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Home Energy Retrofits and Green Jobs for the Stimulus Package

November 2008 (v. 2.0)

This document outlines two energy-efficiency proposals for a potential economic stimulus package. The first is a straightforward expansion of the DOE Weatherization Assistance Program, which has delivered significant results in carbon reduction and energy efficiency but is starved of resources. The second is a new program of grants for point-of-sale home energy retrofits loosely based on the Weatherization model. Including this program in a stimulus package would reduce US carbon emissions, provide green jobs in the construction industry, and increase the value of US homes. These proposals are needed because:

- **Jobs in construction have been hard hit by the crisis in housing finance**. Total employment in the industry has fallen by 663,000 jobs since its peak in 2006. In October 2008, 10.8 percent of construction workers were unemployed – one of the highest rates of any industry.[1]
- Rising energy bills are an increasing burden for all Americans but hit low-income households particularly hard. **This program would cut energy bills for low-income households**, whose average energy bill increased by more than 44% since 2001.[2] (Average households in the US spent $1,817 in energy in 2005, the last year for which comprehensive data are available.[3])
- Buildings consume 72% of all US electricity generation and are responsible for 40% of all US carbon dioxide emissions, a larger fraction than either the transportation or industrial sectors.[4] **It will be extremely difficult to reach the 80% reduction in CO_2 called for in the President-elect's campaign without aggressively addressing building energy efficiency**.
- The infrastructure for a major retrofit program is in place at the federal and state levels, and at utilities. Unemployed construction workers have the necessary skills and unskilled workers can be trained quickly. **Jobs would be created where people live, and could not be outsourced**.
- Retrofits that include **federal funds would increase the value of homes in the program** and provide quality assurance that would further increase home value.

The primary goals of these proposals include:

- Getting construction workers and newly trained retrofitters jobs within weeks of the availability of funds.
- Ensuring that the highest possible fraction of residential and commercial buildings is given energy retrofits at the time of sale.
- Encouraging retrofits up to the full cost-effective level, at marginal utility avoided costs including a carbon price[5] of $25/ton CO_2, by combining federal funds with utility capital investment and home-buyer contributions.

<u>Recommendation 1</u>: Expand and modernize DOE's Weatherization Assistance Program (WAP) to weatherize/retrofit 300,000 homes in 2009 and 2010 (from about 100,000 in 2008).

- Include funding for the DOE WAP at the full authorized level of $900 million in FY09 and $1.05 billion in FY10.
- Significantly increase the statutory limit of $2500 (inflation-adjusted) per house in allowed weatherization assistance (42 USC 6865(c)).
- Direct DOE to ensure that weatherization workers are paid a living wage.
- Direct DOE to improve the process by which it determines the cost-effectiveness of retrofit materials and methods.
- Direct DOE to modernize the software package used by WAP energy auditors.

DOE's Weatherization Assistance Program has helped to fund more than 5 million home energy retrofits for low-income families since its inception in 1976. The program leverages federal money to attract significant additional funding from other sources, approximately $1.50 per $1 spent by DOE. Families whose homes are retrofitted spend an average of $358 less per year in energy bills, and consume 32% less gas for heating.[6]

Despite these achievements, the FY08 appropriation level for the program was only $227.2 million, well below the authorized level. While the FY09 CR increased appropriations, the program still remains well below the authorized level set in EPACT05 and EISA07. By providing full funding at the authorized level, Congress could enable the program to retrofit up to 300,000 homes per year.

In addition, the program's statutory limit on the maximum average retrofit grant is too low to realize the full cost-effective range of retrofits. This limit should be increased. To ensure that retrofitting work leads to sustainable job creation, DOE should be directed to ensure that weatherization workers are paid a living wage by the local Community Action Agencies that implement the program. Finally, the DOE mechanism for determining the cost-effectiveness of retrofit options (materials and methods) should be accelerated, and the software package used by WAP energy auditors should be made web-based and include an automated system to update DOE on auditor findings and retrofit decisions.

<u>Recommendation 2</u>: Create a national time-of-sale home energy retrofit program that would retrofit 1 million homes during the first year of operations.

