



Financing Residential Energy-Efficiency:

**Assessing Opportunities and Coverage Gaps in the
American Recovery and Reinvestment Act of 2009**

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Introduction

The American Recovery and Reinvestment Act of 2009 (ARRA) provides funding for discretionary spending programs and a variety of tax credits to meet the short-term goals of creating jobs and stabilizing the economy, while making a long-term investment in a greener, more energy-efficient economy.

The legislation includes a strong focus on reducing the nation's energy use and greenhouse gas emissions, including funding and incentives for energy-efficient retrofits of residential buildings, which combine the benefits of economic stimulus and reduced energy use with utility cost savings for strapped consumers. Among its many provisions, ARRA provides unprecedented levels of funding for energy-efficiency programs administered by the Department of Energy (DOE), including the Weatherization Assistance Program, which subsidizes energy-efficiency upgrades in residential properties owned or rented by low-income families. The legislation also provides funding for programs administered by the Department of Housing and Urban Development (HUD) to support investments in increased energy-efficiency, particularly in public housing and federally-assisted rental properties.

Congress' decision to channel ARRA funds toward construction jobs that improve the energy-efficiency of older residential buildings is fundamentally sound. Residential buildings are responsible for more than one-fifth of all carbon emissions in the United States,¹ and there is abundant evidence that modest investments in insulation, weather-stripping, and other energy-efficient retrofits can yield substantial reductions in energy consumption and greenhouse gas emissions. Greening residential homes is also cost-effective. The average cost of improvements under the Home Performance with ENERGY STAR program is estimated at \$7,000 per single-family home,² while more modest weatherization efforts average \$2,500 to \$5,000 per unit and generate a 25 to 40 percent improvement in energy efficiency³ as well as lower utility bills each month.

A recent report from the Energy Programs Consortium provides additional evidence supporting the cost-effectiveness of energy-efficient retrofits. This report uses historical data on energy usage as well as assumptions about energy cost inflation and the costs of financing to identify the point at which households at various income levels "break even" – that is, their investments in energy-efficiency measures equal the savings they have achieved through reduced energy use. The report finds that a low-income family (earning at or below 200 percent of the federal poverty level) would "break even" on an investment of \$7,500 that achieves a 30 percent reduction in energy use within a 14-year period, assuming the loan was financed at a five percent interest rate. The use of weatherization grants to cover a portion of the costs would dramatically shorten the payback period.⁴

Despite the substantial progress made in ARRA toward addressing the need for energy-efficient retrofits, the legislation falls short of creating a comprehensive, systemic array of incentives, financing, and

¹ Residential Energy Services Network. 2009. Carbon Cap and Trade. Web Page accessed June 26, 2009. Available at: <http://www.resnet.us/trading/cap.htm>.

² Von Schrader, Chandler, Dale Hoffmeyer, Patricia Pimpton, Ed Thomas, and Katherine Johnson. 2008. "Best Practices and Lessons Learned from EPA/DOE's Home Performance with ENERGY STAR Program." Prepared for the 2008 ACEEE Summer Study conference on Energy Efficiency in Buildings. Available at: <http://www.marketdevelop.com/docs/Best%20Practices%20and%20Lessons%20Learned%20ACEEE%202008.pdf>.

³ Abromowitz, David M. 2008. Green Affordable Housing Within Our Reach. Washington, DC: Center for American Progress.

⁴ Energy Programs Consortium. 2009. Bringing Residential Energy Efficiency to Scale. Washington, DC: Author.

funding to support the wholesale improvement in energy-efficiency of the nation's housing stock. While funding critically needed energy improvements for the very poor and strengthening a tax credit that will benefit primarily the most well-to-do, the legislation does little to help the large group of working families in the middle of the income distribution who have incomes too high to qualify for weatherization but lack the discretionary savings to advance against a strengthened, but still very modest tax credit. The legislation also fails to include sufficient focus on improving the energy-efficiency of multifamily units, which make up one-quarter to one-third of the nation's housing stock.⁵

In May 2009, Vice President Biden called for the Council for Environmental Quality's "Recovery through Retrofit" Interagency Task Force to prepare a set of proposals on ways to expand energy-efficient interventions to benefit middle-class households. The Task Force report promises to "build on the foundation laid in the Recovery Act" to strengthen and expand energy-efficiency initiatives in states and communities across the U.S.⁶ By thinking bigger, and creating a strong set of tools to help this large middle-group finance the energy-efficient upgrades of their homes, the Administration and Congress could achieve a huge downpayment on the nation's carbon reduction goals, while adding additional stimulus to the economy. This paper outlines a number of policies that could help achieve this goal.

Since the inception of the Administration's Interagency Task Force, Congress has also moved forward in developing legislation on climate change and energy policy that contain provisions relevant to energy-efficient retrofits. On June 26, 2009 the U.S. House of Representatives passed the "American Clean Energy and Security Act of 2009," which includes multiple provisions designed to achieve greater energy-efficiency in all sectors. Specific items proposed in the House-passed version of the Act include federal credit enhancement for residential loan portfolios that enable energy conservation; the establishment of the Retrofit for Energy and Environmental Performance program, which would provide modest financial incentives to property owners who undertake energy-efficiency retrofits; and a demonstration program providing temporary increases in project-based rental assistance to help finance energy-efficiency retrofits. Similar legislation is currently under consideration in the Senate. As of the release of this paper, this legislation has not yet been enacted into law.

While ARRA expands the reach of existing energy-efficiency programs, including a tremendous increase in funding for home weatherization, no single policy or program is likely to be sufficient to meet the energy-efficient retrofit needs of all households. Rather, a variety of policy alternatives will likely be needed to help achieve the nation's residential energy-efficiency goals. This analysis reviews many of the tools that will be needed to improve the energy-efficiency of the nation's housing stock.

The first part of this paper describes selected programs included in ARRA that specifically target energy-efficiency in residential properties. (See the Summary Table at the end of the paper for a complete list of programs funded by ARRA that may be used to improve the energy-efficiency of single-family and multifamily homes.) The second part of the paper assesses the extent to which certain segments of the population or housing stock may not be adequately covered by the legislation and makes recommendations for additional policy measures to address the energy-efficiency needs of these households.

⁵ U.S. Census Bureau. 2007 American Housing Survey. The lower range of the estimate counts buildings with 2 to 4 units as single-family units, while the higher-range counts buildings with 2 to 4 units as multifamily units.

⁶ "Vice President Biden Calls for Report on Green Opportunities for the Middle Class." Web page accessed July 23, 2009. Available at: http://www.whitehouse.gov/the_press_office/Vice-President-Biden-Calls-for-Report-on-Green-Opportunities-for-the-Middle-Class/.

Part I. Summary of Programs that can Fund Energy-Efficient Retrofits

ARRA recognizes that energy efficiency improvements made to the housing stock are a cost-effective investment that helps to ensure a sustainable future for residents by reducing carbon emissions, lowering utility costs, and improving the quality and comfort of homes. Several programs included in ARRA received a large increase in funding and prioritize energy efficiency in residential homes. These selected programs are described below in greater detail.

Weatherization Assistance Program

- Administered by the Department of Energy and managed by state partners and local subgrantees
- Provides funding to weatherize single-family and multifamily owner-occupied and eligible rental homes
- Income eligibility rules apply; ARRA raises limits from 150 percent to 200 percent of the poverty level
- ARRA raises average per household assistance levels from \$2,500 to a maximum of \$6,500
- Comprehensive application grant requests were due in May 2009 and distribution of funds allocated under ARRA began in June 2009

One of the most significant expansions in program funding made possible under ARRA is the large allocation authorized for the Weatherization Assistance Program (WAP), which funds modest home improvements that can significantly improve residential energy-efficiency for low-income families. Administered by the Office of Energy Efficiency and Renewable Energy at the Department of Energy, WAP received \$5 billion from ARRA, which are distributed by formula to state partners to provide assistance to eligible homeowners and the owners of rental properties. This allocation is a dramatic increase from program funding levels in prior years, which were never above \$250 million, and the original \$200 million funding level authorized in fiscal year 2009. With this large increase in funding, ARRA also widens the income eligibility parameters for participating households to include any household at or below 200 percent of the poverty level.

While eligibility for this program has always included rental units, apartment buildings, and other types of multifamily units, states have typically focused weatherization activities on owner-occupied single family homes. In fact, in recent years, no more than 21 percent of homes reached through the program have been multifamily units.⁷ However, the assistance provided in ARRA places a greater emphasis on performing energy retrofits on multifamily properties, as compared with previous rounds of funding. This emphasis has been strengthened by a recently-formed partnership between HUD and DOE, which will streamline use of WAP funds for all HUD-subsidized properties as well as those that receive assistance through the Low-Income Housing Tax Credit, primarily by simplifying the income verification process. HUD Secretary Donovan and DOE Secretary Chu recently signed a Memorandum of Understanding formalizing their efforts to coordinate energy retrofit programs in ARRA.⁸

⁷ Web page accessed July 21, 2009. Available at: <http://www.waptac.org/si.asp?id=1226>.

⁸ See <http://www.fhasecure.gov/recovery/doemoucombined.pdf> to view the Memorandum of Understanding.

Energy Efficiency and Conservation Block Grant

- Administered by the Department of Energy and managed by states and localities
- Modeled after the Community Development Block Grant, with a focus on energy-efficiency
- Originally authorized in 2007, but funded for the first time under ARRA
- Eligible parties had until August 10, 2009 to submit grant applications for this funding

Another discretionary spending program funded under ARRA, the Energy Efficiency and Conservation Block Grant (EECBG), is modeled after the Community Development Block Grant program and provides federal assistance to local governments, Indian tribes, states and U.S. territories to make energy-efficient improvements. ARRA provides the EECBG program with \$3.2 billion, which is split into two categories: \$2.8 billion will be distributed by formula to states, eligible localities and Indian tribes, and an additional \$400 million will be allocated through a competitive grant process. Like WAP, this program will also be administered by the Office of Energy Efficiency and Renewable Energy at the DOE.

