Smart Remodeling Workshop Evaluation Report

Presented to:

Minnesota Pollution Control Agency

by:

Catalyst Consulting Group LLC
Helping organizations grow and excel

Contract: CFMS No. B53200

September 28, 2011

TABLE OF CONTENTS

INTRODUCTION

In 2010, the Minnesota Pollution Control Agency (MPCA) facilitated "Smart Remodeling" workshops in four Minnesota locations for over 200 residential building industry experts, including general contractors, designers, architects, remodelers, and home performance professionals. This report describes the results of an evaluation that examined the efficacy of the workshops to change pollution prevention practices among participants and, by extension, the companies for which they work.

The primary evaluation questions that the MPCA and EPA wanted answered included:

- Which smart remodeling practices have attendees implemented on the job since attending the workshop?
- What barriers to implementing the practices have workshop participants faced?

MPCA and EPA will use the contents of this report to determine whether workshops are an effective way to encourage changes in pollution prevention practices. If the workshops are deemed effective, then MPCA will also use the results of this evaluation to improve the existing training curriculum.

METHOD

MPCA and Catalyst Consulting Group, LLC collected evaluation data using an electronic survey of workshop participants. In June of 2011, approximately one year after the workshop, MPCA sent an introductory email to participants explaining the purpose of the upcoming survey and to help ensure that the survey would not be discarded as junk mail. The year was intended to allow enough time for adoption or implementation of new or enhanced practices. Then Catalyst sent all 213 participants an email with a link to an electronic survey created with the Survey Monkey tool via their email address on file. By not collecting IP addresses or any identifying information beyond their professions, we protected privacy.

Because the initial response rate was deemed too low, the MPCA corrected email addresses for those that bounced back, placed phone calls to others whose emails were not found, and sent a paper survey to all participants to boost the rate of response.

Once the response rate improved, Catalyst conducted data analysis, which included frequency distributions for all questions. We performed cross tabulation analyses for the professions of particular interest to our evaluation; that is, remodeler/general contractor and architect/designer. When the results for those two target professions combined are discussed in the report, we use the term "respondent subgroup" to distinguish them from the group of all survey respondents.

RESULTS

This section describes the response rate, a summary of results, and a description of results by survey question. The results for each survey question include analysis and conclusions, followed by relevant data tables. Please see the *Conclusion* section for overall conclusions and recommendations.

Throughout the report, any "not applicable" responses have been omitted from the results.

Response Rate

We received 72 responses out of a possible 213, which is a 34 percent response rate. The majority of responses were from people in professions of the most interest to our evaluation; 55 of the 72 respondents identified themselves as remodelers/general contractors or architects/designers, our respondent subgroup.

While the response rate was lower than desired, we feel confident generalizing from the survey results to all workshop participants since the survey sample resembles the population on important characteristics. The survey sample was representative of the population of workshop participants in terms of profession and years of experience.

Results by Question

Profession

Survey question: "Which of the following best describes your profession?"

Analysis and concluding statement: Slightly more than half of workshop participants and survey respondents defined themselves as remodelers or general contractors, with architects and designers the next largest group (see Table 1. Table 2). This distribution of survey respondents across professions is similar to that of the workshop participants (see Table 1. Table 2). The professions of the workshop population were neither over- nor under-represented in our sample, increasing the accuracy of our results.

Table 1.

PROFESSION OF SURVEY RESPONDENTS

Profession	*Frequency*	*Percent*
Remodeler/General Contractor	42	58.3%
Architect/Designer	13	18.1%
Building Performance Specialist	4	5.6%
Other:		
Insulation Contractor	3	4.2%
Plans Examiner	2	2.8%
Instructor/Trainer	2	2.8%
City Staff	1	1.4%
Electrical/Mechanical Inspector	1	1.4%
Energy Auditor	1	1.4%
Environmental Professional	1	1.4%
Green Building Referral Network	1	1.4%
Nonprofit Rehab Specialist	1	1.4%
Total	72	

Table 2.

PROFESSION OF WORKSHOP PARTICIPANTS

Profession	*Percent*
Remodeler/General Contractor	56.1%
Architect/Designer	21.4%
Building Performance Specialist	10.7%
Other	11.8%

Years of Experience

Survey question: "How many years have you worked in this field?" (Response refers to the profession they selected)

Analysis and concluding statement: The results showed that the distribution of years of experience for survey respondents is similar to that of all workshop participants (Table 3). Like the workshop participants, a large majority of survey respondents had ten or more years of experience in their respective fields (Table 4). The representativeness of the survey respondents to all workshop participants in terms of years of experience adds to the accuracy of our survey results.

