



National Home Performance Council Response to U.S. DOE Home Performance with ENERGY STAR® v2 Proposal

INTRODUCTION

The National Home Performance Council is pleased to submit the following comments and recommendations in response to the U.S. Department of Energy's (DOE) proposals to revise the Home Performance with ENERGY STAR® (HPwES) program, as detailed in the document "The Evolution Continues" presented at the ACI national conference in March 2012 and in subsequent webinars and supporting documentation.

At the request of many stakeholders, and as suggested by DOE, NHPC has facilitated a stakeholder process to review and discuss this proposal. To date, NHPC has convened three conference calls attended by stakeholders including program administrators, program implementers, utilities, regional organizations, industries, contractors, software vendors, and others. NHPC has also held many one-on-one calls with a wide range of stakeholders from the same sectors. A list of those participating in these discussions appears at the end of this document.

The following comments and recommendations are based on these conversations with these stakeholders, who are acknowledged in the participant list. The recommendations in Part I generally reflect broad agreement among stakeholders. When there was opposition or disagreement regarding an issue, the divergence of opinion was noted, and either no recommendation was made, or objections to the recommendation were recorded. Part II proposes guidance on the development of the "Performance Path" that was developed to complement state and federal programs and legislative proposals and all stakeholder input received was addressed. Items that need further stakeholder input were noted. It is important to note that although stakeholder input guided the creation of this document, most stakeholders are submitting comments on behalf of their own institutions, and their views may not coincide in their entirety with the opinions stated in this document.

OVERVIEW

A number of stakeholders noted that they were pleased that DOE is looking at the "big picture" in the draft HPwES v2 and is making proposals to advance the industry. It was generally agreed

that work needs to be done to support the home performance sector, and that DOE has a crucial role to play.

A number of stakeholders said that the challenges that the HPwES v2 proposal was designed to address need additional definition and detail. It is clear from the document that the overall goal is to bring the industry to scale. But there is less clarity regarding the specific obstacles that hinder expansion. In the follow-up Q&A, DOE identifies three goals for the HPwES program re-design:

- To provide clear expectations to consumers and contractors considering participating in the Program;
- To provide a more consistent set of standards that can be applied nationally across a wider range of regional program and funding paradigms; and
- To make the program more accessible to a broader range of participants and improve participation rates.

From presentations and informal conversation, it appears that some of the obstacles identified by DOE as hindering realization of these goals included:

- Lack of a clear, nationally consistent message to consumers (homeowners) about what home performance is and/or does;
- Low levels of engagement from contractors in other industries;
- Difficulty in reaching homeowners at key points in the homeownership lifecycle, particularly HVAC break-down;
- Uneven geographic coverage.

Stakeholders suggested that a more explicit discussion of the challenges that DOE feels are most significant in preventing the industry from achieving scale would be helpful because this would help to clarify the discussion and facilitate assessment as to whether the proposed changes to the HPwES program are the best means to address the problems.

Some stakeholders suggested that the home performance industry faces other challenges that the DOE proposal does not appear to address in its proposed program design changes. These include:

- The challenges involved in collecting and transferring data;
- Measurement and verification of savings;
- Utility cost-effectiveness tests;

- The infrastructure for developing energy efficiency as a resource;
- A clear and consistent performance path for home improvement.

Stakeholder recommendations for addressing these issues and others are discussed in both Part I and Part II of the following recommendations.

PART I: CHALLENGES AND RECOMMENDATIONS

I. Process

1.1 Implementation timing

A number of stakeholders expressed concern that existing programmatic rules and guidelines might be changed or suspended prior to implementation of new program features.

Recommendation: That DOE provide assurance that the HPwES program will continue to operate under existing guidelines, and will provide a clear timetable that details when changes will be phased in.

