

# Needs of Non Energy-Focused Contractors

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*Building America Retrofit Alliance (BARA)*

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## **Needs of Non Energy-Focused Contractors**

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## Definitions

BARA	Building America Retrofit Alliance
BPI	Building Performance Institute
DOE	U.S. Department of Energy
EEBA	Energy & Environmental Building Alliance
HPwES	Home Performance with ENERGY STAR
NAHB	National Association of Home Builders
NARI	National Association of the Remodeling Industry
WAP	Weatherization Assistance Program
WAPTAC	Weatherization Assistance Program Technical Assistance Center
WxTV	Weatherization Television

## Executive Summary

To understand the informational needs of non energy-focused contractors, the Building America Retrofit Alliance (BARA) team examined what remodelers think their information needs are and looked at the informational offerings provided by selected programs, trade media, and manufacturers. The areas of interest for this research are:

- What motivates remodelers to *become* energy-focused

And

- What technical knowledge to remodelers need to *be* energy-focused

The results suggest that the main motivating factor to becoming an energy-efficient remodeler is the business advantage. Yet a relatively small number of energy-efficient remodelers are working in the marketplace. The challenge is to make energy efficiency something remodelers can sell and to create a stronger pull for energy efficiency in the marketplace.

Once motivation is addressed, technical information needs follow. Existing home energy efficiency programs understand these needs from a whole-house perspective, but there may be opportunities to offer information that is specifically relevant to typical remodeling projects. This avoids remodelers completely changing their business but allows them to incorporate energy efficiency into their standard practices.

## 1 Background

There are about 650,000 remodeling and specialty trade contractor businesses, both those with payroll and the self-employed, in the United States (Joint Center for Housing Studies of Harvard University, 2011). The remodeling industry is also very fragmented, as most remodeling companies are small businesses, so characterizing their information needs is challenging. In 2010, the publisher Hanley Wood conducted a study on the information needs of builders and remodelers (Hanley Wood, 2010). This study found that, among remodelers, the number one information need was on technical how-to issues, followed by customer service, product information, and regulatory requirements. The Building America Retrofit Alliance (BARA) team held an expert meeting on media use called Transforming Existing Buildings through New Media: An Idea Exchange. The meeting explored opportunities to “transform the remodeling industry ... through new media strategies” (BARA, 2011). The various formats and modes available to convey information, as well as the type of information needed to transform buildings, were discussed. The three large categories that emerged were: How to Sell It, How to Do It, and Why Do It. These categories served as the framework for investigating the information needs of non energy-focused contractors.<sup>1</sup>

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<sup>1</sup> The categories also echo some of the needs of adult learners overall, as characterized by Malcolm Knowles. Knowles is a recognized expert in andragogy or adult learning theory. His assumptions include that adults are motivated internally or externally to learn something new. Making more money is an external motivation, and related to our “How to Sell it” category. Another assumption is that adults are task oriented and they want to see how what they learn can apply to a task or solve a problem. This is related to both our How to Do It and Why Do It category (Fidishun, 2000).

