

# Home Performance with **ENERGY STAR (HPwES)** Program Report

U.S. Department of Energy  
Building Technologies Office

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# Home Performance with ENERGY STAR (HPwES) Program Report

*U.S. Department of Energy's Review of Stakeholder Comments and Preliminary Plan for the Continued Evolution of the HPwES Program*

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The U.S. Department of Energy  
Building Technologies Office

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## Acknowledgements

The U.S. Department of Energy (the Department) and the Home Performance with ENERGY STAR® (HPwES) Program would like to express our sincere thanks to the Sponsors and industry stakeholders who invested their time and effort in reviewing and commenting on the proposed revisions to the HPwES Program. Your input has been instrumental in establishing goals and defining priority areas for the HPwES Program.

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## Introduction

In March 2012, at the *ACI National Home Performance Conference* in Baltimore, MD, the Department introduced home performance stakeholders to a comprehensive set of proposed changes to the existing HPwES Program. These proposed changes are collectively referred to in this document as HPwES v2.0 or v2.0. The Department invited HPwES stakeholders to review the v2.0 proposal and provide comments during an informal 60-day open comment period. More than 650 comments were received from individuals representing 50 unique stakeholder organizations. This paper provides a preliminary overview of the work that is planned as a result of this recent stakeholder process. The Department values transparency in the development of new guidelines and procedures for HPwES and will continue to keep stakeholders informed and involved as the projects resulting from this comment process continue to emerge.

The comments received from HPwES stakeholders on the Department's v2.0 proposal ranged from general observations of the Department's overall approach to detailed recommendations for changes to the specifications within the proposal. Based on these recommendations, the Department has outlined a multi-year plan that will:

1. Refine the program to make it more understandable, consistent, and scalable;
2. Attract more industry and consumer participants;
3. Better leverage third-party resources; and
4. Obtain additional useful field data which may be used to measure program performance.

As depicted in **Figure 1**, the Department will build upon the foundational HPwES platform to enhance consistency and work towards scalability.

With the current program, HPwES v1.0, the Department, in partnership with industry, provides a whole house process for determining energy savings opportunities in homes by qualified contractors backed by independent, third-party quality assurance (QA). Since the Program's inception 10 years ago, there has been a steady growth rate in additional programs seeking HPwES Sponsorship. With the growth of the Program, however, it is apparent that there are differences in interpretation and implementation of HPwES. These differences include variability in conducting assessments, diagnostic testing, work scopes, and quality assurance. As a result,

and with input from stakeholders, the Department seeks to address these issues in the near term with HPwES v1.5. HPwES v1.5 intends to build upon the existing platform by clarifying the requirements and refining the procedures for data collection and reporting, quality assurance, and

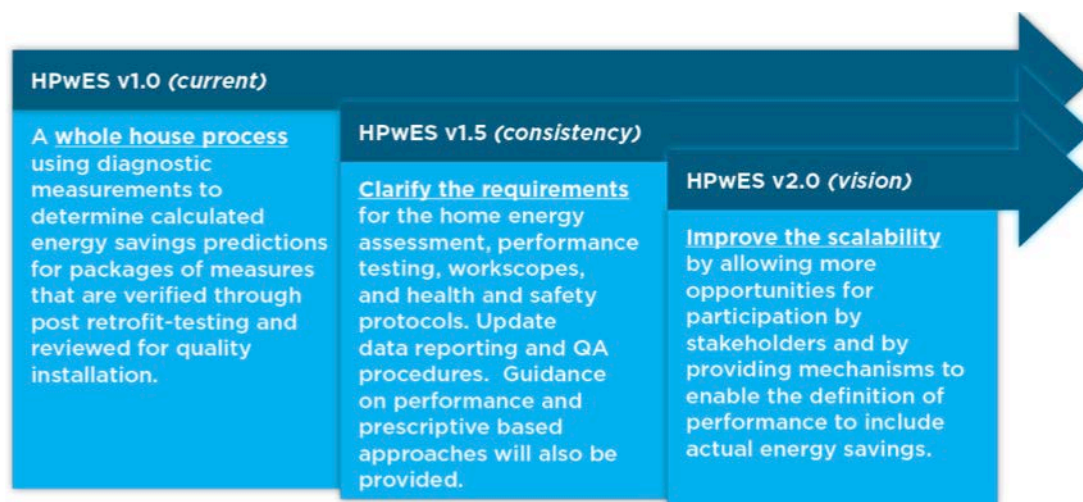


Figure 1 – Improving HPwES to Support Market Transformation

minimum technical requirements.

The Department's goal for v1.5 is to ensure that all Sponsors and their participating contractors are consistently applying the core principles of HPwES, while maintaining the flexibility in local approaches to offer a performance-based or prescriptive-based approach. Additionally, the Department seeks to provide greater value to the Program Sponsors and participants based on lessons learned over the past 10 years of implementation and by integrating resources developed under related programs like the Better Buildings Neighborhood Program and Building America. The Department's goal in these efforts is to continue to aid in standardizing the industry, support innovation, and help cultivate market demand that will usher in the next evolution of growth for HPwES.

On a longer term outlook, the Department will work in collaboration with HPwES stakeholders towards the v2.0 vision of improved scalability and, ultimately, transformation of the market for home performance services.

This report summarizes the Department's review of comments received on the HPwES v2.0 proposal and presents a multi-year action plan to both address Department goals and incorporate industry feedback. The following sections present this action plan, including the Department's anticipated timeline for advancing the national Program. Appendix A includes a more in-depth overview of the stakeholder comments on HPwES v2.0 and the Department's process for reviewing this input.

## Background

The proposed changes for HPwES v2.0, as presented in March 2012, included standardization of minimum technical requirements for worker certification, measure installations, and energy savings predictions. Proposed enhancements also included the introduction of project-level data reporting and more standardized quality assurance protocols. As an alternative to traditional, comprehensive whole-house assessments and improvement packages, HPwES v2.0 also introduced the concept of systems-based or trades-based pathways that may serve as additional points of entry to the Program for both contractors and consumers. Lastly, a structure was proposed that would allow for multiple recognition levels based on individual projects comprehensiveness and/or energy saved.

**Figure 2** schematically illustrates the broad-based elements of the v2.0 program design, as well as the proposed systems pathways based on Envelope and HVAC improvements and how those elements might fit together (as presented at the 2012 ACI national conference). The complete presentation, additional supporting documents, and webinars describing the HPwES v2.0 proposal in detail can be found at: [www.energystar.gov/homeperformance](http://www.energystar.gov/homeperformance)

In June 2012, the Department collected 664 comments from 50 individual stakeholders. The Department's first step in reviewing stakeholder comments regarding the HPwES v2.0 proposal consisted of combining similar comments into bin categories based on specific topic areas and

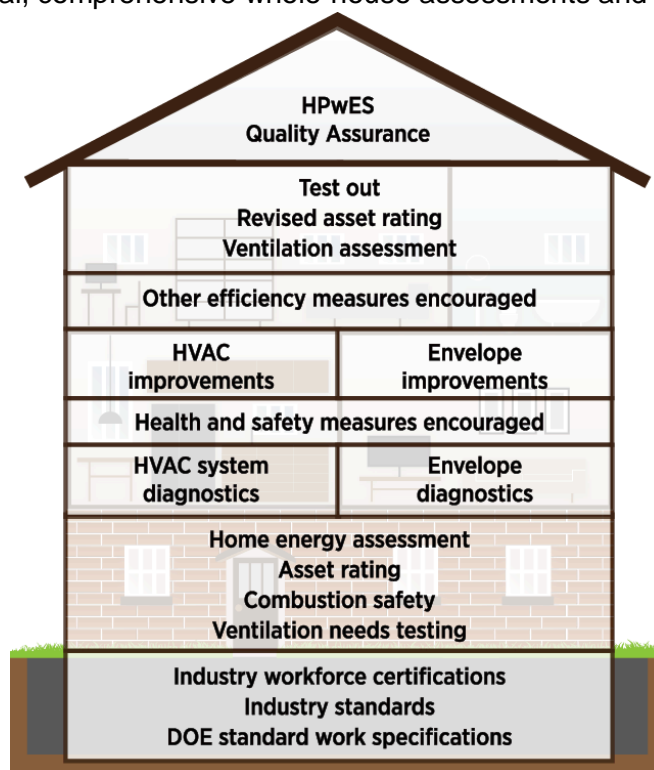


Figure 2 – Proposed HPwES v2.0 Program Elements

assigning a preliminary status and disposition to each comment. These category areas, developed as a direct result of stakeholder comments, establish a basis for the Department's work plan to further evolve the HPwES Program. A description of each of these bin categories is provided in **Table 1**.

