

## Optimizing the Home Inspection Process to Drive Energy Efficiency and High Performance - A Partnership Between the U.S. Department of Energy's Building America Program and InterNACHI

### Problem Statement and Justification of Need

The DOE/Building America Transaction Process Roadmap has determined that “High-performance homes face significant challenges throughout the transaction process. The most significant challenge is getting the housing industry to recognize the superior value of these throughout the transaction process.” While the Roadmap currently focuses on strategies to engage appraisers, lenders, insurers, and realtors, there is another potentially powerful transaction process actor who could play a very significant role in driving energy efficiency in existing homes: the home inspector.

To date, the home inspection process has paid little attention to energy efficiency. That is beginning to change and home inspector organizations like the International Association of Certified Home Inspectors (InterNACHI) are beginning to explore how their members might expand their services to include “energy inspections.” The U.S. Department of Energy's Building America (BA) program has the opportunity to get in on the ground floor of this new nationwide initiative and to help shape its structure, its technical approaches, and its energy savings outcomes. By better understanding the home inspection process, BA will be in a strong position to influence and help drive this key component of the residential real estate transaction process toward creating energy efficient, high performance homes.

Each year in the U.S., **more than 4 million existing homes are bought and sold and the vast majority of them go through a formal home inspection process.** This process offers a unique opportunity to drive energy efficiency upgrades in existing homes for at least three reasons. First, the home inspection is the only step in the existing home transaction process where technical issues are brought to the attention of a homebuyer. The timing is therefore opportune for introducing - energy efficiency - because the homebuyer (and, for that matter, the seller) is already being exposed to the concept that the house is grouping of components that can be improved and optimized. Layering energy efficiency onto this “house as a system” moment is an obvious, but long overlooked, opportunity to improve home performance.

A second reason is the fact that homeowners spend an average of \$8,000 on their home during the first year after they buy it. Home inspection reports can and do influence this spending and adding energy efficiency recommendations to home inspection reports have significant potential to drive some of this spending toward energy savings. And, third, a home inspection is a “need-to-do” activity for consumers, as opposed to an energy audit, which is more of a “nice-to-do” activity. To the extent that the home inspection process can incorporate energy efficiency, the more energy savings can move from a “nice-to” to a “need to” activity.

## Technical Approach and Key Activities

The proposed project builds on research efforts undertaken by the Building America Research Alliance (BARA) team in its role as the chair of the Implementation Standing Technical Committee. In 2012 and 2013, BARA supported the development of strategies to address the transaction process. BARA focused on very specific pieces of this large and complicated process: appraisals and appraisers. Our focus was identifying areas where BA could have significant impact and pursuing key opportunities in this area. This work resulted in clear, actionable recommendations for BA focused on appraisers and the Appraisal Institute's "Green Addendum," which was enacted in 2013 and will soon (by end of 2013) result in the automated delivery of energy information by program verifiers as part of the appraisal process. The first verifiers will be RESNET members, who will deliver data for the more than 120,000 energy ratings they produce each year. This success will catalyze demand for qualified, energy-savvy appraisers, will provide a proven infrastructure for energy programs (i.e., Challenge Home) to value energy performance in the transaction process, and will serve as a platform for consumer education using an existing process and workforce. This success in evaluating market segments that are challenging for traditional BA researchers and DOE, and connecting these markets to clear objectives for the BA program, is unparalleled.

The proposed research effort will build on this success by pivoting to the home inspection portion of the transaction process. The study will examine the current home inspection process in order to better understand and map how homes are currently inspected and to identify potential opportunities for incorporating energy efficiency into the process, either as an integrated element or, like current "radon inspections," as an add-on. Specifically, BARA will engage with a pilot "home energy inspection" program that InterNACHI is launching next year in Michigan.

BARA proposes the pilot (already supported by the Michigan Governor's Office, Building Science Energy Services, and local utilities) focus on a new home energy inspection protocol, developed by InterNACHI. The Michigan pilot will gather data on at least 250 homes in Michigan that receive the new home energy inspections (data can also be gathered from other areas of the country where home energy inspections are underway). The data gathered will include specific home characteristics, (documented in the next section, "current home energy inspection data fields"), recommendations given to homeowners based on the information gathered by home inspectors, potential energy efficiency opportunities, and an assessment of homeowner likelihood to act on recommendations made by the inspectors by performing energy upgrades (through an InterNACHI survey of homeowners who recently received the home energy inspection). The pilot will also develop and implement strategies to educate inspectors on the value of offering home energy inspections and provide inspectors with information to show the value of energy upgrades to their customers.