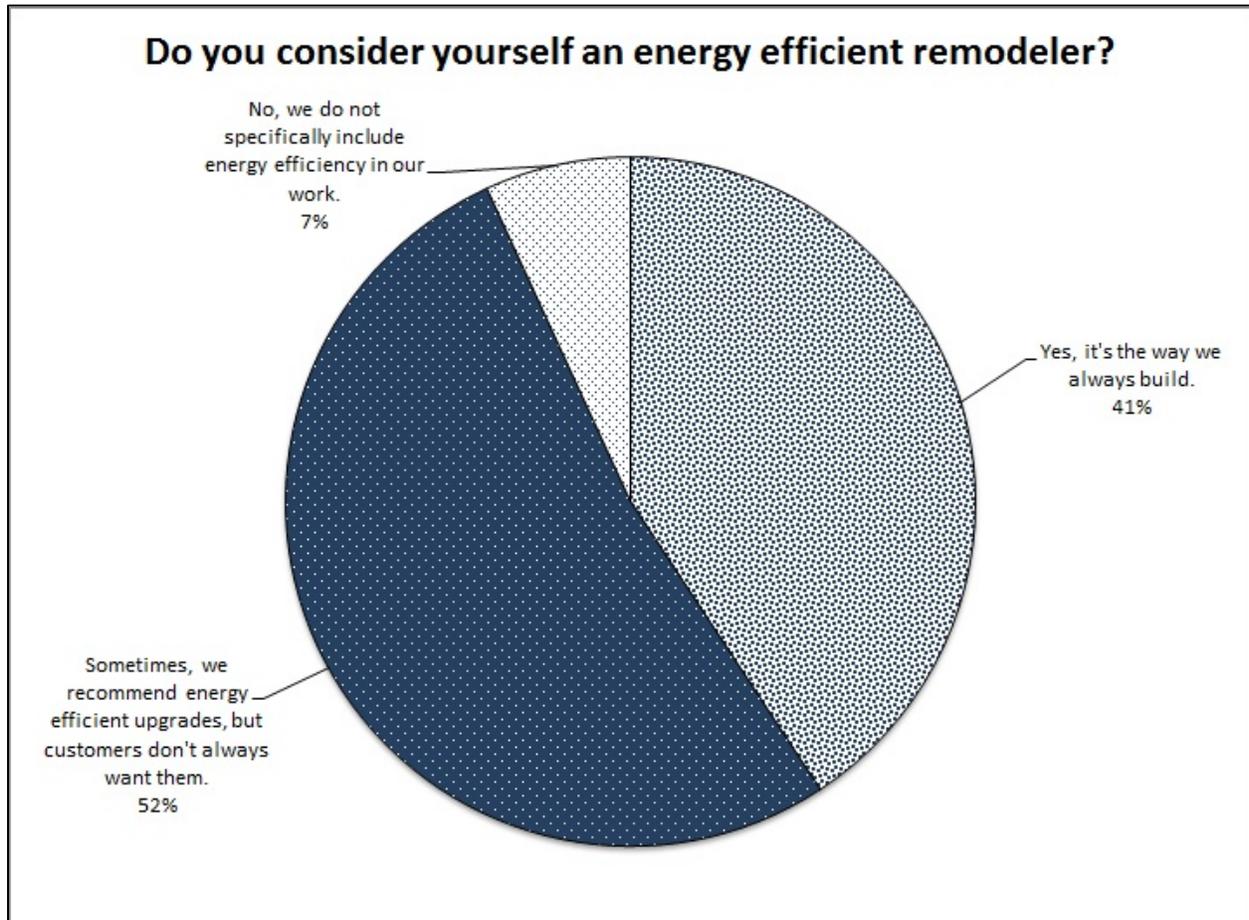
## 2 Research Goal and Approach

Two main areas of interest emerged about the information needs of non energy-focused remodelers: (1) what will motivate them to become energy-focused remodelers; and (2) what technical knowledge do they need to work as energy-focused remodelers. The BARA team researched these questions by asking remodelers about their information needs and by examining the information offered by selected programs, manufacturers, and trade media to non energy-focused remodelers.

Uncovering the information needs of remodeling contractors that are not energy focused can inform which research, strategies, and techniques from the Building America program are most relevant to the remodeling industry. This can help further the Building America goal of improving the efficiency of existing homes by 30%–50%.

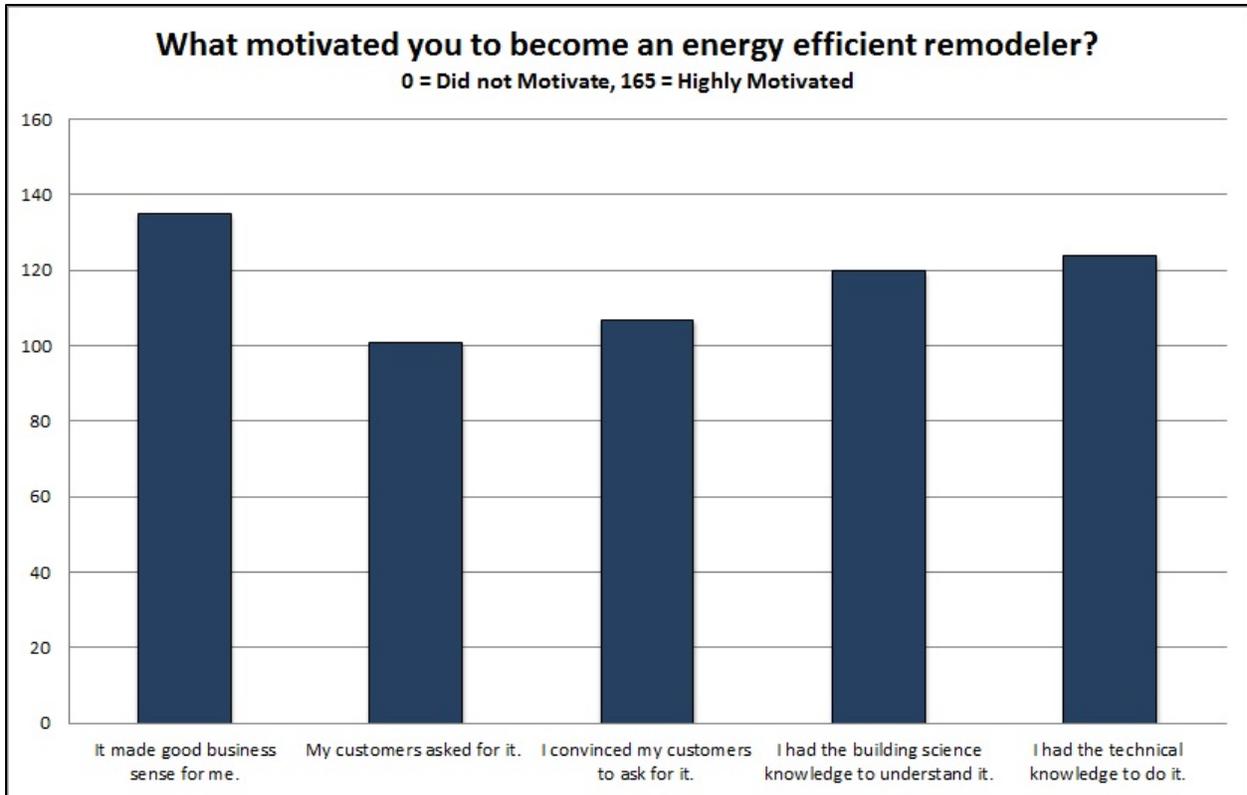
### 3 Remodeler Evaluation

The BARA team created and sent an electronic evaluation to the remodeling industry about its information needs. Subscribers to *Remodeler Magazine* and members of the National Association of the Remodeling Industry (NARI) received the evaluation. During the two-month collection period, 721 remodelers participated and 497 completed the evaluation. To focus on remodelers only, the first question asked if a participant’s work was primarily new construction or remodeling. If the respondent chose “new construction,” the evaluation ended.



