analysis done of the energy efficiency needs of smaller residential buildings than of multifamily housing.[47] There is tremendous room for growth in utility-funded investments in multifamily housing efficiency.

(b) Advantages of Multifamily Homes as Energy Efficiency Targets

While utility energy efficiency investments focus more on one-family homes and smaller rental properties, there are advantages to serving multifamily buildings. Once a utility company learns how to work effectively in multifamily buildings, it can take advantage of the relatively

[46] Benningfield Report.

[47] For example, Oak Ridge National Laboratory has done a number of studies of energy savings achieved by the Department of Energy's Weatherization Assistance Program ("WAP"), but has not done a study specific to large multifamily housing since 1989. See J. MacDonald, "Description of the Weatherization Assistance Program in Larger Multifamily Buildings for Program Year 1989" (ORNL/CON-329). Its most recent WAP study does not specifically address weatherization work in multifamily buildings. M. Schweitzer, "Estimating the National Effects of the U.S. Department of Energy's Weatherization Assistance Program with State-level Data: A Metaevaluation Using Studies from 1993 to 2005" (ORNL/CON-493).

untapped reservoir of units, making it much easier to reach its energy efficiency goals. A single building can have 100 or more customers, yet the utility will not have to go to 100 separate homes, conduct 100 separate energy audits, and deal with 100 separate contracts.

The untapped potential in multifamily building energy efficiency is huge. More than 25% of all U.S. households live in multifamily buildings.[48] A recent study has found that tapping achievable energy efficiency in multifamily buildings can cumulatively save 51,000 gigawatt-hours of electricity and over 1,440 million therms of natural gas by 2020 with an annual savings of $9 billion and 50 million tons of greenhouse gases.[49]

(c) Examples of Utility Company Energy Efficiency Investments Targeting Multifamily Homes

Massachusetts electric energy efficiency program administrators are slated to expend $1 billion on electric energy efficiency between 2010 and 2012, and have set aside 29% of their low-income efficiency retrofit budgets for multifamily housing with more than four units ($38.6 million out of $133.1 million). The percentage is even higher, 35%, for non-low-income residential energy efficiency ($39.8 million out of $153.2 million).[50] This is a model that other states should follow, and that advocates of affordable multifamily housing should use as a precedent in dealing with utility-funded energy efficiency programs.

A 2008 report from ACEEE[51] lists four exemplary multifamily energy efficiency programs, including the California Statewide Multifamily Energy Efficiency Rebate Program, a collaborative effort among the state's four large investor owned utilities. In common areas, the program provides owner rebates for LED exit signs, occupancy sensors, photocells, high-performance windows, central water heaters, and boilers and boiler controls. Rebates are also offered for efficiency measures associated with individual apartments: efficient ceiling fans, compact fluorescent bulbs, clothes washers, dishwashers, water heaters, natural gas furnaces, and attic and wall insulation. The program exceeded its energy savings goals for 2004 and 2005, the most recent years for which data are available, serving 3,300 properties comprising 168,500 units, or 4% of the California's multifamily units during that time period alone.[52] A critical component of the program is that it overcomes the "split-incentives" barrier by providing savings to both tenants and owners.

(d) HUD's Role

HUD must offer leadership at the national level and meaningful support to its PHA and assisted-owner stakeholders at the local level, with the goal of effectuating change in how utilities allocate their energy efficiency expenditures. Environmental, consumer and low-income groups which have intervened in

[48] U.S. Census Bureau, State & County Quick Facts, http://quickfacts.census.gov/qfd/states/00000.html.
[49] Benningfield Report.
[50] "Massachusetts Joint Statewide Three-Year Electric Energy Efficiency Plan" (July 16, 2009), p. 75.
[51] D. York, M. Kushler, & P. Witte, "Compendium of Champions: Chronicling Exemplary Energy Efficiency Programs from Across the U.S.," ACEEE Report U081 (Feb. 2008).
[52] California had 13.3 million housing units in 2007. Approximately 31% of those units (4.18 million) are in multifamily structures. http://quickfacts.census.gov/qfd/states/06000.html.

utility energy efficiency proceedings before state utility commissions have often succeeded in significantly increasing the amounts of funding for energy efficiency, and also increasing the percentage of that funding that is devoted to the low-income sector. In Massachusetts, key stakeholders (community development corporations, housing authorities, and agencies that deliver WAP) recently carved out a segment of the utility-funded low-income energy efficiency programs targeted to reach large, multifamily properties that primarily serve low-income households. HUD, as a federal agency with significant resources, could be at least as successful if it became involved in energy efficiency proceedings, whether directly or in collaboration with housing authorities, private owners of subsidized housing and other interested stakeholders. In a single utility company proceeding, HUD could succeed in redirecting millions of dollars towards low-income multifamily housing. Here are some specific recommendations:

