



Building Performance Institute, Inc.

The Home Performance XML (HPXML): Purpose and Status

Introduction

The Building Performance Institute, Inc. (BPI) has completed the first phase of a Home Performance Extensible Markup Language (HPXML) development. HPXML is designed to facilitate the collection and exchange of data by contractors, program administrators, sponsors, and other sectors of the residential energy efficiency retrofit industry. BPI has created a HPXML schema that is proposed to be accepted as a technical standard by BPI and the American National Standards Institute (ANSI). The HPXML schema is posted on a dedicated website: www.homeperformancexml.org

The HPXML schema is the first step in meeting the rapidly growing need for standardization in the residential energy efficiency field. As residential energy efficiency programs expand, the need for accurate and seamless data transfer becomes more important. The most advanced home performance contractors are using building models and special software tools to assess unique home needs and to propose work to customers. These tools rely on increasingly large quantities of data. Many program administrators and sponsors also seek more data to ensure that predicted savings are realized and that retrofits meet quality standards. As a result, program participants need ways to transfer increasingly large amounts of data without increasing the burden of data management. The HPXML addresses this need directly.

In essence, the HPXML is a carefully designed language that all parties involved in residential energy efficiency programs can use for electronic communications. XML is a protocol for structuring data in a way that ensures it can be read in the same way by any computer. BPI's HPXML has created a key set of terms used in building performance contracting and evaluation and organized them in an XML protocol. This will allow effective, universally intelligible data transfer among any energy efficiency program participants using the HPXML. HPXML users can exchange the specific data required for their specific purposes. For example, the data required to provide quality assurance may be different from data required to obtain funding approval. But the transactions share common data elements. In some cases data may be accessible from an existing pool, reducing the need for multiple collection processes.

The New York State Energy Research and Development Authority (NYSERDA) created an XML protocol in 2009 that allowed contractors to exchange data with program administrators for quality assurance purposes. In 2009, the US Environmental Protection Agency (EPA) contracted with BPI to develop a HPXML data protocol, modeled on the NYSERDA example, that would facilitate job data submission in its Northern Virginia Home Performance with Energy Star (HPwES) program. EPA's objective was to improve program quality assurance, aid in reporting, and keep costs to the contractor low.

EPA asked BPI to submit a draft HPXML for review by a broad advisory group to determine its adequacy. The data schema and supporting documents were developed by Performance Systems

Development, Inc. (PSD), which also provided technical support for the Advisory Group. The Advisory Group was formed by BPI to meet multiple objectives:

- Assess the adequacy of the data components in the draft HPXML to be used to certify residential energy efficiency retrofits carried out through the HPwES program. An initial core of an XML data transfer protocol has been defined as part of the Northern Virginia Home Performance initiative. This protocol enhances BPI's capacity to accredit contractors and provide quality assurance reviews nationally.
- Encourage the continuing development of software that supports the home performance industry to improve retrofit contractors' ability to collect, analyze and report data for HPwES, or for sponsors of efficiency retrofit incentives (such as state or utility credit or rebate programs).
- Chart the path toward a core HPXML used to support a data transfer exchange among a base of home performance sponsor, industry and market participants on a business-to-business basis for the purpose of reducing the inefficiency of third-party storage and transfers and to encourage data sharing.

To address this broad scope, the HPXML Advisory Group included contractors, software developers, home performance program sponsors and representatives of financial and energy industry sectors that collect or use home performance data.

Status of Draft HPXML

A draft HPXML (v. 1.0), was developed by PSD and reviewed by EPA in April 2010. With modifications recommended by EPA, a subsequent version of the draft XML (v. 1.02) was developed by PSD and reviewed by the Advisory Group. Advisory Group members made recommendations for improvements that were adopted in the latest draft HPXML (v 1.03), which is the reference version for the proposed BPI standard. The Advisory Group recommended that the current draft, HPXML v. 1.03, be used for continued development of an interoperable data exchange standard. Most comments were directed toward advancing the HPXML beyond the original scope by adding extensions that meet the needs of different users and that enable data exchange.

The Advisory Group reviewed XML protocols under development by other organizations including RESNET, the Green Buildings Council and IEP Model. No immediate conflicts or incompatibilities with these projects were identified.

EPA accepted the report of the Advisory Group in October, 2010.

Next Steps for Publication and Adoption

As an outgrowth of Advisory Group review, three immediate steps are being taken toward an extended development and adoption of the HPXML:

- BPI plans to work toward adoption of the HPXML as an American National Standard (ANS).
- The National Home Performance Council (NHPC), as explained below, will integrate XML development with its program to collect and consolidate the forms used for collection of home performance data.

- The HPXML and ongoing developments will be accessible on a public web site.

These next steps will be implemented subject to the availability of funding support.

BPI/American National Standards Institute (ANSI) Standard Development

BPI is working to establish a technical working group to propose the HPXML schema with extensions for adoption as an American National Standard. BPI's accreditation by the American National Standards Institute is an important qualification for adoption of the HPXML in the residential energy efficiency improvement industry. The public sector encourages agencies to adopt existing specifications and standards, where they exist, that have followed ANSI accreditation requirements (OMB Circular A-119). ANSI accredits standards organizations that coordinate, facilitate and promote the development of voluntary consensus standards that are relied upon by industry, government agencies and consumers across the United States and around the world.

BPI will consider recommendations of the Advisory Group regarding specific needs for extensions of the HPXML, including:

- Calculation of energy savings resulting from efficiency retrofits
- Data required by retrofit financing organizations
- Advanced interoperability and data transfer between organizations

National Home Performance Council (NHPC) Integration

NHPC has initiated an analysis of data collection forms used by a variety of government, industry and other organizations to track home performance activity. NHPC's objective is to develop a model form that can be used in multiple contexts by home performance contractors, who are the primary source of data through their direct contact with consumers and retrofit projects. The needs of contractors for efficient, economic work processes should be coordinated with data requirements of program sponsors, such as utilities and state organizations. NHPC has established connections with many of these organizations and with federal users of efficiency retrofit data, such as the Department of Energy (DOE).

The BPI HPXML Standard will complement NHPC's work on the model forms by providing a universal way for parties using the forms to communicate data. NHPC is working to ensure that the model forms are fully compatible with the proposed HPXML Standard. NHPC has also agreed to participate in the continued development of HPXML through communication, outreach and technical integration.

Publication and Public Access

The HPXML has been published for general public access and review on this dedicated web site, www.homeperformancexml.org. This site will enable direct public and industry access to information about adoption of the HPXML or new extensions. Developers will have an opportunity to post questions or share information about implementation.