Testimony of Paul W. Parfomak, Ph.D.
Specialist in Energy and Infrastructure Policy
Congressional Research Service

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Good morning Chairman Bingaman, Ranking Member Murkowski, and Members of the Committee. My name is Paul Parfomak, Specialist in Energy and Infrastructure Policy at the Congressional Research Service (CRS). CRS appreciates the opportunity to testify here today about the proposed Home Star Retrofit Rebate program detailed in the Majority Staff Draft provided to the service on March 2, 2010. This testimony discusses CRS's initial perspectives on the Home Star proposal, focusing primarily on operational and energy-efficiency aspects of the program. In accordance with its enabling statutes, CRS takes no position on this or any other legislation.

Introduction

The Home Star program is intended to achieve significant energy-efficiency improvements in American homes while generating new employment opportunities in the home remodeling, energy services, and related manufacturing industries. The program targets the residential sector, which numerous studies have shown to be among the largest sources of cost-effective energy-efficiency opportunity in the United States.[1] The program seeks to build on prior experience with both federal and state energy-efficiency programs to provide operating templates that may be replicated nationwide.

While the proposed Home Star program may present a significant opportunity for both energy-efficiency and employment—it also contains untested operational elements and has set aggressive goals for homeowner participation. CRS has identified four key considerations which may warrant further attention as Congress reviews the Home Star program. They are the two-tiered rebate structure, rebate aggregation, technical standards, and overall expectations for program participation.

Two-Tiered Rebate Structure

Home Star's choice of direct consumer rebates over tax credits and other forms of incentive seeks to promote home efficiency retrofits as quickly as possible. The program would employ a two-tiered structure for energy-efficiency rebates. Its Silver Star program tier would provide up to $3,000 per home in prescriptive rebates for straightforward home upgrades, including insulation, efficient HVAC units, new windows and other measures. The Gold Star program tier would offer $3,000 rebates for more comprehensive energy retrofits achieving at least 20% energy savings, with rebates increasing up to $8,000 per home for retrofits achieving 45% energy savings. The Silver Star rebates would be paid automatically upon job completion and submission of a rebate

[1] See, for example: McKinsey & Company, *Unlocking Energy Efficiency in the U.S. Economy*, July 2009, p. 10; National Academy of Sciences, *Real Prospects for Energy Efficiency in the United States*, National Academies Press, 2010, pp. 31-84.

request. In contrast, Gold Star rebates would require "testing out" to document actual energy savings before rebates would be paid.

While Home Star's two-tiered structure offers a mechanism to capture the highest levels of energy savings from very inefficient homes, Congress may examine whether this structure may unintentionally discourage energy-efficiency investments due to "cream skimming." Cream skimming of energy-efficiency opportunities, "in which relatively certain (but relatively shallow) energy savings opportunities are selected in favor of more promising but more complex and uncertain measures" has long been documented as a challenge to efficiency retrofits in buildings.[2] Because the Silver Star rebates are simple, require no simulation or testing capabilities, require no post-installation performance documentation, and involve no risk of underperformance, they may be substantially more attractive to general contractors than Gold Star rebates. Many contractors with no additional training could begin work under the Silver Star program immediately. Financially constrained homeowners might also prefer the Silver Star program because it would require less investment and less risk on their part. Consequently, Home Star may experience lower-than-anticipated participation in the Gold Star program.

To the extent that homes are highly inefficient, but participate only in Silver Star rebates, some of their energy inefficiency might become locked in because the measures would become less cost-effective to address later, after the lower-hanging fruit of Silver Star measures have been implemented. Such behavior, if it materializes under the Home Star program, might not impact the overall number of jobs associated with the program as a whole, but it could have important implications for the distribution of expenditures within the program, the immediate capture of energy savings, and its ultimate impact on the long-term energy-efficiency of the nation's housing stock.

Rebate Aggregation Providers

Rebate aggregation is a critical function of the Home Star program which aims to ensure the timely approval, processing, and payment of rebates to participating contractors. For similar national-scale rebate programs, such functions typically would be performed by professional rebate fulfillment companies using specialized Internet interfaces, administrative protocols, and data management systems to meet a range of operating requirements for various rebate program partners. Such fulfillment companies focus exclusively on rebate transactions and offer the advantages of quick execution, economies of scale, and the ability to adapt existing capabilities to accommodate new rebate programs. The Home Star program proposal differs from this approach by extending rebate aggregator eligibility to a much wider range of potential providers, including existing energy efficiency programs, utilities, and quality assurance provider networks. Furthermore, in addition to a purely transactional function, it appears that the program's rebate aggregators will be responsible for management and reporting of quality assurance inspections.