- HUD at the national level should seek to change spending allocations by utilities and advocate for greater allocations to low-income multifamily properties. As part of this effort, HUD should work with the National Association of Regulatory Utility Commissioners to adopt a resolution recommending a fair allocation of utility energy efficiency spending to the multifamily sector. HUD should also work with the National Association of State Utility Consumer Advocates—the association of state offices around the country that intervene in state utility proceedings—to seek support of individual NASUCA members for equitable allocation of energy efficiency expenditures.
- HUD, in collaboration with the Department of Energy, should engage in a direct dialog with utility industry associations such as the American Gas Association and Edison Electric Institute regarding their members' allocations of energy efficiency funds. With over $4.5 billion spent annually on energy efficiency by the utility industry, even small percentage changes in how these funds are allocated could result in very significant increases in spending for energy efficiency investments in HUD-assisted multifamily housing.
- HUD should also make the case that assisted multifamily housing should be a high priority within the multifamily sector. Investments in HUD-assisted multifamily housing not only achieve society's energy efficiency and greenhouse gas reductions goals, they also promote the equally important societal goals of helping to preserve affordable housing and making that housing more comfortable and livable for the low income tenants.[53] HUD can facilitate this realignment of priorities by conducting green property needs assessments on HUD-assisted properties and supplying the utilities with pre-approved lists of potential participant properties.
- HUD also has an important role in developing the building science and installation

[53] For a discussion of the non-energy benefits of energy efficiency, see J. Amann, "Valuation of Non-Energy Benefits to Determine Cost-Effectiveness of Whole-House Retrofit Programs: A Literature Review," ACEEE Report A061 (May 2006).

methods that underlie energy efficiency work in larger multifamily buildings. Many entities installing energy efficiency measures in single-family dwellings and smaller multifamily family dwellings are not familiar with the types of energy audits that are needed for larger multifamily buildings, nor with best-practice installation techniques regarding, e.g., large heating plants or central domestic hot water systems. By helping to develop the auditing, installation and other technical skills needed for multifamily energy efficiency, HUD will be removing a significant barrier to energy savings in assisted housing. HUD should draw on existing building science experience in the commercial building and large multifamily sectors and help to disseminate that knowledge.

- In addition, HUD, in conjunction with DOE, can develop better evaluations of energy efficiency work in multifamily housing. To date, there is little study of the cost effectiveness of measures installed in multifamily properties, and this may inhibit utility company expenditures for this sector because programs must usually meet a cost-benefit test.

#2. *Helping Housing Owners to Access the Weatherization Assistance Program*

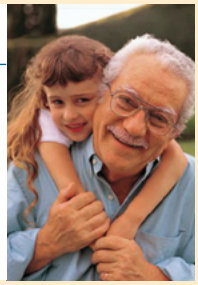
Due to very recent policy changes in how owners of HUD-assisted housing can gain access to the federal low-income Weatherization Assistance Program, HUD should provide additional technical assistance and support to those owners to make sure the new polices are implemented in ways that maximum the benefits to owners and tenants alike.

On May 6, 2009, HUD and the DOE entered into a Memorandum of Understanding ("MOU") intended to increase the use of DOE weatherization funds in assisted housing. DOE then issued a Notice of Proposed Rulemaking that would automatically income-qualify most households in HUD public housing and rental assistance housing for DOE's weatherization program,[54] and finalized the rule on January 25, 2010.[55] At a simple level, the final rule[56] did nothing more than revise the manner in which multifamily buildings are determined income-eligible for WAP. Owners of assisted housing whose properties

2009 Weatherization Program Eligibility

The federal Weatherization Assistance Program began in 1976, and in 2009 the stimulus package expanded eligibility for the program to households whose income falls below 200% of the national poverty level.

PERSONS IN FAMILY	POVERY INCOME LEVEL	TIMES 200%
1	$10,830	$21,660
2	$14,570	$29,140
3	$18,310	$36,620
4	$22,050	$44,100
5	$25,050	$51,580
6	$29,530	$59,060
7	$33,270	$66,540
8	37,010	$74,020



www.humboldtrec.coop/

Source: 2009 Poverty Levels for the 48 contiguous states and the District of Columbia, U.S. Dept. of Health and Human Services, U.S. Department of Energy.

