Submission of Steven Nadel,
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American Council for an Energy-Efficient Economy (ACEEE)

To the Energy and Environment Subcommittee
House Energy and Commerce Committee

Hearing on:
Home Star

March 18, 2010

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Summary

Home Star is a program to create jobs by improving the energy efficiency of homes, reducing homeowner energy bills and laying the groundwork for the longer-term Retrofit for Energy-Efficiency Program (REEP) contained in the American Clean Energy and Security Act (ACES). Home Star is essentially a program for the middle-class—those who are not eligible for free weatherization under the low-income Weatherization Assistance Program (WAP). The Home Star program was developed and is being championed by a large coalition, of which ACEEE is a member.

ACEEE supports Home Star because it:

- creates jobs
- saves energy
- saves consumers money
- makes consumers more comfortable
- helps stretch available domestic energy resources
- reduces emissions of greenhouse gases
- lays the ground-work for a longer-term effort, as contained in REEP

Home Star will create jobs because residential retrofits are labor-intensive. On a national level, a dollar invested in energy efficiency will create about 17 jobs per million dollars invested, counting both direct jobs (e.g., construction and manufacturing) and indirect jobs (e.g., wholesale and retail). These are significantly more jobs than the approximately 7 jobs created per million dollars spent on energy purchases. So for each $1 million we save on energy bills and invest in energy efficiency, we generate about ten net jobs. Furthermore, when energy bills are reduced, the money saved is spent elsewhere in the economy, generating some additional jobs.

On March 9, 2010, ACEEE released an analysis on the jobs impacts of Home Star using an input-output model of the U.S. economy. **We estimate that Home Star will generate 126,000 jobs in 2010 and 36,000 in 2011.** In addition, ongoing energy savings in homes that are retrofitted in 2010 and 2011 will result in about 2,000 jobs each year from 2012 to 2019 (the last year in our analysis). ACEEE's estimate of 162,000 jobs in 2010 and 2011 is very similar to an earlier analysis prepared for the Home Star Coalition that estimated 168,000 jobs in 2010 and 2011. These macroeconomic analyses involve a combination of "science" and "art," and for these two estimates to be so close is reassuring.

As part of our analysis of the Home Star program we also looked at what the likely energy savings and emissions reductions will be. Overall, we estimate that the more than 3 million participating households will save about $1.1 billion in their energy bills *annually* at current energy prices. Savings will increase if energy prices go up. The emissions reductions total more than 4 million metric tons of carbon dioxide annually, equivalent to taking 767,000 cars off the road.

Our detailed submission also discusses the process and criteria that were used to select the specific energy-saving measures that are included in Home Star.

Introduction

My name is Steven Nadel and I am the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a nonprofit organization dedicated to increasing energy efficiency to promote both economic prosperity and environmental protection. We were formed in 1980 by energy researchers and are celebrating our 30th anniversary this year. Further information on our organization can be found on our Web site: www.aceee.org. I have testified multiple times before this Subcommittee as both a Democratic and a Republican witness and appreciate the opportunity to submit these comments for the record.

Personally, I have worked actively on residential energy efficiency retrofit issues since the late 1970's. I ran an energy retrofit program in poor neighborhoods of New Haven, CT, assisted with the design and implementation of programs in Massachusetts during the 1980's, and worked on utility-operated energy efficiency programs in the late 1980's and the 1990's. More recently, I was a major contributor to the design of the Retrofit for Energy Efficiency Program (REEP) contained in the House-passed American Clean Energy Security Act (ACES), and to the design of the Home Star program that is the subject of today's hearing.

Home Star

Home Star is a program to create jobs by improving the energy efficiency of homes, reducing homeowner energy bills and laying the groundwork for the longer-term Retrofit for Energy-Efficiency Program (REEP) contained in ACES. Home Star is essentially a program for the middle-class—those who are not eligible for free weatherization under the low-income Weatherization Assistance Program (WAP). Other witnesses at this hearing will describe the specifics of the Home Star proposal. The program was developed and is being championed by a large coalition, of which ACEEE is a member.

ACEEE supports Home Star because it:

- creates jobs
- saves energy
- saves consumers money
- makes consumers more comfortable
- helps stretch available domestic energy resources
- reduces emissions of greenhouse gases
- lays the ground-work for a longer-term effort, as contained in REEP

Home Star creates jobs because home weatherization is labor-intensive. I discuss this issue further in the next section of these comments.

