

## The President's Economic Recovery Advisory Board

### MEMORANDUM FROM THE PERAB

**DATE:** December 4, 2009

**SUBJECT:** Home Retrofits for American Jobs, Efficiency and Economic Growth  
HOMESTAR, aka "Cash for Caulkers"

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Our country has the opportunity to rebuild our homes with three missions: rapidly create hundreds of thousands of sustainable, valuable jobs, stand up a new competitive American industry, and achieve our long-term climate goals. And the opportunity is vast. 17% of our nation's experienced construction workers are unemployed<sup>i</sup>, and more than 20% of US carbon emissions come from residential buildings.<sup>ii</sup> With home retrofitting, we can put those unemployed workers back to work making millions of US homes energy efficient, and allowing homeowners to save energy—and carbon and money—in the process.

### The Role of Carbon

In a previous PERAB report<sup>iii</sup>, we stated our view that putting a price on carbon is the single, most important action needed on climate change and to create a competitive America. We continue to advocate a price on carbon, and believe that it can help transform our homes and help us adopt energy-efficient technologies. Using carbon reduction as our guide, we will get the most efficient and cost-effective technologies and housing stock. In addition to putting a price on carbon, though, we also mentioned complementary measures, notably "making America's cars and homes the most efficient in the world." The EPA has raised fuel standards; this report is about efficiency in American homes.

As highlighted by McKinsey's research<sup>iv</sup> and others, our energy market is a complicated, diffuse business. The energy consumption patterns of the nation are set by millions of decisions: How much insulation should be in the roof of a house? How should the pipes in a new factory be laid out? What materials should be used in building a new school? Today, we make these decisions without proper price information, because carbon is an unpriced externality. The consequence is clear: vast efficiency opportunities are wasted. America needs clear price signals to make good decisions.

By limiting our total carbon output, we create a price and incentives that ultimately can make these decisions easier and should make reducing output profitable. We create a market-driven drive to efficiency, as truly lower-cost technologies replace inefficient, artificially low-priced supplies. Across all of America, this guiding principle, ignored in the last century, brings the power of the market to bear on the billions of individual decisions we make each day about our energy use. A price on carbon will guide us as we rebuild the American economy to be the most energy-efficient in the world, as we modernize our aging infrastructure, and choose how to invest in innovation.

As we move from today's "business as usual" towards a market with a price on carbon, we need to help industries and especially millions of individuals without the same level of information and expertise in the efficiencies of their homes, to transition and to build an industry that rewards

and implements energy efficiency. Here, we will lay out the transition path for the American residential construction industry, which we believe depends on a home retrofit program.

We believe there is a parallel opportunity for a large scale effort to facilitate energy efficient retrofits in the commercial, industrial and public sector. We have not, however, studied the economics or speed with which those jobs can be created, so this memo only addresses a strategy for residential retrofits.

### **The Home Retrofitting Opportunity: Job Creation and Climate Change**

The construction industry has significant capacity to create jobs quickly by refocusing out-of-work construction labor on energy retrofits. Retrofitting homes is a labor-intensive process that employs similar skills as residential and commercial construction. While experienced construction workers can be retrained as energy retrofitters in very little time, new entrants to the construction workforce will need quality training, particularly to be able to participate in the more advanced residential retrofitting.

Since 2006, the construction industry has dropped by 1.6 million employees, with residential construction down by nearly 1.1 million employees.<sup>v</sup> Today, one in six experienced construction workers is unemployed.<sup>vi</sup> Meanwhile recovery in the construction sector does not seem imminent. Although housing starts have stabilized in recent months (at the lowest rate of production since World War II), there are millions of vacant homes in the country and unemployment in residential construction and related industries has continued to increase.

Energy retrofits could also create substantial domestic indirect jobs in manufacturing and other directly related industries.<sup>vii</sup> Growth in the home retrofitting industry could boost demand for construction products and for the retail supply chain that delivers them to local markets. Unemployment in the production and distribution of building materials has increased by more than overall unemployment in manufacturing and trade. In manufacturing, widespread job losses have resulted in an employment decline of 15 percent — 2.1 million jobs — since December 2007.<sup>viii</sup> More than 400,000 of those jobs lost were in construction-related manufacturing<sup>ix</sup>, and more than 100,000 were lost in construction-related retail<sup>x</sup>.