[54] 74 Fed. Reg. 23804 (May 21, 2009).
[55] 75 Fed. Reg. 3847.
[56] Codified as revisions to 10 C.F.R. 440.22, "Eligible dwelling units."

are on a list of properties that have been pre-determined as income-eligible by HUD or the Department of Agriculture will not have to separately determine the income of each household in a multifamily building.

At a more complex level, however, the DOE-HUD MOU brought to the fore an issue that has been largely hidden in the background for many years: how does an owner of multifamily rental housing meet the requirement of the WAP statute that the:

> "benefits of weatherization assistance in connection with such rental units [must] . . . accrue primarily to the low-income tenants residing in such units."[57]

When DOE published the final rule, it suggested that it might provide additional guidance so that owners of properties pre-determined as income-eligible could also meet the separate requirement that the "benefits of weatherization . . . accrue to the low-income tenants."[58] At the urging of low-income advocates, DOE published such guidance on April 8, 2010.[59] While this Guidance constrains the ability of income-eligible multifamily owners to simply obtain WAP funding by asking, it also provides a road map for how those owners can meet the requirement that the benefits of weatherization primarily accrue to the tenants.

If the tenants directly pay for their energy bills, DOE has determined that the requirement is met so long as the WAP-related work directly reduces tenant energy bills. For tenants who do not pay energy bills directly (e.g., those costs are included as part of the rent), the owner will have to demonstrate other ways that the benefits accrue primarily to the tenants, including through:

- longer term preservation of the property as affordable housing for low-income households;
- investment of the energy savings in services that offer measurable direct benefits to tenants;
- investment of the energy savings in specific health and safety improvements with measurable benefits to tenants;
- improvements to heat and hot water distribution, and ventilation, to improve the comfort of residents; and
- establishment of a shared savings program with the tenants.

Both the new lists of pre-determined, income-eligible properties and the Guidance represent new policies at DOE. DOE and HUD should provide additional training and technical assistance so that these policy changes will actually result in greater expenditures of WAP funding in multifamily properties. This would be particularly beneficial in rental assistance properties, where the owners have the option of exiting the rental assistance program and returning the units to the private rental market. As DOE noted in the Guidance, "expanding weatherization into the multifamily housing sector . . . will provide greater opportunities for local [WAP] agencies to serve even more low-income persons."[60] It will also provide an opportunity to expand energy

[57] 42 U.S.C. 6863(b)(5).

[58] 75 Fed. Reg. 3853 (Jan. 25, 2010), col. 3 ("DOE is considering describing . . . other existing procedures in guidance as a non-inclusive list of examples of weatherization benefit accrual to low-income tenants.")

[59] WAP Notice 10-15A, "Guidance Regarding Accrual of Benefits to Low-Income Tenants in Multifamily Buildings Under the Weatherization Assistance Program."

[60] WAP Notice 10-15A, p. 3.

efficiency gains in low-income housing. But to achieve those gains, HUD and DOE must ensure owners of assisted housing are given adequate information, training and support, and that they comply with all legal requirements of WAP.

#3. Better Coordination of CDBG Funding with DOE WAP Funding

HUD's Community Development Block Grant ("CDBG") program provides billions of dollars in assistance annually to municipalities across the country, with 70% of funding benefiting low- and moderate income communities. Much of the funding goes towards repairs and renovations to low- and moderate-income housing.

HUD could significantly improve the energy efficiency of this housing by working with DOE to better coordinate rehab work funded by CDBG and weatherization work funded by DOE's WAP. Many homes cannot be weatherized under WAP because there are limits on the amount of the funding per weatherization job that can go towards needed repairs. For example, if a roof needs major repairs for the weatherization work to be effective, and the cost of the roof repair exceeds the WAP repair limit, the local WAP agency will have to walk away from the job. This can be a particularly frequent occurrence in states with significant numbers of manufactured homes that often need substantial repair work. CDBG funds, however, could be used to complete the needed repairs. Better coordination will increase the number of low-income homes that can access weatherization funding, while reducing the unnecessary, duplicative administrative costs that may arise if a home separately receives CDBG and WAP services at different points in time.