Program guidance issued by the Department of Energy indicates that states and localities should “look for ways to link their energy efficiency efforts to long-term priorities (especially community economic development, *community stabilization and poverty reduction efforts*).”⁹ Supporting retrofits for low- and moderate-income households would clearly be consistent with this guidance. Nevertheless, a broad range of activities qualify for the EECBG program and competition from other interests may mean that funding may be more difficult for organizations to obtain and use for residential energy-efficient retrofits.

State Energy Program

- Administered by the Department of Energy and managed by state energy offices
- Funds distributed to states by formula
- ARRA waives a 20 percent state matching requirement that applied in previous funding rounds
- Comprehensive applications were due in May 2009 and distribution of funds allocated under ARRA began in June 2009

The State Energy Program received \$3.1 billion for states to use in the form of grants to address their energy priorities and program funding to adopt emerging renewable energy and energy efficiency technologies. Administered by the Office of Energy Efficiency and Renewable Energy at the DOE, funding allocations have already been made to individual states, pending approval of state-submitted plans, based on a formula used in previous funding rounds.

ARRA specifically requires that states use this funding to offer rebates and other incentives for electric and gas utility customers to use energy more efficiently, enact building codes and standards focused on energy-efficiency at the state and local levels, and prioritize funding of energy efficiency and renewable energy programs, including energy-efficient retrofits of buildings and industrial facilities. Similar to the Energy Efficiency Conservation Block Grant, competition from other interests may mean that this funding may be more difficult for organizations to receive and use for energy retrofits in residential homes.

⁹ Emphasis added. See http://www.eecbg.energy.gov/downloads/DE_FOA_000013_Amendment_000003.pdf to view the Notification of Funding Availability and related guidance.

Public Housing Capital Fund

- Available on a formula and competitive basis to public housing authorities
- Priority given to projects that leverage private sector funding for energy-efficient renovations and conservation as well as projects already underway
- All funds must be obligated within a year of receipt, and 60 percent of funds must be spent within 2 years

ARRA makes available a total of \$4 billion for public housing. This funding is split into two categories: \$3 billion has been awarded by formula to meet needs identified in public housing capital plans, while \$1 billion is being awarded on a competitive basis to support eligible activities as specified in the notification of funding availability¹⁰, including: Improvements addressing the needs of the elderly and/or persons with disabilities; the transformation of public housing; providing gap financing for projects that are stalled as a result of financing issues; and the creation of energy-efficient, green communities. For energy-efficiency measures, per-unit maximum funding limits of up to \$3,000 apply and vary based on the size of the public housing authority.

HUD began accepting applications for competitive public housing grant funding on June 22, 2009. While the deadline for applications related to other eligible activities was August 18, HUD stopped accepting applications for funding pertaining to the creation of energy-efficient, green communities as of July 21, 2009. HUD allocated the \$3 billion in formula funds to grantees on February 25, 2009.

Assisted Housing Stability and Energy and Green Retrofit Investments Stimulus Program

- Administered by the Department of Housing and Urban Development
- Funds support energy-efficiency measures in developments that receive federal project-based assistance
- Awards available for eligible properties on a first-come, first-served basis; eligible property owners needed to submit an application no later than June 15, 2009 to be considered for funding

The Assisted Housing Stability and Energy and Green Retrofit Investments Stimulus Program (also referred to as the “Assisted Housing Green Retrofit Program”) is another program created for eligible property owners who receive project-based assistance through the Section 811, Section 202 and Section 8 assisted housing programs. This program provides funding to help owners make green retrofit investments to their properties. ARRA included \$250 million for this program, which will be administered by the Office of Affordable Housing Preservation at HUD.

ARRA specifically notes that physical and financial analyses of the properties will be required to determine the size of each loan, and that the terms of each grant will include continued affordability requirements for multi-family properties.

¹⁰ See <http://www.hud.gov/offices/pih/programs/ph/capfund/ocir/recoverynofa.pdf> to view the Notification of Funding Availability.

Residential Energy Efficiency Tax Credit

- Supports energy-efficient investments in owner-occupied homes
- ARRA increases the tax credit to 30 percent of eligible costs, providing up to \$1,500 per residence
- Available to homeowners at all income levels

As previously noted, ARRA also includes a wide variety of tax credits. One specific tax credit, the Residential Energy Efficiency Tax Credit, was expanded under ARRA to provide incentives for energy efficiency improvements made in existing homes. This is a personal tax credit that allows homeowners to claim 30 percent of the costs of most equipment and some related installation costs associated with energy efficiency improvements in their primary residential dwelling. This tax credit was capped at \$1,500 per residence.

For a complete listing of discretionary programs and tax credit provisions included in ARRA that list energy retrofits as an eligible activity, please see the Summary Table at the end of this paper.

Part II. Opportunities for improvement

With the energy-efficiency provisions included in ARRA, the Administration and Congress have taken important steps to broaden the scope and reach of existing weatherization and energy retrofit programs. Nevertheless, current initiatives leave out several key groups that – without incentives – may be unwilling or unable to undertake energy-efficiency improvements.

The following section outlines coverage gaps and offers policy recommendations to help address these gaps, including innovative financing instruments, tax credits that help to leverage public spending with private financing, and other tools. Recommendations are organized by market segment, starting with moderate-income owners of existing homes and then continuing with a focus on rental housing, including owners of rental properties that receive federal project-based assistance and owners of rental properties that do *not* receive any subsidy or who rent to tenants with Housing Choice Vouchers.

Because of the large amount of funding included in ARRA for an expansion of the Weatherization Assistance Program, which focuses on assisting low-income homeowners, this paper does not specifically address additional programs targeted to this population. However, even with the weatherization program operating at full capacity, the energy-efficiency needs of many households in this segment of the market will likely remain unmet. States and localities may wish to consider combining the programs discussed below with other available assistance to create a comprehensive package of resources that can help families at all income levels improve the energy efficiency of their homes.

See Table I for a summary of market segments directly addressed, indirectly addressed, and not addressed by ARRA, and recommended next steps.

Table I.

	Owner-Occupied Properties	Rental Properties
Market segments <i>directly</i> addressed by provisions in ARRA	<p>Higher-income homeowners</p> <ul style="list-style-type: none"> Eligible for Residential Energy Efficiency and Renewal Energy tax credits; generally do not need upfront assistance to undertake energy-efficient retrofits <p>Low-income homeowners</p> <ul style="list-style-type: none"> Eligible for assistance under the Weatherization Assistance Program 	
Market segments <i>indirectly</i> addressed by provisions in ARRA	<p>Moderate-income homeowners</p> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> Strengthen the Residential Energy Efficiency Tax Credit Offer tax credit advances to cover up-front costs Provide innovative financing options 	<p>Affordable properties that receive project-based assistance</p> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> Encourage the use of Weatherization Assistance Program Funds for properties receiving project-based assistance Adopt Energy Performance Contracting to finance improvements in properties receiving project-based assistance Re-visit limitations on the annual distribution of project net cash flow
Market segments <i>not</i> addressed by provisions in ARRA		<p>Market-rate and luxury rental properties*</p> <p>Affordable, unassisted rental properties (including those with Housing Choice Voucher-holders as tenants)</p> <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> Encourage the use of Weatherization Assistance Program Funds for affordable rental homes Create a residential energy efficiency tax credit for privately-owned unassisted rental properties Provide low-interest loans in exchange for owner commitment to continued affordability

* Policy recommendations for this segment of the market are mostly beyond the scope of this paper.

1. Moderate-Income homeowners

According to the 2007 American Community Survey, roughly 15.6 million homeowners have incomes that fall between 80 and 120 percent of the \$63,059 national median income – or \$50,450 and \$75,760. While these families may have limited room in their budgets for the up-front costs of energy-efficient retrofits, their incomes far exceed allowable limits for the Weatherization Assistance Program – the main source of support for basic energy efficiency improvements in owner-occupied homes. As noted above, income limits for this program were increased to 200 percent of the poverty level in 2009, but the maximum limit still reached only \$36,620 for a three-person household and \$44,100 for a four-person household.¹¹

While the direct spending provisions in the stimulus bill apply only to programs that serve low-income families, the tax credits for energy efficiency improvements and renewable technologies do not carry any income restrictions. However, these benefits are likely to have only limited impact on moderate-income homeowners for several reasons, including:

- *Inadequate financial incentives* – While ARRA increased the amount of the Residential Energy Efficiency Tax Credit from 10 to 30 percent of costs (up to a \$1,500 maximum credit), it's unlikely to be a large enough boost to convince moderate-income homeowners to advance \$5,000 or more of their limited savings to pay for energy-efficient improvements. While the expanded credit may provide a meaningful change in incentives for some segment of the population, its impact and use is likely to be among much higher-income households.
- *Limitations on eligible costs* – As currently structured, the tax credit may be applied to the cost of new equipment but covers installation costs for only a subset of that equipment. For example, while certain windows and doors qualify for the tax credit, the credit does *not* cover the cost of installing windows and doors. Similarly, the tax credit may cover up to 30 percent of the cost of insulation and roofing materials, but the cost of installing these materials – a large portion of the necessary costs of cost-effective energy retrofits -- does not qualify. In contrast, the tax credit may be applied to the cost of purchasing *and* installing eligible HVAC equipment.¹²

The State Energy Program presents another opportunity for states and localities to invest in energy-efficiency retrofits for moderate-income homeowners. The program, which is administered by the Department of Energy, receives \$3.1 billion through ARRA that state energy offices may use in a variety of ways to address their energy priorities. In theory funds could be used for programs that support greater energy-efficiency for moderate-income homeowners, and some states, including Connecticut and Washington, have allocated part of their award to expanding home weatherization programs. Notably, the State of Washington's application includes efforts to "expand [weatherization] program service delivery to homeowners with incomes too high to qualify for low income programs but too low

¹¹ Alternatively, states may choose to set the income eligibility limit at 60 percent of state median income.