Furthermore, these new jobs backed by appropriate training and meaningful career ladders have the potential to provide living wages and room for advancement — jobs with benefits that give workers the ability to earn a real living for their families. We envision a vibrant industry with new entrants and existing players from individual entrepreneurs to large established construction organizations to big box national retailers. New entrants and incumbent players will compete based on performance to help build this great new American residential retrofitting industry.

This program could not only create jobs, but could also have a substantial impact on carbon reductions. According to the Pew Center on Global Climate Change, home energy use accounts for 21% of the overall U.S. carbon footprint — roughly twice the carbon emissions produced by passenger cars.<sup>xi</sup> Because the bulk of America's existing housing stock was built before the adoption of modern efficiency standards, considerable gains can be achieved through the implementation of basic energy-saving measures such as caulking, insulation, duct repair, window replacement and heating and cooling system upgrades. Together, these highly cost-effective measures can reduce household energy consumption by 10 to 40% for most homes in

America, implementing measures where the vast majority of the investment goes to create local jobs. In fact, it will be difficult for us to achieve our climate goals without a significant building retrofit program.

## **HOME STAR – National Initiative to Retrofit America’s Homes for Jobs and the Climate**

We are at a unique place where the need to restore American jobs and competitiveness meets our mission to reduce our impact on climate. We have a rare opportunity to build a sustainable and scalable home retrofitting industry. Our proposed plan is called HOME STAR, and it is designed to jumpstart an industry of over 1 million workers retrofitting 100 million US homes and reducing U.S. carbon footprint by 5% by 2030. It is inspired by Silicon Valley entrepreneurs and modeled on proven programs across the country. This approach has been vetted by environmental groups, labor, and industry, and will bring national focus and funding to reinvigorate the American construction industry, create good jobs and reduce energy demand.

Retrofitting homes for energy efficiency is a fast, affordable way to create new careers that cannot be outsourced overseas. Skilled but unemployed construction workers can be rapidly retrained to deliver services to a new and growing home performance industry. New entrants to the construction industry can be trained and provided with industry recognized credentials that will both allow them to contribute to this effort and set them on a long term career path in the construction industry. Home performance companies employ certified professionals who assess homes and trained retrofitters who implement solutions that can include white roofing, caulking, insulation, window, high efficiency HVAC or other upgrades to reduce wasted energy in American homes, while improving indoor air quality and comfort. Depending on the location, age, size of the house, and level of investment, retrofitting an average home can cut energy bills by 10 to 40%. For millions of people, this is a sound investment even without a government incentive. But with a focused support program from the government as described below, it could drive a massive increase in consumer demand for energy efficiency, while simultaneously spurring companies to invest in this new and growing industry.

### **Driving Mass Adoption**

The HOME STAR program has three mechanisms to increase demand and rapidly scale: performance-based incentives for homeowners and industry, consumer financing, and standards for quality and training.

**Homeowner Incentives:** HOMESTAR is a performance based system which bridges today’s struggling construction industry to a thriving, large-scale home performance industry. The incentives are designed to spur rapid job creation and will be phased out over time as the market stands up.

HOME STAR has two concurrent tracks: SILVER STAR, which creates jobs immediately with little additional training, and GOLD STAR, which is a higher quality, performance based system with certification and verification of performance standards. Over time workers – and the industry – would advance from SILVER to GOLD STAR.

In the SILVER STAR track homeowners qualify for incentives based on a list of eligible measures with installations based on a set of basic quality standards. Measures include white

insulating roofs, wall insulation, air sealing, weatherization, duct sealing, lighting and other energy efficiency “low-hanging fruit.” Purchase and installation of eligible measures will qualify for a matching payment from the government ranging from two-hundred fifty dollars for a super-efficient appliance to as much as four thousand for the implementation of five or more efficiency measures.