#4. Encourage Smaller Housing Authorities to Utilize Energy Performance Contracts

(a) How Energy Performance Contracts Work

HUD has made progress in facilitating investment in energy efficiency for assisted housing through the use of "energy performance contracts" ("EPCs").[61] HUD regulations provide incentives for PHAs to enter into EPCs which lead to significant reductions in energy consumption.[62] The PHA must finance energy efficiency investments through a source other than HUD funds (such as a bank or an energy service company), must demonstrate that payments under a financing or other agreement can be repaid out of the energy savings, and must obtain HUD approval. Then the PHA can retain the energy savings for the life of the EPC, but must devote at least 75% of those savings to paying off the loan or shared savings contract. It can use the remaining 25% of the energy savings for any eligible operating expense.

However, the experience thus far has been disappointing. HUD's 2008 Status Report on EPCs lists a total of only 183 EPCs entered into since the inception of the program. Moreover, 76 of those contracts were entered into by large housing authorities having at least 1250 units under their control. Conversely, only 17 EPCs (9% of all EPCs) have been entered into by "very small" PHAs (those with less than 250 units), of which there are 2,300 across the country. HUD must significantly increase the use of EPCs by all PHAs by providing auditing and contracting assistance.

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[61] For HUD's "Field Office Review Procedure for Energy Performance Contracting," go to www.hud.gov/offices/pih/programs/ph/phecc/eperformance/epcprotocol.pdf.

[62] 24 C.F.R. 990.185.

The benefits of the EPCs would be reduced PHA energy expenditures, reduced pollution and greenhouse gas emissions, increased expenditures on operating needs benefiting tenants, and, eventually, reduced HUD operating subsidies. One notable example is at the Boston Housing Authority, which recently announced a $63 million renovation, financed over a period of 20 years. The energy savings during those first 20 years will be used to repay the energy performance contractor, Ameresco, so that the Authority will not have to pay anything out-of-pocket. After that period, the Authority expects to save $7 million annually in energy operating costs.[63] Even for small housing authorities, guaranteed EPC annual savings average over $80,000 annually, and at medium PHAs over $200,000.[64]

The total amount invested in energy efficiency through the EPC process was $571 million as of HUD's 2008 report, and the investment per EPC has been more than $3 million. The yearly guaranteed savings from EPCs totaled $102 million as of March 2007. But much more can be done.

(b) Overcoming Smaller PHA Underutilization of Energy Performance Contracts

PHAs entering into EPCs since the program's inception in 2000 have been predominantly those with more than 250 units—as of 2008, over 20% of these larger PHAs have entered into EPCs (167 of approximately 800 such PHAs). Less than 1% of PHAs with fewer than 250 units have entered into EPCs (17 of about 2300 such PHAs).

Smaller PHA underutilization of this program is linked to the complexity of HUD's EPC rules and the challenges these PHAs face either financing energy improvements with a bank loan or negotiating a contract with an energy services company. In addition, energy service companies are likely more interested in working with the larger PHAs. HUD staff in its central and field offices engage in outreach and support to PHAs around energy efficiency issues, but that has not succeeded in facilitating smaller PHAs entering into EPCs. HUD should do more to identify the barriers that so far have kept most smaller PHAs from using EPCs and develop a plan for how those barriers can be overcome.

HUD should establish an Office of Energy Efficiency Implementation ("OEEI") to provide technical and other assistance to PHAs (see § VI) and also revise EPC rules to make it easier for smaller PHAs to obtain EPCs. The OEEI, perhaps by contracting with a skilled vendor, would arrange for detailed energy audits of PHAs and assist the PHA in obtaining contractors to carry out the recommended cost-effective measures.

HUD could set a reasonable target of assisting 10% of its PHAs each year, so that at the end of a decade all PHAs would have been visited. Such an effort might require a dedicated group of 20 to 30 skilled energy professionals, at a cost of perhaps $5 million to $10 million annually. This is a small cost for HUD to incur, given its $5 billion energy bill and the fact that even in small housing authorities, the guaranteed savings per EPC average $80,000, and at medium housing authorities more than $200,000.[65]