Category	Description
<b>Process</b>	Includes timing of roll-out for new program requirements, transition periods, and suggestions for continued interaction with stakeholders as the final v2.0 design is developed, piloted, and implemented.
<b>General Program Design</b>	Comments related to the overall approach and general goals established within the HPwES v2.0 design, regional considerations, and use of recognition and labels.
<b>Contractor Requirements and Workforce Standards</b>	Proposed requirements for credentialing of all participating contractors, including the use of unfinished/untested initiatives such as the Workforce Guidelines and Standard Work Specifications (SWS).
<b>Performance Metric</b>	Comments related to project-level performance-based program design as well as macro-level actuarial type performance measurement systems.
<b>Systems Paths and Minimum Criteria</b>	Comments related to proposed trades-based systems paths, interaction between the proposed trades-based paths, and proposed measure-level specifications for both performance testing and installation methods and materials.
<b>Quality Assurance (QA)</b>	Design of a program-level QA system, details of project-level QA requirements, use of third-party QA standards and systems.
<b>Data and Reporting</b>	Proposed changes to data collection systems and reporting tools including integration of HPXML and acquisition of project-level data.
<b>Expanded Delivery Models</b>	Comments related to the proposed "Charter Contractor" program element as well as the proposed role of non-traditional Sponsors. Comments revealed the need to demonstrate value to the Sponsor network and its customers for program success.

*Table 1 – Comment Category Bins and Descriptions*

The comments received from HPwES stakeholders on the v2.0 proposal ranged from general observations of the Department's overall approach to detailed recommendations for changes to the specifications within the proposal. While many comments were related to specific program design elements, two recurring topics were present in many commenters' submissions. These topics are:

- **Performance-Based Approach:** There were many comments regarding the absence of an explicitly defined performance path that would be easily distinguishable from the prescriptive-based proposed systems paths. Some Sponsors were specific in stating that a performance-based approach is necessary for their continued participation. Others weighed in on the pros/cons of prescriptive vs. performance with a general consensus that there should be options for both. The Department will work with industry to develop a basic rule set and guidance for Sponsors using performance-based as well as prescriptive-based approaches.
- **Regional Considerations:** Local Sponsors need sufficient latitude to design their own measure specifications in compliance with local statutory, regulatory, and market-driven requirements while still offering a fully recognized HPwES Program. Cost-effectiveness testing requirements are one example. Using a variety of tactics, the Department will work with current and prospective Sponsors to gain a better understanding of those needs and constraints to ensure that the final HPwES v2.0 Program

design does not conflict directly with local requirements while still maintaining standards consistent with the core objectives of HPwES.

The Department is committed to pursuing a HPwES v2.0 Program design that will be responsive to stakeholder concerns. The comment process helped clarify stakeholders' concerns about transitioning to a new model for HPwES. While the Department's goal is to move toward a more consistent, replicable program model and expand participation of the HPwES Program, the Department seeks to do so while providing the flexibility necessary for the home performance industry to be successful.

Some themes were repeated often enough in the stakeholder comments, that the Department identified these to be common themes for a work plan. The common themes are summarized in **Table 2**.

Common Themes	How the Department will Proceed
<b>Slow down the development and implementation process</b>	<ul style="list-style-type: none"> <li>Consider options for making incremental changes</li> <li>Extend the timeline for full adoption</li> </ul>
<b>Harmonize national requirements with regional stakeholder needs more systematically</b>	<ul style="list-style-type: none"> <li>Collaborate with stakeholders to create national requirements</li> <li>Program rules that address regional issues</li> <li>Implement pilot initiatives</li> </ul>
<b>Minimize complexity</b>	<ul style="list-style-type: none"> <li>Ensure clarity for Program evolution that may include system pathways</li> </ul>
<b>Prioritize immediate needs</b>	<ul style="list-style-type: none"> <li>Near-term priorities are to standardize minimum program requirements for the home energy assessment, H&amp;S criteria, performance testing, and QA</li> <li>Longer term actions are to research and pilot elements related to a pathway approach, workforce certifications, recognition/labeling and sponsorship criteria</li> </ul>

*Table 2 – Common Themes*

The Department thoroughly reviewed stakeholder comments and, as a result, is moving forward with a multi-year action plan to work towards the goals for consistency, scalability, and, ultimately, residential energy savings. A summary of the Department's review and analysis of stakeholder comments on v2.0 is in **Appendix A**. The next section of this document outlines the Department's approach to incorporating stakeholder input into an actionable plan for evolving the HPwES Program.

## Working Plan to Evolve HPwES

As a result of the analysis of the over 650 comments received, the Department outlined a work plan for the continued evolution of the Program. Moving forward, the design of the final HPwES v2.0 model should be realistic for implementation and provide real value to the marketplace. To accomplish this, the Department is committed to providing adequate development time to achieve these goals.

Heeding the message from industry stakeholder comments, the Department's timeline for evolving HPwES will be a multi-year effort using a phased approach with key go/no-go decision points. **Figure 3**, below, presents the Department's timeline for sequencing the evolution of HPwES, working under three general work streams: (1) Priority Enhancements to the Existing HPwES Program; (2) Research and Pilot Projects; and (3) Department Program and Policy Activities.

For Work Stream 1, Priority Enhancements, the Department will develop standardized program elements and criteria with a revised Program Sponsor Guide that outlines HPwES v1.5. This work stream is focused on refining and updating the Program as it currently exists.

For Work Stream 2, Research and Pilot Projects, and Work Stream 3, Department Program and Policy Activities, the HPwES Team will embark upon the work to evolve HPwES v2.0. In undertaking the action steps in Work Streams 2 and 3, the Department intends to engage industry stakeholders where relevant to participate in research, pilots, and ultimately inform the direction of the Program's evolution. Using a phased management approach aligned with Stage Gate™ principles employed in other DOE research efforts, the HPwES Team will proceed incrementally in each of the research areas described in **Table 4**. This approach provides a framework for making fact-based decisions at pre-determined stages throughout the research and development process to effectively manage resources, maintain coordination with current market conditions, and prioritize work efforts. Greater detail on each of these Work Streams follows in the next section.

Workstreams		2013				2014				2015						
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1. Priority Enhancements		Issue revised Sponsor Guide (v 1.5) for review and comment	Address comments & release final v 1.5 Sponsor Guide	Launch <sup>1</sup> v1.5												
2. Research/Pilot and 3. Decision Making	Data and Reporting	Industry collaboration on HPXML Schema	Pilot HPXML for HPwES, including collecting energy savings data		Identify Requirements <sup>2</sup>											
	Contractor Requirements and Workforce Standards	WAP Development of Guidelines and Standard Work Specifications		Identify Requirements <sup>2</sup>												
		Industry efforts on 62.2			Identify Requirements <sup>2</sup>											
	Systems Path	Explore options		Identify Requirements <sup>2</sup>												
	Delivery Models	Explore options	Pilot Charter Contractor concept				Identify Requirements <sup>2</sup>									
	Performance Metrics	Research/pilots (Home Energy Score, RIGRS, SEED/BPD)					Identify Requirements <sup>2</sup>									
	Recognition/ Labeling	Explore options for varying levels of recognition (e.g., completion certificates, whole-house labels, asset ratings)		Conduct Pilots			Identify Requirements <sup>2</sup>									
v2.0 (anticipated)					Update on Research and Pilots		Development		Issue Document for Review		Public Comment		Address Comments		Launch1 v2.0	

<sup>1</sup> "Launch" date is the start of a one-year transition period for existing Sponsors and the start date for new Sponsors to comply.