The GOLD STAR track is a performance-based incentive that rewards actual, audited energy savings. It starts with an energy assessment prior to work that includes energy modeling to predict savings using accredited, specially trained contractors. After the work is complete, it undergoes third party quality assurance audits. Any combination of retrofit measures that results in 20% reduction would be eligible for \$3,500 in incentives, with each additional 5% reduction achieving another \$1,500 in incentive.

In each case, the total Federal incentive cannot exceed 50% of the homeowner’s contribution.

Utilities and PUCs are changing focus from incentivizing specific products (e.g. CFLs) to performance retrofits, and we expect that ratepayer dollars will supplement and lend more effectiveness to the HOME STAR program. For every dollar of federal subsidy, we believe an average of two private sector dollars will be invested, creating a match that results in more jobs, and deeper carbon abatement.

In addition, incentive amounts can ratchet down over time to adjust demand. This model has been successful elsewhere and will allow us to use the market to balance incentive amounts. Higher incentives in the near term will drive a more rapid increase in demand, but costs will be controlled by reducing incentive levels as the industry stands up

**Industry Incentives:** In addition to homeowner incentives, HOME STAR has a series of incentives for industry actors—big box retailers, home performance contractors, and home builders—to drive industry to actively sell home performance rather than waiting for demand. Just as “Cash for Clunkers” excited dealers (who created demand) and consumers, this “Cash for Caulkers” goes to big retailers, utilities, homebuilders (who create demand) and to homeowners. Additional incentives will be provided to companies that contribute to the creation of good jobs and a skilled retrofit workforce by investing in training and health care for employees.

Major retailers such as Home Depot and Lowes are actively looking to the retrofitting market to make up for lost new construction revenues. With the downturn in new construction, these major incumbent industries are eager to focus investment and resources on creating new jobs. By designing incentives that run through the suppliers, the HOME STAR program can deliver some benefits in the form of immediate point-of-sale rebates to consumers.

Involving the industry is an important addition to get the program into full gear. There has been somewhat disappointing take-up of existing tax incentives and many in the industry attribute this to the fact that so few people know about the credit and to the delays induced by a tax filing in April.

**Consumer Financing:** The HOME STAR program could also stimulate homeowner demand through low-cost consumer financing programs that dramatically reduce initial costs and barriers to entry. A diversity of financing mechanisms could help reduce barriers to entry by enabling virtually every HOME STAR project to be cash-flow positive from month one.

## **Standards for Quality and Training**

In addition to creating immediate jobs and economic activity, to provide long-term sustainability, we must ensure that companies deliver measurable and reliable results.

**Standards:** HOME STAR will leverage “Home Performance with ENERGY STAR” as the standard model and for efficiency retrofitting, with 28 programs currently running across the country, and will work with these programs to set a new national standard for excellence in the delivery of home retrofits. Standards for home performance contractor accreditation and Building Analyst auditor certification will be implemented by the Building Performance Institute (BPI) and through a national network of third party providers. The Department of Energy will provide technical standards and software certification based on emerging standards such as the BESTEST-EX protocol. Program standards will be maintained with the help of a robust program of third-party verification and inspection designed to ensure that homeowners get what they pay for under Home Star. Inspections will be calibrated to program performance and the adoption by contractors of front-end quality measures such as BPI accreditation and use of a well-trained construction workforce in order to quickly address quality problems.

**Workforce:** Across the country, an extensive network of BPI, community colleges, weatherization training program, and union training facilities is capable of rapidly training and certifying a new home performance industry – LIUNA Training, for example, currently has the capacity to train over 100,000 workers each year at its 62 US training facilities. To ensure that the program creates good jobs and provides workers with long term career prospects in more skill-intensive aspects of retrofitting, HOME STAR will encourage contractors to employ a construction workforce trained to national quality standards. ARRA has invested in training workers for jobs in low-income weatherization that may be scaled back as funding is decreased. Building retrofitting represents a long-term opportunity for these workers in skilled jobs, at living wages, that cannot be outsourced.