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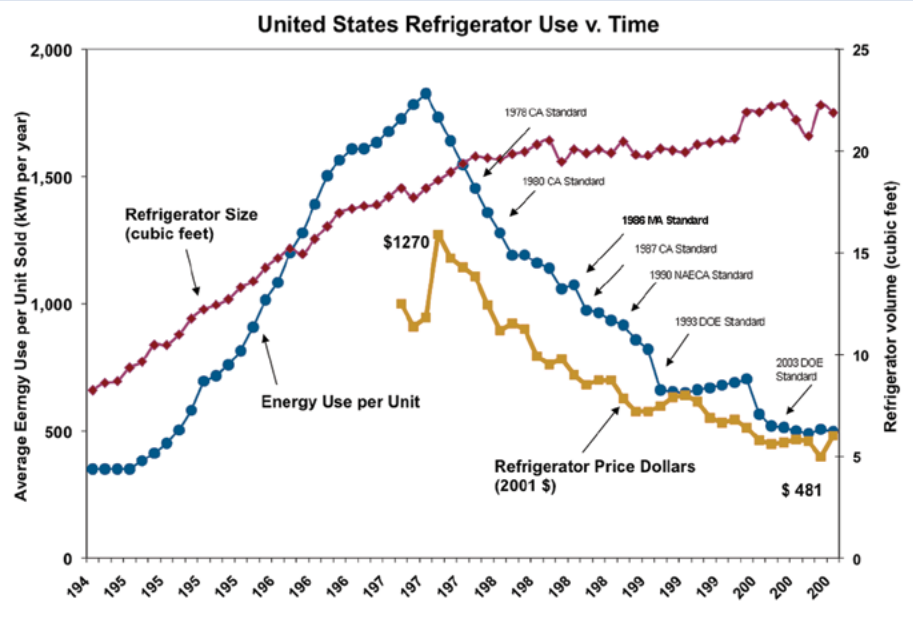
[63] Andrew Ryan, A $63M push to retrofit housing, Boston Globe, March 18, 2010.

[64] "Energy Performance Contracts—Status Report—2008 Report to Congress"

[65] For a discussion of several EPC "Success Stories," go to: http://www.hud.gov/offices/pih/programs/



Due to standards, new refrigerators use high-efficiency motors and compressors, better insulation, and improved heat exchangers, using 70% less energy than refrigerators manuffactured in the 1970s.
Source: Kaboom! the Power of Appliance Standards.

#5. *The Energy Efficient Utility Allowance*

(a) How the Energy Efficient Utility Allowance Works

Most assisted housing tenants pay 30% of their adjusted income on rent and utilities. When the tenant pays for utilities, a "utility allowance" is set that covers "a reasonable consumption of utilities by an energy-conservative household of modest circumstances consistent with the requirements of a safe, sanitary, and healthful living environment."[66] The fixed utility allowance is then deducted from 30% of income to compute the rent. In theory, but often not in practice, when the tenant pays for utilities plus the lowered rent amount, this totals 30% of income—the very purpose of establishing adequate utility allowances.

The present method of computing a utility allowance creates significant disincentives for pursuing energy efficiency improvements. While making tenants responsible for utility costs creates an incentive for the tenant to conserve energy, many factors that contribute most to inefficient usage are outside the tenant's control—unit location, the building's level of insulation, and the age and efficiency of major appliances and equipment purchased by owners. Tenants do not even have an incentive to ask landlords to make changes outside the tenant's control, because these are likely to lead to a reduction in the tenant's utility allowance, so that the tenant will receive no net benefit from the reduced energy

ph/phecc/eperformance/epcsuccess.cfm.

[66] 24 C.F.R. § 965.505(a) (public housing); 24 C.F.R. § 5.603(b) (FHA-subsidized and project-based Section 8 subsidies); 24 C.F.R. § 982.517 (Section 8 vouchers); 26 C.F.R. § 1.42-10 (LIHTC properties, which rely mostly on utility allowances already set by PHAs for Section 8 vouchers in the area).

usage. PHAs and subsidized owners also lack incentive to pursue conservation measures for tenant-paid utilities unless they can be assured that they will result in commensurate reductions in utility allowances, so that the out-of-pocket amount tenants pay for rent increases. Otherwise, the owner has paid out of pocket for an investment that helps only the tenants.

Promotion of an "Energy Efficient Utility Allowance" ("EEUA") can overcome these disincentives. An EEUA encourages PHA and landlord investments in energy efficiency by promising lower utility allowances for improvements that lower tenant utility bills. At the same time, some of the savings are passed on to tenants, so the tenants' total rent and utility payments are reduced, helping to offset what are too often inadequate utility allowances.