**Figure 1. Remodelers evaluation, Are you an energy efficient remodeler?**

The question in Figure 1 asked if respondents considered themselves as energy efficient remodelers. The majority said sometimes, as it depended on whether the client wanted the energy upgrade. Of the remaining respondents, 41% said yes and 7% said no.

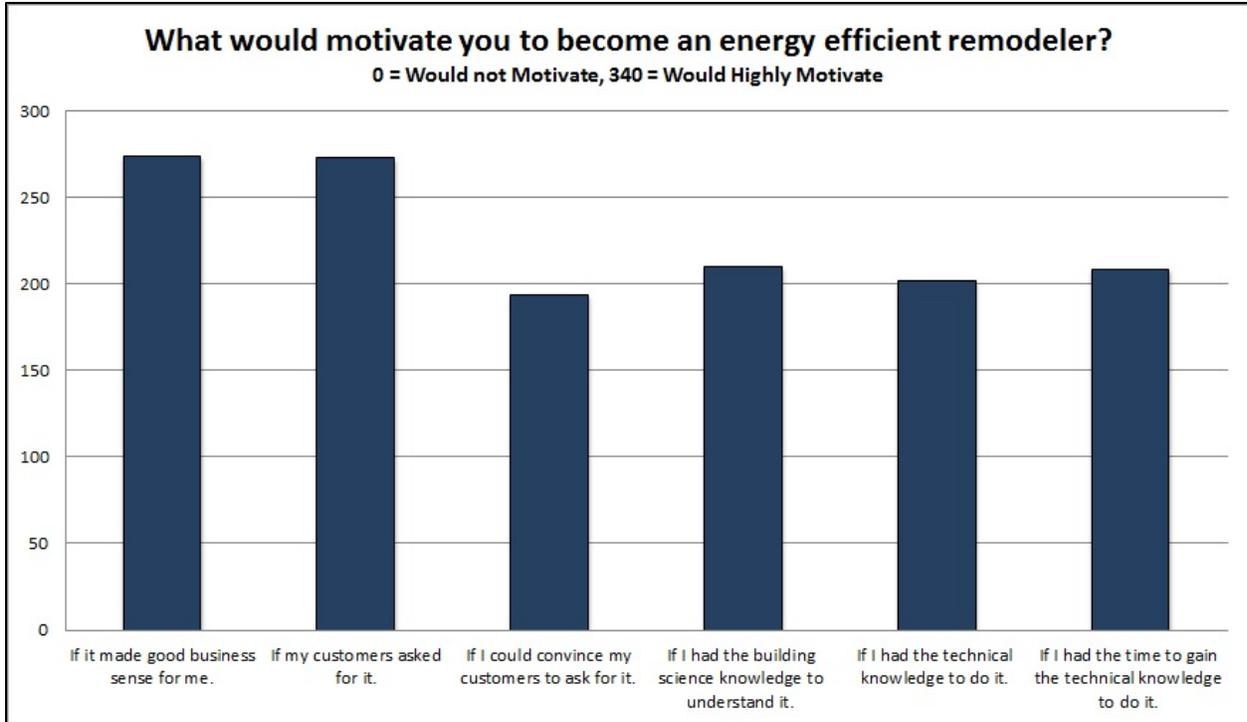


**Figure 2. Remodeler evaluation, energy-focused remodelers' motivation**

The question in Figure 2 looked at the motivation to become energy efficient remodelers for those that defined themselves as such. Respondents ranked the motivation levels of six factors. Answers were scaled from 0 = not a motivating factor to 5 = highly motivational. These scores were multiplied by the number of respondents giving that score, resulting in an overall ranking from high to low of:

- It made good business sense for me.
- I had the technical knowledge to do it.
- I had the building science knowledge to understand it.
- I convinced my customers to ask for it.
- My customers asked for it.

There were only 32 respondents to this question. Yet it is interesting to see that the top three rankings loosely parallel the broad categories of information that emerged in the BARA expert meeting: How to Sell it (It made good business sense for me), How to Do it (I had the technical knowledge to do it), Why Do it? (I had the building science knowledge to understand it).

