PIER Whole House Contracting Study

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Final Report on National Survey of Home Performance Contractors

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The Public Interest Energy Research (PIER) Program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

The PIER Program annually awards up to $62 million to conduct the most promising public interest energy research by partnering with Research, Development, and Demonstration (RD&D) organizations, including individuals, businesses, utilities, and public or private research institutions.

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- *Buildings End-Use Energy Efficiency*
- *Industrial/Agricultural/Water End-Use Energy Efficiency*
- *Renewable Energy*
- *Environmentally-Preferred Advanced Generation*
- *Energy-Related Environmental Research*
- *Strategic Energy Research.*

To obtain more information on the PIER Program, please visit www.energy.ca.gov/pier/buildings or contact the Commission's Publications Unit at 916-654-5200.

1 INTRODUCTION AND OVERVIEW

This report provides the results of a national survey of home performance contractors designed to identify home retrofit best practices. The survey was initiated in mid-2003 as a part of a project funded by the California Energy Commission's PIER (Public Interest Energy Research) program to (1) determine best practices for retrofits and (2) suggest approaches for encouraging retrofit home performance contracting in California.

Rationale and Goal

The goal of this report is to document the business and technical practices of successful whole house and home performance contractors, thereby helping contractors attempting to adopt whole house and home performance business models become more successful. The survey results contained in this report are applicable to both to publicly funded programs (e.g., weatherization, energy efficiency) and private contractors. For public programs, success means promoting consumer investment in home retrofits and improving the resulting energy savings. For private contractors, success means obtaining a good profit in a business with high growth potential and delivering superior results.

A Note on Terminology

As used in this report, the terms "home performance" and "whole house" are closely related but have distinct differences in meaning intended to convey the benefits of moving beyond performance testing to offer comprehensive workscopes.

Home performance is the more inclusive term. It refers to contractors who use performance testing but without *necessarily* doing comprehensive workscopes that include both shell and HVAC improvements. Home performance contractors providing comprehensive workscopes include contractors who use subcontractors for some of the work as well as contractors who deliver both shell and HVAC improvements using their own crews.

Whole house is a more exclusive term. It refers specifically to contractors who focus on implementing comprehensive solutions for performance problems with a combination of HVAC and insulation work. The result of this distinction is that whole house contractors do home performance work, and are home performance contractors; in contrast, home performance contractors may not be doing whole house work.

2 ONLINE SCREENING SURVEY

The survey was conducted in two stages: (1) a broad-based, online screening survey, followed by (2) detailed phone interviews with selected contractors.

Online Screening Survey

The screening survey was designed to identify contractors who had incorporated performance testing into a high percentage of their business and to provide a better understanding of the basic testing techniques they use. The screening survey also distinguished between not-for-profit providers of home performance services and for-profit private contractors. Detailed results from this survey and a sample of the instrument are available in Appendix A and B respectively.

The screening survey was promoted to approximately 2000 contractors whose e-mail addresses were obtained from (1) the lists of Affordable Comfort event attendees and (2) approximately 500 user registrations at www.buildingperformance.net. The initial survey e-mail had a response rate of about 6% (over120 responses). After eliminating incomplete replies and the occasional curious energy efficiency program manager, 118 contractors remained. This is a surprisingly geographically diverse group that includes representatives from 35 states, the District of Columbia, and Canada.

Phone Interviews

The screening survey was followed by detailed phone interviews and discussions[1] with the 16 contractors deemed most clearly successful and committed to building science-based methods. The contractors interviewed were also selected to provide representation across a range of company sizes, business models, and geographic locations. Two not-for-profits providing fee-for-service home performance services were also included. (A copy of the survey instrument is provided in Appendix C.)

These interviews collected information on business, marketing, and technical practices; contractor perception of consumer concerns; and sources of training information. Each interview was, on average, more than one hour long. All contractors agreed to participate without subsidy. More information on these contractors appears in Chapter 3.

[1] Information on one of the sixteen contractors was obtained from a workshop presentation on October 15, 2003 for new and potential Home Performance with Energy Star© programs and resulting follow-up discussions. The business model for that successful contractor was deemed unique enough to merit coverage by the study.

3 CONTRACTOR CHARACTERIZATION

Contractors to be interviewed in detail were chosen according to their success in creating a viable home performance business. The primary selection criterion was operating for at least two years as a home performance contractor with the majority of their income coming from performance tested work. The one exception was a large California based contractor actively working with the California Building Performance Contractors Association program and rapidly transitioning into a whole house home performance business.

Business characteristics of the organizations selected to participate in the detailed survey are shown in Appendix D. Key descriptors of the selected contractors are as follows:

Business Size

By usual standards, virtually all the respondents were small contractors. However, there was substantial variation among them, so we divided them into three size categories. Ten of the successful contractors chosen for the survey were considered "large" with estimated annual sales of approximately $500,000 and above. Two contractors were considered "medium" with annual sales between $100,000 and $500,000. Two contractors were considered "small," with sales of under $100,000. These smallest contractors provided little or no direct installation and primarily offered diagnostic and construction management services without becoming the general contractor.