[2] Evan Mills, Steve Kromer,Gary Weiss, and Paul A. Mathew, "From Volatility To Value: Analysing And Managing Financial And Performance Risk In Energy Savings Projects," *Energy Policy*, Vol. 34, No. 2, January 2006, p.191.

Given the range of providers with inherently different starting capabilities potentially eligible to serve as rebate aggregators, the Home Star program may face challenges ensuring speedy development and consistent delivery of these services for all contractors who seek them. Congress may wish to ensure that the program's quality assurance obligations do not deter professional rebate fulfillment companies from applying to serve Home Star. Such obligations may lie outside the scope of services they provide and may raise concerns about quality-related liability. Home Star's rebate aggregation provisions may therefore have the unintended consequence of discouraging direct participation by professional providers. Such companies potentially could partner with quality assurance providers to provide aggregation services, but establishing such relationships might be time consuming and could result in complicated rebate and quality assurance processes. Any limitation or inconsistency in the administration of the program's rebate fulfillment functions could create transactional bottlenecks or confusion among contractors and thereby reduce Home Star's overall market effectiveness.

Technical Standards

Congress may wish to examine how the Home Star program's technical standards requirements may influence the speed and breadth with which the program might be implemented. For programs like Home Star, technical standards can help to ensure home services are provided at an appropriate level of quality and consistency across numerous contracting companies. The selection of particular standards for inclusion in the program also may determine which contractors initially will be eligible to participate in the program and what home energy information they will be able to provide for the purposes of program management and evaluation. Consequently, the choice of standards influences both the complexity of program deployment and its administrative needs.

Home Star's requirements for whole home simulation software to be used by contractors include (explicitly or by reference) software packages authorized by the Department of Energy's Weatherization Assistance Program, the Internal Revenue Service, and equivalent programs certified by states. These programs include various versions of EnergyPro, MICROPAS, EnergyGauge, REM/Rate, and other software packages. By adopting these widely used home simulation software packages, Home Star intends to facilitate contractor participation, since many are already skilled in the use of one or more of these software programs. From an administrative perspective, however, approving multiple software programs and versions on a national scale may also complicate efforts at quality control because of differences in the format, content, or transferability of home simulation information. Such differences also may make comparisons of buildings and contractors participating in Home Star more difficult.

Contractors who satisfy Home Star's training certification standards would face less frequent quality inspection than uncertified contractors. For certification, the program specifically authorizes existing skills standards established by the Building Performance Institute (BPI), North American Technician Excellence, and the Laborers' International Union of North America (LIUNA). Unlike the home simulation software requirements,

however, there are other training standards in widespread use that are not initially approved for Home Star certification. One notable exclusion, for example, is training by the Home Builders Institute (HBI), the workforce development affiliate of the National Association of Home Builders (NAHB), which is one of eight National Training Contractors for the Department of Labor's Job Corps program. The Institute bases its home energy training curriculum on the National Green Building Standard, jointly developed by the NAHB and the International Code Council.

It is beyond the capacity of CRS to evaluate or recommend any particular technical standard. Nonetheless, it is worth noting that the National Green Building Standard has been accredited by the American National Standards Institute (ANSI), while the BPI standard is still in the process of ANSI accreditation.[3] It may be that the HBI curriculum could eventually be authorized for Home Star under provisions proposed for "other standards" if approved by the Secretary of Energy, in consultation with the Secretary of Labor and the Environmental Protection Agency (EPA) Administrator. However, the Home Star proposal offers no process or specific criteria for such approval. As a result, contractors with HBI training and seeking Home Star certification may need to undertake additional, potentially redundant, training or wait for the program to accept HBI standards. Retraining or certification delays may put them at a competitive disadvantage.

Taken together, Home Star standards provisions for home simulation software and contractor certification illustrate the attempt to balance quick program execution against operational simplicity. If the proposal includes fewer standards, that might simplify program administration, but may put those contractors certified under an excluded program at a disadvantage; either additional training or more frequent inspections would be required. LIUNA's training curriculum for energy auditors, for example, requires seven weeks, and to date has been offered only in a few of the union's regional training centers.[4] As the EPA's recent experience with residential contractor certification under its 2008 lead rule demonstrates, such certification can be an unexpected bottleneck for program implementation. If contractors wishing to participate in Home Star believe they face time-consuming or costly training requirements, they may forgo certification altogether, accepting higher job inspection rates as an acceptable alternative. Such an outcome might undermine the intended purpose of the employee training standards—a more capable workforce, better contract work, and lower costs for quality control.