California's Public Utility Commission promotes an EEUA for both public and rental assistance housing through its "Designed for Comfort" Efficient Affordable Housing Program. Where a PHA adopts the EEUA, tenant utility allowances are reduced and rents thus increase where owners or developers achieve certain levels of energy efficiency in new or existing affordable multifamily properties.[67] Tenants also benefit because the reduction in the utility allowance (which ends up increasing the tenant's rent payments) is designed to be smaller than the projected energy savings. In essence, the program design allows both the owner and tenant to split the energy savings. The 2006 Designed for Comfort program evaluation found that the program met or exceeded its initial objective that ten PHAs would adopt an EEUA, and efforts in California to promote the EEUA continue.

One assessment found that an EEUA and energy efficiency measures in a 53 unit development in Riverside, California generated more than $11,000 annually in additional return to the property owner.[68] Even with a larger debt service payment for the initial four years (more than enough to cover the additional cost of energy efficiency measures even *without* a utility program incentive), the cumulative residual cash by the 7th year was about $75,866 greater and approximately $181,009 after 15 years.

Tenants also benefited because their utility allowances were not reduced as much as the energy savings. Software certified by the California Energy Commission predicted a 15% reduction in energy use,[69] but the utility allowances were reduced only by an average of 11.25% "to (a) provide a safe and prudent margin based on using estimation tools, and (b) so that part of the direct benefit of the energy efficiency improvements would flow to the tenants rather than giving the landlords all of the economic benefits."[70] That is, if all of the projections proved accurate, tenants would net 3.75% of the energy savings, as their energy bills would decrease by 15% but their utility allowances would only decrease 11.25%.

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[67] "Evaluation of the 2004-2005 Designed for Comfort: Efficient Affordable Housing Program: Final Report," at 2-1, KEMA, Inc (Nov. 2006) (hereafter, DfC Evaluation).

[68] Brown and Benfield, "The Role of Local Governments in Promoting Housing Affordability through Energy Efficiency," *Currents: An Energy Newsletter for Local Governments* (July/August 2004).

[69] Maria Razzo, "Establishing and Implementing the Energy Efficiency Utility Allowance Schedule: Housing Authority of the County of Riverside" (2002)

[70] Id.

A somewhat different approach was taken in Ventura County, California. The *Designed for Comfort* program provided the owner $100 per unit toward a $125 per unit efficiency investment. The EEUA allowed the owner to recapture 75% of the value of the energy savings during the first four years because tenant utility allowances were reduced by that amount. This usually resulted in a 15% to 20% return on investment for the landlord. The tenants receive the benefit of 25% of the energy savings the first four years, and after that, the utility allowance increased to the pre-existing amount, allowing tenants to receive all the energy savings after the first four years.[71]

(b) Ways HUD Can Encourage Implementation

California found that many PHAs were too busy or understaffed to become familiar with the EEUA concept. Another limiting factor in California PHA use of an EEUA was the lack of an explicit HUD endorsement of the EEUA. While HUD publications list promulgation of an EEUA as a PHA "best practice,"[72] no formal HUD directive explicitly approves such allowances.

HUD has another more subtle role in fostering EEUAs. Adoption of an EEUA requires that energy use is reduced enough below the existing utility allowance to justify the investment on a cost-benefit basis. If an initial utility allowance has historically been set too low—below actual use—an energy investment that is justified by the amount it reduces actual use may not produce a sufficient reduction in an EEUA to justify the investment.

Inadequate utility allowances discourage EEUAs in another way. Inadequate utility allowances increase tenant rent payments to the PHA. Implementation of an EEUA may result in a more accurate utility allowance that will reduce rent payments.

A 1991 General Accounting Office report found that more than half of the PHAs surveyed failed to annually review their utility allowances as required by law,[73] and there have been extensive reports of inadequate utility allowances over the years. The current regulatory standard for establishing allowances is inherently vague, and housing providers can base allowances on abstract engineering calculations, rather than upon actual consumption at the property. Instead, HUD should take actions to insure an adequate utility allowance. For example, allowances can be based upon a percentile of actual consumption (e.g., 75th or 80th percentile) where usage by most but not all tenants would fall within the allowances. This would provide fair treatment for most tenants, while excluding the excessive consumption of some households.

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[71] "A Two-Tiered Utility Allowance: Encouraging Energy Efficient Low-Income Housing Construction," Heschong Mahone Group (May 2002); DfC Evaluation, at 2-1.

[72] "Housing Authority of the City of Riverside (California): A new energy efficient utility allowance schedule takes energy efficient buildings into account." *Public Housing Energy Conservation Clearinghouse News* (Mar. –Apr. 2004).