Home Star will have a substantial impact on home energy use. Under Gold Star, whole-home energy use must be reduced by at least 20% to qualify. Under Silver Star, measures were chosen that on average will reduce energy used for space heating, cooling and water heating by at least 5%. We estimate the average savings per measure will be about 8%. By reducing energy use by 8-20% or more, Home Star will have a similar impact on consumer energy bills. In 2005, according to EIA's Residential Energy Consumption Survey, the average American household spent $1810 on energy for their home (e.g. cars are not included). Electricity and fuel oil prices have risen since then, with the result that the average home energy bill is more than $2000 per year. Thus, Gold Star participants will save $400 per year or more, which can be significant for those on tight budgets.

Home weatherization also helps make residents more comfortable in their homes, reducing drafts and "cold spots" and distributing heat in the winter and cool in the summer more evenly.

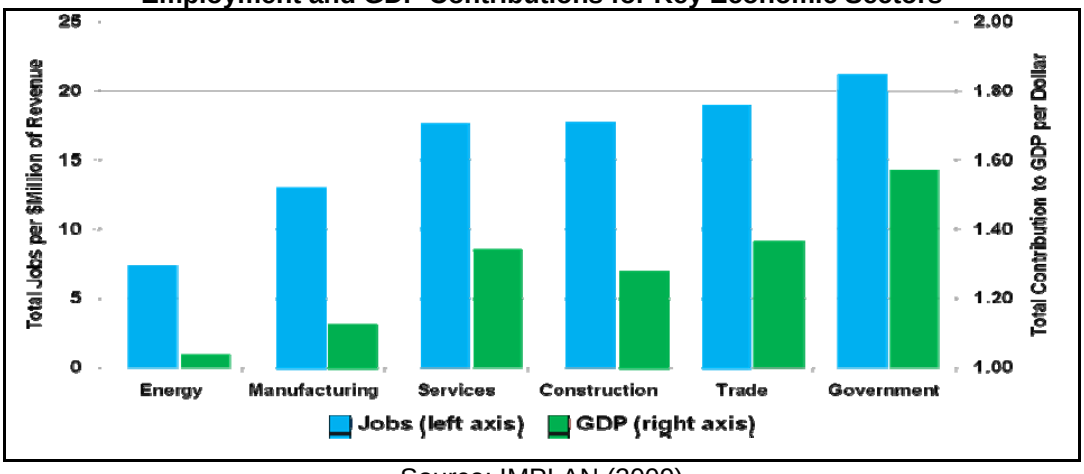
In addition, by saving fuel oil and natural gas, Home Star helps to reduce fuel imports and helps stretch domestic energy resources so they last longer. We estimate that Home Star will reduce annual U.S. natural gas consumption by about 32 Trillion Btu (enough to serve about 460,000 average U.S. homes for a year) and will save about 1.3 million barrels of oil annually (e.g. about the capacity of a Very Large Crude Carrier, a.k.a. a "supertanker"). These energy savings will also reduce greenhouse gas emissions, providing a useful step in efforts to address global warming. As discussed further below, we estimate annual reductions of more than 4 million metric tons of carbon dioxide. These savings will grow substantially under the REEP program.

Finally, Home Star is in many ways an early start of the REEP program. REEP is a program to help homeowners improve the energy efficiency of their homes and is designed to serve tens of millions of homes over the long-term. The program has bipartisan support and in addition to being in ACES, is also contained in the American Clean Energy Security Act reported out by the Senate Energy Committee. Home Star will allow REEP to begin more quickly, when and if Congress can complete work on an energy bill.

Jobs

As I noted above, a primary reason we support Home Star is that it will create jobs in the short-term. As other witnesses at this hearing will discuss, residential retrofits are labor-intensive. It takes several people to insulate a house, install new windows, or conduct air and duct sealing. In addition, jobs are generated when new equipment is produced, and at the wholesale and retail level when this equipment is sold. Most of the equipment covered by Home Star is produced domestically. For example, an analysis by the Home Performance Resource Center found that for most of the energy efficiency measures included in Home Star, more than 90% of products sold are produced domestically.[1] On a national level, a dollar invested in energy efficiency will create about 17 jobs per million dollars invested, counting both direct jobs (e.g. construction and manufacturing) and indirect jobs (e.g. wholesale and retail). These are significantly more jobs than the approximately 7 jobs created per million dollars spent on energy purchases.[2] So for each $1 million we save on energy bills and invest in energy efficiency, we generate about ten net jobs. This is illustrated in the graph on the next page. Furthermore, when energy bills are reduced, the money saved is spent elsewhere in the economy, generating some additional jobs.