Table 3.

YEARS OF EXPERIENCE			
Profession	*≥ 10 yrs*	*5-9 yrs*	*< 5 yrs*
All Professions	66.7%	15.3%	18.1%
Remodeler/General Contractor & Architect/Designer	80.0%	12.7%	7.3%

Table 4.

WORKSHOP RESULTS: YEARS OF EXPERIENCE			
	> 9 yrs	*5-9 yrs*	*< 5 yrs*
All Workshop Participants	75.5%	13.3%	11.3%

Primary Work Location

Survey question: "Where do you perform most of your work?"

Analysis and concluding statement: About two-thirds of survey respondents work primarily in the Twin Cities, while the remaining third work in Greater Minnesota (Table 5). This question was not asked at the workshop, but it does reflect the location at which participants attended the workshops. Two-thirds of workshop participants attended a session held in the Twin Cities, with one third attending in Greater Minnesota (Table 6). Assuming that most participants attended a workshop near their primary work location, we can conclude that the survey respondent group was representative regarding geographical location. That is, the survey respondents did not draw from either the Twin Cities or Greater MN more than the population of workshop participants, adding to the accuracy of the survey results. The respondent subgroup was slightly skewed toward the Twin Cities compared to the workshop participants, but probably not enough to substantially affect the comparison.

Table 5.

PRIMARY WORK LOCATION		
Profession	*Twin Cities*	*Greater MN*
All Professions	62.5%	37.5%
Remodeler/General Contractor & Architect/Designer	67.3%	32.7%

Table 6.

WORKSHOP RESULTS: WORKSHOP LOCATION		
	Twin Cities (Eagan or Maplewood)	*Greater MN (Rochester or St. Cloud)*
All Workshop Participants	62.1%	37.5%

Number of projects worked on since the workshop

Survey questions:

- "How many building/remodeling projects have you worked on since last spring's workshop?" Respondents were asked to select from ranges.
- "Of those projects, how many included at least one of the following: HVAC change-out or upgrade, air sealing, or insulation?" Respondents were asked to type in a number.

Analysis: The number of projects worked on by the respondent subgroup of remodelers/general contractors and architects/designers since the workshop varied widely. As shown in Table 7, about 6% of the respondent subgroup did not work on any projects since the workshop; the rest of the responses were divided among the three categories of 1-3, 4-6, and 7+ total projects. From these ranges, we can extrapolate the 55 subgroup respondents completed a total of about 272 projects since the workshop, or an average of 5 projects per person. About half of those projects included HVAC change-out or upgrade, air sealing, or insulation. To extrapolate from these subgroup results to all remodelers/general contractors and architects/designers who attended the workshop, which comprised about 150 of the total workshop participants, the smart remodeling training has likely impacted about 750 projects since the workshop.

Table 7.

NUMBER OF PROJECTS SINCE WORKSHOP

	Total projects				*Projects with HVAC change-out/ upgrade, air sealing, or insulation*			
Profession	*7+*	*4-6*	*1-3*	*0*	*7+*	*4-6*	*1-3*	*0*
All Professions	37.7%	21.7%	30.4%	10.1%	11.8%	19.1%	35.3%	33.8%
Remodeler/General Contractor & Architect/Designer	38.2%	25.5%	30.9%	5.5%	7.3%	23.6%	36.4%	32.7%

Test In/Test Out

Survey questions:

- "Considering all of the projects you have worked on since last spring's workshop, about how many did you 'test in' near the beginning of the project as follows?" See categories in Table 8 and Table 9 below.
- "Considering all of the projects you have worked on since last spring's workshop, about how many did you 'test out' or intend to test out (project not completed) as follows?" See categories in Table 8 and Table 9 below.