<sup>2</sup> "Identify Requirements" represents a milestone for the Department to consider next steps and/or guidance as a result of the research/pilots.

*Figure 3 – Timeline for HPwES Development Activities*

## Work Stream 1: Priority Enhancements to the Existing HPwES Program

As a result of the review of the stakeholder comments, the HPwES Team identified priority design elements that can be addressed immediately. In each of these program areas, the Department will venture to maintain consistency with applicable existing industry standards by providing overarching guidance and key criteria for selection and application of those standards in the context of HPwES. These program elements, described in **Table 3**, are targeted for inclusion in an updated *HPwES Program Sponsor Guide*.

Priority Enhancements	Information Gleaned from Stakeholder Comments
<b>Minimum criteria for a HPwES home energy assessment</b>	<p>Based on the significant number of comments received relating to home energy assessments, there is sufficient information for the HPwES Team to move forward in drafting a minimum set of requirements for energy assessments that is both national in scope and responsive to stakeholder concerns. This includes providing additional guidance for addressing low rise multifamily buildings in the HPwES Program.</p> <p><i>This is a priority revision because the energy assessment is the basis for all HPwES projects and there is confusion in the marketplace regarding the minimum requirements for HPwES.</i></p>
<b>Minimum health and safety criteria</b>	<p>In general, there is broad agreement among stakeholders that a minimum set of health and safety related criteria should be part of the Department's requirements for HPwES and there is also agreement as to what those standards should encompass. As such, there is sufficient information available to the HPwES Team at this time to move forward with drafting a revised set of minimum health and safety related criteria for the Program.</p> <p><i>This is a priority revision because the current program standards are not explicit enough to ensure consistency in implementation among HPwES Sponsors.</i></p>
<b>Minimum performance testing (diagnostics) criteria</b>	<p>There are published industry standards through third-parties available as a resource for local Program Sponsors to use when developing region-specific rules and tolerances for these tests. Based on stakeholder comments and feedback, the HPwES Team will proceed with developing a basic set of guidelines for applying these standards.</p> <p><i>This is a priority revision because performance testing is a key element of the HPwES Program and these requirements are directly related to revisions and clarifications for energy assessments.</i></p>
<b>Quality Assurance (QA) requirements and procedures</b>	<p>Participating Sponsors are required to maintain quality assurance systems. Sponsor QA responsibilities include routine data reviews, field inspections, as well as operational requirements and conflict resolution practices. To enhance its support of Sponsors, the Department will continue to refine and standardize this review process and create QA feedback systems to encourage improvements.</p> <p><i>This is a priority enhancement as the network of HPwES Sponsors continues to grow. A formalized process for reviewing Sponsor activities will help ensure compliance with minimum requirements and consistent delivery of the Program nationally.</i></p>
<b>Performance- and Prescriptive - Based Approaches</b>	<p>In response to stakeholder concerns about the absence of a performance-based approach in HPwES v2.0, the revised Sponsor Guide will include guidance describing the key distinguishing features of both a performance-based approach and a prescriptive-based approach. This guidance will be suitable for program administrators to use when determining the best region-specific program designs while still permitting the flexibility of the many individual and varied existing programs.</p> <p><i>This is a priority enhancement to promote Sponsor innovation in local program design by ensuring that the Department is explicit in describing the range of program implementation models that are available to current and prospective HPwES Sponsors.</i></p>
<b>Building Science Based Work Scope Guidance</b>	<p>Many stakeholders were concerned that the measure-level specifications proposed in v2.0 would inordinately restrict local programs. As an alternative to defining measure eligibility criteria, the revised Sponsor Guide will define the basic requirements for developing a whole-house building science-based work scope that should be presented to the customer as a result of the home energy assessment.</p> <p><i>This is a priority revision as it will provide necessary guidance to Sponsors to ensure that minimum specifications are being met in all regions while still allowing for sufficient flexibility for HPwES to fit into a wide range of regulatory and statutory environments.</i></p>

*Table 3 – Components for HPwES v1.5*

The Department anticipates releasing the updated Sponsor Guide in early 2013 for stakeholder review and comment. After the incorporation of comments, the Department anticipates releasing the final version of the new Sponsor Guide in the spring of 2013. As illustrated in **Figure 4**, Sponsors will have a year-long transition phase to update programs to comply with the new Sponsor Guide. The HPwES Team expects that adoption of the enhancements will be incorporated by 2014.

## Work Stream 2: Research and Analysis Projects, Including Certain Pilot Initiatives

Based on comments received, some of the proposed v2.0 design elements require additional development before they can be considered for full integration with the HPwES Program. These elements may require additional research, analysis, or possible pilot initiatives prior to adoption. While it will take several months to complete this process, the Department plans to immediately begin and/or engage in work already begun on associated research and pilot projects. Using an approach modeled after R.G. Cooper's Stage Gate Innovation Management Guidelines, these projects will be pursued using a phased work plan allowing the Team to assess the viability of these processes for HPwES based on outcomes of work completed at each phase and make adjustments to the work stream as necessary. These elements are described in **Table 4** below.

Research Activity	Activity Detail
<b>Standardized Data Collection</b>	Most Sponsors are open to new data and reporting requirements but some have concerns about the costs of modifying their systems (to capture project-level data or ensure HPXML compatibility) and maintaining this data. Zip+4 and collection of energy consumption data are problems for some. The HPwES Team will continue to work with Sponsors to more fully understand these challenges and conduct pilot initiatives to evaluate these new processes, as well as the feasibility of collecting energy savings data. In addition, the Department will continue to support efforts to standardize data collection and reporting protocols for the home performance industry to promote consistency and establish an infrastructure capable of supporting longer term industry goals for data acquisition and analysis, as described in part in the "Performance Metrics and Evaluation Tools" research area.
<b>Ventilation Requirements</b>	While the final decision has not yet been made regarding ASHRAE 62.2, in part or in whole, as a mandatory component of HPwES, it is clear that additional research is needed to evaluate the impact on HPwES projects including job costs and potential negative impacts of improperly installed ventilation systems. As this standard will continue to be adopted both at the local and national level by other parties, it is important that participants in the HPwES Program have guidance to apply ASHRAE 62.2 appropriately to existing homes. Modified protocols used in some parts of the country, which achieve equivalent performance goals, may serve as reasonable alternatives to ASHRAE 62.2. The HPwES Team will complete a preliminary evaluation of the impact of these protocols, if adopted on a broad scale, and will develop additional resources (e.g. design guides) as a result of its findings.
<b>Systems-Based or Trades-Based Opportunities</b>	Most stakeholder comments indicated general support for the Department pursuing a trades-based or systems-based pathways for participation in HPwES. However, many details need to be considered to ensure HPwES continues to deliver the value of a whole-house, building science-based program. The HPwES Team will work with stakeholders to identify and address these issues prior to rolling out the proposed pathways. Limited regional pilots for Sponsors interested in pursuing this program design will help inform this process.
<b>Performance Metrics and Evaluation Tools</b>	The Department and the HPwES Team are in the process of evaluating how to best support the development of systems to collect data and develop use cases and analysis tools based on actual pre- and post- installation fuel data, while moving forward with complementary initiatives to define a common taxonomy for housing such data, such as the Buildings Performance Database (BPD) and Standard Energy Efficient Database Platform (SEED). To complement that effort, the Team will also evaluate adoption of a standardized data collection and data transfer protocol (such as HPXML) using pilots to collect project-level data, including energy savings data, from HPwES Sponsors that might begin to populate such a database.
<b>Delivery Models</b>	Stakeholder comments revealed some confusion about the definition and proposed roles for Charter Contractors and Non-Traditional Sponsors. Virtually all respondents agreed that the Department should pursue the further development of this participation model but stressed the importance of a well-defined and robust quality assurance requirement. As a result, the Department will work with industry stakeholders to define the roles and responsibilities for Charter Contractors and Non-Traditional Sponsors. Additionally, the Department will conduct pilot initiatives to test the viability of these delivery models.