Employment and GDP Contributions for Key Economic Sectors



Source: IMPLAN (2009)
Note: Energy efficiency is primarily construction and services.

[1] Home Performance Resource Center. Feb. 2010. *Domestic Manufacturing Shares of Common Energy Remodeling Products.* http://www.hprcenter.org/publications/domestic_manufacturing_shares.pdf.
[2] These figures are drawn from the IMPLAN database of input-output coefficients prepared by the IMPLAN Group, which is a spinoff from work originally started by economics researchers at the University of Minnesota.

On March 9, 2010, ACEEE released an analysis on the jobs and other impacts of three energy-efficiency jobs provisions now being considered in the Senate.[3] This analysis was calculated using ACEEE's Stimulus Jobs Calculator (http:/www.aceee.org/energy/national/recovery.htm). This in turn was based on ACEEE's more detailed **D**ynamic **E**nergy **E**fficiency **P**olicy **E**valuation **R**outine (DEEPER) model and the IMPLAN Group input-output coefficients.[4] Our estimates of jobs provided by Home Star are provided in the table below. We estimate that Home Star will generate 126,000 jobs in 2010 and 36,000 in 2011. In addition, on-going energy savings in homes that are retrofitted in 2010 and 2011 will result in about 2000 jobs each year from 2012 to 2019 (the last year in our analysis). All of these figures are "job years", meaning one fulltime job for one year. These estimates are net jobs created in each year, meaning jobs attributable to Home Star investments and resulting energy savings, minus the jobs lost due to lower household energy use. The assumptions we used in making these estimates are documented in Appendix 1 of these comments.

Net Jobs Estimates				
Year 1 - 2010	Year 2 - 2011	Year 3 - 2012	Year 5 - 2014	Year 10 - 2019
126,000	36,000	2,000	2,000	2,000

Our estimate of 162,000 jobs in 2010 and 2011 is very similar to an earlier analysis prepared for the Home Star Coalition that estimated 168,000 jobs in 2010 and 2011. These macroeconomic analyses involve a combination of "science" and "art," and for these two estimates to be so close is reassuring.

Energy Savings and Emissions Reductions

As part of our analysis of the Home Star program we also looked at how many homes could be served by the proposed $6 billion budget and what the likely energy savings and emissions reductions would be. Details of our analysis are contained in Appendix 1 to this submission. Our results are summarized in the table below. Overall, we estimate that participating households will save about $1.1 billion in their energy bills *annually* at current energy prices. Savings will increase if energy prices go up. The emissions reductions total more than 4 million metric tons of carbon dioxide annually, equivalent to taking 767,000 cars off the road.

Annual Savings in 2011 as a Result of 2010-2011 installations						
Electricity (TWh)	Fuels Savings (TBtu)	Primary Energy Savings (Quads)	Avoided Carbon Dioxide (MMT)	Federal Investment (billion 2010 $)	Total Investment (in Billion 2010$)	Annual Participant Savings (Billion 2010$)
4.2	39.7	0.08	4.14	6.00	13.50	1.12

Notes:

- Savings provided are annual savings in 2011 as a result of installations in 2010 and 2011.
- Fuel savings include natural gas, fuel oil, and "other fuels" as defined by EIA in their *Annual Energy Outlook*.

[3] See http://www.aceee.org/press/030810.htm for a link to the full analysis.
[4] Further details can be found at http://aceee.org/pubs/e098.pdf .

Choosing the Measures in Home Star

Committee staff have asked me to discuss how the measures included in the Silver Star component of Home Star were chosen. These decisions were made by the Home Star Technical Committee, a group I coordinate.

The Home Star Coalition formed a Technical Committee made up of representatives from organizations that signed-onto the Home Star Coalition Principles. The Technical Committee was open to all in the coalition who were interested in participating in the Technical Committee. A list of current Technical Committee members is attached in Appendix 2 to these comments. A broad range of industry, environmental, energy-efficiency experts and organizations with very different perspectives and agendas were brought into the conversation to ensure that recommendations were established consistent with the criteria described below. In almost all cases we were able to achieve consensus on the best items to include and the appropriate specifications and incentive levels.