Analysis and concluding statements: Our results show that a considerable percentage of the survey respondent subgroup are regularly testing in and testing out for key smart remodeling categories (Table 8). Before the workshop, participants were asked to rate the likelihood that they would offer similar services by indicating their common practice on their last five projects (Table 10). Though the questions were asked in different ways, some comparisons can be made between the behaviors reported by all participants just prior to the workshop and the respondent subgroup's test-in/test-out behaviors since the workshop. For the comparisons discussed in this section, we are matching the response scales as follows:

- In the analysis of our survey results, we consider respondents who performed these behaviors on at least half of their projects as demonstrating they have implemented smart remodeling. That is, we are totaling the categories of *all*, *more than half*, and *half* of projects as an overall measure of the implementation of smart remodeling practices.
- For comparison, when looking at the workshop results, we consider the *very likely* and *likely* categories as indicators that workshop participants were performing smart remodeling actions before the workshop. The *somewhat likely* category was not included for comparison purposes because this response seems more equivalent with a response of *less than half* than with a response of *half*.

The results discussed below are for the respondent subgroup of remodelers/general contractors and architects/designers (Table 8). The results for all professions (Table 9) were similar in that the behaviors performed most frequently by the subgroup were also performed the most frequently by all professions. Overall, the subgroup tested in and tested out slightly less often than respondents from all professions. The higher responses in the "all professions" group may be due to the inclusion of building performance specialists, insulation contractors, and energy auditors who routinely perform some of these tests as the nature of their jobs. In the discussion below, the results for all professions are shown in parentheses after the subgroup results..

- Remodelers/general contractors and architects/designers in the survey respondent subgroup are evaluating insulation types and levels much more often than prior to the workshop. On our survey, 77% (82%) reported that they tested in for insulation on half to all of their projects. Before the workshop, only 55% of all workshop participants said they were very likely or likely to review insulation levels before starting a remodeling project.
- Evaluation of ventilation performance has also increased considerably since the workshop. On our survey, 53% (56%) of remodelers/general contractors and architects/designers reported evaluating ventilation performance at the beginning of half to all of their projects. Before the workshop, only 30% of all workshop participants said they were very likely or likely to evaluate existing ventilation before starting a remodeling project.
- The survey respondent subgroup is also evaluating combustion safety more often since the workshop. Our survey showed that 44% (56%) of remodelers/general contractors and architects/designers tested in and 35% (47%) tested out for equipment combustion safety on half to all of their projects. Before the workshop, only 18% of all workshop participants

said they were very likely or likely to evaluate existing equipment for combustion safety at the start and end of a remodeling project.

- The attention to moisture problems at the beginning of projects was high prior to the workshop and has remained steady or increased since then. Of our survey respondent subgroup, 55% reported testing in and 39% reported testing out for moisture problems on half to all of their projects. When all professions are included, 63% reported testing in and 51% reported testing out. Prior to the workshop, 55% of all workshop participants said they were very likely or likely to identify moisture sources at the start of a project. The fact that less change since the workshop has been reported for this behavior than for others may be due to the different wording of questions. Our survey question asked about test in/test out behavior, which sounds more rigorous than the workshop question which asked about identifying sources of moisture. Another question in our survey, shown in Table 14, indicates that the respondent subgroup is addressing moisture problems often; 91% said they had addressed moisture problems with basements with at least one customer since the workshop.
- Blower door testing is not widely used among subgroup respondents, but its use has increased since the workshop. On our survey, 25% (37%) of remodelers/general contractors and architects/designers reported using blower door testing on half to all projects. Before the workshop, 14.6% of all workshop participants said they were very likely or likely to conduct blower door testing at the beginning and end of a project.
- Radon evaluation was the activity least likely to be done at the beginning and end of a project by remodelers/general contractors and architects/designers. Only 22% (25%) of subgroup respondents reported testing in for radon on half to all of their projects and 20% (20%) reported testing out. This question was not asked on the earlier survey.

Concluding statement: Overall, remodelers/general contractors and architects/designers have substantially increased their test in/test out behaviors since the workshop, especially for insulation levels, ventilation performance, and combustion safety.

Table 8.

TEST IN & TEST OUT - Remodeler/General Contractor & Architect/Designer

Ratio of projects since the workshop that included "testing in" and "testing out."

	TEST IN					*TEST OUT*				
	All	*> Half*	*Half*	*< Half*	*None*	*All*	*> Half*	*Half*	*< Half*	*None*
Evaluating or identifying insulation types and levels.	36%	26%	15%	9%	15%	31%	18%	9%	13%	29%
Evaluating or verifying performance of ventilation equipment/system.	32%	7%	14%	14%	34%	24%	11%	7%	18%	40%
Evaluating or verifying combustion safety of existing or new equipment.	29%	4%	11%	24%	31%	22%	13%	0%	22%	42%
Identifying and documenting sources of moisture problems.	26%	7%	22%	20%	26%	22%	4%	13%	20%	41%
Using blower door testing to help guide decisions.	18%	0%	7%	16%	59%	16%	0%	9%	20%	56%
Evaluating radon levels.	11%	7%	4%	22%	56%	9%	9%	2%	16%	64%

Table 9.