¹² A full list of eligible installation costs is available on the Energy Star website at http://energystar.custhelp.com/cgi-bin/energystar.cfg/php/enduser/std_adp.php?p_faqid=2426&p_created=1145981147&p_sid=rBQTz1sj&p_accessibility=0&p_redirect=&p_lva=&p_sp=cF9zcmNoPTEmcF9zb3J0X2J5PSZwX2dyaWRzb3J0PSZwX3Jvd19jbnQ9MjgsMjgmcF9wcm9kc0zMTlmcF9jYXR.

to make major energy efficiency home improvements without assistance.”¹³ However, an initial review of plans for the first round of funding suggests that other initiatives, such as investments in energy-efficient technologies for state buildings and facilities, may take precedence in many states.¹⁴

Policy options for moderate-income homeowners:

A. Strengthen the Residential Energy Efficiency Tax Credit

While the Stimulus Bill extended and made significant improvements to the Residential Energy Efficiency Tax Credit, further changes could be made to enhance its effectiveness. In the current economic climate, homeowners at moderate-income levels – and even many higher-income households – have limited cash on hand and diminishing home equity to draw on to cover the upfront costs of energy efficiency renovations and retrofits. Adjustments to broaden the scope of the current tax credit might induce more moderate-income families to make cost-effective improvements that fit within their budgets.¹⁵ Policy options include:

- *Increase the reimbursement rate* – Holding the maximum credit at \$1,500 but increasing the reimbursement rate to cover a larger share of costs could increase the attractiveness of the credit for moderate-income families who may be able to make only modest, lower-cost improvements. For example, by increasing the reimbursement rate to 50 percent, homeowners could maximize use of the credit with a \$3,000 investment; by increasing the rate to 75 percent, a \$2,000 intervention would let households claim the full credit. Since even modest investments in insulation, weather-stripping and other low-tech solutions can lead to large increases in energy efficiency, these larger reimbursement rates would still catalyze important energy improvements. These investments could be expanded by marrying the credit with other assistance offered by states and localities. And once families have a strong incentive to get an energy audit that provides them with an analysis documenting the benefits that could accrue from weatherization, they may well choose to finance supplementary improvements to generate additional utility cost savings.
- *Broaden installation eligibility* – The existing legislation limits installation cost coverage to renewable technologies (solar panels, geothermal heat pumps, etc.) and big-ticket items such as heating and cooling systems and water heaters. Extending installation coverage to all eligible equipment would help moderate-income homeowners cover installation costs for lower-tech improvements like caulking and adding insulation, which are not currently eligible.

¹³ Washington’s Application to the United States Department of Energy: State Energy Program. Web page accessed July 10, 2009. Available at <http://www.cted.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=7348&Mid=863&wversion=Staging>.

¹⁴ Based on a review of funding new releases issued by the Department of Energy, accessed July 10, 2009 and available at http://apps1.eere.energy.gov/state_energy_program/news.cfm.

¹⁵ Making the Residential Energy Efficiency Tax Credit refundable would provide an additional incentive to very low-income families with little or no tax liability, but could present an obstacle to adoption by Congress where refundable credits face a particularly high level of scrutiny. An additional recommendation to introduce a similar tax credit for the owners of rental properties is discussed in the subsequent section.

- *Match the benefits for renewables* – As Lori Bamberger has noted,¹⁶ homeowners interested in installing renewable technologies enjoy tax incentives that are much more robust than those offered for energy-efficiency improvements. Indeed, ARRA stipulates that homeowners who undertake eligible activity related to renewables may claim a 30 percent tax credit with no maximum (as compared with the \$1,500 cap on energy-efficiency improvements). Most low- and moderate-income families cannot take advantage of renewable technologies, even with tax credits, because of their high upfront cost, but could undertake more modest energy-efficiency upgrades.

B. Offer tax credit advances to cover up-front costs

Apart from its energy-efficiency provisions, the stimulus bill offers an \$8,000 tax credit to first-time buyers who purchase a home by the end of 2009. The Department of Housing and Urban Development recently issued guidance enabling qualified borrowers to receive a “tax credit advance,” or low-cost short-term loan in the amount of the credit, from state housing finance agencies and certain non-profit organizations.¹⁷ “Monetizing” the tax credit provides upfront cash that borrowers can apply towards their downpayment and closing costs or to buy-down mortgage interest rates, allowing them to benefit immediately rather than having to wait to claim the credit until they file taxes next year.

Establishing a similar program for homeowners interested in the Residential Energy Efficiency Tax Credit would help to make energy-efficiency rehab more accessible to moderate-income homeowners. As noted above, under the provisions in ARRA, homeowners who undertake eligible improvements may claim a personal tax credit covering 30 percent of the associated costs, up to \$1,500 per residence. In cases where an energy audit indicated the need for energy-efficiency improvements costing at least \$5,000 (the amount at which homeowners can maximize the tax credit), a low-cost bridge loan in the amount of the credit would help borrowers on tight budgets to cover the up-front costs associated with many energy-efficiency measures. The tax credit could also be used as the downpayment toward larger loans that would finance the full cost of improvements, allowing families to benefit from increased utility cost savings with which to pay back the balance owed.

C. Provide innovative financing options

The purchase of an existing home presents a particularly important opportunity for the new owners to make energy-efficient improvements. Homeowners can usually recoup the upfront costs associated with energy-efficiency improvements in a relatively short period of time, through reduced energy consumption and lower utility bills. However, many moderate-income homeowners lack the funds to cover these upfront costs – particularly for larger investments – and traditional lending instruments make it difficult to affordably finance improvements. Expanding the availability of loan products that currently reach a limited audience could help make energy efficiency more accessible to these families. States and localities may wish to consider providing incentives to promote the use of such products

¹⁶ Bamberger, Lori. 2008. *Greening the American Dream: Saving Homes by Saving Energy and Turning Carbon into Cash for Middle Class Families and Communities*. San Francisco, CA: Lori Bamberger Consulting, Inc.

¹⁷ HUD’s guidance stipulates that “*fees and costs that total more than 2.5% of the anticipated credit are considered excessive.*”

among qualified borrowers or other resources to augment families' purchasing power to help cover the cost of energy-efficient upgrades that may be completed before the new homeowners relocate.

Several innovative financing mechanisms to fund energy-efficient improvements are discussed below. In addition to helping cover the increased costs of renovations made at the time of purchase, many of these products can be used to help existing homeowners improve the energy-efficiency of their homes.

1. Energy Efficient Mortgages (EEMs) allow homebuyers or owners who are refinancing to add the cost of energy-efficiency improvements to the loan, providing lower-cost financing payable over the term of the mortgage. A variation on this theme is to provide a second mortgage to finance the improvements, while leaving the first mortgage intact. Typically, lenders set aside funds for the retrofits in an escrow account until any renovations or improvements have been completed. Some EEM programs also require pre- and post-rehab audits or inspections to assess initial efficiency levels and verify that improvements have been implemented in compliance with program requirements.¹⁸

While energy efficient mortgages are not new, they have not yet "broken into" the broader market in a meaningful way. Several existing programs provide models upon which a more widely-available EEM product could be based, including loan insurance available through the Federal Housing Administration¹⁹ and Veterans Administration and EEM guidelines issued by Fannie Mae and Freddie Mac. Some private lenders also offer "green" mortgages, although they have yet to obtain a significant market share.²⁰

Existing EEM instruments offer several mechanisms through which borrowers can qualify for financing that rolls in the cost of energy-efficient improvements. By expanding use of such measures, more families can qualify for assistance.

- *Disregard cost of improvements for loan qualification purposes* – In some cases, moderate-income households might not qualify for home purchase or refinance loans after adding in the cost of energy-efficiency improvements. Some EEMs disregard the added cost of improvements for loan qualification purposes, on the assumption that reduced utility costs will keep payments within families' budgets. Programs may also exclude the cost of improvements from the downpayment calculation (i.e., to meet a 20 percent downpayment requirement on a mortgage of \$100,000 + \$20,000 in energy-efficient improvements, a borrower would be responsible for only \$20,000 down, not \$24,000).
- *Adjust effective income by projected energy cost savings* – Rather than adjusting the loan amount for qualification purposes, some EEM programs count anticipated energy cost savings towards the borrowers' income, helping them to qualify for a larger loan that includes the cost of improvements.

¹⁸ Similar programs are available for new construction, allowing greater latitude for borrowers who demonstrate that their homes exceed model code requirements. This discussion focuses on existing homes as a means to help address neighborhood stabilization goals.

¹⁹ Recent increases in loan limits may help to broaden the reach of all FHA products, including those that finance energy efficiency improvements.

²⁰ See, for example, the Energy Savings Loan offered by Grand Rapids lender Northpointe Mortgage.

- *Adjust home value to reflect expected efficiency improvements* – Energy-efficiency improvements are generally believed to enhance both the livability and the value of existing homes. Some EEMs account for projected increases in home value as a result of scheduled renovations and retrofits. If home values have not fallen too far, this feature could help homeowners who have become “underwater” on their mortgages to qualify for refinancing at currently-available lower interest rates.