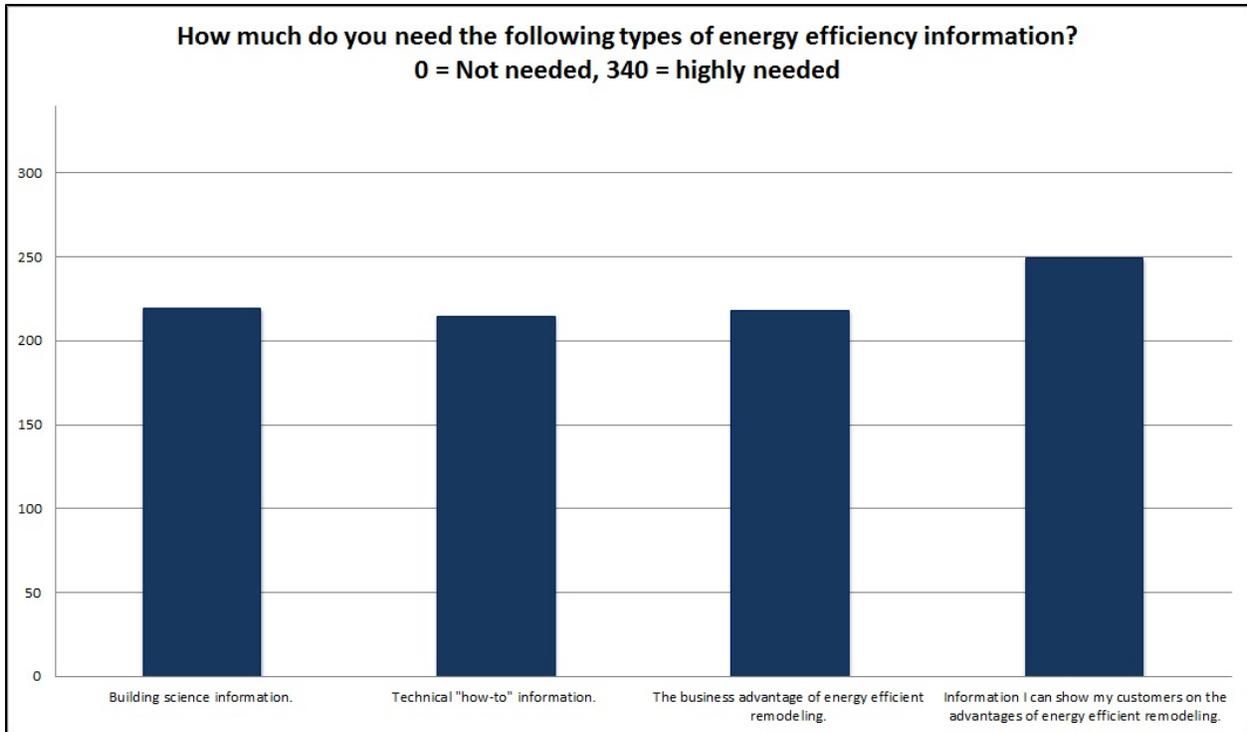


**Figure 3. Remodeler evaluation, possible motivators for non energy-focused remodelers**

As seen in Figure 3, the evaluation separately asked non energy-focused respondents what *would* motivate them to become energy efficient remodelers. The weighted scores from high to low are:

- If it made good business sense
- If my customers asked for it
- If I had the building science knowledge to understand it
- If I had the time to gain the technical knowledge to do it
- If I had the technical knowledge to do it
- If I could convince my customers to ask for it.

There were 68 respondents to this question. Again, as with the remodelers that are already energy focused, the potential business advantage ranked as the highest motivator.