TEST IN & TEST OUT - All Professions

Ratio of projects since the workshop that included "testing in" and "testing out."

	TEST IN					*TEST OUT*				
	All	*> Half*	*Half*	*< Half*	*None*	*All*	*> Half*	*Half*	*< Half*	*None*
Evaluating or identifying insulation types and levels.	48%	22%	12%	7%	12%	40%	19%	7%	11%	23%
Evaluating or verifying performance of ventilation equipment/system.	33%	9%	14%	14%	30%	26%	14%	7%	19%	33%
Evaluating or verifying combustion safety of existing or new equipment.	31%	16%	9%	19%	26%	28%	16%	3%	19%	34%
Identifying and documenting sources of moisture problems.	31%	10%	22%	17%	20%	26%	9%	16%	16%	34%
Using blower door testing to help guide decisions.	25%	7%	5%	14%	49%	25%	5%	7%	16%	46%
Evaluating radon levels.	14%	7%	4%	18%	58%	11%	7%	2%	13%	67%

Table 10.

WORKSHOP RESULTS: BEHAVIORS BEFORE THE WORKSHOP (1)

	Very likely	*Likely*	*Somewhat likely*	*Probably not likely*	*Unlikely*
Review insulation levels before starting a remodeling project.	27.9%	27.3%	25.0%	14.0%	5.8%
Evaluate existing ventilation before the start of a remodeling project.	13.3%	16.9%	25.3%	16.9%	27.7%
Evaluate combustion safety of existing equipment at the start and end of a remodeling project.	9.7%	9.0%	23.2%	16.1%	41.9%
Identify sources of moisture before starting a remodeling project.	24.0%	31.0%	26.0%	10.0%	9.0%
Use blower door testing to help guide decisions at the beginning of a remodeling project.	8.5%	6.1%	17.1%	18.9%	49.4%
Use blower door testing to evaluate home performance near the end of a remodeling project.	7.9%	6.7%	16.4%	18.8%	50.3%

Smart Remodeling Actions

Survey question: "Considering all of the projects you have worked on since last spring's workshop, about how many did you _____?" (See smart remodeling actions in Table 11 and Table 12 below.)

Analysis: Our results showed that remodelers/general contractors and architects/designers have implemented smart remodeling actions since the workshop. At the start of the workshop, participants were asked to rate how often they performed the listed smart remodeling actions before attending the workshop by indicating their common practice on their last five projects (see Table 13). Table 11 and Table 12 show the results of similar questions that were asked in the follow up survey. Though the questions were asked in different ways, some comparisons can be made between the actions reported before the workshop and the survey respondents' actions since the workshop. For the comparisons discussed in this section, we are matching the response scales as follows:

- In the analysis of our survey results, we consider respondents who performed these behaviors on at least half of their projects as demonstrating they have implemented smart remodeling. That is, we are totaling the categories of *all*, *more than half*, and *half* of projects as an overall measure of the implementation of smart remodeling practices.
- For comparison, when looking at the workshop results, we consider the *often* and *always* or *very likely* and *likely* categories as indicators that workshop participants were performing smart remodeling actions before the workshop. The *somewhat likely* category was not included for comparison purposes because this response seems more equivalent with a response of *less than half* than with a response of *half*.

The results discussed below are for the respondent subgroup of remodelers/general contractors and architects/designers (Table 11). The results for all professions (Table 12) did not differ substantially from these, with the exception of the use of utility bill information. The respondent subgroup used utility bill information less often than the group of all professions, perhaps because energy auditors and building performance specialists routinely use utility bills when conducting home assessments. The results for all professions are shown in parentheses after the respondent group results. .