Prior Business Status

Ten of the contractors were established in a conventional specialty. The remaining six were home performance startups. That is, they did not have an existing contracting business prior to adopting home performance testing as an integral part of contracting. Of those, two of the startups were now considered large and both had experienced rapid growth. Both combined a focus on HVAC installations with in-house shell work.

Organization Type and Location

Fourteen of the sixteen contractors were private sector companies. The remaining two were not-for-profits (NFP's) doing fee for service work. Eleven of the sixteen were from heating climates, such as New York, Wisconsin, and Vermont. (New York and Wisconsin have longstanding public sector support for home performance and, therefore, have more contractors who have gotten over some of the bumps in the road.) The remaining five contractors are from Texas, Arkansas, North Carolina, and California.

Business Specialties

Seven of the contractors selected are whole house or full service contractors, offering some combination of HVAC and shell work with their own employees. Four of the contractors are specialty shell contractors offering performance tested HVAC installation services using subcontractors. Five of the contractors do no direct installation work themselves, instead acting either as general contractors using subcontractors or as customer's representatives and supervisors, with the customers signing installation contracts with independent installation contractors.

Typical Home Performance Project Size

The average job size for the private contractors doing some significant part of the installation was $9333. In contrast, the not-for-profits averaged $4500; these tended to be low-income weatherization specialists. The remaining contractors, who act only as diagnosticians and coordinators of work by others, billed an average of $2250 since little if any actual installation work was included.

4 ORIGINS OF HOME PERFORMANCE CONTRACTORS

One of the most important lessons to be learned from successful home performance contractors is how different types of contractors can progress from the limited use of home performance testing to the establishment of a successful comprehensive home performance contracting business. Therefore, the phone interviews took a careful look at contractors' base of experience to determine (1) what starting points (or "origins") were most common amongst successful contractors and (2) which variations in origins lead to success with different types of business models.

Benefits of Previous Experience

Almost all the contractors interviewed had previous experience with some type of energy efficiency program. Many of the contractors were previously involved with utility energy programs or the Weatherization Assistance Program (WAP), and had acquired some level of testing skills in those programs but had not previously used the experience to move into offering home performance, whole house services, or diagnostics outside the scope of the existing programs.

Understanding and experiencing the usefulness of performance testing on a regular basis appears to have made it easier for contractors to consider adopting this new business practice based on testing. The contractors interviewed were able to take their experience in performance testing within the context of a funded energy program—for example, low-income weatherization—and transfer that into private market home performance.

Of course, the interest of these contractors may be due at least in part to program following. Contractors who are already comfortable working in energy efficiency programs, even if they involve no testing, may be more willing to access the support offered by the local home performance program. But even outside locales where formal home performance programs were being offered, most home performance contractors who responded to this survey had some prior testing experience.

Program Implications

Based on the results summarized above, programs might do well to recruit from a pool of contractors who have participated in other energy efficiency programs. Moreover, in preparation for the introduction of a home performance contracting program, , those existing energy efficiency programs could be modified to introduce key building science principles and skills. These transitional changes in existing programs might include additional performance testing, health, and safety testing, or the use of certification programs such as that of the Building Performance Institute, to help contractors develop key skills and understanding. These coordinated changes would help to develop a more sophisticated contractor base prior to explicit funding of a home performance program.

Contractor Implications

Contractors interested in moving toward whole house work should consider participating at some level in existing energy efficiency programs that offer performance testing and diagnostics training, even if the program is not whole house. They can use these programs to get their management and crew familiar with testing. The training offered may be as helpful as the work provided.

Effects of Contractor Specializations

The potential contractor audience for a home performance program is quite broad. The screening survey respondents included existing shell contractors (windows, insulation, weatherization), existing HVAC contractors, remodelers, and companies that had not previously done installations, such as home inspectors and startup contractors. It appears from both the screening survey and the phone survey that shell contractors and small general contractors are currently the prime source of contractors making the transition into home performance. Surprisingly, HVAC contractors, who typically have greater technical expertise, appeared much less likely to embrace whole house approaches that integrate shell with HVAC disciplines.

Shell Contractors

Most of the contractors interviewed started as shell contractors. Regardless of the size of the company or their level of experience in home performance, there was a strong tendency for these contractors to subcontract some or all of the heating and air conditioning work that they generate as part of their whole house inspections. But not always: Two of the startup contractors with the highest growth rates brought the heating and air conditioning expertise and installations in-house with their own shell work. One of the larger shell contractors had merged with an HVAC company to offer whole house workscopes.