The original instructions to the Technical Committee from the full coalition, based on White House and Hill staff input, were to come up with a very simple and manageable program involving about 8-10 efficiency measures, each eligible for the same incentive. Based on this, the Technical Committee decided:

- To set the incentive at $1000 per measure, or 50% of measure cost (whichever is less)—large enough to attract substantial homeowner attention.
- To look for measures that typically achieve about 5% or greater savings in home energy use (heating, cooling and water heating). This level of savings is needed to cost-justify the $1000 incentive, meaning that a measure will be cost-effective over the measure's life considering the $1000 federal incentive plus a matching homeowner contribution of at least an equivalent amount (often the homeowner contribution will be greater, sometimes three to four times the federal amount).
- To look for measures that make sense on a national level—this was for simplicity and fast roll out. Measures that made sense only in a specific region might be not be appropriate or could even be counter-productive in other regions.
- To consider the market availability of technologies, recognizing the need for rapid penetration rather than a multi-year ramp up.
- To look for measures that would generally not be adopted without incentives. This includes retrofit measures (e.g. insulation, air and duct sealing) and equipment replacement measures where the current market share of qualifying equipment is significantly less than 25%. This latter provision meant that for new equipment, we were looking to set qualification levels stronger than ENERGY STAR, since ENERGY STAR typically has a 25-50% market share, depending on the product. This was designed to insure that Federal dollars increased investment and savings and not just pay for already planned investments.[5]

Based on these criteria, the original list of measures was:

1. Whole-house air sealing
2. Attic insulation
3. Above-grade wall insulation
4. Duct sealing or replacement
5. Crawl space insulation
6. Window replacement
7. Heating system replacement (natural gas)
8. Air conditioner or heat pump replacement
9. Replacement water heater (heat pump electric, condensing and tankless gas, solar)

[5] This discussion among the Technical Committee happened before window manufacturers and several retailers joined the discussions. As discussed below under windows, many of these newer participants think that for windows, a qualification level based on the 2010 ENERGY STAR specification is appropriate.

Specific criteria were developed for each measure to provide enough savings to justify the $1000 incentive and to keep current market shares well below 25%.

After the original list was prepared, we received many requests for additions. The Technical Committee and the Home Star Coalition at large received extensive input and suggestions. We reviewed each one in light of the above criteria. At times, there was strong support for including specific measures with smaller energy savings. In these cases we decided to provide reduced ($250) incentives for several measures, so that the savings and incentive would match. After this was done, we received requests that the incentive be increased to $1500 for two particularly high-savings but labor-intensive and expensive measures—attic insulation with air sealing, and wall insulation. We also received a request to include a $250 incentive for consumer-installed insulation.

Based on these requests and our discussions about them, the Technical Committee decided to add the following measures:

a. Basement wall insulation (combined with crawl space insulation) to address a wider variety of housing stock found in different regions.
b. Replacement doors ($125/door, up to 2 doors/home)
c. Oil-fired replacement heating systems (combined with gas heating systems) to address available needs and technologies used nationwide but particularly in the Northeast and Midwest.
d. Wood stoves, furnaces and boilers (combined with other heating systems)
e. Indirect water heaters (combined with other water heaters) to provide a more technology neutral approach with equivalent energy savings.
f. Natural gas storage water heaters with .67 EF, $250 incentive. We added these because there are very few natural gas systems on the market at the .80 EF level needed to qualify for a $1000 incentive.
g. Rim joist insulation, $250 incentive recognizing the value of this measure in homes where a full crawlspace or basement wall treatment is not practical.
h. Geothermal heat pumps, differentiating these from air-source heat pumps.
i. Water heaters integrated with geothermal heat pumps, with a full incentive for units that provide year-round hot water, and a $500 incentive for those that provide hot water only when home heating or cooling is needed.
j. Storm windows for use in historic homes where new windows are inappropriate. These save less than new windows and therefore we approved them for a $250-600 incentive, depending on the number of storm windows installed.

We also accepted the request to increase the incentive for attic and wall insulation to $1500 based on the high level of savings and low 'free riders' resulting from these measures. And we accepted the request to include the $250 consumer-installed insulation incentive after considering industry sales and market trends that demonstrate the majority of consumers install insulation themselves and see measurable energy savings, yet 80 million homes are under insulated. Insulation manufacturing (100% domestic) is running at 40% capacity. Including this limited rebate will broaden the scope of the program to include homeowners not qualifying for low income weatherization but who cannot afford a contractor. Adding do-it-yourself materials will also boost manufacturing job growth. The Committee agreed to limit the overall spend of the consumer-installed rebate to $250 million to ensure it does not disproportionately impact contractor-installed measures.

A number of measures were suggested but rejected by the Committee as follows:

- Window film—generally doesn't save 5% of whole home use; not appropriate nationally.
- Window shutters—no documentation of savings in field use. These shutters only save energy if consumers shut them, something they may do at night but are unlikely to do during the day as they block the windows.
- Electric resistance storage water heaters ($250 incentive)—savings too low to justify an incentive.
- New hot water distribution systems—too few contractors are familiar with this measure to make it appropriate for a 2010 mass-market program.