- The subgroup of survey respondents regularly discusses building performance concepts with clients; 75% (75%) talk with their clients about building performance on half to all of their projects. This is a considerable increase from before the workshop when only 36.3% of all workshop participants reported that they often or always discussed building performance concepts with clients.
- The suggestion to clients to purchase high efficiency HVAC units has also increased, but less dramatically. On our survey, 59% (59%) of subgroup respondents reported performing this action on half or more of their projects. Before the workshop, only 39% of all workshop participants often or always recommended purchase of high efficiency HVAC. Of our subgroup respondents, 23% (24%) reported recommending high efficiency HVAC on all of their projects since the workshop. Prior to the workshop, only 14.5% of all workshop participants always made that recommendation.
- Not as many respondents have implemented the use of green building checklists, but nearly one-third reported doing so. Of the subgroup respondents, 32% (33%), reported using a green building checklist on half or more of their projects, which is more than double the 14.6% of all workshop participants who felt comfortable integrating building performance concepts with a green building checklist on projects before the workshop.
- The large majority of subgroup respondents did not use past utility bill information on any projects since the workshop. On the other hand, the percentage of all respondents using

past utility bill information since the workshop is double the percentage prior to the workshop. A total of 19% (30%) used utility bill information on half or more of their projects since the workshop. This increased from the 15% of all workshop participants who said they were very likely or likely to use past utility bill information to assist in a project before the workshop.

Concluding statement: Since the workshop, remodelers/general contractors and architects/designers have dramatically increased their discussions with clients about building performance concepts, and they have substantially increased the frequency with which they suggest clients purchase a high efficiency HVAC unit. Almost one-third of the subgroup of respondents are using green building checklists, which is not as significant a change in behavior, possibly because this topic was not adequately addressed with hands-on training in the workshop. Even though green building checklists are not widely used, the importance of green building concepts to respondents did come through in other areas of the survey, such as the Current Business Practices topic addressed later in this report. Finally, some improvement was seen in the use of utility bill information since the workshop, but the specifics of this action also were not addressed in much detail during the workshop.

Table 11.

SMART REMODELING ACTIONS ON PROJECTS - Remodeler/General Contractor & Architect/Designer

Ratio of projects since the workshop that included the following actions.

	Percent				
	All	*> Half*	*Half*	*< Half*	*None*
Discussed building performance concepts with client	36%	26%	13%	13%	13%
Suggested the purchase of high efficiency HVAC	23%	21%	15%	25%	17%
Used utility bill information	11%	4%	4%	17%	64%
Used a green building checklist	6%	13%	13%	17%	52%

Table 12.

SMART REMODELING ACTIONS ON PROJECTS - All Professions

Ratio of projects since the workshop that included the following actions.

	Percent				
	All	*> Half*	*Half*	*< Half*	*None*
Discussed building performance concepts with client	40%	23%	12%	13%	12%
Suggested the purchase of high efficiency HVAC	24%	20%	15%	24%	17%
Used utility bill information	19%	3%	8%	15%	54%
Used a green building checklist	13%	10%	10%	15%	52%

Table 13.

WORKSHOP RESULTS: BEHAVIORS BEFORE THE WORKSHOP (2)					
	Always	*Often*	*Sometimes*	*Rarely*	*Never*
I would feel comfortable discussing Building Performance concepts with the customer	15.6%	20.7%	32.4%	20.1%	11.2%
I would suggest to the home owner that s/he purchase energy efficient HVAC equipment	14.5%	24.6%	39.1%	12.8%	8.9%
I would feel comfortable integrating Building performance concepts with a Green Building Checklist/Certification Program for projects that I work on	6.2%	8.4%	25.3%	34.3%	25.8%
	Very likely	*Likely*	*Somewhat likely*	*Probably not likely*	*Unlikely*
Use past utility bill information to assist in a project	7.2%	7.8%	20.4%	21.0%	43.7%

Risky Situations Addressed with Customers

Survey question: "Since last spring's workshop, which of the following risky situations have you identified and addressed with at least one customer?"

Table 14 shows the results for all professions as well as the respondent subgroup of remodelers/general contractors and architects/designers. The following discussion focuses on the results of the respondent subgroup. The results for all professions did not differ substantially from these.

Analysis: Remodelers/general contractors and architects/designers are indeed addressing risky situations on the job. About 70% or greater of survey respondents reported that they have addressed moisture problems in basements, potential for back drafting in worst case scenario, finished insulated basement walls and floor coverings, and large exhausts or vent hoods.

The subgroup of respondents is especially on the look-out for moisture problems in basements, with 91% reporting this activity. The before question is worded very differently so an exact comparison is not possible. Prior to the workshop, only 55% of all workshop participants reported that they were likely or very likely to identify sources of moisture before starting a remodeling project (Table 15).