Energy Programs Consortium’s Energy Star® Mortgage Program

Available in a small but growing number of states through a public-private partnership between the nonprofit Energy Programs Consortium, the U.S. Department of Energy and Environmental Protection Agency, and state energy and housing agencies, Energy Star-branded mortgages allow borrowers to obtain low-cost financing for energy-efficiency improvements, provided the improvements yield a 20 percent reduction in the home’s energy consumption. (The product may also be used to purchase a new home that meets Energy Star qualifications.) Energy-efficient mortgages build the cost of rehab or retrofits and projected savings into the loan; the private lenders that offer an Energy Star mortgage product agree to provide additional borrower incentives, such as closing cost assistance, a discounted interest rate, or other financial benefits. Borrowers must work with state-approved auditors to complete an energy audit prior to the rehab, and the cost of the audit may also be built into the mortgage.

The flexible and innovative design of the Energy Star mortgage allows it to address many of the barriers that previously prevented other energy efficient mortgages from gaining greater popularity. For example, by offering incentives for owners to take out the mortgages, participating lenders provide a “net benefit” to borrowers, resulting in a competitively-priced product that may allow homeowners to retrofit their homes at a cost comparable to that of simply refinancing without any renovations. (The Energy Star product may also present an opportunity for borrowers with high-cost mortgages to refinance into a lower-cost loan; the combination of lower interest rate and energy savings results in a more sustainable homeownership scenario.) Finally, because the Energy Star mortgage is structured as an add-on to lenders’ existing purchase or refinance products, lenders may use their own underwriting standards, resulting in greater lender acceptance.

Learn more about the Energy Star Mortgage at <http://energyprograms.org/energystar/index.html>.

Potential barriers to adoption of Energy Efficient Mortgages

A recent evaluation of HUD’s Green Building efforts by the Government Accountability Office²¹ revealed several barriers that may prevent more widespread use of the FHA products – barriers that may apply to EEMs in general.

- *Added time* – For programs that require inspections by a rater before and/or after the improvements have been carried out, the additional time associated with these inspections has been identified as a potential obstacle to their widespread use. However, the recent

²¹ United States Government Accountability Office. 2008. Green Affordable Housing: HUD Has Made Progress in Promoting Green Building, but Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants. Washington, DC: Author. Available at: <http://www.gao.gov/new.items/d0946.pdf>.

slowdown in home sales could serve to mitigate this concern, with real estate agents more likely to accept delays that help to close sales in a slumping market.

- *Availability of qualified raters and contractors* – Lenders may require that audits be carried out by a Home Energy Rating System (HERS) accredited rater or that work be conducted by a certified contractor. This requirement also presents an opportunity for training unemployed or underemployed citizens.
- *Insufficient loan limits for energy efficient improvements* – FHA’s EEM caps eligible expenses at either \$4,000 or 5 percent of property value (up to \$8,000) – an amount that HUD officials interviewed for the GAO report felt “may be too low to attract many potential users.” While modest measures such as insulation and caulking can indeed generate significant energy savings, some homeowners may prefer to make more visible but costly improvements, such as installing energy-efficient windows, which both improve energy efficiency and boost property values.

A recently-released FHA product, the Streamlined 203(k), helps to overcome some of these limitations by raising loan limits to \$35,000 and eliminating the need for a home inspection. The Streamlined 203(k) may be used to finance a set of less-intensive improvements, including weatherization and replacement of windows and doors. Unlike the other EEMs, however, borrowers must have incomes sufficient to qualify for the additional energy efficiency rehab funds included in the loan.²²

- *Lack of performance data* – While considerable research has been undertaken to demonstrate the benefits and financial payoff of energy improvements, there are few universally agreed-upon standards and benchmarks that may be used to measure the reduction in energy consumption that property owners, lenders, and other interested parties should expect to achieve through specific interventions.
- *Lack of awareness about EEMs* – A critique of HUD’s energy efficient mortgage programs issued by the Federation of American Scientists identifies lender and borrower lack of awareness as “the most prominent obstacle to [the] market success” of EEMs. The GREEN Act of 2008 called for “green banking” centers to educate prospective borrowers about energy efficient mortgages and home improvements.²³

Expanding on currently available products and broadening funding and eligibility for loan guarantee programs could help to increase the accessibility and market share of EEMs. Notably, the Federal Housing Administration recently issued guidance that would enable lenders to increase mortgage amounts by five percent for borrowers who intend to use the money to undertake improvements

²² See the July 2009 issue of *Insights*, a publication of the Comptroller of the Currency, to learn more about the 203(k) program. Web page accessed August 12, 2009. Available at: http://www.occ.gov/cdd/203k_Loan_Program_Insights_Jul09.pdf.

²³ The Federal Association of Scientists’ paper offers additional recommendations regarding establishment of an EEM program, including: (1) study why EEMs have not gained substantial market share to date, (2) work with the media and private enterprise to disseminate information about EEMs, (3) establish goals for green banking centers, (4) update the standard for Energy Efficient Homes. See also “Understanding and Overcoming the Energy Mortgage barrier: Financing Energy Improvements in Existing Homes” for additional recommendations.

that substantially enhance home energy-efficiency. In addition, the HUD FY 2010 Budget proposal includes a request for a \$100 million Energy Innovation Fund, intended “to catalyze a residential energy retrofit and new construction market” in the US. The proposed Fund includes \$25 million to help “re-engineer” the Federal Housing Administration’s EEM and improve its affordability, accessibility, and attractiveness to consumers. If approved, the funds will help to “streamline the energy audit and retrofit process,” and develop new second mortgage products and Title I (FHA-insured home improvement) loans.²⁴

2. Interest rate buy-down programs make it more affordable for borrowers to finance energy-efficient improvements through public subsidies that reduce interest rates on loans issued by participating lenders. Several states have implemented energy-efficiency interest rate buy-down programs, including New York (profiled below), Louisiana,²⁵ and Alaska,²⁶ offering repayment periods ranging from one to 15 years and interest rate reductions from 25 to 650 points.²⁷ These state-level programs provide a model for a new federal program that could help expand access to such lower-cost financing. Some of the considerations relevant to designing a state or federal program of this nature include:

- *Amount of interest rate reduction* – Interest rates may be reduced by a fixed amount (i.e., 200 points below the normal interest rate) or an amount that varies depending on the scope of the proposed improvements. For example, owners of existing homes who participate in Alaska’s Energy Efficiency Interest Rate Reduction Program can receive incrementally larger interest rate reductions depending on the level of efficiency achieved. Energy ratings conducted before the project is initiated and after completion must be submitted to the loan servicer.
- *Period of the buy-down* – Most programs limit the interest rate reduction to no more than ten years, although the term of the loan may extend beyond that period at an unsubsidized rate. In cases where buy-downs are applied to longer-term loans, borrowers should be made aware about potential increases in their monthly payments.

New York Energy Smart Loan Fund

The New York Energy Smart Loan Fund, one of many programs administered by the state's Energy Research and Development Authority (NYSERDA), provides an interest rate reduction on loans from participating lenders used to finance energy-efficiency measures and renewable technologies. In most parts of the state, borrowers receive a reduction of four percentage points (400 basis points) below the normal market interest rate over a ten-year loan period.²⁸ Partnering banks receive a lump sum

²⁴ U.S. Department of Housing and Urban Development. 2009. Fiscal Year 2010 Budget: Roadmap for Transformation. Washington, DC: Author, p. 24 and *Going Green: Economic Recovery and Beyond* webinar, presented by the Department of Housing and Urban Development, June 11, 2009.

²⁵ Louisiana Department of Natural Resources. 2008. HELP – Home Energy Loan Program. Web page accessed June 26, 2009. Available at: <http://dnr.louisiana.gov/sec/execdiv/techasmt/programs/residential/help/index.htm>.

²⁶ Alaska Housing Finance Corporation. (no date.) Energy Efficiency Interest Rate Reduction Program. Web page accessed June 26, 2009. Available at: <http://www.ahfc.state.ak.us/loans/eeirr.cfm>.

²⁷ Energy Programs Consortium. January 2007. State Sponsored Energy Efficiency Grant, Loan and Tax Credit Programs. Washington, DC: Author.

²⁸ Con Edison customers may be eligible for a rate reduction of 6.5 percent or 650 basis points below the normal market rate.

payment in the amount of the subsidy (at net present value) when the loan closes, with project funding coming through a public benefit fund administered by NYSERDA.

All improvements financed by the program must be included on the program's Eligible Measures List, which includes upgrades to heating and cooling systems, insulation, replacement of windows and doors, and purchase of ENERGY STAR qualified appliances. Associated labor costs are eligible under the program, although with the exception of the purchase of Energy Star-rated appliances, a pre-approved contractor must complete all improvements. When the project is finished, borrowers submit a certificate of completion to NYSERDA, including a signature from the contractor.

Loan limits for owners of existing single-family homes are set at \$20,000 (\$30,000 for Con Ed customers). The owners of multifamily buildings as well as developers of new multifamily construction are also eligible to participate, with loan limits of \$5,000 per unit up to \$2.5 million for existing buildings and \$1 million for new construction.