Congress should create and fund a new national program that provides cost-shared grants to home buyers to be used for energy retrofits at or shortly after the time of sale. Addressing home energy retrofits at the time of sale minimizes the costs of energy audits by piggy-backing on home inspections, and streamlines the process to start retrofits. Despite the economic downturn, existing home sales in September were at an annualized rate of just over 5 million units (seasonally adjusted)[7] and this program could address a significant fraction of that figure. This program would be a stop-gap measure, to be replaced by a permanent time-of-sale retrofit program crafted during 2009. The program would:

- Combine funds from federal grants, utility capital investment, and home-buyer contributions to retrofit up to the full cost-effective amount, including marginal utility avoided costs and a $25/ton CO_2 price;
- Make the transaction costs for all parties transparent, seamless, and efficient by not adding significantly to inspections and paperwork;
- Create markets for retrofits large enough to attract sophisticated firms with associated planning, purchasing, just-in-time delivery, quality control, follow-up data gathering, and continuous improvement methods;
- Provide funds to train home inspectors in energy auditing and construction workers in home retrofitting;
- Allow utilities or other parties to preselect general contractors that would perform the required retrofitting work;
- Prohibit FNMA secondary financing to homes in regions where the retrofit program is offered but not accepted by the home buyer.

A key point is that retrofit measures paid for by the program would be defined to be "cost effective" if the cost of the energy-saving measure is lower than the cost of generating that energy from a new plant, assuming that the new plant pays $25/ton of CO_2 emitted. This would permit the replacement of inefficient equipment even if it has some remaining lifetime, and increase the demand for new appliances and other devices, which would multiply the benefits of the retrofit investments.

States would be eligible to participate in the program if they modify their utility regulations so as to require utilities to participate. Home inspectors could immediately begin conducting energy audits at the same time as the standard home inspection with a minimum of training, and could use the existing DOE WAP software[8] to determine recommended retrofits.

Home buyers would be given the choice of opting in to the program at closing, with a minimum of hassle. Opting in would trigger the release of federal funds and utility contributions, and require a contribution from the home buyer, which could be rolled into the mortgage. The utility would be responsible for ensuring that the retrofit work is completed, either through third-party contractors that have pre-bid for services, or through their own ESCOs. Utilities could also be given the option of sending the funds and work orders to the local Community Action Agency that executes the Weatherization Assistance Program, if that center has the capacity to absorb the work.

The program should set 20% participation (roughly 1 million homes) as a first-year goal. DOE estimates that energy savings of roughly 30% are achievable for homes in the Northeast and Midwest with retrofit measures costing about $4000, based on data from the Weatherization Assistance Program.[9] Similarly, DOE estimates that retrofit packages costing just over $2300 can lead to savings of 25% for houses in the West. Given the leveraging of federal, utility and home buyer contributions, the total federal price tag for this program would be roughly $2 billion.

<u>NOTE</u>: FAS is also working to develop specific proposals for retrofitting public sector buildings (such as schools and hospitals) and commercial buildings. These will be available shortly.

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[1] Bureau of Labor Statistics, http://www.bls.gov/news.release/empsit.nr0.htm .

[2] *Short and Long-Term Perspectives: The Impact on Low-Income Consumers of Forecasted Energy Price Increases in 2008 and a Cap-and-Trade Carbon Policy in 2030*, Oak Ridge National Laboratory, December 2007. http://weatherization.ornl.gov/pdf/CON503-FINAL.pdf .

[3] 2005 Residential Energy Consumption Survey, Energy Information Administration, http://www.eia.doe.gov/emeu/recs/recs2005/hc2005_tables/c&e/pdf/tableus1part1.pdf .

[4] *Federal Research and Development Agenda for Net-Zero Energy, High-Performance Green Buildings*, National Science and Technology Council, October 2008. http://www.ostp.gov/galleries/NSTC%20Reports/FederalRDAgendaforNetZeroEnergyHighPerformanceGreenBuildings.pdf .

[5] Although predictions vary as to the price of carbon under a possible US trading scheme, several factors suggest that this price is reasonable. First, the current price of EU carbon allowance futures for December 2008 is approximately \$21/ton CO_2 (http://www.europeanclimateexchange.com/). And second, the EIA has estimated a price of \$22/ton CO_2 (constant 2005 dollars) in 2020 under the Lieberman-McCain cap-and-trade bill S. 280 (http://www.eia.doe.gov/oiaf/servicerpt/csia/pdf/sroiaf(2007)04.pdf).

[6] *Weatherization Works!,* Department of Energy, http://www1.eere.energy.gov/office_eere/pdfs/wap_fs.pdf .

[7] National Association of Realtors, http://www.realtor.org/research .

[8] Department of Energy, http://www.waptac.org/sp.asp?mc=techaids_audits .

[9] *Meeting the Challenge: The Prospect of Achieving 30 Percent Energy Savings through the Weatherization Assistance Program*, Oak Ridge National Laboratory, May 2002. http://www.ornl.gov/~webworks/cppr/y2001/rpt/114115.pdf .