1.2 Clarity

Another general stakeholder concern was that the original HPwES v2 did not provide sufficient detail about the proposed changes to provide a basis for adequate comment. These concerns have been partially addressed by the subsequent webinars and Q&A documents, but some stakeholders have still noted that it is difficult to comment on some sections of the proposal because the existing documents are not entirely clear or sufficiently detailed in their recommendations.

2 Performance vs. Prescriptive Paths

2.1 Robust support for a performance path

Stakeholders raised more comments and concerns regarding the lack of a performance path (based on a decrease in whole house energy consumption) in the proposal than any other issue. Many stakeholders suggested that the prescriptive paths (based on the efficiency level of individual measures) that were proposed have merit as strategies both a) to bring HVAC and insulation contractors into the home performance field, and b) to raise the quality of

installation in these areas. Stakeholders also indicated that the prescriptive paths could provide an appropriate and useful template for states and utilities that are just beginning to develop whole-house programs.

However, many stakeholders emphasized that their programs are designed to achieve performance improvements and that DOE's support for a performance path is important for their programs' success. They noted that performance is central to the structure of utility incentives, and is likely to remain so for the foreseeable future. They also noted that recent proposed Federal legislation links incentives to performance, and that state legislation (e.g. energy efficiency portfolio standards) are often implicitly or explicitly focused on performance.

Recommendation: That DOE develop and publicly express strong support for a performance path. *Additional recommendations, principles and guidelines recommended for this performance path development are detailed in Part II of this submission.*

2.2 Different branding for prescriptive paths

Many stakeholders raised concerns about the potential for market confusion if the same brand is used for both the prescriptive and performance paths. A suggested alternative with broad support among stakeholders was to retain the Home Performance with ENERGY STAR® brand for the performance path, and give the prescriptive paths related but distinct labels.

Recommendation: That DOE give the prescriptive paths related but different brands from HPwES, e.g. ENERGY STAR® HVAC and ENERGY STAR® Envelope

2.3 Integration of performance and prescriptive paths

The issue of integrating the prescriptive and performance paths came up repeatedly in discussions. A number of stakeholders supported the idea of having the prescriptive paths "count" towards an eventual whole-house, performance-based retrofit. It was suggested that this approach would have the ancillary benefit of helping to develop a national strategy for supporting "staged" retrofits, i.e. retrofits that occur over time, according to a homeowner's budget and willingness to undertake work. However, the technical issues involved in evaluating the cumulative effect of improvements that occur over a period of multiple years would need to be worked out in significantly greater detail.

Recommendation: That DOE work with stakeholders to develop a proposal for allowing a prescriptive HVAC or envelope improvement to "count" toward a whole-house performance-

based retrofit.

2.4 Cost effectiveness for prescriptive paths

One of the concerns raised most frequently by stakeholders regarding the prescriptive paths was that as currently designed, they would be extremely difficult to support with utility subsidies because of the challenges involved in passing utility cost-effectiveness tests. The ASHRAE 62.2 ventilation requirement was mentioned most frequently as a serious cost-effectiveness challenge, but other potential problem areas were also raised, including compliance with ACCA QI5 and the potential that the incremental cost could outweigh the incremental benefit of installing a measure to high (e.g. IECC) standards.

Stakeholders also noted that the HVAC prescriptive path, if pursued without regard for envelope improvements, may result in installation of oversized HVAC units. Stakeholders also noted that the requirements for diagnostic testing were unclear, and could have a significant impact on cost-effectiveness test results, and on a contractor's ability to sell a job more generally.

Recommendation: That as part of the development of the prescriptive paths, DOE run a comprehensive set of tests to ensure that the regional prescriptive paths could each clear a strictly-administered TRC test, and that DOE ensure that the prescriptive paths provide sufficient flexibility to allow programs that are required to clear particularly stringent cost-effectiveness tests to design programs that can obtain regulatory approval.

Note: The asset rating proposed in the HPwES v2 document was raised as a potential issue of concern. It was generally recognized that an asset rating can have value, and that some potential federal legislation references asset rather than occupant ratings. However, it was noted that homeowners are probably more interested in occupant ratings.