A recent proposal issued by Architecture 2030 puts forth a plan to bring an interest rate buy-down program to scale at the national level. According to the plan, homebuyers or homeowners seeking to refinance their mortgage would be required to undertake renovations to meet an energy efficiency target (i.e., x percent below current code requirements). The greater the energy savings achieved by the renovations, the lower the mortgage interest rate would be. (Rates would be based on market conditions, so renovations that achieved a 30 percent energy savings would be eligible for a one percentage point reduction in interest rates; those that achieved a 50 percent reduction would be eligible for a rate 1.5 percentage points below market, etc.) The proposal is focused on existing homes to help address neighborhood stabilization as well, but smaller interest rate reductions could be extended to new homes, too.²⁹

Potential barriers to adoption of interest rate buy-down programs

- *Need to establish an agreed-upon energy efficiency benchmark* – Energy efficiency standards – whether voluntary or required – vary from state to state, although most are based on some version of the International Energy Conservation Code (IECC). Adopting performance-based interest rate reductions would likely require agreement on a minimum national energy efficiency standard against which improvements could be gauged.
- *Program complexity* – The complexity of an interest rate buy-down program that offers multiple tiers of reductions could render such programs difficult to administer, posing a barrier to participation by financial institutions.³⁰
- *Risk of default* – As noted above, where the rate reduction ends prior to the term of the loan, borrowers' payments will increase when the subsidy stops. Proper education and notice can help to prevent default. Notably, New York's Energy Smart Loan Fund, which offers interest rate reductions for a term of up to ten years, has a zero percent default rate.

²⁹ Much more detail on the proposal is available at:

http://www.architecture2030.org/downloads/2030brief_121108.pdf.

³⁰ TCG International LLC. 2004. Financial Interventions to Increase Access to Commercial Credit in Developing Economies. Washington, DC: Author.

- *Current credit environment* – Interest rate buy-down programs do not, on their own, make it easier for borrowers to obtain financing. In the current market, households with limited income or blemished credit could have difficulty qualifying for a loan, leaving them unable to take advantage of this program.

3. On-bill financing and other pay-as-you-save products allow borrowers to pay for energy efficient improvements through monthly or annual installments on an existing bill. There are several ways to structure the financing, including adding a special assessment to a local property tax payment or tying repayment to a monthly utility bill, each of which carries its own set of advantages and disadvantages. Under both models, however, the combination of an extended payback period and integration of payments into an existing obligation helps to overcome many of the obstacles related to forcing families to cover the full upfront cost of energy-saving measures.

- *Utility on-bill financing* – In communities that have adopted utility on-bill financing programs, property owners pay for energy-efficiency measures through surcharges on their monthly utility bills. While utilities or public entities integrate the billing for pay-as-you-save programs, they do not typically serve as a lender or a guarantor of program costs. Instead, that mechanism could potentially be managed by an array of institutions, including “regional public-private partnerships that may include municipalities, utilities, private and community-based lenders, CDFIs, credit unions, ESCOs, and nonprofit organizations,” some of which might also provide upfront funds.³¹
- *Property assessment financing* — This approach is similar to utility on-bill financing, with the key distinction that repayment is made through a supplemental property tax payment or other regular local property assessment, rather than a utility bill. The upfront costs of property assessment financing programs are generally covered through a state or local bond issue, although other sources, including funds made available through ARRA, can be used to establish a program.³²

In many cases the financing and amortization schedule for pay-as-you-save programs can be structured so that monthly utility savings exceed the cost of the monthly payment, allowing homeowners to enjoy an overall payment savings. An additional advantage of this approach is that when repayment is tied to a utility or property tax bill, the charges stay with the house and the household enjoying the benefits of the energy-efficiency upgrades, even if the home is sold during the repayment period. There is at least one important difference between these two pay-as-you-save programs, however. With on-bill financing this process is seamless – the cost and savings cancel each other out on the same statement – whereas property assessment financing would

³¹ Bamberger, Lori. 2008. *Greening the American Dream: Saving Homes by Saving Energy and Turning Carbon into Cash for Middle Class Families and Communities*. San Francisco, CA: Lori Bamberger Consulting, Inc., p. 2. See full memo for additional federal actions to catalyze on-bill financing programs. See also Cillo, Paul A. and Harlan Lachman. 1999. *Pay-As-You-Save Energy Efficiency Products: Restructuring Energy Efficiency*. Prepared for the National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment.

³² Because mortgage liens are typically subordinate to property taxes in the event of a foreclosure, this approach may carry lower risks for institutional lenders that fund energy-efficient retrofits. However, mortgage lenders may raise concerns about the weakening of their position as a result of the expansion of assessments to include financing for retrofits. This tradeoff may need to be resolved before property assessment financing can be adopted at scale.

require homeowners to pay a special assessment on their tax bill but accrue savings on a separate utility bill.

Midwest Energy's How\$mart program

Midwest Energy is a customer-owned energy cooperative based in rural Kansas. Available to Midwest Energy's 80,000 electric and/or gas customers, the How\$mart program enables consumers to pay for investments in energy-efficiency, including insulation, sealing, and heating and cooling systems, through a charge on their utility bill. Both homeowners and renters (with landlord permission) may participate in the program. Participants receive a free home energy audit, which is used to determine the most cost-effective improvements. The program covers the upfront cost of the improvements; however estimated savings must be greater than the monthly surcharge. (Not all improvements identified in the audit yield sufficient savings to be eligible for How\$mart financing – where estimated savings fall short of the improvement costs, residents may “buy down” the balance by paying for the difference on their own.³³) In the event that the initial homeowner moves, the payment obligation transfers to the new owner. At present, the interest rate is 4 percent over 15 years for residential customers, with no penalty for prepayment.

A recently-announced interagency task force between the U.S. Departments of Energy (DOE) and Housing and Urban Development (HUD) will explore the possibility of extending DOE's loan guarantee authority to include the residential sector, a step that could help to encourage institutional participation in a pay-as-you-save program and minimize the risk that any defaults would result in higher charges for other customers.³⁴ In addition, legislation currently under consideration in Congress would provide credit support, including loan guarantees and insurance, to portfolios of loans issued for energy-efficiency and renewable energy measures.³⁵

2. Families living in privately owned rental housing

According to the 2007 American Community Survey, some 36 million housing units – nearly one-third of all occupied units – are renter-occupied. The owners of an estimated 1.5 million of these units have entered into federal subsidy contracts, meaning they will be eligible for a portion of the \$250 million set aside in the stimulus bill for energy-efficiency grants and loans for properties receiving project-based assistance. However, the allocated amount will reach only a very small segment of the assisted stock. The Assisted Housing Green Retrofit program authorizes awards of up to \$15,000 per eligible unit, and if all projects used the maximum per-unit amount, the \$250 million could be used to improve the efficiency of only 16,700 units, or some one percent of the assisted stock. Assuming a more modest price tag of \$3,500 per multifamily unit, the program would still reach only 71,500 units – fewer than five percent of eligible units.

³³ Climate + Energy Project. 2008. “CEP Conversations: Michael Volker of Midwest Energy, and their award-winning How\$mart energy efficiency program.” *CEP blog*. Web page accessed September 1, 2009. Available at: <http://blog.climateandenergy.org/2008/10/21/cep-conversations-michael-volker-of-midwest-energy-and-their-award-winning-howmart-energy-efficiency-program/>.

³⁴ U.S. Department of Energy. 2009. Secretaries Donovan and Chu Announce Partnership to Help Working Families Weatherize Their Homes. Web page accessed June 26, 2009. Available at: <http://www.energy.gov/news2009/print2009/6956.htm>.

³⁵ U.S. House. 111th Congress. “H.R.2454: American Clean Energy and Security Act of 2009.” Section 188: Indirect Support.

In addition, the Act does not include any specific provisions for energy-efficiency improvements in rental properties that do not receive project-based assistance – including two million units rented to Housing Choice Voucher-holders and more than 9.8 million privately-owned unassisted but nevertheless affordable units.³⁶ Without significant incentives, owners of these properties may be unlikely to take steps to improve energy efficiency for several reasons:

- *Lack of capital and financing tools* – Estimates of energy-efficiency rehab pay-back periods – the time required to recoup the up-front costs of energy-efficiency investments through lower operating expenses – vary widely, although there is general consensus that over the life cycle of a building the improvements eventually pay for themselves. Regardless of the long-term savings potential, many property owners operate at very small margins and do not have adequate capital to cover these “first costs” with currently-available financing tools.³⁷
- *Lack of information and confidence in energy-efficient technologies* – Owners of existing buildings may lack knowledge about the state-of-the-art in energy-efficiency improvements, or who to turn to for guidance and expertise. In addition, in the absence of comprehensive evidence of cost-savings and pay-off periods associated with specific interventions, private companies and individuals may be reluctant to invest in energy-efficiency measures.
- *“Split Incentives” problem* – The split incentives problem arises when the entity responsible for the initial cost of energy-efficiency improvements does not have a financial stake in the projected gains. More than four out of five renters pay their electric bill separately from their rent, and nearly two-thirds pay separately for gas³⁸, indicating that many property owners would not be able to recoup the cost of renovation through lower energy bills. (See box for more on the split incentives problem.)

As noted above, funding from the State Energy Program may be used for a variety of purposes and presents another opportunity for states and localities to invest in energy-efficiency retrofits for rental homes. However, an initial review of funding plans suggests that many states will be targeting these funds on other initiatives. For the owners of unassisted rental properties, undertaking energy-efficient rehab may not be feasible without a substantial investment of time and money, possibly resulting in energy efficiency at the expense of affordability.

It is important to note that the FY 2010 Budget Proposal issued by the Department of Housing and Urban Development sets aside \$100 million for the creation of an Energy Innovation Fund that, if approved, could help make energy-efficiency rehab more accessible and affordable to the owners of both assisted and unassisted rental properties. As proposed, part of the Fund (\$25 million) would be used to test strategies to promote energy investments in HUD-assisted housing, including “reducing or

³⁶ Includes all units renting for below \$600/month as accounted for in the 2007 American Community Survey.