- Gas heat pumps—these systems are not available in most regions of the country and have not been fully field-proven. However, while not appropriate for Silver Star, these systems can by used in Gold Star.

At its meetings the Technical Committee also discussed the qualification levels for specific pieces of equipment, based on the general principle, discussed above, that the current market share of qualifying equipment should be significantly less than 25% so as to minimize the payment of incentives to equipment that would have been installed anyway. In most cases consensus was reached. But in a couple of cases there was a majority decision and a minority that did not agree. I discuss these issues here.

First, the most difficult issue on qualification levels has been windows. Originally, the proposal was to provide a full $1000 incentive for the replacement of 75% of all windows. This was later changed to a specific number—10 windows—that met the standards used for the residential efficiency tax credit, 25C. These criteria are set at 0.3 U factor and 0.3 SHGC. The majority of window manufacturers and many retailers favor a switch to the 2010 ENERGY STAR criteria to align marketing efforts and complement existing ENERGY STAR programs. Efficiency advocates and Anderson windows prefer the current tax credit criteria, noting that these criteria are now being heavily marketed and also stating that their data show that a majority of windows on the market meet the 2010 ENERGY STAR criteria in some regions. A few other parties also weighed in, supporting either 2010 ENERGY STAR, 25C, or in one case, higher levels than 25C. Efforts to find a compromise resulted in a hybrid that used 2010 ENERGY STAR, but changes some of the 2010 ENERGY STAR criteria. However, this compromise did not get unanimous support and Senate staff felt this alternative was too complicated and instead decided to reference the tax credit so that if it should be changed, as there is presently an attempt to do, the Home Star levels would remain consistent with the tax credit. The Technical Committee did reach agreement to recommend lowering the number of required windows from 10 to 8 and included doors, both at the request of the window and door industry and retailers.

Second, while the Technical Committee reached consensus on qualifying levels for natural gas and propone furnaces, we are aware that some people are advocating for a lower qualifying level. Currently, about 43% of gas furnace sales are 90% AFUE or more. The Technical Committee found that this high market share violated our principle of trying to minimize incentives to sales that would have happened anyway ('free riders'). Based on current sales of 90% AFUE furnaces, about $1 billion of the Home Star budget would be used by "free riders" at the 90% efficiency level.[6] Instead, the Technical Committee decided to set the qualifying level at 92% AFUE, a level commonly used by utility incentive programs. The other option was to go to 95% AFUE, the level required to qualify for federal tax incentives, but the Technical Committee decided that this was too restrictive, particularly for southern states.

Third, the qualification level for water heaters has recently come up for discussion. As noted above, earlier a compromise was reached to include .67 EF gas storage water heaters with a $250 incentive. The .67 level was chosen because it becomes the ENERGY STAR level on September 1, 2010. Recently Lowe's suggested that we reference ENERGY STAR, allowing a .62 EF water heater to qualify from program start until when ENERGY STAR changes on September 1st. They recommended a $250 incentive. ACEEE conducted an economic analysis on this proposal and found it is not cost effective, as the benefits of a .62 EF water heater are less than half of the proposed $250 incentive. The ACEEE analysis is attached in Appendix 3 to these comments. I should note that Lowe's disagrees and may be providing additional comments for the record.

Finally, I should note that the Technical Committee is still discussing whether to include electric tankless water heaters. We have decided to reject units sized to serve an entire home (e.g. units using 30 kW of electricity or more), as the energy savings are too small to justify an incentive. We are still discussing whether to add and how to define smaller units (e.g. units using less than 25 or 29 kW) that can be

[6] The $1 billion cost is based on 2009 residential furnace sales of 2,174,528 (from AHRI website), an ENERGY STAR market share of 43% in 2008 (from EPA; the ENERGY STAR qualification level is 90% AFUE), a $1000 rebate, plus 10% for other program costs (amount set aside in legislation).

distributed around the house. Energy is saved because heat losses from the distribution system are minimized.

Recommended Changes and Additions

While ACEEE strongly supports the Home Star draft as written, we do have a few changes and additions to recommend as discussed below.

First, for purposes of NEPA and Buy-American, the Home Star program should be treated in the same manner as the Weatherization Assistance Program. State officials testified last week before the Select Committee on Global Warming and Energy Independence and the Senate Energy Committee that the federal and state governments have learned a great deal through the implementation of ARRA. One thing we learned is that further delay is not acceptable. Home Star is a residential energy efficiency retrofit program: Weatherization is a residential energy efficiency retrofit program. Home Star should be treated in the same manner for purposes of these important statutes.