High Expectations for Program Participation

In its first two years as a new federal energy-efficiency initiative, Home Star may face challenges achieving the high levels of homeowner participation implied by its level of appropriations. The Home Star proposal authorizes appropriations through FY2011 of

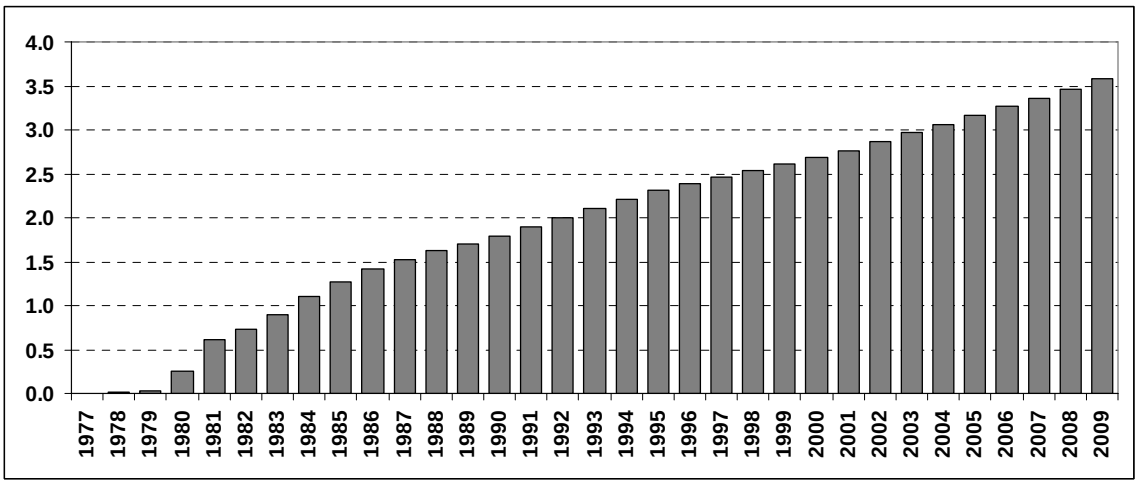
[3] The American National Standards Institute (ANSI) is a private, non-profit organization overseeing development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States. ANSI also coordinates U.S. standards with international standards.

[4] Laborers' International Union of North America (LIUNA), "Weatherization Training Program," Brochure, 2010, www.liunabuildsamerica.org/files/WeatherizationTrainingProgramBrochure.pdf; and LIUNA, "Information for Prospective Trainees," Internet page, 2010, www.liunabuildsamerica.org/weatherize/trainees.

$3.4 billion for Silver Star rebates and $1.7 billion for Gold Star rebates. Assuming average Silver Star rebates of $2,000, this appropriation would fund 1.7 million Silver Star homes. Assuming average Gold Star rebates of $6,000, the appropriation would fund an additional 280,000 Gold Star homes. Assuming full expenditure of the appropriated funds through 2010, and combining both Silver Star and Gold Star, total participation would be nearly 2 million homes in the first two years of the program or 1.6% of all U.S. residential housing units in 2008.

Experience with programs similar to Home Star offers some perspective on the aggressiveness of these participation goals. For example, under the U.S. Department of Energy's Weatherization Assistance Program (WAP), home weatherization projects directly funded by the program reached approximately 2 million in 1992, 15 years after the program was initiated (**Figure 1)**.[5] The WAP program's peak year of annual participation was 1981, during which the program weatherized 353,000 homes. The American Recovery and Reinvestment Act of 2009 sharply increased funding for the WAP program and raised associated weatherization goals to 586,015 homes over the 3-year life of the act, but the program is not meeting these goals. Although weatherization rates under ARRA funding have accelerated in recent months, the Department of Energy's Inspector General reported last month that only 30,297 of the planned 586,015 weatherization projects were completed by February 16, 2010.[6]

Figure 1. DOE Weatherization Assistance Program - Cumulative Homes
(Millions)