*Table 4 – Components for Research and Pilot Activities*

Some of the Department's first actions will be to reach out to industry, coordinated with other Department programs (e.g. Building America, WAP, BBNP, etc.), to conduct this research. As indicated in **Figure 4**, the Department anticipates several phases with go or no-go decision points in the course of conducting research and pilots in 2013. At these junctures, the Department will determine requirements and consider next steps for guidance, further research, or other activities to advance plans to evolve HPwES. The Department anticipates that results from research and pilot activities will be summarized in late 2013 and will inform its proposed plans for the detailed HPwES v2.0 platform.

### Work Stream 3: Department Program and Policy Activities

In Work Stream 3, the Department will consider federal program and policy activities. Several aspects of the HPwES v2.0 proposal were designed to leverage existing resources residing in related Department programs and encourage both inter-agency (including related U.S. Environmental Protection Agency (EPA) and U.S. Department of Housing and Urban Development (HUD) projects) and intra-agency communication and cooperation on an on-going basis. Many commenters supported coordination in general but articulated concerns that some of the newer tools and resources may not be ready to be fully adopted by HPwES as mandatory components of the Program at this time. As a result, additional review of these resources and possible synergies with HPwES will continue to be explored, and possibly launched on a pilot basis. **Table 5**, below, presents Work Stream 3 activity details.

Policy Area	Activity Detail
<b>Inter- and Intra-Agency Collaboration and Coordination</b>	Coordination among related federal programs is already underway to leverage resources, enable streamlined messaging in the marketplace, and avoid competing programs. The Department will continue with these on-going efforts to maintain open communication to maximize cooperation and efficient use of resources among various Department programs including HPwES, Building America, Better Buildings Neighborhood Program, Home Energy Score, Office of Weatherization and Intergovernmental Programs, and the National Laboratories' EPA's ENERGY STAR programs, including the HVAC Quality Installation program; and HUD's housing programs.
<b>Workforce Certifications and Standard Work Specifications</b>	Many commenters were concerned with the v2.0 proposal to adopt the Standard Work Specifications and worker certifications developed under the <i>Guidelines for Home Energy Professionals</i> project, stating that these yet-to-be-released standards are not ready for wide-scale implementation and may not be a good direct fit for HPwES. As these specifications and certification schemes are still in development, they will not be compulsory for participation in HPwES at this time. The Department and the HPwES Team will review current industry standards and certifications for applicability to the HPwES Program and create guidelines for describing the necessary components of a certification program for Sponsors and their Contractors. As products of the <i>Guidelines for Home Energy Professionals</i> project are completed, the HPwES Team will work with stakeholders to determine how to incorporate them into the HPwES Program in an effective manner and reasonable timeframe.
<b>Asset Ratings</b>	The v2.0 proposal included a mandatory asset rating as a component of a HPwES project. Some commenters like the idea and are open to using the Department's Home Energy Score to provide an asset rating. However, most agree that more work needs to be done to demonstrate that Home Energy Score works nationally and is the most appropriate choice for this purpose. The Department will continue its efforts to deploy the Home Energy Score and evaluate the results for possible future use in HPwES, and will also consider providing guidance on alternative rating tools.
<b>Labeling, Branding, and Project Completion Certificates</b>	The Department and EPA need to coordinate closely working under the ENERGY STAR Program to avoid market confusion. While many stakeholders like the idea of offering trade-based or system-based pathways as options for entry into the Program, there is almost universal consensus that associating the HPwES name with improving a single system/path within a home would result in a negative outcome for the home performance industry. Most seem to agree that any level of recognition as a HPwES project should be limited to the whole-house approach including an assessment to identify all opportunities, allowing the homeowner to choose from a minimum of work to be completed, and providing pre and post performance testing to capture savings and verify systems are performing to specifications. However, using a non-HPwES label, such as "ENERGY STAR HVAC" or "ENERGY STAR Envelope," for those systems improved through the HPwES Program was encouraged by several commenters. The Department is committed to creating a positive value proposition for HPwES customers and will work with EPA to continue to explore possible options for offering a certificate or other recognition associated with a HPwES project.
<b>Evaluation of Energy Modeling Software Tools</b>	Some stakeholders would like the Department to offer guidance for selecting appropriate energy simulation tools for their regions. The Department will review this request and consider developing a means for evaluating and/or qualifying modeling software and to assist Program Sponsors in this regard.

*Table 5 – Components for Program and Policy Activities*

Similar to Work Stream 2, the anticipated timeline for the activities related to Department program and policy decisions will proceed in phases with decision points, as depicted in **Figure 4**. As certain research efforts and pilot initiatives yield actionable information, the Department will be able to make recommendations on issues related to proposed elements such as application of the Home Energy Score, Workforce Certifications, and recognition opportunities. Throughout this process, the Department will be interested in collaborating with stakeholders to ensure a workable plan for advancing HPwES.

## Closing

With this multi-year outlook, the Department will proceed with improvements to the HPwES Program while maintaining transparency with HPwES stakeholders. Immediate next steps are to continue to obtain stakeholder input and encourage participation in the process so that, together, we can increase the availability of HPwES services to homeowners nationally by making the Program both accessible and feasible for a variety of market sectors and operational models. Through the three work streams described in this document, the Department will seek new opportunities to engage with stakeholders to determine the most effective solutions.

The Department appreciates the time and effort the HPwES community of stakeholders took to provide extensive and thoughtful comments on the HPwES v2.0 proposal. The Department is grateful to the HPwES stakeholders for their continued support of this landmark program. The community's involvement and perspective is a critical component that assists the HPwES Team in the continued evolution of the Program. Most significantly, it is the HPwES Sponsors and their participating contractors who make the implementation of this program possible and the Department is committed to establishing program rules that create value in the marketplace and can be leveraged to help Program Sponsors meet and surpass their residential energy efficiency goals.

The Department looks forward to the continued development of the HPwES Program to be both scalable and sustainable over the long-term. The comments received during this review process have provided the basis for a clearly defined action plan to move the Department and stakeholders forward together toward achieving these goals.