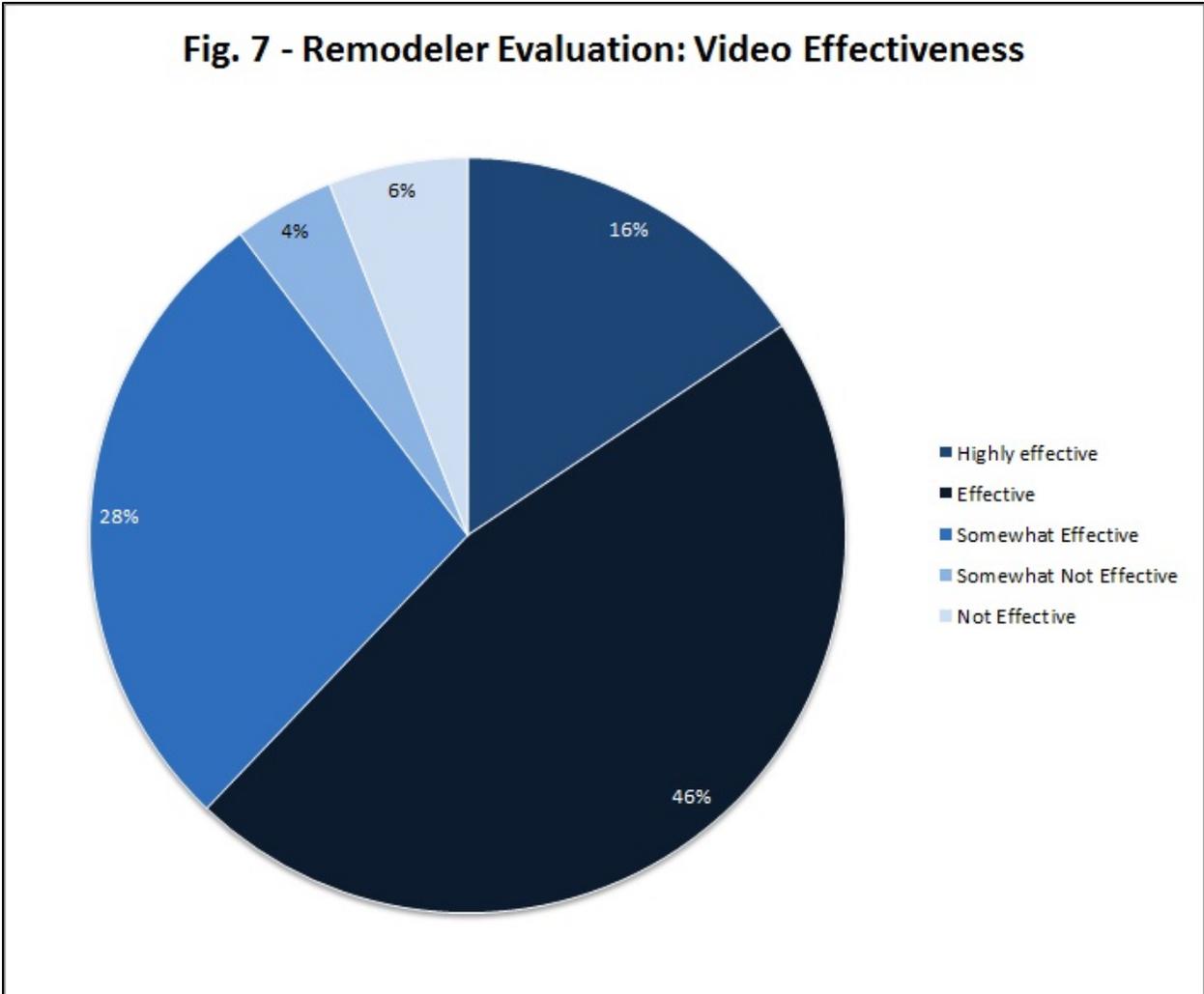


**Figure 4. Remodeler evaluation, most needed information**

The next question, as seen in Figure 4, asked about the types of energy efficiency information remodelers needed. Answers were scaled from 0 = not needed to 5 = highly needed. The rankings from high to low are:

- Information I can show my customers on the advantages of energy efficient remodeling
- The business advantage of energy efficient remodeling
- Building science information
- Technical “how-to” information.

Information for customers had the top ranking, but only marginally, as all the choices ranked similarly. This implies a need for all the information.



**Figure 5. Remodeler evaluation, video effectiveness**

The next question, shown in Figure 5, asked remodelers to watch a short [informational video](#) on duct sealing and rate how effectively it communicated its message. There were 486 respondents to this question.

The video was considered “Effective” by 46% of respondents, “Highly Effective” by 16% and “Not Effective” by 6%

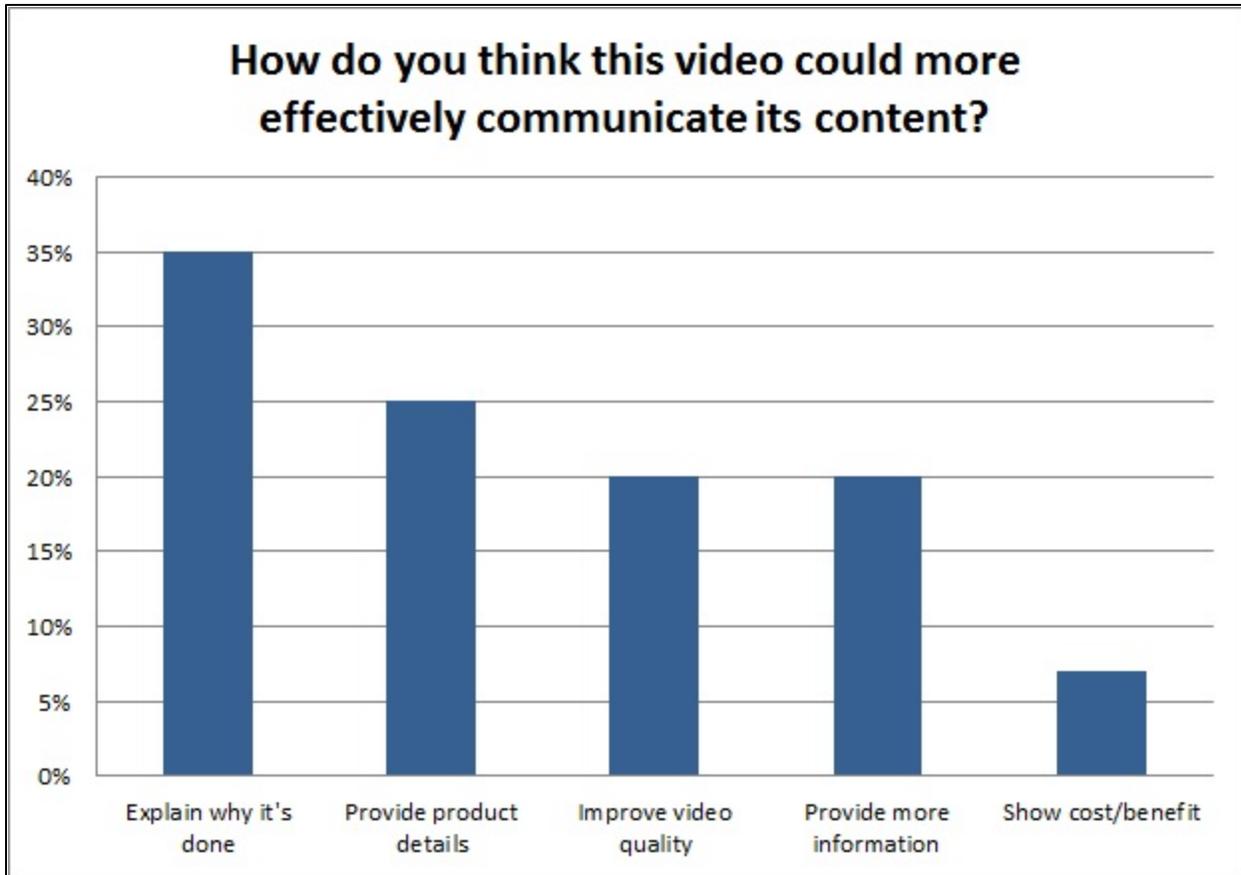


Figure 6. Remodeler evaluation, how to increase video effectiveness

In Figure 6, a follow-up question on the video asked how it could more effectively communicate its content. Most respondents wanted an explanation of why ducts are sealed, followed by product information. Interestingly, when considering the focus on the business side of energy efficiency highlighted in earlier questions, “show cost/benefit” had the lowest ranking. There were 167 respondents to this question.