3 Charter Contractors

A number of stakeholders supported the proposal to allow charter contractors to operate in areas not served by a Home Performance with ENERGY STAR program as a way of expanding the field. Stakeholders emphasized that adequate oversight and quality assurance measures would be crucial to the success of the charter contractor approach, and recommended that DOE provide more detail regarding these issues. Specifically, several stakeholders raised concerns about the contractors directly retaining QA providers.

Recommendation: That QA providers report to a third party that retains and pays them directly, with funds to cover QA expenses possibly flowing from the charter contractors to the third party.

4 Non-Traditional Sponsors

4.1 Jurisdictional issues

Stakeholders raised more concerns about non-traditional sponsors than charter contractors. Some stakeholders wanted assurance that charter sponsors would not be allowed to solicit participation in their catchment areas, thus providing unnecessary competition and market confusion. Stakeholders also noted the potential challenges involved in assigning credit for savings achieved when multiple sponsors, particularly a utility and non-utility sponsor, operate within the same geographic area.

Recommendation: That DOE not allow charter sponsors to operate within the service areas of existing programs without the consent of the programs.

4.2 Development of quality standards for non-traditional sponsors

Currently, program sponsors do not make money from offering their programs; instead, most programs rely on subsidies or public support. This makes sense, in that increased energy efficiency creates a number of public goods, including pollution reduction, grid security, national security, more sustainable and higher quality housing stock, which justify the public investment. It is unclear how for-profit sponsors could financially justify assumption of program sponsorship responsibilities unless they have a clear strategy for making sponsorship profitable. Stakeholders expressed concern that profitability would be achieved in part through significantly lower quality control and oversight standards than those currently offered by HPwES sponsors. With respect specifically to big-box companies, stakeholders noted that the typical big box-contractor relationship required affiliated contractors to run a high-volume business with low profit margins that could not be easily converted into high-quality home performance work.

Some stakeholders suggested that these issues could be addressed through appropriate programmatic rules and effective oversight. They indicated interest in keeping the alternative sponsor option open, and focusing on development of an adequate supervisory infrastructure.

Recommendation: Allow for-profit entities to assume sponsorship responsibilities only after

development of stringent rules that ensure a level playing field and maintenance of the integrity of the ENERGY STAR brand.

5 Branding

DOE's presentations indicate that clarifying for consumers the "product" that HPwES programs offer and building a home performance brand were important considerations in the development of the HPwES v2 proposal. Many stakeholders strongly agreed that these were important considerations, but differed in opinion as to how they should be addressed.

5.1 Home Energy Score (HES)

The draft proposal refers to the HES as an integral part of the HPwES program. Some stakeholders expressed strong support for a national performance label analogous to a miles-per-gallon number, and were interested in the potential for HES to play that role. However, other stakeholders expressed concern that the HES had not been sufficiently tested, and opposed integration of the HES into the HPwES program at this point.

Recommendation: That ongoing HES pilot programs continue, and that test results be shared, and that stakeholders have broad confidence in the usability of the HES tool and the accuracy of the HES score prior to its inclusion in HPwES.

5.2 Home Energy Score (HES)

Stakeholders currently using regional labels expressed concern that HES be a requirement, and indicated strong support for a provision that would allow programs to opt-out from use of HES if they choose to use an appropriate alternative. Others recognized that a national label would reduce the confusion of a patchwork of labels across the country.

Recommendation: Allow programs the option to use an alternative label, if the alternative is demonstrated to provide similar or better functionality, but only until a national, consensus label for home retrofits can be established through a stakeholder working group to allow for national consistency and advanced branding.

5.3 Alternative branding strategies

The HPwES v2 document suggests that providing consumers with a clear "product" (e.g. a set of defined HVAC or envelope improvements) would help to brand HPwES and build consumer

interest. Some stakeholders suggested that significantly different branding approaches could be pursued, such as focusing on the value provided by the combination of the underlying building science and the rigor of the quality assurance regime, both of which are potentially important to consumers who are not familiar energy efficiency measures and are concerned about retaining contractors to undertake work they do not feel comfortable installing measures they don't fully understand.