³⁷ An analysis of the performance of Low Income Housing Tax Credit properties conducted by Ernst & Young finds that many of these properties operate on a very small margin, with a per unit breakeven of \$250. From: Ernst & Young Tax Credit Investment Advisory Services. 2007. Understanding the Dynamics IV: Housing Tax Credit Investment Performance. Cleveland, OH: Author, p. 10.

³⁸ Includes electric, natural gas, fuel oil and other fuel bills, as well as water, trash, and septic bills. From: Brennan, Maya and Barbara J. Lipman. Stretched Thin: The Impact of Rising Housing Expenses on America’s Owners and Renters. Washington, DC: Center for Housing Policy.

offsetting the cost of mortgage insurance premiums” to encourage property owners to invest in energy efficiency; \$50 million in grants would support innovative local energy-efficiency financing initiatives.³⁹

This is an important step in the right direction, but clearly represents incremental progress rather than wholesale change. The requested funds could help states leverage their existing funding more effectively by marrying public funds with private financing. But much more will be needed to bring large numbers of the nation’s out-of-work contractors back to work retrofitting older housing – including rental housing. A number of ideas for accomplishing this goal are outlined below. The ideas focus first on privately-owned housing with federal subsidies, and then on the broader market of unsubsidized but affordable rental housing. It is important to note that retrofitting older rental properties will help to accomplish the related goal of preserving this segment of the affordable housing stock, which may be at risk of loss due to disinvestment and deterioration. Improvements in energy-efficiency will also leave these properties less vulnerable to often-unpredictable spikes in energy costs, allowing them to remain available and affordable for a longer period of time. The greening of high-end housing – both rental and homeownership – is beyond the scope of this paper.

The “split incentives” problem and energy-efficient rental housing

In some cases, neither landlord nor tenant sees it in their interest to make investments that improve energy efficiency. This situation, commonly known as the “split incentives” problem, typically arises when owners of rental properties pass energy costs on to their tenants – either through rent increases or separate payment of utility bills. Because they are not responsible for covering rising energy costs, owners may be reluctant to take measures to enhance the energy efficiency of individual units, which often carry high up-front costs. The tenants who directly or indirectly pay utility bills would benefit from greater efficiency but are generally unlikely to make upgrades to a unit they do not own and may occupy for only a short period of time.

This tendency may be exacerbated for landlords who serve tenants that receive housing assistance, as rent ceilings can make it difficult to quickly recoup the cost of the upgrades. A similar situation may arise with new construction built by developers who plan to sell the property to a third party before occupancy. Unless prospective buyers will pay a premium, developers may not be willing to make up-front investments in energy efficiency that can take several years to pay off. Robust incentives programs, and the increasingly environmentally-aware consumers who create a demand for energy-efficient units, can help to resolve this problem.

Policy options to improve the energy-efficiency of privately owned rental housing:

A. Encourage the use of Weatherization Assistance Program Funds for rental homes

While the Department of Energy (DOE) sets overall guidelines for the Weatherization Assistance Program, each state establishes its own set of priorities and directives for local activities. As noted above, weatherization of rental housing has been an eligible activity under earlier regulations, provided income-eligible households occupy at least 50 percent of the overall units in small buildings (fewer than

³⁹ U.S. Department of Housing and Urban Development. 2009. Fiscal Year 2010 Budget: Roadmap for Transformation. Washington, DC: Author, p. 24.

five units) and 66 percent of the units in larger properties. To date, however, the focus on rental properties has been limited.⁴⁰ Single-family rentals in particular make up a large segment of the affordable housing stock that has traditionally been under-served by the program.⁴¹ Owners of this segment of the rental stock, as well as smaller multifamily rental properties, tend to be less financially sophisticated than owners of larger multifamily units (less than 50 units), and thus have less access to capital. Limited resources in previous program years, together with the split incentives problem, described above, may help to explain why the Weatherization Assistance Program has not reached more rental housing units.

While increased program funding will certainly expand the reach of this program, owners of rental properties may need additional incentives to bring them to the table. Legislation currently under consideration in Congress may help to address this coverage gap. A provision in the House-passed version of the American Clean Energy and Security Act of 2009 would create a “Retrofit for Energy and Environmental Performance” (REEP) program intended to provide incentives for the owners of residential buildings to undertake energy audits and recommended measures to reduce energy consumption by at least 10 percent.⁴² The combination of Weatherization Assistance Program funds to cover the cost of improvements and REEP bonus awards could prove to be an important enticement to better serve the rental stock.

The additional funding for the Weatherization Assistance Program made available through ARRA also provides an opportunity to make an investment in the assisted rental housing stock over and above the \$250 million specifically set aside within the bill for energy efficiency improvements. HUD and DOE have already taken significant steps to streamline the delivery of Weatherization funds to federally-assisted rental properties; most notably through a Memorandum of Understanding that proposes to make HUD’s income verification procedures transferable to DOE-administered programs, eliminating duplicative income verification requirements for residents of eligible properties.⁴³

The Memorandum of Understanding does *not* require states or localities to prioritize or target Weatherization funding on a specific segment of the market; nevertheless, allocating a specific dollar amount or share of funds to assisted rental properties could yield additional benefits.⁴⁴ Whether

⁴⁰ Phone interview with Mark Wolfe, Executive Director, Energy Programs Consortium – 3/27/09

⁴¹ Between 2001 and 2006, single-family rental homes made up some 10 percent of units served. U.S. Department of Energy. 2008 Weatherization Assistance Program Briefing Book. Section 7, pp. 1 -6.

⁴² U.S. House. 111th Congress. “H.R.2454: American Clean Energy and Security Act of 2009.” Section 202: Building Retrofit Program.

⁴³ Properties subsidized through the Low-Income Housing Tax Credit Program (administered by the IRS) would also be eligible for the streamlined income verification process outlined in the Memorandum of Understanding. The MOU does *not* reconcile inconsistencies in how “low-income” is defined by HUD and the DOE, which set maximum income levels at 80 percent of the area median income (AMI) and 200 percent of the poverty threshold, respectively. Setting the maximum income level for the Weatherization Assistance Program at 80 percent of the AMI would enable more moderate-income families to make use of the program; however, this adjustment might divert weatherization assistance from poor and near-poor families.

⁴⁴ In March 2009, Enterprise Community Partners, the National Housing Trust, and NeighborWorks America issued a joint memo recommending that the Department of Energy “encourage states [to] give equal priority to privately owned, subsidized housing” when allocating Weatherization funds. The full memo, with additional recommendations for maximizing leverage of DOE Weatherization funds in HUD-assisted multifamily properties is available at: www.nhtinc.org/policy/weatherization_memo_OMB_032609.pdf. A number of states already have multifamily set-asides in their state weatherization plans, including Massachusetts, Oregon, and Florida.

accomplished through a required set-aside or some form of incentive, coordination of efforts between local housing and weatherization agencies would help private owners of assisted properties secure funds to complete needed improvements (possibly linked to agreements to extend their affordability contracts) and local weatherization officials would find an outlet for millions of dollars that need to be spent on an accelerated timeline. An additional benefit related to this segment of the housing stock is that the infrastructure is in place to follow up on completion and maintenance of energy-efficiency improvements at federally-mandated annual inspections.

Benefits of focusing on the assisted stock

Incentives geared to public housing agencies (PHAs) and the assisted rental stock offer certain programmatic benefits that would not apply to privately-owned, unassisted rental or homeowner units. Energy costs account for more than ten percent of the HUD budget⁴⁵ -- more than \$5 billion each year -- including expenditures on utilities in public housing, which consume nearly one-quarter of PHA operating costs⁴⁶, and utility allowances made available to owners of assisted multifamily housing. Renovations that improve the energy efficiency -- and lower the operating costs -- of these structures can therefore also serve as a federal cost-reduction measure.

If linked to robust data collection requirements, the improvements could also provide an opportunity to test the cost-effectiveness of various interventions and delivery methods. Existing program regulations call for regular inspections of the condition of public housing units and properties that receive project-based assistance. These visits provide a framework on which to verify completion and adequate maintenance of energy efficiency improvements as well as collect data on system performance.

Recognizing these benefits, legislation currently under consideration in Congress proposes to create a demonstration program to promote energy-efficient renovations in multi-family properties that receive project-based assistance. The proposed demonstration would test the effectiveness of various interventions and delivery methods in no fewer than 50,000 units over a four-year period, and would lead to the creation of a database of techniques, management practices, and financing vehicles for improving energy-efficiency and conservation.⁴⁷ The legislation calls for a final report to Congress on the assistance provided and the savings achieved at the end of the demonstration period, findings which could be used moving forward to inform energy-efficiency programs affecting a much broader segment of the housing stock.

B. Adopt Energy Performance Contracting to finance improvements in properties receiving project-based assistance

⁴⁵ United States Government Accountability Office. 2008. Green Affordable Housing: HUD Has Made Progress in Promoting Green Building, but Expanding Efforts Could Help Reduce Energy Costs and Benefit Tenants. Washington, DC: Author. Available at: <http://www.gao.gov/new.items/d0946.pdf>.

⁴⁶ Boehland, Jessica. 2008. HUD Encourages Green Public Housing. Web Page accessed June 26, 2009. Available at: <http://greensource.construction.com/news/080826hud.asp>.

⁴⁷ U.S. House. 111th Congress. "H.R.2454: American Clean Energy and Security Act of 2009." Section 285: Energy Efficiency and conservation Demonstration Program for Multifamily Housing Projects Assisted with Project-Based Rental Assistance.