Second, we recommend that do-it-yourself products be added to the bill, with incentives up to 50% for up to $250 per household, and a total cap on such expenditures of $250 million. The rationale for this change was discussed in the prior section of these comments.

Third, while I want to stress that Home Star is ACEEE's first priority for a new jobs bill, if additional resources are available in a jobs bill, we are also supporting two other energy efficiency programs with an opportunity to generate many jobs. Our next priority is to provide additional funding for a DOE industrial grant program funded under ARRA that was oversubscribed by a factor of 24 ($3.8 billion in proposals, $156 million available). No effort to repair the economy or create jobs can be accomplished without the involvement of the industrial sector—it is the base upon which the entire economy is built. A letter describing this opportunity and the benefits is attached as Appendix 4 to these comments. And our third priority is the Building Star program for commercial buildings that is somewhat modeled after Home Star. Building Star has recently been introduced in the Senate by Senators Merkley and Pryor.

Conclusion

Home Star will create an estimated 162,000 jobs, primarily in 2010, but some in 2011. It will also save consumers more than $1 billion annually in their energy bills and lay the groundwork for the REEP program, a longer-term effort to weatherize tens of millions of homes that is making its way through the legislative process (passed the House, reported out by the Senate Energy Committee). A rigorous process was used to develop the technical details of Home Star. We urge this Committee to report out the bill, and hope that Congress will speedily adopt it so that job creation can begin as soon as possible.

Appendix 1: Inputs into ACEEE Analysis of Home Star

Home Star Impacts

Program size:	$6.00	Billion
Houses Retrofitted:	3.51	Million
Savings to American homeowners per year:	$1,118	Million
Cars off the road:	767,000	
300 MW Power plants offline:	4	

		Notes
Federal budget (billion $)	$6.00	From legislation.
Administrative portion	10%	From legislation.
Left for incentives (billion $)	$5.40	Subtract out administrative costs.
Incentives as % of measure cost	40%	In most cases, incentives will not cover 50% of measure cost.
Total investment (billion $)	$13.50	Incentive dollars divided by incentive as % of measure cost.
% of consumer costs financed	40%	
Average basecase HH kWh/yr	4,619	includes AC, Space Heating, Water Heating (2005 RECS)
Average Basecase HH mBtu/yr	64.9	includes AC, Space Heating, Water Heating; a Wtd avg of NG, oil, LPG
Whole Home HH kWh/yr	13,159	2005 RECS, for single-family homes
Whole Home HH HH mBtu/yr	68.9	2005 RECS, for single-family homes
Elec	11.61	Average residential cost from EIA Electricity, in cents
NG	15.78	Weighted avg residential cost for NG, LPG and oil, past year
Silver Star		
Percent of total budget	67%	From legislation.
Average incentive/home	$1,200	Estimate. Some do more than 1 measure, sometimes 50%<$1000.
Number of homes	2,999,700	Incentive budget * Silver Star % / incentive per home
Average savings/home	9.6%	8% avg. savings/$1000 (based on 7 most common measures)
Annual savings (electricity, in GWh)	1,995	
Annual savings (fuels, in bBtu)	28,052	
CO2 (in MMT)	2.25	weighted average of fuels emissions factors, from AEO 2009
Gold Star		
Percent of total budget	33%	From legislation.
Average incentive/home	$3,500	Estimate. Based on 22% average savings (just over 20% minimum)
Number of homes	514,234	Incentive budget * Silver Star % / incentive per home
Average savings/home	22.0%	Tied to average incentive
Annual savings (electricity, in GWh)	2,233	
Annual savings (fuels, in bBtu)	11,686	
CO2 (in MMT)	1.9	weighted average of fuels emissions factors, from AEO 2009
Total Savings		
Annual savings (electricity, in GWh)	4,228	
Annual savings (fuels, in bBtu)	39,739	
Energy bill savings (in million $)	1,118	
CO2 (in MMT)	4.1	

ACEEE Estimates, 3/09/10

Appendix 2: Home Star Technical Committee Members

The Technical Committee was open to all Coalition members who were interested. In addition, often other people joined the discussions for measures they were particularly interested in.