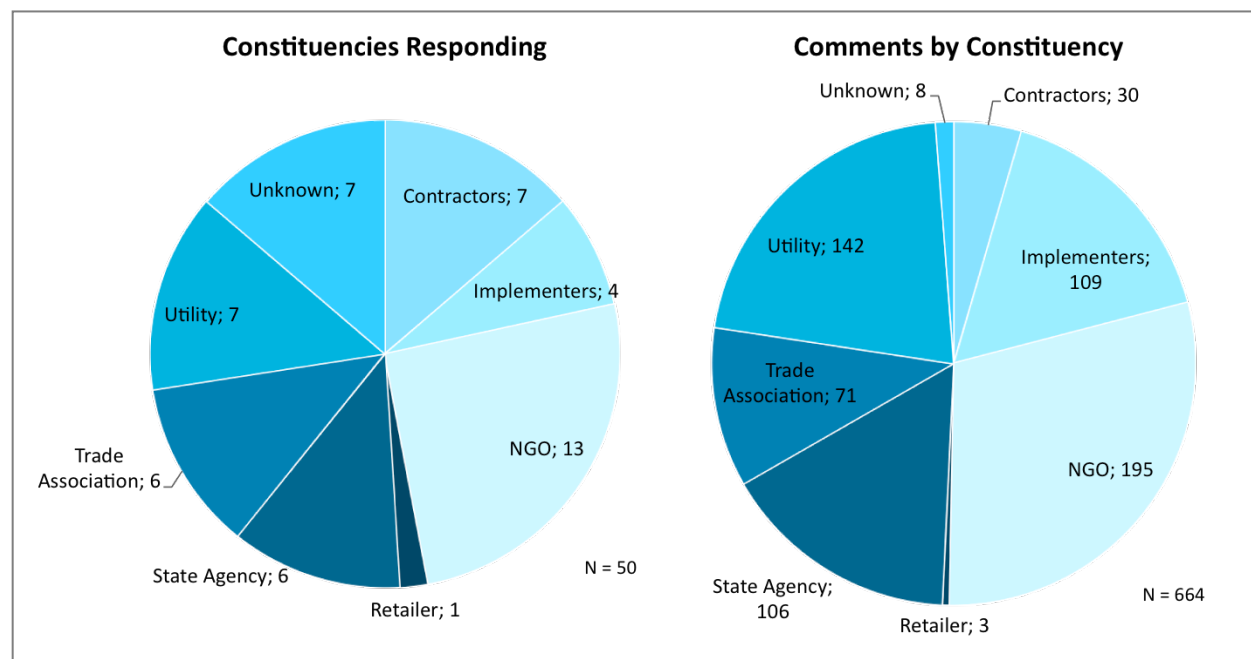
## Appendix A: Summary of Stakeholder Comments

### *Received Regarding the Proposed Version 2 Changes to the HPwES Program*

Under the direction of the Department and with a decade of experience to build on, a re-designed program model, HPwES v2.0, was introduced to stakeholders in March 2012 with the goal of creating a scalable program that is sustainable in both the public and private sectors. An informal 60-day public comment period followed, resulting in 664 unique comments submitted by respondents representing more than 50 organizations nationwide. This Appendix summarizes stakeholder comments received and the Department's process for their review and analysis.

### Analysis Process for Comments Received

Comments were collected via an online tool in which respondents typically commented on individual details of the proposed program design one at a time, as well as in letters and memoranda submitted by stakeholder groups. In order to capture trends and prioritize action items related to comments received, the Department's HPwES Team was charged with itemizing individual topical comments extracted from longer documents submitted by stakeholders. Once this process was complete, a total of 664 individual comments had been tallied, categorized, and assigned an action level and status.



*Figure A.1 – Number of Organizations Responding and Number of Comments Received by Constituency Type*

As **Figure A.1** shows, Individuals representing 50 separate organizations provided comments including 14 HPwES Sponsors. The pie chart on the right shows the distribution of comments received by constituency, indicating that some constituency groups contributed a greater number of comments per organization than

others. Additional Sponsors and other parties were also represented within some organizations' aggregated comments.

Some respondents noted that they had intentionally limited their comments to higher level conceptual and policy issues, electing to refrain from commenting on specific details of the proposal until the bigger picture issues were resolved. For these reasons, it is difficult to assign a relative weight to each of the categories or individual comments received, however bigger picture decisions were generally assigned a higher priority than comments related to specific details of the proposal.

Upon review, each of the 664 comments were categorized by topic and sub-topic and assigned a preliminary status. Status designations were designed to help inform the HPwES Team's working plan. **Table A.1**, below, presents the status designations used for this process:

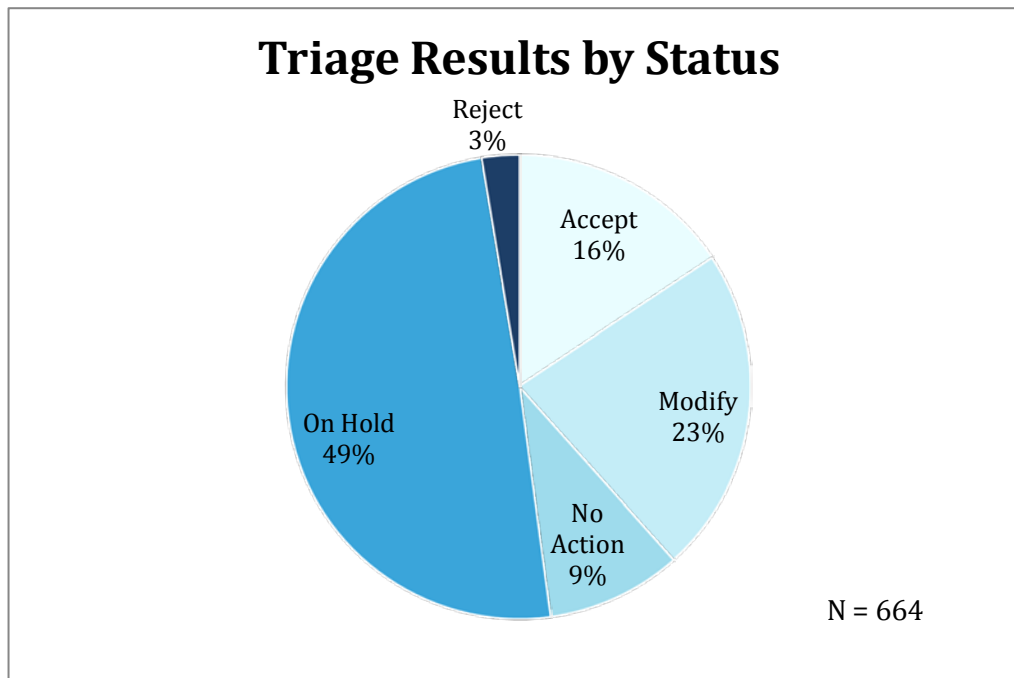
Status	Description
<b>Accept</b>	The commenter's suggestion will be integrated with the evolution of the Program.
<b>Accept with Modifications (Modify)</b>	The commenter's suggestion is generally acceptable but may require some modification to fit into the evolution of the Program.
<b>No Action</b>	The comment was informational and not actionable.
<b>On Hold</b>	The comment requires a broader policy decision by the Department, further research, additional information or resources, or may require a pilot prior to full launch.
<b>Reject</b>	The commenter's suggestion was not appropriate for HPwES and/or not feasible at this time.

*Table A.1 – Comment Status Designations*

As a result of this designation process, 184 of the 664 comments received, were deferred for future consideration (put "On Hold") and categorized as "dependent details" requiring a predecessor decision to be made before determining if the referenced detail will remain relevant to the ensuing program design. All totaled, nearly half of all comments received have been placed temporarily on hold pending one of the following actions:

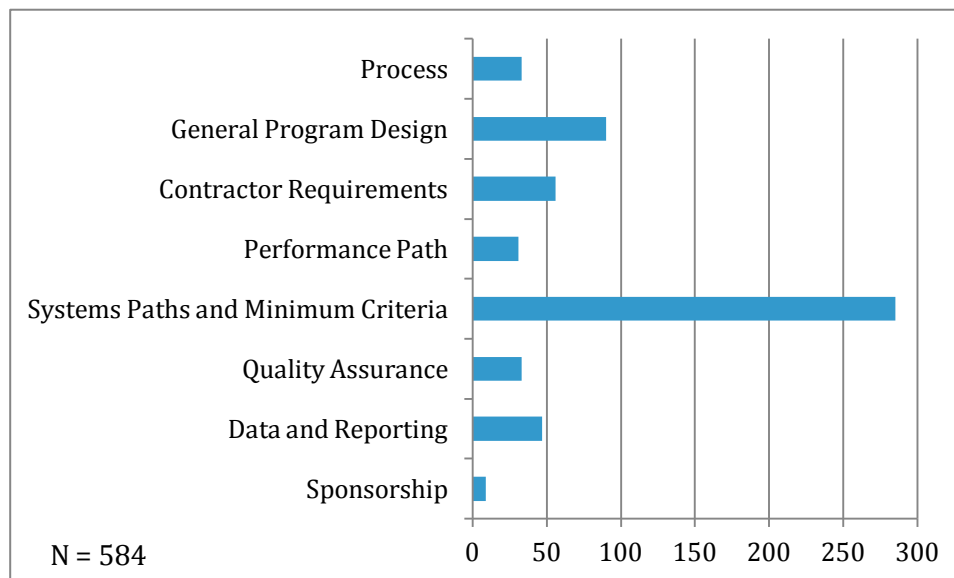
- Additional stakeholder input or resources needed
- Additional research or analysis by the HPwES Team
- Outcomes of predecessor decisions (i.e., Dependent Details)