Energy Performance Contracts provide “one stop shopping” for energy-efficiency improvements, which are executed by a third party called an Energy Service Company, or ESCO. The ESCO conducts an energy audit of the building or buildings and recommends energy-saving interventions; secures financing; and makes the improvements. The post-improvement utility cost savings, as projected by the ESCO, are used to finance the rehab, meaning that property owners face few upfront costs. Contracting with an ESCO is also relatively low-risk for property owners; generally, if the project fails to yield the projected savings as specified in the performance contract the ESCO is contractually obligated to pay the difference. Any savings beyond the cost of the improvements may be split between the ESCO and the contracting organization.

Currently, ESCOs work primarily with large clients, including public housing authorities, where (1) transaction costs may be offset by the much larger total cost of the project, and (2) energy consumption and, accordingly, projected cost savings will be of a magnitude large enough to cover the cost of the work.⁴⁸ However, an increasing number of community-based models have started to emerge, making the advantages of an ESCO – limited up-front costs, reduced risk, and a knowledgeable expert to coordinate rehab and financing – accessible to owners of affordable rental properties.

For example, a recent HUD webinar highlighted the work of the Vermont Energy Investment Corporation, a nonprofit ESCO that has served the state since 1986 by providing “financing, technical expertise, reliable information, and direct installation of measures to facilitate energy upgrades and investments in buildings,” among other services.⁴⁹ The Corporation works with a range of clients, including public housing agencies and owners of multifamily affordable housing, often in partnership with the Vermont Housing Finance Agency. Because of its non-profit status, the organization “fill[s] a void left by commercial ESCOs” that may refuse to take on smaller projects or those with limited profit margins.⁵⁰

One important public policy question concerns how to foster the establishment and expansion of ESCOs that are geared toward this important and often neglected segment of the market. Another, complimentary strategy is to foster the development of non-profit one-stop centers that perform many of the same support functions, though without the guarantee provided by an ESCO. One example of such a program, the Energy Savers Program, is highlighted below.

Cook County, Illinois’ Energy Savers Program

Offered through a partnership between the Center for Neighborhood Technology, a non-profit “think-and-do tank” and the Community Investment Corporation, a non-profit mortgage lender, the Cook County Energy Savers program helps owners of rental properties with five or more units obtain low-cost financing for energy-efficient improvements. Started in January 2008, the Energy Savers program offers many of the same services offered by ESCOs, including:

⁴⁸ RESNET. 2008. Tapping the US Fuel First – Policy Initiatives to Improve Residential Energy Efficiency. Web Page accessed June 26, 2009. Available at: http://www.natresnet.org/about/policy/RESNET_Proposed_Residential_Energy_Efficiency_Initiatives.pdf; and Abromowitz, David M. 2008. Green Affordable Housing Within Our Reach. Washington, DC: Center for American Progress.

⁴⁹ United States Environmental Protection Agency Office of Policy. September 1998. “Vermont Trims Energy Bills for Low-Income Families.” Washington, DC: Author.

⁵⁰ Ibid. Learn more about the Vermont Energy Investment Corporation at www.veic.org.

- Complete energy assessments and specific energy-efficiency recommendations
- Financing options for implementing energy recommendations
- Assistance coordinating tax benefits and energy credits
- Construction oversight and bid package review
- Annual reports on energy performance⁵¹

As part of the program, the Community Investment Corporation also offers financing for energy-saving improvements at sharply discounted interest rates. As of March 2009, the Corporation had provided more than \$1 million in financing to program participants, and the Center for Neighborhood Technology had completed some 5,000 energy assessments.⁵²

C. Re-visit limitations on the annual distribution of project net cash flow

Regulations stipulate that the for-profit owners of properties subsidized with federal project-based assistance may receive only a limited share of the properties' annual net cash flow (distributions are set at ten percent or six percent of the owner's initial equity stake in the property, depending on the subsidy program). Because of these caps on dividends, those owners who already receive the maximum allowable distribution have little financial incentive to reduce building operating and maintenance costs through energy-efficiency investments. Owners would be responsible for the upfront cost of the improvements but prohibited from enjoying any financial savings resulting from the post-improvement utility cost savings.

A paper recently issued by the Center for American Progress⁵³ includes a recommendation to address this limitation through payment of a "green dividend" to eligible owners whose properties' net revenue increases as a result of energy cost savings. As proposed, the green dividend would be paid on top of the standard distribution, in an amount up to a ten percent annual return on the cost of the energy-efficient investments. To the extent that properties receiving federal project-based assistance could be converted to tenant-metered, rather than master-metered, systems, tenants would also have a stake in energy conservation efforts, and enjoy the benefits of savings.

As an additional incentive to invest in energy-efficiency measures, property owners could be given the flexibility to adjust tenants' utility allowances, which are currently fixed at a predetermined rate by state and local public housing agencies, to finance these improvements. This adjustment would not affect the overall rent burden on tenants, but would allow a greater share of the total tenant payment to come back to the property owner, reflecting reduced energy consumption at the property and helping to cover the costs of energy-efficient measures.

⁵¹ Center for Neighborhood Technology. (no date) Cook County Energy Savers: A one-stop energy efficiency shop for multi-family building owners. Web page accessed June 26, 2009. Available at: <http://www.cicchicago.com/documents/EnergySavers.pdf>.

⁵² ULI Chicago. 2009. Keystone Initiatives Update. Web page accessed June 26, 2009. Available at: http://www.ulichicago.org/PC_newsletter/200903/keystone.html#preservation. The Energy Savers program is one of six Keystone Initiatives offered as part of the Preservation Compact, a strategy to preserve and improve existing affordable rental homes that is led by ULI Chicago with support from the John D. and Catherine T. MacArthur Foundation. Learn more about the Preservation Compact at <http://www.macfound.org/site/c.lkLXJ8MQKrH/b.4293515/apps/s/content.asp?ct=3919801>.

⁵³ Abromowitz, David M. 2008. Green Affordable Housing: Within Our Reach. Washington, DC: Center for American Progress. See the paper for additional recommendations on greening the HUD-assisted stock.

D. Create a residential energy efficiency tax credit for privately-owned unassisted rental properties⁵⁴

Much as the Low Income Housing Tax Credit (LIHTC) allows developers of affordable rental properties to transfer income tax benefits to investors in exchange for up-front capital, an Energy Efficiency Tax Credit for rental properties would help owners raise funds for energy retrofits and renovations. As proposed by Stewards of Affordable Housing for the Future (SAHF), the tax credit would cover 30 percent of the cost of energy improvement, parallel to the current reimbursement rate of the Residential Energy Efficiency Tax Credit for homeowners discussed below.⁵⁵

Under SAHF's proposal, utility companies would be the likely purchasers of these credits, at the behest of state public utilities commissions. Current problems in the LIHTC market, however, indicate conditions that could pose a risk to the success of a new tax credit program in the near future if sale of the credits were targeted on a broader audience. Slumping investor income (and therefore reduced demand for tax credits) and an abundance of caution and focus on rebuilding balance sheets have stalled many LIHTC projects -- a problem that may extend to credits focused on energy efficiency as well. As the market for tax credits begins to recover, a tax credit for rental properties might enjoy a greater chance of success, but it may be important not to jeopardize the fragile LIHTC market with an oversupply of competing credits before the market is ready to absorb them.

E. Provide low-interest loans in exchange for owner commitment to continued affordability

Through the Department of Energy, ARRA makes available \$3.1 billion in State Energy Program grants and \$3.2 billion in Energy Efficiency Block Grants, both of which prioritize funding of energy efficient retrofits in buildings. Many states already administer low-interest loan programs that support energy efficiency upgrades in non income-restricted, privately-owned rental buildings, and a portion of this new money could be used to broaden the reach of these programs or to create new initiatives in states that do not currently provide this type of assistance.

For example, Minnesota's Rental Energy Loan Fund provides short-term low-interest loans to the owners of rental properties to help pay for renovations that increase the energy efficiency of their buildings. Eligible activities include replacement or repair of heating systems and water heaters, installation of insulation or storm windows and doors, and high efficiency lighting. Currently, the maximum loan amount of \$10,000 per borrower, with loan terms up to 60 months at four percent interest. New York's Energy Research and Development Authority offers a similar program, the Energy Smart Loan Fund, which provides an interest rate reduction on loans for energy efficiency measures. (See page 16 for more on the Energy Smart Loan Fund.)

Additional incentives or eligibility restrictions could be added at the national or state level to ensure that property owners who rent to Housing Choice Voucher-holders receive priority consideration for program funds, in exchange for a commitment to continuing to serve low-income tenants. Similarly, some unassisted apartments rent at rates affordable to low- or moderate-income tenants as a result of the building's age or condition, location, or limits on what the market will bear. Building owners who

⁵⁴ Proposed by SAHF in a 2008 paper available at: www.nw.org/network/pubs/alert/documents/NW_Conference_Paper_Energy_v10241.doc

⁵⁵ See <http://www.sahfnet.org/energyPolicy.html> for more on SAHF's proposal.

agree to hold rents at or below an affordable level for an agreed-upon period of time could be eligible for additional interest rate reductions or priority consideration. This would have the effect of both reducing energy use AND ensuring the continued affordability of these units to moderate-income families.

Seattle's HomeWise Weatherization Energy Conservation Services

Seattle, Washington's Office of Housing offers the HomeWise cost-sharing program to help owners of affordable rental housing upgrade the energy-efficiency of their properties. The program serves rental buildings of any size, from single family homes to large developments. To be eligible, at least 50 percent of tenants must meet specified income requirements. (The Office of Housing offers a streamlined application process in cases where households already receive a housing subsidy.)