Greg Bergtold, Dow
Lane Burt, NRDC
Dave Calabrese, AHRI
Michael Chenard, Lowes
Steve Cowell, CSG
Matt Golden, Recurve
John Jones, NYSERDA
Heather Kennedy and Ron Jarvis, Home Depot
Jay Murdock, Macso
Steven Nadel, ACEEE
Kate Offringa, NAIMA
Mike Rogers, GreenHomes America
Lowell Ungar, ASE
Larry Zarker, BPI

Additional People Participating in Window Discussions

Michael O'Brien, WDMA
Matt Stanton, Fortune Brands
Garrett Stone, Anderson Windows

Appendix 3: ACEEE Analysis of the Cost-Effectiveness of Proposed Incentive for .62 EF Gas Storage Water Heaters

Base water heater use (therms)	237	From EIA RECS 2005
Current water heater efficiency std.	0.59	DOE TSD in current water heater rulemaking
Energy Star efficiency	0.62	Energy Star thru 8/31/10
% savings	4.8%	
Therm savings	11.5	
Average incremental installed cost	$19	DOE TSD in current water heater rulemaking
Proposed incentive	$250	
Lifetime	13	DOE TSD in current water heater rulemaking
Real discount rate	5%	DOE TSD in current water heater rulemaking
Incentive cost per lifetime therm saved	$2.32	
Average residential gas cost/therm	$1.03	EIA for 12/09 (most recent available)
Lifetime benefits of Energy Star unit	$110.80	
Benefit-cost ratio	0.44	

Appendix 4: Copy of Letter on Addressing Manufacturing in a Jobs Bill

February 23, 2010
(Updated February 26, 2010)

The Honorable Harry Reid
United States Senate
522 Hart Senate Office Building
Washington, D.C. 20510

Dear Senator Reid,

As unemployment in America remains high, it is incumbent on Congress to quickly take steps to revitalize existing manufacturing and create new jobs. Manufacturing produces wealth, encourages economic growth, and has been a key factor in this country's high standard of living. No effort to repair the economy or create jobs can be accomplished without the involvement of the industrial sector—it is the base upon which the entire economy is built. Productive investments in manufacturing ripple throughout the economy, as every manufacturing job—such as operating and maintaining machines and facilities—supports three jobs elsewhere in the economy, including the design, marketing, delivery, and sale of those manufactured goods. A new focus on **advanced manufacturing** processes can make the sector more energy-efficient, cleaner, safer, and most important, can create and preserve sustainable jobs and make American industries more **competitive** in the global economy.

Economic stimulus for energy-efficient manufacturing is a key component to this sector's continued competitiveness and growth. However, recent actions by Congress to stimulate the economy have largely overlooked the industrial sector. Indeed, of the $787 *billion* spent on the *American Recovery and Reinvestment Act* (ARRA), only $156 *million* was reserved specifically for industrial energy efficiency and combined heat and power (CHP), and a minimal portion of state grants went to investments in manufacturing.

The Industrial Technologies Program (ITP) within the Department of Energy (DOE) received applications requesting over $3.8 billion for the $156 million in available grants—over 24 times the funds available. These grants are rendered even more productive because they leverage private funds that exceed the federal share. The $156 million that DOE ITP awarded represents a total investment of $785 million; the requested $3.8 billion would have leveraged a total investment of $9.2 billion. The proposals outlined below, and other similar proposals that could be funded through an expansion of this existing program, represent large-scale, "shovel-ready" opportunities for stimulus spending that can put people to work immediately while contributing to the competitiveness of U.S. manufacturing. Through technology production and installation, and the implementation of engineering best practices and other energy efficiency programs, **tens of thousands of jobs will be created** and existing jobs will be preserved by the increased competitiveness of U.S. manufacturers.

Moreover, the manufacturing sector faces some significant market barriers that often make improved efficiency and competitiveness a complex task. Federal policies to encourage investment in this area can help to overcome these barriers.

We, the undersigned organizations and firms, call upon the U.S. Congress to provide significant stimulus to the manufacturing sector for investments in energy efficiency and tooling for the production of energy-efficient and clean energy products. Specifically, we suggest enactment of the following provisions to increase employment in the manufacturing sector and set the United States back on the path of sustainable economic growth and competitiveness:

- **$4 billion energy-efficient manufacturing grant program**
  It has become clear over the past several months that with industrial facilities struggling to survive, tax credits and loan guarantees are not sufficient to compel manufacturers to invest in energy efficiency in the current capital-constrained environment. Public-private partnership grants, such as the $156 million awarded by ITP—for which nearly $4 billion in responsive proposals were received—have proved to be not only palatable to manufacturers but also effective at reducing energy consumption and greenhouse gas emissions. Expanded funding for this grant program of at least $4 billion would immediately create jobs, help reduce manufacturing costs, encourage production of energy-efficient and clean energy products, and help protect manufacturers from the costs of carbon emissions regulations. Providing additional funding for grants is the fastest and most effective way to catalyze investment in manufacturing in the immediate term.