The goal is to integrate Building America technical knowledge into the home energy inspection (make technical recommendations for changes to the current process to optimize energy efficiency), and to integrate Building America research results (content) into inspector and homeowner education, as well as to gather data on the home inspection process, and homes being inspected in the pilot. In addition, the pilot will constitute a "living laboratory" that BARA will use to examine and better understand the home inspection processes and infrastructure. The pilot will

provide concrete guidance to BA on how to effectively engage with the home inspection process to achieve BA goals for existing homes. Including:

- A clear understanding of the home inspection process, market, opportunity to impact energy efficiency, software tools, and connection to the Home Energy Score (InterNACHI is currently a HES partner and is addressing the opportunities and challenges involved in aligning HES protocols and their own inspection processes).
- Aligning HPwES and worker certification programs (InterNACHI is looking for strategies to hand homeowners off to qualified home energy professionals).
- A map of the InterNACHI Home Energy Inspection – current standards, data collection protocols, reporting methodology – and the incorporation of Building America recommendations and content into the Home Energy Inspection (which is a national roll out).
- Data on the home inspection market and identification of key tools currently used by the industry that could be influenced by BA/DOE.
- Data from 250 homes undergoing “home energy inspections” in the Michigan market and recommendations for gathering more data from homes in future years.
- A roadmap for how BA/DOE can better engage with the home inspection industry to further its national energy efficiency goals.
- Inspector education and consumer outreach incorporating BA content into training for home inspectors on doing home energy inspections, and in consumer outreach materials for hundreds of homes undergoing inspection in the Michigan pilot. This content will also be incorporated into future markets (the home energy inspection is expected to be rolled out to all major markets in the coming years).

Additionally, the pilot proposes to work to evaluate the opportunity to provide “qualified leads” to Home Performance with ENERGY STAR contractors, as part of the process. This innovation has the potential to impact 4-5 million existing homes per year. Key stakeholders are home inspectors and home buyers. Price-participating partners include InterNACHI, Building Science Energy Services, and the Governor's Office of Michigan State.

### **Review Criteria**

#### **Match between Project Objectives and Building America Priority Needs**

The proposed project clearly identifies a key innovation opportunity, the home inspection process, that could lead to achieving 30% energy savings in existing homes. This process is not currently an area of focus for energy efficiency activities, but has strong potential to drive energy savings at a key inflection point in the residential real estate transaction process. The proposed project will investigate this promising opportunity and make recommendations on innovative ways that BA/DOE can catalyze this central, but under studied, home purchase activity toward energy savings and high performance. The proposed project directly relates to Research Need 6.0 Development of Successful Business Models (for home inspectors) and Research Need 8.0 Technical Support for New and Existing Home Market Transformation Programs. It also indirectly relates to 5.0 Building Science Education (for home inspectors and, home owners).

#### **Expected Impact on Building America Market Transformation Goals**

The proposed project directly addresses an activity - home inspection - that impacts over 4 million homes every year. The potential for this activity to drive energy efficiency is very significant and

could become a key component in transforming the existing home market toward greater energy savings and toward achieving BA’s market transformation goals.

**Expected Likelihood of Project Success**

The likelihood of project success is strong. The BARA team has the knowledge, skills, and capabilities to undertake the study and is partnering with the leading organization representing the home inspection industry: InterNACHI, a Partner of the U.S. Department of Energy’s Better Buildings Neighborhood Program. InterNACHI is not only a comprehensive source of information on the home inspection industry and its procedures, but is also committed to driving the industry toward greater involvement with energy efficiency as is evident by its pending energy efficiency pilot project in Michigan. The BARA team is confident that it can work effectively with InterNACHI and its members to conduct the proposed study and generate credible, useful results for BA and DOE.

**Schedule and Milestones**

*Project Start Date: January 1, 2014*

*Project End Date: December 31, 2014*

Milestone Title	Description	Target Date
Detailed plan	Develop a draft plan outlining key activities, schedules, and outcomes	Six weeks after award
Final report	Incorporate feedback and finalize report capturing key activities and outcome for this task	12/1/2014

**Key Personnel and Industry Partners**

Key Personnel	Role
Stacy Hunt and Deane Evans	Program managers
Christine Liaukus	Content development and design
Partner Organizations	Role
InterNACHI; Governor’s Office of Michigan; Building Science Services	Michigan pilot partners

InterNACHI is an extremely committed and engaged partner, and has committed to give Building America access to the data outlined above for all the HE inspections in the MI pilot, and other areas of the country, if desired. (500 per month are currently conducted by InterNACHI members). In addition, InterNACHI has agreed to take any reasonable recommendations Building America might

make to alter data points or to incorporate different recommendations or content in the HE reports. They are pleased to have someone looking over their shoulder to help optimize their process and provide useful content to educate their contractors and consumers.

### **Metrics for Success**

- Data is gathered from 250 homes.
- InterNACHI revises their Home Energy Inspection to reflect recommendations (technical and educational) from the Building America program, for national rollout.
- InterNACHI incorporates existing Building America research results in all inspector and consumer-facing educational and informational content (trainings, reports, newsletters, Home Maintenance guide)