[73] "Assisted Housing Utility Allowances Often Fall Short of Actual Utility Expenses," REPORT TO CONGRESSIONAL COMMITTEE (Vol. I), General Accounting Office (Mar. 1991) at 2. The report is available at: http://archive.gao.gov/t2pbat8/143503.pdf (Volume 1 of 2) and http://archive.gao.gov/d21t9/143504.pdf (Volume 2 of 2).

www.denverhousing.org

The Denver Housing Authority owns or manages over 600 properties of HUD Assisted Multifamily Housing units, located throughout the City and County of Denver and include dispersed housing (scattered family houses or complexes) and high-rise buildings designated for elderly persons and persons with disabilities.

#6. HUD Must Collect More and Better Data

(a) The Lack of Existing Data

Addressing energy consumption in HUD-assisted housing is especially challenging due to the absence of good data: the location and number of buildings by state or region; the building types (single-family, town-house, high-rise, etc.); construction materials (clapboard, brick, masonry, etc.); building age; space heating source (oil, gas, electric; furnace v. boiler) and age of space heating and cooling equipment; water heating loads; age of appliances; energy consumption; tenant v. owner responsibility for various energy bills; and other information. The GAO has noted HUD's lack of basic data regarding energy usage in its assisted properties.[74] Unlike many commercial building managers, HUD does not widely use utility benchmarking to compare energy usage in its assisted properties to similar buildings across the county, which would allow it to identify properties that could improve their energy efficiency.[75]

While HUD is beginning to collect more energy-related data on its housing stock, until very recently it was only collecting information on PHAs' energy expenditures, not actual consumption, and apparently still does not collect data on number of units correlating with those expenditures, nor on unit size, nor types and age of space conditioning equipment. Regarding the rental assistance housing stock, HUD appears to collect no consumption data, whether for tenant- or owner-paid utilities.

The Residential Energy Consumption Survey (RECS)[76] is an important source for data regarding residential energy consumption. However, the sample for public and subsidized housing is so small that no reliable conclusions can be drawn from the data.[77] Moreover, RECS data is collected only every two to four years, and is generally not compiled and released until years after it has been collected. (For example, the recently-released RECS data is based on a 2005 survey). Nor

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[74] "Green Affordable Housing - HUD Has Made Progress in Promoting Green Building, But Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants", GAO-09-46, p. 34 (Oct. 2008).

[75] Id.

[76] http://www.eia.doe.gov/emeu/recs/

[77] In addition, the American Community Survey performed by the U.S. Census Bureau (www.census.gov/acs/www/) no longer collects data specific to public or subsidized housing.

does RECS contain state level data or any data on water or sewer usage. Most critically, RECS data does not provide building or location-specific data that would allow HUD to target resources to those buildings which are likely to yield the most savings at the least cost.

A recent report prepared by the Benningfield Group for the Energy Foundation provides a great deal of useful information about the energy efficiency potential in all categories of multifamily housing (not limited to HUD-assisted multifamily housing).[78] While that report provides some useful policy guideposts regarding which regions of the country have the densest concentrations of multifamily housing, the oldest multifamily buildings, and the largest potential for energy savings, that same report underscores the need for better data collection if that potential is to be realized.

(b) Data HUD Is Presently Collecting

HUD prepares reports on the HOME program: the "SNAPSHOT" and "DASHBOARD" reports.[79] However, the data focuses on spending, number of units and demographics, and not data that would be helpful in identifying buildings that would benefit most from energy efficiency improvements.

HUD's Asset Management system, implemented in 2007, requires PHAs to physically manage and financially monitor their properties individually, rather than lump them together PHA-wide, and creates incentives for PHAs to monitor and control costs (including energy costs) at the project level.[80] Asset Management can provide PHAs with meaningful incentives to reduce energy usage, particularly when combined with utility benchmarking, the latter of which has historically been absent from HUD programs. In late 2009, HUD was scheduled to convene a stakeholder meeting to determine whether and how to establish a utility benchmarking process at the public housing project level as part of its effort to move to project-level asset management, with a target of having utility benchmarking in place by FY 2011.[81] However, it is not clear whether that benchmarking effort has in fact moved forward.

(c) Additional Data That Should Be Collected

An effort to collect consumption and cost information for every property, or for some useful subset of properties, would be extremely helpful for identifying those properties with the greatest potential for cost-effective energy savings. For example, HUD should collect data on the physical attributes of the public and rental assistance housing stock—particularly, number of bedrooms and building type (single family, duplex, less than/greater than 5 units)—as well as information on any heating system (cold climates), presence/absence of central or room air conditioning, whether the utilities are tenant-paid, and whether the units are LEED- or Energy Star-certified. Gathering consumption data by building type, size, age; unit type, size and

[78] Benningfield Report.