More than half of respondents in the subgroup (57%) reported addressing an orphaned water heater.

Chemical storage in the home was the least likely to be addressed, with only 25% of the respondent subgroup reporting that activity.

Concluding statement: The workshop seems to have considerably increased the likelihood for remodelers/general contractors and architects/designers to address some specific risky situations with customers.

Table 14.

RISKY SITUATIONS ADDRESSED WITH CUSTOMERS SINCE THE WORKSHOP

	Remodeler/General Contractor and Architect/Designer		*All Professions*	
	Yes	*No*	*Yes*	*No*
Moisture problems in basements	91%	9%	93%	7%
Potential for backdrafting in worst case scenario	80%	20%	83%	17%
Finished insulated basement walls and floor coverings	71%	29%	73%	27%
Large exhausts or vent hoods	69%	31%	69%	31%
Orphaned water heaters	57%	43%	61%	39%
Chemical storage in the home	25%	75%	31%	69%

Table 15.

WORKSHOP RESULTS: BEHAVIORS BEFORE THE WORKSHOP (3)					
	Always	*Often*	*Sometimes*	*Rarely*	*Never*
I am on the look-out for risky situations and do what is needed to address them	24.7%	31.3%	28.0%	12.6%	33.0%
	Very likely	*Likely*	*Somewhat likely*	*Probably not likely*	*Unlikely*
Identify sources of moisture before starting a remodeling project	24.4%	30.8%	25.6%	10.5%	8.7%

Current Business Practices

Survey question: "Do the following statements describe your current business practices?"

Table 16 shows the results for all professions as well as the respondent subgroup of remodelers/general contractors and architects/designers. The following discussion focuses on the results of the respondent subgroup. The results for all professions did not differ substantially from these.

Analysis: Since the workshop, remodelers/general contractors and architects/designers have made dramatic changes to their business practices.

- Nearly 90% of the subgroup of survey respondents said "yes" they use a whole house systems approach to remodeling. This appears to be a great improvement since the workshop, but the response options are sufficiently different that it is difficult to gauge the extent of the change. Before the workshop, less than one-third of all workshop participants reported that they used a whole house systems approach in their remodeling work always or often, but another 56% used the approach sometimes or rarely (Table 17).
- The large majority (72%) of subgroup respondents reported that the workshop prompted them to seek additional smart remodeling information or training.
- Substantially more than half of the respondent subgroup also reported that their companies are developing green building policies and procedures. This may indicate that more positive behavior change will follow. Subgroup respondents see the importance of green building and are figuring out how best to incorporate new practices into their day-to-day work.
- Fewer than half of subgroup respondents reported that they discuss test in and test out results with clients. The result may appear lower than it actually is due to the way the question was worded; if the respondents were not performing test in/test out behaviors, they would not have results to discuss with clients. Still, the "yes" response is lower than the percentages for the most popular test in/test out behaviors. Thus, it appears that remodelers/general contractors and architects/designers are not yet routinely discussing results with clients.

Concluding statement: The workshop appears to have influenced participants to utilize a whole house systems approach more frequently in their remodeling practices. They are inspired and motivated to learn more about smart remodeling. A large majority of respondents are affiliated with companies that have in place or are developing green building policies and procedures. By doing so, these companies are likely to carry forward the smart remodeling lessons of the workshop.

Table 16

CURRENT BUSINESS PRACTICES				
	Remodeler/General Contractor and Architect/Designer		*All Professions*	
	Yes	*No*	*Yes*	*No*
I use a whole house systems approach to remodeling.	89%	11%	88%	12%
The workshop prompted me to seek additional information or training on building performance and green remodeling.	72%	28%	70%	30%
My company is developing or has in place green building policies and procedures.	62%	38%	64%	36%
I discuss test in and test out results with clients.	44%	56%	52%	48%

Table 17

WORKSHOP RESULTS: BEHAVIORS BEFORE THE WORKSHOP (4)					
	Always	*Often*	*Sometimes*	*Rarely*	*Never*
I use a whole house systems approach in my remodeling work	9.6%	19.2%	31.1%	24.9%	15.3%

Barriers

Survey question: What have you found to be the top barriers to implementing the Smart Remodeling practices that you learned in the workshop?