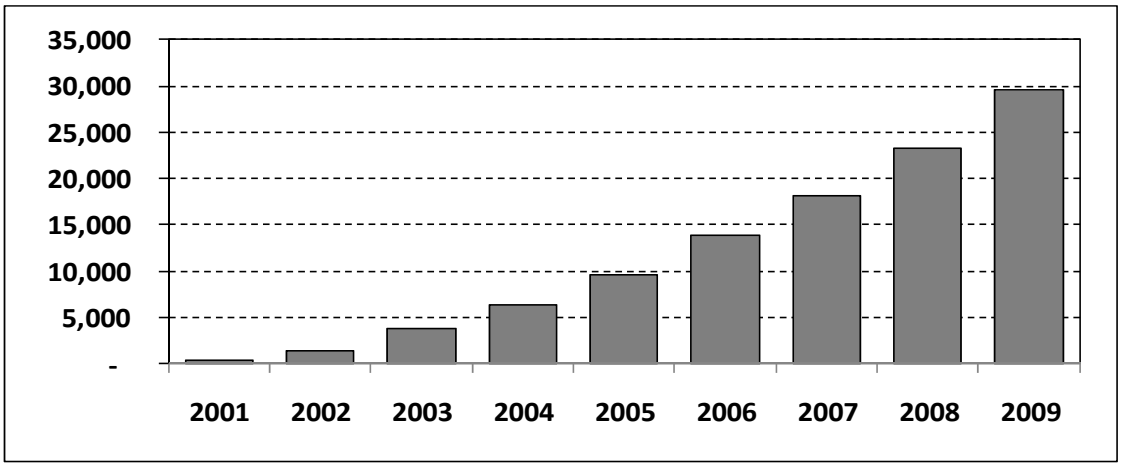


Source: U.S. Department of Energy, Office of Weatherization and Intergovernmental Program, Personal communication, March 7, 2010 and "Homes Weatherized by State," February 19, 2010, http://www.energy.gov/recovery/documents/Homes_Weatherized_By_State_Dec2009.pdf.

[5] The DOE estimates that approximately 2.8 million additional homes were weatherized through 2008 by state programs leveraging core weatherization funding from DOE.
[6] U.S. Department of Energy, Office of Inspector General, *Progress in Implementing the Department of Energy's Weatherization Assistance Program Under the American Recovery and Reinvestment Act*, OAS-RA-10-04, February 2010, Appendix II.

New York's Home Performance with ENERGY STAR Program, which is similar in most respects to the Gold Star component of the Home Star program, served just under 30,000 homes over its first nine years of operation (**Figure 2**). This total represents 0.75% of the 4.0 million homes in New York potentially eligible for the program.[7] Achieving this enrollment rate among the 97.1 million similar homes across the entire United States would yield approximately 728,000 program participants.

Figure 2. New York Home Performance with ENERGY STAR Program Cumulative Homes



Source: New York State Energy Research and Development Authority, Home Performance with ENERGY STAR Program, Personal communication, March 8, 2010.

Comparing participation rates expected for Home Star with those experienced by the WAP program or the Home Performance program in New York is only suggestive. There are significant differences in the structure of these programs as well as in their funding, target markets, and the time periods of their operation. In particular, it is possible that general economic conditions in the United States over the next few years may lead to comparatively higher or lower participation in Home Star than those realized by the WAP or New York programs. Nonetheless, these comparisons suggest that the level of homeowner participation implied by the rebate funding provisions in the Home Star proposal would far exceed that achieved by comparable programs in their initial years. Implementation experience and supporting infrastructure developed through the WAP program, Home Performance with ENERGY STAR, and similar state programs may help Home Star achieve higher market penetration more quickly than the earlier programs, but to what extent remains to be seen. Consequently, Congress may consider alternative options for Home Star program administration and funding if initial participation rates differ significantly from its initial goals.

[7] U.S. Census Bureau, *The 2010 Statistical Abstract*, "Table 954 - Housing Units by Units in Structure and State: 2007," 2010, http://www.census.gov/compendia/statab/2010/tables/10s0954.pdf. Potentially eligible homes are assumed to include 1-unit detached homes up to 4-unit attached homes. There are 5.2 million homes in these categories statewide in New York, but approximately 1.2 million homes are either ineligible for this program because they are in the service territory of the Long Island Power Authority, or are not targeted by the program for other reasons.

Conclusion

The proposed Home Star program may present a significant opportunity to improve residential energy-efficiency and increase related employment, but it contains a number of operational elements that have yet to be tested—and may be difficult to implement—on a national scale. Achieving the program's high expectation for homeowner participation also would be unprecedented. Taken together, Home Star's requirements for key operational elements such as its technical standards, two-tiered rebate structure, and rebate aggregation function may present unanticipated obstacles to speedy and consistent program implementation across the country. As Congress examines details of the Home Star proposal, focusing on tradeoffs between rapid implementation, operational complexity, and energy-efficiency impacts may be important. Balancing the twin goals of short term job creation and long-term investment in cost-effective energy savings could also be an ongoing challenge.

Thank you for the opportunity to appear before the committee. I will be happy to address any questions you may have.