## **Building on Existing Initiatives**

HOME STAR is based on the Retrofit for Energy and Environment Performance (REEP) program currently in the Waxman Markey and Kerry Boxer climate bills. However HOMESTAR should be implemented immediately in 2010 and phased into climate legislation which comes online late 2011 and 2012. HOME STAR is meant to dove-tail with climate legislation, ongoing administration efforts and to fit into ongoing funding sources based on revenues captured in future climate markets, which can then be fed back to help make reducing energy use even more affordable. It builds on efforts already underway in the government and private sectors.

The Recovery act is deploying \$5 billion to 100% grants for low income weatherization and \$1 billion for workforce training. HOME STAR will ensure there are ongoing jobs for these trained workers.

Vice President Biden’s Recovery Through Retrofit<sup>xii</sup> report complements the HOME STAR program by providing specific recommendations focused on homeowner financing and industry standards. In addition, the DOE Retrofit Ramp-Up<sup>xiii</sup> program will test neighborhood level streamlined deployment models that can leverage the HOME STAR program to increase demand. The combination of these existing federal efforts with HOME STAR will put in place the necessary foundation for rapid scale and job creation.

## Conclusions

Retrofitting millions of American homes does not require new science or technology. It builds on existing technologies and labor skills. What is new is the national need for good jobs and carbon reductions. HOME STAR is the most effective way we know to generate hundreds of thousands of new jobs fast, to reduce carbon significantly by 2020, and to create a new domestic industry. Presidential leadership can make this big idea happen at scale, and with speed. Mr. President, your leadership and urgency can produce real, rapid and sustainable results in jobs, climate, and prosperity for American families.

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<sup>i</sup> United States. Bureau of Labor Statistics. Industries at a Glance: Construction: NAICS 23. 28 October 2009. <<http://www.bls.gov/iag/tgs/iag23.htm>>

<sup>ii</sup> Pew Center on Global Climate Change. Climate Change 101: Technological Solutions, January 2009.

<sup>iii</sup> PERAB Memo to President. "Energy, the Environment and Technology." 20 May 2009.

<sup>iv</sup> McKinsey & Company. Unlocking Energy Efficiency in the U.S. Economy. Ed. Hannah Choi Granade et al. July 2009.

<sup>v</sup> United States. Bureau of Labor Statistics. Industries at a Glance: Construction of Buildings: NAICS 236. 28 October 2009. <<http://www.bls.gov/iag/tgs/iag236.htm>>

<sup>vi</sup> United States. Bureau of Labor Statistics. Industries at a Glance: Construction: NAICS 23. 28 October 2009. <<http://www.bls.gov/iag/tgs/iag23.htm>>

<sup>vii</sup> Impacts calculated by ClimateWorks using external models provided by REMI and McKinsey & Company.

<sup>viii</sup> Calculated from preliminary September 2009 employment statistics. United States. Bureau of Labor Statistics. Employment, Hours, and Earnings from the Current Employment Statistics Survey (National). 28 October 2009. <[http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?series\\_id=CES3000000001&data\\_tool=XGtable](http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?series_id=CES3000000001&data_tool=XGtable)>

<sup>ix</sup> Includes wood products, fabricated metal products, and nonmetallic mineral products. United States. Bureau of Labor Statistics. Industries at a Glance: Manufacturing: NAICS 31-33. 28 October 2009. <<http://www.bls.gov/iag/tgs/iag31-33.htm>>

<sup>x</sup> Includes only building material and supplies dealers. United States. Bureau of Labor Statistics. Industries at a Glance: Building Material and Garden Equipment and Supplies Dealers: NAICS 444. 28 October 2009. <<http://www.bls.gov/iag/tgs/iag444.htm>>

<sup>xi</sup> Pew Center on Global Climate Change. Climate Change 101: Technological Solutions. January 2009.

<sup>xii</sup> [http://www.whitehouse.gov/assets/documents/Recovery\\_Through\\_Retrofit\\_Final\\_Report.pdf](http://www.whitehouse.gov/assets/documents/Recovery_Through_Retrofit_Final_Report.pdf)

<sup>xiii</sup> <http://www.eecbg.energy.gov/Downloads/EECBGCompetitiveFOA148MON.pdf>