Recommendation: Develop working group with appropriate resources to develop one or more national branding strategies for the performance and prescriptive programs that are based on in-depth consumer research and testing.

6 Strategic Infrastructure Building

Many stakeholders said that one of the most important issues that needs to be addressed to bring the home performance industry to scale is to ensure that the infrastructure necessary to run efficient programs and accurately measure savings is in place. This infrastructure needs to be *national* in scope to reduce the compliance burdens for firms with a regional or U.S.-wide footprint, and to facilitate movement by trained workers.

Many of the most important infrastructure needs identified by stakeholders concerned quality, including, among other things, the quality of the technical standards, the quality of workforce skill, the quality of work conducted, and the quality of oversight and QA procedures. Another crucial infrastructure need identified by stakeholders involved standards for data collection, transfer and analysis.

Stakeholders recognized that many important infrastructure development projects, such as the workforce guidelines, are currently in process. They stressed the importance of continuing and coordinating these efforts, and supporting other projects, which could include:

- Individual qualifications for all staff employed in the home performance industry
- Individual qualifications for use of energy modeling software
- Quality Standards for modeling software
- Quality Standards for health and safety measures (test-out / “do no harm”)
- Quality Standards for data collection and transfer
- Quality Standards for conducting file inspections
- Quality Standards for third-party on-site field inspections
- Quality Standards for quantifying the impact of measures (both quantitative and qualitative)

Recommendations:

That DOE convene or support a series of stakeholder working groups that includes standards organizations to identify the crucial infrastructure needs and develop a roadmap for achieving them, and

That DOE give priority to infrastructure development over development of other components of the proposed HPwES v2 components.

PART II: PERFORMANCE PATHWAY

A primary item of stakeholder consensus is that any new iteration of the HPwES program must include a path for participation based on modeling and predicting savings from home energy performance improvements. The following recommendations are proposed principles and guidelines for this “Performance Pathway” that represent current best practices and procedures, which the HPwES stakeholders recommend that DOE adopt. However, another overarching consensus position is that, with the large number of active home performance programs with differing incentive structures as well as legislation that has been introduced at state and federal levels related to home performance, that HPwES reduce the prospect of undermining these efforts by ensuring flexibility where possible.

The Performance Pathway recommended here is designed to complement federal legislation that has been developed with significant industry input as well as provide flexibility to current programs that enables them to respond to local market and regulatory conditions.

1 Qualified Home Energy Performance Retrofit

A qualified home energy efficiency retrofit is a retrofit that is based on efficiency needs identified through a comprehensive home assessment (CHA), implements measures intended to reduce the energy use of a home, and meets the following requirements:

- The CHA meets the requirements of BPI-1100-T-2010 or an equivalent as approved by the DOE, and is implemented by an Energy Auditor certified through BPI meeting ANSI 17024 or equivalent as approved by the DOE;
- The measures are installed by a qualified contractor (defined below);
- The set of energy conservation measures (defined below) are modeled to achieve a reduction of at least 10% in home energy use from the baseline (defined below) using

approved modeling software (defined below). When feasible, a reduction of 20% in home energy use from the baseline, as indicated as a goal in the current HPwES Sponsor Manual, is desirable. With DOE approval, sponsors may receive a waiver to establish a different minimum percent reduction in energy use.

- Implement a test-out procedure, following guidelines of the applicable standard or accrediting program;
- Follow BPI- or other guidelines approved by the DOE that ensures the safe operation of all systems post retrofit; and that all improvements have been installed according to standards of the applicable accrediting program, manufacturers' installation specifications; and all applicable State and local building and mechanical codes or equivalent standards.