### 3.1 Remodeler Evaluation Summary

The sampling of remodeler participants in the evaluation was relatively small, making a definitive conclusion unwarranted. Yet, the results suggest that remodelers will pursue energy efficient remodeling when it makes financial sense, and that they need supporting information to sell energy efficiency to their customers. Technical information is also needed, but it is not the first priority.

## 4 Information From Existing Home Programs

The BARA team scanned the information provided by the two largest existing home energy efficiency programs in the United States and four large trade publications directed toward remodelers.

### 4.1 Weatherization Assistance Program

The U.S. Department of Energy (DOE) Weatherization Assistance Program (WAP) and the Home Performance with ENERGY STAR program (HPwES) are the largest existing home energy efficiency programs in the United States.

WAP provides energy upgrades to homes where the resident meets income eligibility requirements. The WAP program has weatherized more than 6.4 million dwellings and, more recently, weatherizes about 150,000 homes per year. There are more than 900 local Weatherization Agencies and WAP employs 23,000–25,000 workers (WAPTAC, 2011).

WAP has standardized curricula for the weatherization workforce trainings. The curricula are based on the core competencies of the WAP and address subjects from overall concepts to specific how-to information. WAP wants participants to understand both how to do something and why they are doing it. Occupant safety is stressed in all WAP information.



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### Weatherization Assistance Program Standardized Curricula

These curricula are designed to be comprehensive, yet flexible tools useful to both new and experienced instructors as we expand the Weatherization Workforce. A new instructor can download the entire module for a comprehensive training session. Experienced trainers may only want to download specific sections to beef up their existing presentations. Modules for each weatherization position will be released in the coming weeks and months.

- [Weatherization Installer/Technician Fundamentals](#)
- [Weatherization Installer/Technician Intermediate](#)
- [Weatherization Installer/Technician Mobile Homes](#)
- [Energy Auditor - Single Family](#)
- [Energy Auditor - Multifamily](#)
- [Crew Chief](#)
- [Weatherization Technical Monitor / Inspector](#)
- [Mechanical Systems - Multifamily - NEW](#)
- [Train the Trainer](#)
- [Health and Safety Training for Programmatic Staff - NEW](#)

Figure 7. WAP standardized curricula (WAPTAC, 2011)

### 4.2 Home Performance With ENERGY STAR

The HPwES program is a market-rate program with various levels of available subsidies. HPwES has upgraded about 75,000 homes since it officially rolled out in 2007 (U.S. EPA and U.S. DOE, 2011). HPwES is the largest market rate existing home energy efficiency program in the country (Schrader, 2011). Building Performance Institute (BPI) Building Analyst and Envelope Professional Certifications are typically required of the professionals that perform HPwES work. There are 20,236 BPI Certified Professionals in the United States (BPI, 2010).

The WAP and BPI Certification training programs offer comparable technical information (see Table 1). Although not apparent in the BPI Curricula listed below, training materials to support HPwES often include marketing and sales guidance (Haven, 2010).

**Table 1. Comparison of WAP Auditor Curriculum and BPI Affiliate Building Analyst Coursework**

<b>WAP Standardized Curriculum, Energy Auditor</b>	<b>BPI Affiliate Curricula, Building Analyst, and Envelope Professional Certification</b>
<b>Introduction to Weatherization</b>	
<b>Measure Selection Guidelines</b>	Identifying Building Performance Problems Insulation Techniques and Applications
<b>Deferral of Services</b>	
<b>House as a System</b>	Fundamentals of Building Science
<b>Energy Movement</b>	Fundamentals of Building Science
<b>Comfort and Climate</b>	Psychrometric Chart and Sling Psychrometer
<b>Indoor Air Quality</b>	Indoor Moisture Sources and Solutions
<b>Auditors Toolbox</b>	Blower Door Technology and Other Diagnostic Equipment
<b>Building Shell Retrofit Strategies</b>	Insulation Techniques and Applications
<b>Calculating Envelope. Energy Loss</b>	Heat Loss Calculations and Air Leakage Assessment
<b>Combustion Appliances</b>	Combustion Safety Mechanical and Distribution Systems Assessment Duct Diagnostics and Sealing
<b>Cooling Measures</b>	Mechanical and Distribution Systems Assessment Duct Diagnostics and Sealing
<b>Base Load Measures</b>	Heat Loss Calculations and Air Leakage Assessment
<b>Attic Ventilation</b>	Identifying Building Performance Problems Thermal and Pressure Boundary Evaluation
<b>Generating a Work Order</b>	
<b>Building Assessment</b>	Identifying Building Performance Problems Thermal and Pressure Boundary Evaluation Blower Door Technology and Other Diagnostic Equipment Building Airflow Standard Visual Inspection Thermal and Pressure Boundary Evaluation
<b>Math Basics</b>	
<b>Interpreting Infrared</b>	Blower Door Technology and Other Diagnostic Equipment
<b>Moisture Assessment</b>	Indoor Moisture Sources and Solutions
<b>Zone Pressure Diagnostics</b>	Blower Door Technology and Other Diagnostic Equipment

## 5 Information From Trade Associations and Publications

The National Association of the Remodeling Industry (NARI) and the National Association of Home Builders (NAHB) Remodelers Council are exclusively for remodelers. NARI has nearly 7,000 members (Taddei, Director of Education, NARI, 2011), and the NAHB Remodelers Council has about 14,000 remodeling industry members (National Association of Home Builders, 2011). These groups both offer a “green” credential for remodelers.