As illustrated in **Figure A.2**, 39% of all comments received were assigned an "Accept" or "Accept with Modifications" status, while an additional 49% were placed "On Hold," leaving only 12% with non-actionable status assignments. Approximately 60% of the "On Hold" comments have been deferred pending higher level predecessor decisions. The remaining 40% of these comments are currently actionable and will be addressed by pursuing additional research, analysis, and pilot projects in collaboration with other Department programs (such as Building America, Home Energy Score, Better Buildings Neighborhood Program, and the Weatherization Assistance Program) as well as current Sponsors.



*Figure A.2 – Comment Status Assignments*

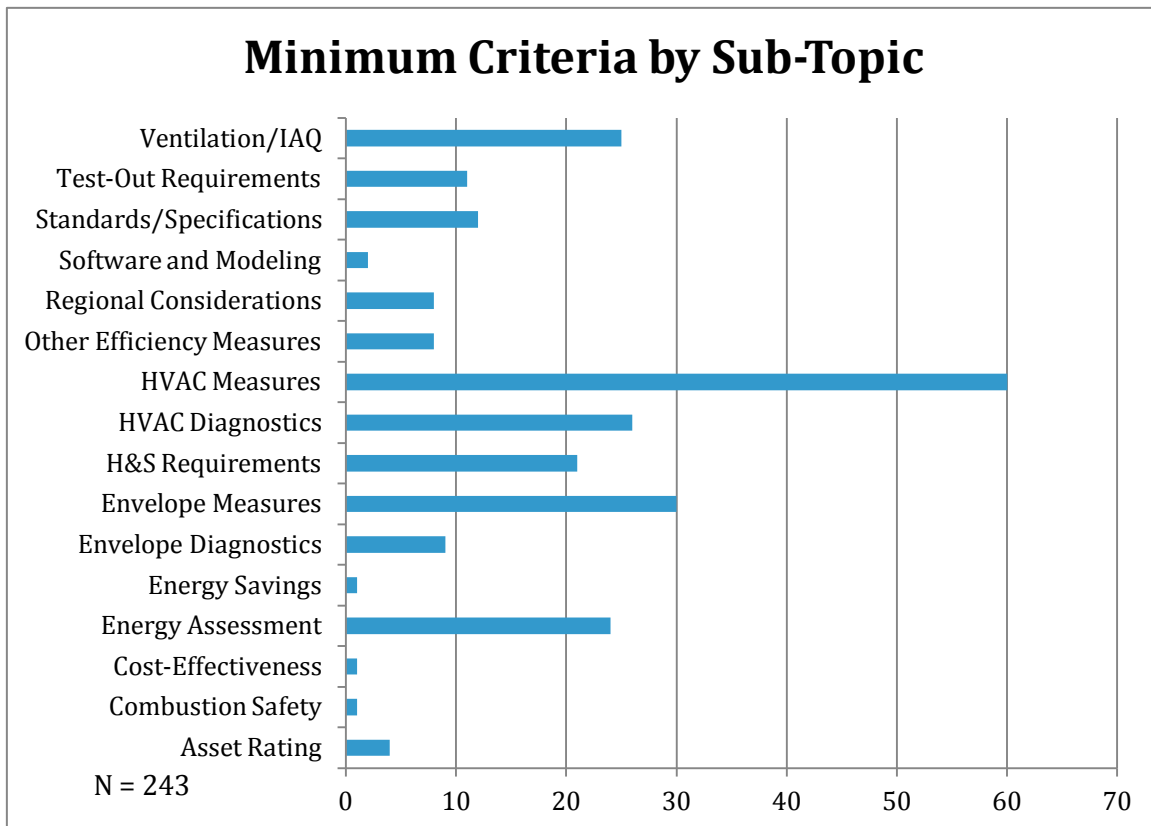
To better identify and understand trends, comments were categorized by topic and sub-topic. **Figure A.3** shows the breakout by category of all actionable comments received.



*Figure A.3 – Comments by Major Topic Area<sup>1</sup>*

<sup>1</sup> In **Figure A.4**, the number of comments represented in the graphic (N=584) is less than the total number of comments received (N=664) due to the elimination of any non-actionable comments receiving an initial “No Action” or “Reject” status assignment.

As shown in **Figure A.3**, the vast majority of comments were related to the “Systems Paths and Minimum Criteria,” a category which included all comments received related to the basic design and interaction of the proposed systems paths as well as the minimum criteria and measure specifications described in the HPwES v2.0 proposal. To better understand the nature of these comments, **Figure A.4** shows the detailed breakout by Sub-Topic for all comments within the “Minimum Criteria” category (in **Figure A.3**.)



*Figure A.4<sup>2</sup> – Sub-Topic Categorization of "Minimum Criteria" Comments*

Note that virtually all comments categorized into the HVAC, or Envelope Measures or Diagnostics Sub-Topics were dependent details that will be considered at a later time after higher level design decisions are settled. In many cases, these details may be left to the local Program Sponsor to determine provided other minimum program requirements have been satisfied.

## Action Steps

Generating an action plan based on the stakeholder feedback received during this comment period was of primary importance in the comment review process. When categorized comments were overlaid with the status designations of Accept, Modify, or On Hold, a prioritized action plan with team assignments emerges. **Figure A.5** summarizes the final breakout of actionable comments by status and assigned action step. Prioritized elements are those that have been assigned an Accept or Modify status.

<sup>2</sup> The comments referenced in **Figure A.4** include only those comments that were related the Minimum Criteria established in the v2 proposal (N=243). **Figure A.3** shows “Minimum Criteria” and “Systems Paths” comment counts combined (N=285.)

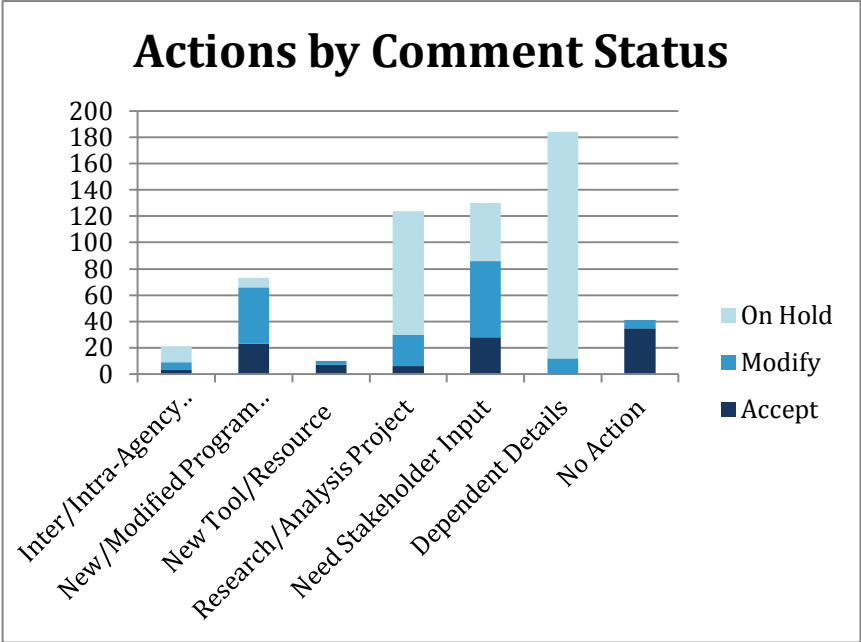


Figure A.5 – Prioritization of Comments by Action and Status

Summary of Comments

This section, organized by the categories of similar topic, presents a general overview of the set of comments received by stakeholders. Subsequent action steps that the Department identified as a result of reviewing these comments is presented in the Department’s Preliminary Plan.