  Congress should first and foremost specify that DOE immediately fund any projects that were found meritorious during the Recovery Act solicitation but were denied due to lack of funding, and direct DOE to immediately issue and process a second solicitation to identify other "shovel-ready" projects with awards to be made by mid-year. In addition to a general solicitation for industrial energy efficiency, this second solicitation should allocate a portion for small and medium manufacturing enterprises (SME). SMEs are a vital part of the economy and are important to job creation, but were underrepresented in the recent DOE grant awards. Providing a dedicated allocation to SMEs would address this opportunity.

- **Additional $50 Million for the Manufacturing Extension Partnership (MEP) Program**
  Congress should authorize an additional $50 million for the Hollings Manufacturing Extension Partnership (MEP) program, administered by the National Institute of Standards and Technology (NIST). MEP centers are located in every state and operate as private-public partnerships. MEPs contribute directly to job retention by working directly with small and medium-sized manufacturers to improve their processes, adopt new technologies, reduce costs, and innovate to compete in a global market. In FY 2007 alone, an MEP impacts study reported that their services led to 57,000 jobs created or retained, $10.5 billion in new or retained sales, $2.2 billion in new private investment, and cost savings of over $1.4 billion. The MEPs are awarded federal funds for operations through competitive solicitations, and the requested additional $50 million would also be awarded competitively. These additional funds would be used for tools, services, and experts to assist small and medium-sized manufacturers and could be awarded in as little as 60-90 days. The centers are normally required to provide 50% or more of their capital and costs through non-federal sources; however, given the current economic situation,

waiving the requirement for this $50 million would speed the funds' distribution and implementation.

The ARRA funds noted above were specified for CHP, district energy systems, waste energy recovery systems, and industrial end-use energy efficiency, which received only a relatively small amount. There are still many industrial energy efficiency initiatives with great potential for job creation, including:

- *"Smart" manufacturing:* Using sensors, information networks, and controls to dynamically optimize production lines and entire facilities enhances energy efficiency, improves productivity and product quality, and reduces emissions. The European Union has already made $1.6 billion in grants available to their industrial base in this area as part of their stimulus program, and the U.S. should follow suit. Over $1 billion dollars in "shovel-ready" smart manufacturing projects have already been identified in the U.S. Public-private partnership grants should be provided to firms for the design, installation, and commissioning of smart manufacturing control systems.
- *Mechanical insulation:* Proper maintenance is often deferred in manufacturing plants, leading to increased energy costs and leaving firms at a competitive disadvantage. Insulation is an often-overlooked, highly cost-effective efficiency measure that provides real savings while immediately creating a wide array of quality jobs. One billion dollars of grants for the installation of mechanical insulation could create tens of thousands of jobs and could be implemented immediately.
- *Save Energy Now LEADER Program:* Energy-intensive industries joining DOE's SEN LEADER Program have pledged to reduce their energy intensity by 25% over 10 years. Grants to manufacturers such as these enable them to undertake large-scale energy efficiency projects that require independent, 3rd party technical assistance and the purchases and installation of energy efficient process and support technologies. Not only do such projects generate employment opportunities, but they also enable better energy efficiency and environmental performance.

Thank you for the opportunity to submit these comments. Please contact Nate Kaufman (202-507-4026, nkaufman@aceee.org) with ACEEE if you have questions or require additional information.

Sincerely,

Alliance to Save Energy

Aluminum Association

American Chemistry Council

American Council for an Energy-Efficient Economy

American Forest & Paper Association

American Foundry Society

American Iron and Steel Institute

Apollo Alliance

Biorefinery Deployment Collaborative

Business Council for Sustainable Energy

Center for American Progress Action Fund

Eastman Chemical Company

Glass Manufacturing Industry Council

Industrial Energy Consumers of America

Ingersoll Rand

International Association of Heat and Frost Insulators and Allied Workers

International District Energy Association

Johnson Controls, Inc.

The Manufacturing Institute

National Association of Manufacturers

National Council for Advanced Manufacturing

National Electrical Manufacturers Association

National Insulation Association

National Science Foundation Smart Process Manufacturing Initiative

North American Die Casting Association

Northeast-Midwest Institute

Steel Founders' Society of America

Recycled Energy Development

Rockwell Automation

U.S. Clean Heat & Power Association