2 Qualified Energy Efficiency Measures

The stakeholders recommend that Home Performance with ENERGY STAR include a list of “qualified home energy efficiency measures” that can be used in the calculation of the energy savings, including but not limited to heating, cooling, hot water, shell, appliances, and permanent lighting.

3 Approved Modeling Software

The contractor shall use modeling software certified by RESNET as following the software verification test suites in section 4.2.1 of RESNET Publication No.06–001, or under equivalent standards approved by DOE for this purpose, and shall have the ability at a minimum to assess the projected savings associated with all the measures approved by the HPwES Program. Each approved software package shall also include best practices for its use to ensure reasonable prediction of savings. The stakeholders recommend that DOE establish, in coordination with industry stakeholders, a set of best practices regarding issues including the use of historic energy usage data within the model, procedures for representing multiple heating sources, and other unique situations that may arise in the course of modeling.

4 Monitoring And Revision

It is important that DOE periodically evaluate the accuracy of predicted energy savings for program-sponsored retrofits by comparing the modeled savings to actual savings as indicated by actual energy consumption data. To accomplish this, DOE should work with stakeholders to develop a process to evaluate software packages and other inputs to the program-sponsored retrofits, including contractor performance.

5 Energy Use: Reduction/Cost/Baseline Measurement

5.1 Energy Use Reduction

The reduction in energy use for any residence should be determined by modeling the annual predicted percentage reduction in total energy costs for heating, cooling, hot water, and permanent lighting. It should be modeled using computer modeling software and calibration methodology noted in these guidelines.

To build public confidence in whole-house retrofits and to support better understanding of the most effective methods for reducing energy consumption in residential buildings, DOE should use a stakeholder input process to develop a methodology or approve a methodology developed by a third party for comparing actual post-retrofit energy consumption to both actual pre-retrofit consumption and modeled post-retrofit consumption. Sponsors may be required to use this methodology to collect data on actual and modeled energy consumption for all Home Performance with ENERGY STAR retrofits.

5.2 Energy Costs

For the purpose of calculating the energy use reduction, energy cost per unit of fuel for each fuel type may be determined by dividing the total actual energy bill (subtracting taxes and fees) for the residence for that fuel type for the most recent available 12-month period by the total energy units of that fuel type used over the same period.

5.3 Baseline Energy Use

The software model that establishes the baseline energy use and predicted energy savings shall be calibrated according to the procedures set forth in sections 3 of BPI Standard BPI-2400-S-2011: Standardized Qualification of Whole-House Energy Savings Predictions by Calibration to Energy Use History, or an equivalent standard approved by DOE. The program sponsor has the option to generate a standardized savings prediction per BPI 2400-S-2011 section 4.

6 Contractor Qualifications

A contractor may perform retrofit work under a Home Performance with ENERGY STAR Program if the contractor is accredited by BPI, a RESNET accredited Energy Smart Home Performance Team, or accredited by an equivalent certification program approved by DOE for this purpose.

The Individual Program Sponsors should consider additional requirements, including that the contractor:

- Meets all applicable contractor licensing requirements established by the State;
- Holds insurance coverage of at least \$1,000,000 for general liability, and for such other purposes and in such other amounts as required by the State;
- Provides warranties to the homeowner that completed work will be free of significant defects; be installed in accordance with the specifications of the manufacturer, and all applicable State and local building and mechanical codes; and perform properly for a period of at least 1 year after the date of completion of the work

7 Quality Assurance

Quality Assurance (QA) is crucial to ensure the viability of the HPwES Program and ensure that all participants provide equivalent program performance. HPwES Sponsors are responsible for developing a robust QA system to ensure that desk audits and field reviews are conducted on a sample of retrofit jobs to verify compliance with the HPwES Guidelines and installation standards. In the absence of another agreement between DOE and the Sponsor, Sponsors will ensure that field QA reviews are conducted on not less than 50% of the first ten retrofits conducted by a participating contractor, 20% of the next ten retrofits conducted by the contractor, and 15% of all retrofits conducted by the contractor thereafter.