Participants in the program undertake a unit-by-unit energy audit, after which HomeWise will "prepare [the] scope of work; review bids and award contract[s] for work to be done; monitor work progress; [and] inspect completed work."⁵⁶ The amount of the owners' contribution is contingent on the availability of funding sources and the projected energy savings; property owners typically receive between \$2,000 and \$4,000 per unit towards energy-efficiency improvements, including window, door, and refrigerator replacement costs. In exchange, owners commit to maintaining rents at an affordable level for a period ranging from three to ten years, depending on tenant income and the building's heat source. To date, more than 2,600 households have been served.⁵⁷

Conclusion

With the passage of ARRA, the Administration has taken important steps towards increasing the energy-efficiency of our nation's housing stock. The recommendations outlined above provide several avenues for building on this progress and facilitating energy-efficient improvements in all segments of the housing market. It is important to note, however, that this paper addresses only one dimension of our energy-efficiency challenges – the financing of energy-efficient retrofits. To successfully improve the energy efficiency of the nation's housing stock, attention will also need to be paid to other essential efforts, including the training of a "green" workforce, post-improvement verification and monitoring, and education and awareness strategies for influencing resident behavior to adopt energy-efficient practices.

The Administration has started to address these multi-dimensional challenges through the assembly of a task force that includes representation from the Departments of Education, Energy, Housing & Urban Development, and Labor, among others. Meanwhile, Congress has also made progress through the consideration of legislation such as the "American Clean Energy and Security Act of 2009." The potential for far-reaching positive outcomes – ranging from reduced utility costs and lower levels of carbon emissions and pollution to improved housing quality and living conditions and opportunities for job creation – make additional energy-efficiency programs well worth considering for the benefit of current and future generations.

⁵⁶ City of Seattle. 2009. HomeWise Weatherization Energy Conservation Services for Rentals. Web page accessed June 26, 2009. Available at: <http://www.seattle.gov/housing/HomeWise/1-4plexes.html>.

⁵⁷ Personal communication with John Flynn, City of Seattle HomeWise Manager. 6/26/09.

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Summary Table: Energy Efficiency Provisions in the “American Recovery and Reinvestment Act of 2009

Provision	Program Description	Changes Implemented by ARRA	Funding included in ARRA	Distribution Mechanism	Timeline
Programmatic Spending					
Assisted Housing Stability and Energy and Green Retrofit Investments Stimulus Program ⁵⁸	Provides grants and loans to owners of properties receiving project-based assistance to make energy and green retrofit investments in the property	N/A	\$250 million	Administered by the Office of Affordable Housing Preservation (OAHP) through the Department of Housing and Urban Development (HUD)	Funds are available on a first-come, first-served basis. Grant and loan funds must be spent by the property owner within two years.
Community Development Block Grant (CDBG) ⁵⁹	Enables local governments to undertake a wide range of activities – including energy retrofits and rehabilitations	N/A	\$1 billion	Administered by HUD’s Office of Community Planning & Development Grantees will supply HUD with action proposal plans. HUD will process the plans and provide the grantees with funds accordingly.	Priority will be given to projects that can award contracts within 120 days of the grant agreement. State allocations have already been determined.
Energy Efficiency and Conservation	Provides federal grants to local governments, Indian tribes, states and U.S.	This program has never received appropriations and	\$3.2 billion to be split into	Administered by the Office of Weatherization and Intergovernmental	Each local government must submit a proposed energy and

⁵⁸ Department of Housing and Urban Development. Opportunities. Web page accessed July 21, 2009. Available at http://portal.hud.gov/portal/page?_pageid=153,7940934&_dad=portal&_schema=PORTAL.

⁵⁹ ARRA also provided a \$10 million set aside of CDBG funding for the Indian Community Development Block Grant (ICDGB) that also lists include housing construction, rehabilitation, acquisition of land for housing, direct assistance to facilitate homeownership among low- and moderate-income persons, construction of tribal and other facilities for single or multi-use, streets and other public facilities, and economic development projects as eligible activities. ARRA requires tribes to give priority to projects that can award contracts based on bids within 120 days from the date the funds are made available to the tribes.

Block Grant (EECBG)⁶⁰	territories to reduce energy use and fossil fuel emissions, and for improvements in energy efficiency	the DOE has yet to establish rules or regulations for the implementation of EECBG	two parts: \$2.8 billion will be distributed by formula to states, eligible local governments and Indian tribes. \$400 million will be distributed through competitive energy grants through DOE's Office of Energy Efficiency and Renewable Energy (EERE).	Programs in the Office of Energy Efficiency and Renewable Energy of the U.S. Department of Energy (DOE).	conservation strategy to DOE.
Native American Housing Block Grant	Assists tribes in developing, operating, maintaining, and supporting affordable rental and homeownership housing	Funding priority will be given to projects that will spur construction and rehabilitation and create employment opportunities	\$510 million -- \$255 million awarded through a competitive grant process and \$255 million allocated by formula	Administered by the Office of Native American Programs (ONAP) at the U.S. Department of Housing and Urban Development (HUD)	Tribes/tribally designated housing authorities (TDHE) will be required to obligate 100 percent of their funds within 1 year of the date funds are made available, expend at least 50 percent of such funds within 2 years of the date in which funds became available, and expend 100 percent of such funds within 3 years of such date.
Native Hawaiian Housing Block	This program is a block grant set aside intended to	ARRA allows funds to be used for new	\$10.2 million	Administered by the Office of Native American	The recipient must obligate 100 percent of their funds within 1

⁶⁰ Department of Housing and Urban Development. Opportunities. Web page accessed July 21, 2009. Available at http://portal.hud.gov/portal/page?_pageid=153,7940934&_dad=portal&_schema=PORTAL.

Grant	help develop, acquire or rehabilitate affordable housing units, and include elements that lead to greater energy efficiency or improve infrastructure.	construction, acquisition, rehabilitation, including energy efficiency and conservation, and infrastructure development.		Programs (ONAP) at the U.S. Department of Housing and Urban Development (HUD).	year of the date funds are made available, expend at least 50 percent of such funds within 2 years of the date in which funds became available, and expend 100 percent of such funds within 3 years of such date.
Public Housing Capital Fund (competitive)	This program provides investments, awarded competitively, to Public Housing Agencies that either leverage private funding or provide financing for renovations and energy conservation.	The funds shall be awarded by competition for priority investments, including investments that leverage private sector funding or financing for renovations and energy conservation.	\$1 billion	Administered by the Office of Public and Indian Housing at HUD.	Public housing agencies shall obligate 100 percent of the funds within 1 year of the date on which funds become available to the agency for obligation, shall expend at least 60 percent of funds within 2 years of the date on which funds become available to the agency for obligation, and shall expend 100 percent of the funds within 3 years of such date.
State Energy Program (SEP)	The State Energy Program (SEP) provides grants to states and directs funding to state energy offices to address their energy priorities.	N/A	\$3.1 billion	Administered by the Office of Energy Efficiency and Renewable Energy at the Department of Energy (DOE).	State allocations have been determined.
Weatherization Assistance Program (WAP)⁶¹	This program funds energy efficiency retrofits in single-family homes, rental units, multi-family dwellings, and apartment buildings, including those of mixed income as long as 50% of renters within	WAP is expanded in ARRA to include any household at or below 200% of the poverty level. States must (1)	\$5 billion	Administered by the Office of Energy Efficiency and Renewable Energy at the Department of Energy (DOE).	Funding levels for each Weatherization grantee (allocations arranged for all 50 states and territories) have been established (allocations were announced by DOE on March 12, 2009).

⁶¹ Ibid.

	certain types of large multi-family buildings are below the poverty level.	incentivize a more efficient use of electric and gas utilities, (2) enact building codes focused on energy-efficiency, and, (3) prioritize funding of energy efficiency and renewable energy programs.			
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Tax Credits					
Energy Star Appliance Subsidy ⁶²	State rebate program to consumers for buying energy efficient Energy Star products to replace old appliances.	N/A	ARRA provides \$300 million for the Energy Star Program and for matching grants for state rebates to consumers.	Joint program of U.S. Environmental Protection Agency (EPA) and DOE.	No deadline specified.
Residential Energy Efficiency Tax Credit ⁶³	Efficiency improvements or equipment must serve a dwelling in the United States that is owned and used by the taxpayer as a primary residence.	ARRA extends tax credits for energy efficiency improvements in the building envelope of existing homes and for the purchase of high-efficiency heating, cooling and water-heating equipment.	The maximum for all improvements combined is \$1,500	Personal tax credit – overseen by U.S. Internal Revenue Service (IRS).	Homeowners may claim 30% of costs of all equipment purchased during the two-year period of 2009 and 2010.

⁶² Database of State Incentives for Renewables & Efficiency. 2009. Federal Incentives/Policies for Renewables and Efficiency. Web page accessed June 26, 2009. Available at: http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US37F&State=federal¤tpageid=1&ee=1&re=1.

⁶³ Ibid.

Residential Renewable Energy Tax Credit ⁶⁴	<p>Federal tax credit for residential energy property initially applied to solar-electric systems, solar water heating systems and fuel cells.</p> <p>A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the U.S. used as a residence by the taxpayer.</p>	<p>The credit was enhanced under ARRA by removing the maximum credit amount for all eligible technologies (except fuel cells) placed in service after 2008.</p>	<p>There is no maximum credit for systems placed in service after 2008. The maximum credit is \$2,000 for systems placed in service before January 1, 2009.</p>	<p>Personal tax credit that is administrated by the Internal Revenue Service (IRS).</p>	<p>Systems must be placed in service from January 1, 2006, through December 31, 2016.</p>
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⁶⁴ Ibid.