### 5.1 NARI’s Certified Green Professional Program

NARI’s Green Certified Professional Program includes (NARI Certification Board, 2010):

- Building Science
- Indoor air quality—indoor pollutants
- Mold
- Deconstruction versus demolition
- Foundations—insulation, moisture control, resource efficiency
- Framing—resource efficiency
- Air sealing
- Roofing—resource efficiency
- Durability
- Accommodating renewable energy
- Attic ventilation
- Safety
- Insulation
- Air sealing
- Roofing—resource efficiency
- Durability
- Accommodating renewable energy
- Attic ventilation
- Safety
- Insulation
- Air sealing
- Roofing—resource efficiency
- Durability
- Accommodating renewable energy
- Attic ventilation
- Safety
- Insulation
- HVAC
- Electrical
- Renewable energy
- Appliances
- Plumbing
- Exterior and interior finishes
- Landscaping and marketing

The Green Certified Professional (GCP) Program education covers technical issues that are comparable to the WAP and HPwES with a greater emphasis on materials. What does stand out is the inclusion of Marketing Green, because, as the NARI director of education noted, it is challenging to get members to take this on when they are struggling to make a living (Taddei, Director of Education, NARI, 2011).

### 5.2 NAHB’s Certified Green Professional Program

The National Association for Home Builders Certified Green Professional CGP program requires participants to take a Green Building for Professionals course. This covers the integration of building science into design decisions and material selection, using the National Green Building Standard, and reviews specific green building practices. It also covers how to sell green.

### 5.3 Professional Remodeler

*Professional Remodeler* has a Building Science column in every issue. It is typically one page and addresses an overall concept, such as ventilation or moisture management. As can be seen in Figure 8, the graphics do not provide specific instruction, but illustrate an overall concept. The magazine has been hearing from readers that they want more building science coverage, and, as such, *Professional Remodeler* will have an article from the Energy & Environmental Building Alliance (EEBA) in every issue beginning in April 2012 (Sweet, 2012).

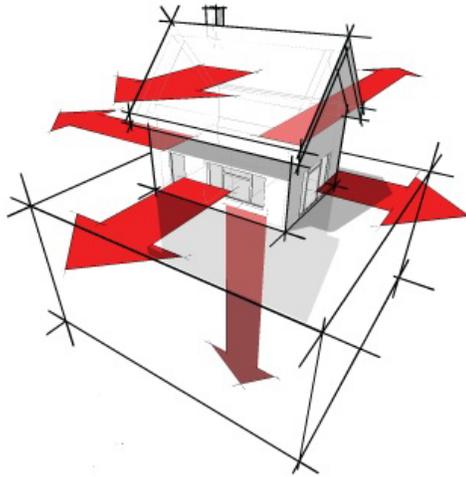


Figure 8. *Professional Remodeler*, Do houses need to breathe illustration

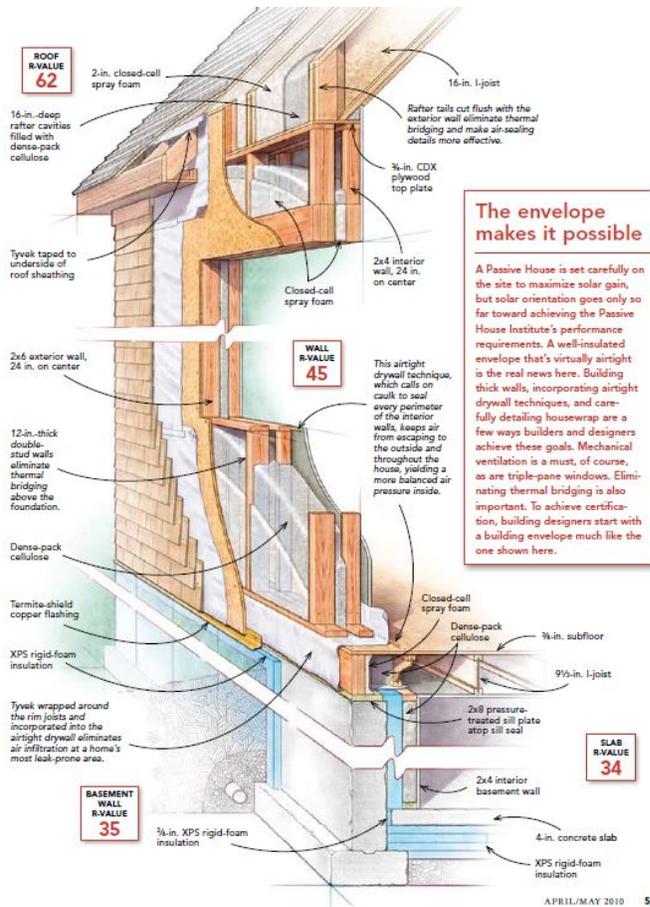
### 5.4 Remodeling Magazine

Content related to energy efficiency in *Remodeling Magazine* often links to a discussion of grants, tax credits, and/or other incentives. *Remodeling Magazine* also has a monthly section called “Home Performance.” The print version of the magazine contains brief pieces on issues pertinent to the home performance contractor industry; on the website, the subheadings include Stimulus Tax Credits; Green Products; Green Standards; and Green Remodeling.