Process

Regarding the proposed design and roll-out for HPwES v2.0, responses ranged from enthusiastic to apprehension, but generally there was a consensus desire for the Department to move forward at a slower pace to allow for a longer development phase. HPwES stakeholders’ perceived urgency to the Department’s proposed roll-out of v2.0 which was described as “perplexing.” For example, one trade association’s comments affirmed the need for change, observing that the Department’s process “has provoked the needed thinking and action by the industry, and this has resulted in a level of engagement not seen in many years.” While it further suggested that the Department take advantage of this renewed industry interest by “[working] with directly and materially affected interests to identify which initiatives could be worked on immediately and which items may require and deserve a longer timeline for development, testing, and deployment.”

Issue or Topic	Action Steps
DOE should slow down the process to evolve the HPwES Program and prioritize immediate needs for current program participation.	The HPwES Team’s workplan will follow a phased approach that prioritizes immediate fixes, initiates longer term research, and pilot opportunities.
DOE should consider local program and implementation concerns to better identify opportunities for enhancements to the national Program.	The HPwES Team will continue to conduct outreach and coordination with local programs via one-on-one support, regional peer exchanges, and other communication tactics to ensure an open dialogue of information exchange.

## General Program Design

While most respondents encouraged the creation of additional points of entry based on traditional contracting trades as an important next step in the evolution of the HPwES Program, it was also virtually unanimous that if issues arise with the general Program design, it will be in its details. While some respondents embraced the idea of establishing minimum measure standards at the national level, the majority were concerned that this approach would inordinately encumber Sponsors and contractors working in regions that are already struggling to exist in presently over-burdened regulatory and statutory environments.

Assistance from the Department with messaging and marketing support was a frequently cited request among stakeholders in the context of both the existing HPwES Program and any future program designs. Coordination of related programs within DOE and among other federal agencies was repeatedly mentioned in comments as a key to addressing implementation details that avoid market confusion, redundant use of resources, and unintentional conflicts between federal program goals and agendas. Many respondents urged the Department to ensure that the final v2.0 design incorporates elements that address these issues, giving higher priority to these kinds of activities than to designing detailed measure specifications and prescriptive project requirements.

Several commenters expressed a need to simplify the proposed approach to further promote clarity in the marketplace. As one NGO representative explains, *“While [the Department] seeks to address desirable goals to increase HPwES market penetration and national coverage, many of the proposed changes also make the program more complex ... Contractors and homeowners have limited time and resources, and program complexity may become a distraction and ultimately a deterrent to participation.”*

While another NGO makes the case for simplicity by describing two potentially important market factors: *“While the availability of [ARRA] funding has caused more enthusiasm and optimism about the potential of massively scaling up retrofits than has been seen for many years, the cold hard reality is that this funding will not be available to support ongoing programs; and the low cost of natural gas will dramatically affect utility cost-benefit tests in coming years, resulting in much less funding for program administration than is currently the case.”*

The underlying sentiment being that an overly complex program design is likely unviable given today’s market challenges.

Issue or Topic	Action Steps
DOE should coordinate HPwES revisions with other related federal programs and projects.	The HPwES Team is working closely with other DOE teams as well as related programs within EPA and HUD to take advantage of leveraging opportunities, minimize redundancy, and coordinate messaging and goals.
DOE should provide Sponsors with marketing support to create effective and consistent national messaging.	The HPwES Team will provide a communications strategy that offers consistent messaging on the value of HPwES and seeks to grow the application of the HPwES mark.

## Contractor Requirements and Workforce Standards

Commenters generally supported some form of credentialing requirement for HPwES participation contractors, as described by one Utility, *“[We support] the requirement for the individual performing testing to have a whole-house, building science focused certification from ANSI or equivalent accredited body, particularly if the requirements have more focus on in-field training.”*

Others raised concerns regarding the use of the certifications developed under the Department's Guidelines for Home Energy Professionals project. The concerns fell into two categories: (1) these certifications are still in development and remain untested in the marketplace; (2) local programs would prefer a greater degree of flexibility. One NGO explained the need for flexibility in terms of cost and practicality by suggesting, *“allowing for other certifications... to meet this requirement. The cost to these small and medium businesses in expense and time is significant to receive certifications. In addition, the most effective learning should take place in the field with Program Sponsors.”* Most recommended waiting until the workforce certifications were complete and tested before citing them specifically as a program requirement, and also allowing for credentialing alternatives based on a standard set of criteria.

Several respondents also took the opportunity to express their opinions on the need for certification of technicians conducting infrared scans. There was a split decision on the proposed requirement for certification of technicians doing infrared inspections with approximately half of those responding firmly against the idea and half in favor.

Adoption of ASHRAE Standard 62.2, “Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings,” as part of the minimum health and safety requirements for HPwES v2.0 resulted in similarly divided opinions. Some commenters were concerned about the added project costs and potential energy penalties associated with the installation of ventilation systems while others felt that their cost-effectiveness test requirements would preclude them from being able to comply with this standard for all HPwES projects. However, these positions were counter-balanced by respondents expressing full support for adoption of ASHRAE 62.2, either in its entirety or with an allowance for possible regional modifications. A thorough review of the comments received regarding ASHRAE 62.2 indicates that there is a great deal of confusion within the industry as to the actual requirements for existing homes and the potential technical and economic impacts on HPwES projects.

Issue or Topic	Action Steps
DOE should not mandate the use of unfinished and untested standards and certification schemes such as those based on the Workforce Guidelines project.	The HPwES Team will monitor and review the results of pilot initiatives to introduce these standards and certifications into the marketplace as well as other industry standards that are in development. The results of this review will inform any future decisions to require their integration within HPwES Programs.
DOE should not mandate compliance with ASHRAE Standard 62.2 for HPwES projects.	The HPwES Team will develop informational guidance for Sponsors to better understand the requirements of ASHRAE 62.2 and conduct additional research to better understand the impacts of applying this standard to HPwES projects. The HPwES Team is also coordinating these efforts with other DOE programs including WAP and Building America to identify (and create where necessary) training resources and design guidance for HPwES Sponsors and contractors to use.

Performance Metrics

Several Sponsors felt disenfranchised by the omission of an explicitly defined “performance path” in the proposed v2.0 design and many stakeholders commented on the lack of alignment with performance-based requirements in currently proposed federal legislation. As one Sponsor stated, *“[Our Program] uses a performance-based design based on an assessment and modeling of a home; the estimation of the potential savings; and the negotiation of a scope of work between the homeowner and contractor.”* This same respondent further cautioned that a simple overlay of a performance model plus prescriptive requirements would potentially *“introduce rules that would not be a natural part of a performance program design”* reinforcing the need for a clearly articulated and distinct performance path.

Several commenters articulated a need for performance data and evaluation tools based on actual pre and post-energy consumption and systems capable of supporting actuarial and investment-grade analysis of project and program results. This type of analysis would enable energy savings to be monetized and valued based on a variety of use cases, encouraging private market investment and supporting expansion of the HPwES Program at scale.

Issue or Topic	Action Steps
DOE should explicitly include a performance path in the v2.0 design.	The HPwES Team will develop a basic rule set and guidance for Sponsors using a performance-based approach.