Analysis: Table 18 lists only those responses that were repeated at least five times. These comments came from all respondents, not just remodelers/general contractors and architects/designers. While some of the answers were not identical we grouped them in the same row if their meaning was the same.

Table 18

RESPONSE	No. of mentions
Added cost and similar answers	46
Client perception, lack of knowledge, doesn't see a problem, impact not understood, resistance, value return not understood or	17
No work, small jobs, or doing different work right now	9
Added time or scope	6
Rules or codes don't require it or we are not responsible for it	5
Builder lack of expertise, awareness, or desire	5
Buyers don't want it, other priorities	5

Concluding Statement: Clearly, costs overshadow all other barriers, yet it appears that improving client understanding about the benefits and long-term value of smart remodeling practices may help to overcome this barrier.

Desired Assistance

Survey question: What additional information or assistance would help you incorporate the Smart Remodeling practices into your projects?

These comments came from all respondents, not just remodelers/general contractors and architects/designers.

Raw data pasted below:

Attended the workshop for our own knowledge.

best airtight building assemblies

Better assistance for the documentation

But the builder and subs need to carry the ball

Can't think of anything at this time

Classes on Web

Combustion safety poorly understood

Consumer interest

cost saving statistics from energy company

Cost savings of improvements

Easy system to photo document and work being done and organize the photos.

Education of consumer

Education regarding tax credits and grant programs for RE and EE projects.

Energy bills dictate mortgage terms - bankers

Energy budget per household-regardless of house size

energy modeling documentation of past completed projects

Expert advice availability

experts to call

Follow-up seminar

Green Property Condition Assessments with select Architects

GSHP included on MnCheck HVAC form!!

Have been receiving continuous information for 30 years

HVAC sizing & duct sealing poorly understood

Incorporating specific Smart Remodeling practices into a Phase I Environmental Site Assessment.

interior buildout and Insofast can solve problems

Lower cost of testing

More "green doesn't have to be expensive" advertising

more case studies

more cost effective products

more knowledgeable trades people

More rebates

Most of the time it is not my decision--I make suggestions

Need neutral 'third party' online, testimonials, etc. to show Smart benefits

Need 'smart remodeling' "label" to put on completed house to help resale, value.

new work

None

Penalize if you do it wrong - contractor responsibility

practical case studies that are understandable

proper roof ventilation to shingle specs with insulation

R factor drip in walls and ceilings

Readily available published information with technical detail

renewable energy options

residing is an opportunity

roofs replacement is an opportunity

Rules of thumb regarding cost / benefit for various improvements

simple, easy brochure to give to clients

Smart brochure focusing on how kitchen/bath remodels should be seen in the scope of whole house performance, especially how changing the status quo can cause new potential problems

Some way to quantify small, incremental changes.

state funded blower door tests

testimonials from a comfort point of view

This is not a service we provide.

User group

Water heating upgrades

Concluding Statement: Increased awareness and understanding on the part of consumers about the cost savings and other benefits of smart remodeling practices is needed, according to several respondents. Some suggested that a consumer brochure about smart remodeling be developed that contractors could provide to clients. The need for educational materials for contractors and other professionals, in the form of case studies, online classes and technical information, was also mentioned. Other recommendations included the ready availability of expert advice and more accessible and interpretable data from energy utilities.

CONCLUSION

This section provides a summary of responses for the entire survey and our findings and recommendation.

- Test in test out: Overall, remodelers/general contractors and architects/designers have increased their test in/test out behaviors substantially since the workshop, especially for insulation levels, ventilation performance, and combustion safety.
- Since the workshop, remodelers/general contractors and architects/designers have implemented several of the recommended smart remodeling actions. They have increased discussions with clients about building performance concepts, including the frequency with which they suggest clients purchase a high efficiency HVAC unit. In addition, these survey respondents are utilizing a whole house systems approach to their remodeling practices, and the companies they are affiliated with have adopted or are developing green building policies and procedures.
- The workshop seems to have considerably increased the likelihood for remodelers/general contractors and architects/designers to address risky situations with customers. They are especially on the look-out for moisture problems in basements, potential for back drafting in a worst case scenario, finished insulated basement walls and floor coverings, and large exhausts or vent hoods.
- Some areas for further improvement include greater use on projects of green building checklists and past utility bill information.
- Clearly, costs overshadow all other barriers, yet it appears that improving client understanding about the benefits and long-term value of smart remodeling practices may help to overcome this barrier.