Articles that do not feature the business aspect of energy efficiency provide project overviews rather than detailed how-to information (Binsaca, 2012). The related Remodeling TV provides detailed how-to information on energy efficiency and building science.



**Figure 9. Remodeling TV**  
(used courtesy of Remodeling TV)



**Figure 10. *Fine Homebuilding* Passive House illustration**  
(Kolle, 2010)

(used courtesy of *Fine Homebuilding*)

## 5.5 Fine Homebuilding

*Fine Homebuilding* features articles concerned with energy efficiency and building science in every issue. There is a regular feature called Energy-Smart Details that provides large-scale detail drawings with notes. These are specific enough to build the detail or use for construction documents. There is also a comprehensive explanation of the building science supporting use of the detail. The illustration in Figure 10 is from an article on Passive House. The wall section is drawn specifically enough to guide construction, while the inset text explains the concepts and strategies behind Passive House.

*Fine Homebuilding* rarely addresses the business aspects of energy efficient construction and remodeling.

## 6 Manufacturer Programs

Many manufacturer training programs are available. A limited example using Honeywell and DuPont shows that the information offered is specific to the application of their own product and related building science and/or energy efficiency issues. The trainings typically emphasize sales and marketing. Honeywell offers Homes University. This is a three-day, in-person training program that focuses on thermostats the first day, indoor air quality the second day, and zoning and marketing support programs on the third day. Each day includes the technical how-to of product applications and installation as well as selling strategies. DuPont’s Building Knowledge University is an online resource that begins with a module on the business model of DuPont’s Tyvek Specialist network. The remaining training includes courses on Energy Basics, Water and Moisture Management, Windows, HVAC System Overview, Fundamentals of Indoor Air Quality, Energy Efficient Homes, Organizing Educational Events (as a way to grow business).

**Table 2. Research Summary**

Program/Entity	Types of Information Offered			
	How To Sell It	How To Do It	Why Do It	Other
<b>Energy Efficiency Programs</b>				
HPwES	✓	✓	✓	Health and Safety
WAP	N/A	✓	✓	Health and Safety
<b>Trade Associations and Publications</b>				
NAHB Certified Green Professional	✓		✓	
NARI Green Certified Professional	✓		✓	
<i>Professional Remodeler Magazine</i> and website	✓		✓	
<i>Remodeling Magazine</i> and website	✓	✓	✓	Tax credits, grants, and other incentives
<i>Fine Home Building Magazine</i> and website		✓	✓	
<b>Manufacturers</b>				
DuPont Building Knowledge University	✓	✓	✓	
Honeywell Homes University	✓	✓	✓	
<b>Remodeler Evaluation of Needed Information</b>				
Remodeler Evaluation	✓	✓	✓	
<b>Total</b>	8	7	10	

## 7 Findings and Next Steps

Remodelers need information on the business advantages of energy efficient remodeling. Having that information provides motivation to enter the energy efficiency market. Once a contractor is motivated to become energy focused, there is a need for technical information. Existing home programs such as WAP and HPwES provide the range of technical information needed, but limit the remodeler's work to energy upgrades. There is an opportunity for Building America to provide guidance on incorporating energy efficiency into typical remodeling projects such as house re-siding jobs, kitchen remodels, and room additions. This could allow contractors to learn how to incorporate energy efficiency into their work incrementally. Building America could also provide guidance on planning upgrades over time, allowing a contractor to have an informed conversation with customers about next steps for their homes. BEopt, Building Energy Optimization software, analysis could support this.

The summary of research in Table 2 indicates that “how to sell” energy efficiency is addressed by all but WAP and *Fine Homebuilding*. Manufacturer programs are specific to selling their products and HPwES is specific to selling that program. However, *Professional Remodeler* and *Remodeling Magazine* attempt to highlight the business opportunity of energy efficient remodeling. Building America could harness one or both publications' access to remodelers and provide information on how to do incremental energy upgrades while doing typical remodeling work.

While the remodeling magazines noted above do address how to sell energy efficiency, remodelers need materials they can leave with customers. Building America could develop applications that allow contractors to customize promotional material on incremental energy upgrades or larger scale interventions. The Building America's HVAC Guide for Contractors to Share with Homeowners is on the Most Popular list on the program's website. Building America could provide shorter, more concise guides on specific issues and the associated energy and cost benefits. For example, a helpful stand-alone document contractors could share with homeowners might be, “Should You Repair or Replace Your Furnace.”

Building America could help fill gaps in the information needs of non energy-focused remodelers by:

- Tailoring energy efficient detailing content for typical remodeling projects
- Providing guidance on planning for energy upgrades over time
- Including content in remodeler focused publications and websites
- Offer remodeling project specific energy efficiency information suitable for leaving with contractor customers.

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