Systems Paths and Minimum Criteria

The proposed v2.0 “systems paths” or a “pathway approach” (i.e. HVAC or Envelope) were designed to allow for ease of access to home performance services for customers working with traditional trades-based contractors. One trade association agrees that this approach can be effective but is not without its challenges, *“There is an opportunity here to create a sustainable model for the HVAC industry with practices that deliver proven measured results. The key to sustainability ... is the contractor’s ability to make a fair profit on that work without subsidies.”*

Many commenters generally supported the pathway approach with certain caveats. One implementation contractor describes the potential benefits of such a structure as *“[allowing] homeowners to participate at their level of interest and ability. Many homeowners are simply not able to complete a full home performance project at once. This model allows homeowners to take what they have learned from the energy assessment and begin to move along their Energy Path making smaller improvements over time, eventually achieving a high performance home.”* While an NGO offers a counter-argument noting, *“While the tracks may increase participation, it seems that they would also allow for contractors to be rewarded for abandoning the whole home approach to home energy upgrades ... [The Department] should place greater emphasis on fundamentals, such as a whole home approach, and less on required measures.”*

Summarizing the concerns of several other stakeholders, one state agency qualifies its support for this approach by adding, *“Program implementation, marketing and contractor training will need to be well planned to avoid market confusion.”*

Overall, the prescriptive measure specifications proposed under the systems path for v2.0 were among the most controversial elements of the proposed program design. More than 200 comments received were directly related to these details and in many cases with no clear consensus on what the right answer might be. This seems to illustrate the need for flexibility at the regional or local levels so that industry can respond to varying conditions based on markets, housing stock, regulatory requirements, resource limitations, and infrastructure constraints.

Issue or Topic	Action Steps
DOE should not prescribe minimum measure requirement in the HPwES process.	The HPwES Team will revise and communicate the system pathway approach more clearly, including simplifications that will be more adaptable to region-specific needs and constraints.
DOE should consider implementation costs associated with the minimum criteria for the HPwES Program.	The HPwES Team will evaluate and communicate potential cost implications associated with changes to the minimum criteria. Only those requirements that are necessary to protect the integrity of the Program and provide value to the customer will be considered for inclusion in future program revisions.

## Quality Assurance

While there is universal support for a well-defined and robust quality assurance (QA) element of the HPwES Program, there is little agreement among commenting stakeholders as to how that system should be structured and which standards should be referenced. Some parties support BPI's Accredited Contractor model while others advocate for ACCA's Quality Assured program, and still others seek general guidance from the Department offering the flexibility to adopt any system that meets a set of pre-defined criteria.

In the context of the proposed Charter Contractor model, there was some debate among the commenters regarding the definition a third-party QA provider and the terms of the relationship between the QA provider and the contractor. Additionally, there were questions raised regarding the responsibility of local Sponsors to provide QA oversight for varying types of HPwES projects completed in their regions, particularly if the Sponsor's core program is limited to specific types of jobs or projects.

In a request for additional clarity around the requirements for project level QA, one Sponsor noted the need for the Department to *"expand the types of QA inspections that 'count' toward the onsite inspection requirement,"* further noting that, *"onsite QA visits [are performed in our program] at different times during a project: at test-in (during the initial audit), during installation (in progress), or at test-out or post-completion. All of these types of site visits are valuable in ensuring high-quality retrofit work is being performed."*

Issue or Topic	Action Steps
DOE should ensure a robust QA element of the HPwES Program, including clarity of inspection types, required standards, frequency, and reporting structures.	The HPwES Team will develop a standardized review process and QA feedback system.

Data and Reporting

Proposed enhancements to the data and reporting systems including the use of a standardized data schema such as HPXML were generally well-accepted and most respondents felt that the proposed time limits for submission of data to be reasonable. However, some respondents cautioned that delivering project-level data could be problematic and would require adequate transition time for Sponsors to modify their systems for both data collection and reporting. Additionally, one Sponsor felt that the expense of re-tooling their data systems would be prohibitive, suggesting that the Department would need to demonstrate the benefits to the Sponsors to help justify this investment.

Reporting of utility and fuel consumption data was viewed as an easy task by some and virtually impossible by others, due to utility imposed restrictions on sharing that data. As a result, it is clear that additional work needs to be done within the industry and at the public policy level before this data is universally accessible.

Issue or Topic	Action Steps
DOE should support industry efforts to streamline data standards, while being cognizant of implementation costs for HPwES participants.	The HPwES Team will collaborate with Sponsors to pilot the collection of project level data. DOE will also support the HPXML pilot to establish data schema.

Expanded Delivery Models

The comments revealed that there is significant confusion among respondents on the distinction between Charter Contractors and Non-Traditional Sponsors<sup>3</sup>. A Non-Traditional Sponsor model was proposed as a new program option that would potentially allow for new sectors, such as trade associations, NGO’s, manufacturers, or retailers, to participate as HPwES Sponsors. . Commenters found this proposal to be fairly controversial with many expressing concern about competition between Sponsors in overlapping territories and how that might be managed to limit market confusion. While no prohibition against multi-sponsored territories currently exists within the HPwES Program rules, the issue was raised by current Sponsors.

The proposed Charter Contractor model was generally seen as a viable option for HPwES provided that Charter Contractors were explicitly prohibited from operating independently within a sponsored region. Virtually all respondents agreed that the Department should pursue the further development of this participation model but stressed the importance of a well-defined and robust quality assurance requirement. Opinions varied widely on how to design and execute the quality assurance component but most agreed that some form of third-party oversight is necessary.

One retailer expressed interest in sponsorship but sees a challenge in a model that does not allow for regional cross-over among Sponsors. *“From a national retailer standpoint the idea of creating a business model around being a Program Sponsor is, on the surface, intriguing. That said, it doesn’t look like [the Department] would want to see any sponsor overlap so it still doesn’t knock down one of my primary concerns – operating a program with national scale.”*

<sup>3</sup> Some commenters were confused about the distinction between a Charter Contractor and a Non-Traditional Sponsor. The Charter Contractor would be a home performance contracting company that is empowered to offer HPwES services in regions that are not already sponsored by other organizations. A Non-Traditional Sponsor would be a company or organization that participates as a Sponsor with contractors working under them either regionally or nationally. Market players that might participate as Non-Traditional Sponsors include trade associations, NGO’s, manufacturers, retailers, or others.

Others expressed support for the idea in general, but cautioned the need for a strong set of rules to protect the integrity of the program and brand. As one contractor stated, *“Any willing and able entity should be allowed to ‘sponsor’ HPwES, but only after development of stringent rules that ensure a level playing field ... We want the market to innovate—and we should encourage that as long as they have to clear the same bar and are accountable.”*

Implementation costs of new program requirements were raised as a potential area of concern for Sponsors with several commenters requesting that the Department more fully explore the potential added costs to implementation of the HPwES Program under the proposed v2.0 design.

One Sponsor described challenges posed by increased implementation costs by stating, *“Our overarching concern about HPwES v2.0 is that the multitude of prescriptive requirements ... would result in both increased program administration costs, and costs to the homeowner, that would discourage participation.”* Further explaining that, *“These prescriptive requirements would, in many cases, go beyond what utilities would support and what would be justified by cost-effectiveness ... we urge the DOE to allow maximum flexibility in the assessment and scoping of retrofits.”*

Issue or Topic	Action Steps
DOE should provide clarification of the eligibility, roles, and responsibilities for Non-Traditional Sponsors.	The HPwES Team will continue to evaluate options for workable models for this approach and identify opportunities for potential pilot participants.
DOE should work with stakeholders to develop guidance for roles and responsibilities for Charter Contractors.	The HPwES Team will work with industry to develop Charter Contractor requirements and pilot initiatives prior to adoption as a formal component of the HPwES Program.

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