7.1 Quality Assurance Providers

A quality assurance provider can be qualified through:

- BPI
- RESNET; or
- Any other entity designated by the DOE such as a State or State-approved residential energy efficiency retrofit program.

A quality assurance provider will:

- Be entirely independent of the contractor who installed the work;
- Perform field inspections and other measures required by the Program Sponsor.

8 Program Sponsors

HPwES will give priority to existing comparable comprehensive retrofit programs that have a

HPwES program sponsor, including programs planned or operated by States, non-profit organizations, municipalities, electric and natural gas utilities, Federal power marketing administrations, and Indian tribes. DOE will work to support and advance existing programs by coordinating with administrators of these programs to limit confusion.

8.1 Program sponsors duties

- Ensure the guidelines of the Home Performance with ENERGY STAR program are followed;
- Develop QA policies and procedures for the program, and retain and monitor the program QA provider(s);
- Confirm that contractors and installers of home energy efficiency retrofits meet the qualification requirements detailed in the standard work specification guidelines established by the National Renewable Energy Laboratory of the Department of Energy;

9 Coordination With Existing Programs

The stakeholders see it as crucial that a performance path coordinates with existing programs to ensure that there is limited confusion in the marketplace. Many programs have incentive and participation structure that need to align or complement the HPwES program.

10 Data Collection And Transfer

The roll-out of HPwES Version 2 is an ideal opportunity to work at closing the crucial and limiting gap of data on home performance retrofits and their success in regions and nationally. Within a period of not less than three years, DOE will require programs to submit standard data sets on each retrofit in accordance with BPI or other standards.

DOE shall use HPXML for the purposes of data transfer, and will encourage sponsors and other partners to report and transmit data via HPXML to the greatest extent feasible.

11 Federal Database Of Home Performance

It is important to the further growth of HPwES that a database and information technology system be developed to monitor and track home energy improvements. To facilitate this, we recommend that the Secretary make available, on a designated Website, model forms for demonstrating compliance with all applicable requirements of the program that each qualified contractor or quality assurance provider may submit after a home energy retrofit.

11.1 *Information to be Collected/Protocols*

- HPXML compliance protocols
- Optional release forms authorizing access by DOE, the HPwES Sponsor, BPI, and RESNET to information in the utility bills of the home that has been retrofitted under the program
- Others deemed appropriate

12 Evaluation Report

The following issues should be evaluated annually by DOE:

- How many eligible participants have participated in the program;
- How many jobs have been created through the program, directly and indirectly;
- What steps could be taken to promote further deployment of energy efficiency retrofits;
- The quantity of verifiable energy savings, homeowner energy bill savings, and other benefits of the program;
- Any concerns that have been raised about waste, fraud, or abuse with respect the program;
- Any other information that DOE considers appropriate.

CONCLUSION

HPwES is a valuable program to engage the many stakeholders involved in home retrofits to press for increases in quality home energy efficiency improvements that provide real energy savings. NHPC encourages DOE to continue to advance home energy savings through stakeholder supported changes to HPwES that advance market penetration of energy savings technologies and practices.

Organizations that Participated in HPwES v2 Stakeholder Process

1. ABM Energy
2. ACI
3. Austin Energy
4. BG&E
5. BPI
6. CA Building Performance Association
7. City Utilities, Springfield, MO
8. CNT Energy
9. CSG
10. CT L&P/UI
11. Efficiency First
12. Efficiency.org
13. Energy Trust of Oregon
14. FSL
15. GRU
16. HomeFree Nevada
17. ICF
18. Knauf Insulation
19. KY Housing
20. LIPA
21. MEEA
22. Metropolitan Energy Center, Kansas City
23. NASEO
24. National Home Performance Council
25. NJ BPU
26. NRDC
27. PSD
28. RESNET
29. SC Electric & Gas
30. Xcel Energy, MN