[79] These reports can be found on HUD's web page: www.hud.gov/offices/cpd/affordablehousing/reports/

[80] For a high-level overview of asset management, go to http://nhl.gov/offices/pih/programs/ph/am/.

[81] 24 C.F.R. §990.185(c) (2009). See also "Benchmarking Utility Usage in Public Housing," HUD Contract C-OPC-22650, D&R International (Dec. 2007); HUD web page: www.hud.gov/offices/pih/programs/ph/phecc/ubenchtool.cfm

location; climatic zone; metering system; tenant population, etc., could be used both to establish baseline levels at particular properties, as well as typical levels for prioritizing properties needing attention. In order to devise more effective policies to reduce energy consumption in its assisted housing stock, HUD should collect the following information:

- Numbers of units that use different energy sources (natural gas, electricity, fuel oil, propane, or other) for space heating and, separately, for hot water, compiled in a manner that allows sorting by state/location and bedroom size.
- Energy consumption, in a manner that allows for sorting by building size and type and by bedroom size, for the various end uses of space heating, water heating, and miscellaneous electric consumption.
- Average energy costs for the various energy sources, at the site or project level.
- Separation of the costs borne by owners v. tenants, by building.
- Age of major appliances such as water heaters, furnaces/boilers, air conditioners, and refrigerators.
- Date of any renovations or rehab work that included energy efficiency upgrades.
- Water and sewer costs, separating costs borne by owner v. tenant.

#7. HUD Should Set Energy Savings Targets

HUD has never set any energy savings goals either for the units directly under the control of housing authorities nor the privately-owned units in its subsidized rental housing stock— despite the fact that it has been required by law to set "energy reduction goals" since 2005.[82] HUD may have resisted setting goals because it believes it cannot sufficiently influence or control energy usage in the housing it supports with its funding, especially rental assistance housing that is privately owned, but HUD must do better. This paper outlines a number of ways HUD can achieve that very result.

Most studies of energy efficiency work in residential housing report savings in the range of 20% and more. Over time, HUD should be able to reduce its $5 billion energy bill by at least $1 billion. While it is not reasonable to expect HUD to achieve that full savings goal in the space of one or two years, HUD can set an annual savings target of $100 million by 2012—a tripling of its last reported savings, within the next three years—and to increase annual savings steadily each year thereafter. Certainly, HUD has the ability to address energy efficiency needs in PHAs in the near term, and should be able to reduce usage even in privately-owned rental assistance housing in the longer term. HUD's housing stock is generally so old and inefficient that significant energy savings targets could be readily met.

[82] Pub. L. 109-58, § 154, 119 Stat. 650 (Aug. 8, 2005).

VI. CREATE AN OFFICE OF ENERGY EFFICIENCY IMPLEMENTATION

HUD must take aggressive steps to reduce energy usage in assisted housing. This will require leadership from the top of the agency, as well as technical support and assistance from the managers at HUD who interface daily with PHAs and owners of rental assistance housing. The current Administration's leadership and focus on climate change issues, as well as ARRA-funded investments to support energy efficiency improvements in assisted housing, have been promising.

But HUD must institutionalize a commitment to increasing the efficiency of energy consumption in its entire assisted housing portfolio. HUD must seek direct funding for energy efficiency improvements in its regular budget—or else reallocate existing funding that is available. At a minimum, HUD should devote at least $20 million of funding to create an Office of Energy Efficiency Implementation. Approximately $5 million to $10 million of that amount should be devoted to assisting PHAs to utilize the existing rules regarding use of energy performance contracts so as to achieve significant reductions in HUD's energy bill for public housing, with the goal of providing assistance to every PHA in the country that needs such help within a decade. Investments in cost-effective measures will pay themselves back quickly and the net impact on HUD's budget will be positive over time. Approximately another $5 million to $10 million of that amount should be set aside to accomplish similar goals in rental assistance housing: assisting subsidized owners in having energy audits completed and in arranging for contractors to complete recommended energy efficiency improvements. Funding should also be devoted to advocacy efforts within individual states and at the federal level to significantly increase the amount of utility-generated energy efficiency funding directed toward HUD's affordable housing stock.[83]

[83] See the discussion in § V.A, above.

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