Why are shell contractors most likely to consider home performance work? The show of interest on the part of the shell contractors, both large and small, may be due to a desire to differentiate themselves in a market where quality and margins are constantly threatened by a low cost of entry. It is much easier to start a business as a window installer or insulation company than as an HVAC contractor. The lower cost of entry into shell work may work to create a situation that makes the home performance option attractive to quality oriented shell contractors, large or small, who want to grow or professionalize themselves by differentiating themselves from low overhead competition.

Shell specialists may also be more motivated by business uncertainties, since they are less likely to have the stability of continuing relationships with their clients than are HVAC contractors, whose business may stress periodic servicing and repair or annual service contracts.

HVAC Contractors and New Contractors

Although there is a significant financial opportunity for new contractors or existing HVAC contractors who adopt whole house approaches, it appears from the survey that they are not pursuing this opportunity.

In the interview group, there was only one HVAC contractor who had incorporated shell work into his business to support his whole house work. The focus of that business was performance warranties on new construction rather than whole house retrofitting. From the online screening survey, it also appeared that there were few HVAC contractors who were doing significant amounts of performance-tested work, and fewer still, who had progressed to offering whole house solutions.

Perhaps the move of a few larger shell contractors into the HVAC business will stimulate some of the conventional HVAC contractors to expand their scope. Those HVAC contractors who are currently content to be subcontractors in home performance projects, with their work performance tested by the shell contractor, are likely to find it more profitable to move towards getting training, performing inspections, and installing performance tested HVAC and even shell improvements.

Another example of HVAC contractors moving towards whole house service delivery came from survey respondents in some regions who indicated that some HVAC specialists are starting to insulate attics as a part of treating the attic-based duct systems. Air sealing and insulating walls or using cellulose as part of strategic dense packing may not be far behind for these contractors.

Remodelers

Larger remodelers have a skill set that may make it easier for them to adopt and manage the complex, multi-trade business process of home performance contracting. One of the most successful contractors contacted was a remodeler who has rapidly adopted the multi-trade approach and developed a sophisticated marketing and sales approach. More information is needed on the potential success of remodelers in making this transition.

Program Implications

Shell contractors may be early adopters of home performance techniques and may partner with HVAC contractors to offer comprehensive solutions. Early recruiting of HVAC contractors may be more difficult, despite their often greater technical skills. Avenues by which HVAC contractors may move towards home performance and whole house work include:

- The move of a few larger shell contractors into the HVAC business, however, may stimulate some of the conventional HVAC contractors to expand their scope.
- HVAC contractors who are currently content to be subcontractors (with their work performance tested by the shell contractor) are likely to find it more profitable to get training, perform inspections, and install performance-tested HVAC- and perhaps even shell improvements.
- According to survey respondents in some regions, HVAC contractors are starting to insulate attics as a part of treating the attic-based duct systems. Air sealing and insulating walls or using cellulose as part of strategic dense packing may not be far behind for these contractors.

Contractor Implications

All types of contractors should think carefully about how they will incorporate the other necessary home performance trades into their work. They should consider including broader in-house capabilities as an alternative to subcontracting.

5 TRANSITIONS TO WHOLE HOUSE CONTRACTING

The survey provided a wealth of information on how contractors can maximize their chances of success and overcome common obstacles when building a business around home performance and whole house work.

Increasing Job Size by Taking on Broader Workscopes

All the largest contractors interviewed, with the exception of the two not-for-profits, tended to sell large jobs—$8000 or more, averaging over $9000. This appears to reflect their greater ability or willingness to incorporate a broader range of trades either in-house or via subcontracting. The smaller contractors had an average job size of $5000 or less, which may be due in part to the fact that the small contractors group included diagnostician/supervisors (who sell only their consulting services rather than actual materials, equipment, and remediation services) as well as shell installers**.**

All the contractors in the interview group use performance testing techniques as part of their business and technical process. But, as indicated by the average job size, the larger contractors are more successful at executing larger (i.e., broader) customer workscopes. Larger/broader jobs also should mean that the contractors are having a greater impact on the performance of their customers' homes. As a result, the capability to do these larger jobs may help contractors create a stream of larger jobs as satisfied customers make referrals and help recruit customers who have an expectation of the project being more than just a furnace replacement or insulating an attic.

Taken together, the online survey and the phone interviews revealed three stages of contractor involvement with performance testing and building science:

1. Performance testing with conventional limited workscopes (e.g., HVAC)
2. Performance testing with broader workscopes and subcontracting of other trades
3. An integrated whole house approach with all services offered in house

Program Implications

Larger home performance jobs mean lots of consumer investment in efficiency. Helping contractors to do these more complete workscopes can result in a lower overall program cost per unit of energy savings because large jobs typically have greater positive impacts on customer energy efficiency than smaller jobs. Also, early evidence of such effects may be an effective way to get more contractors interested in participating in home performance programs. The added investment in contractor selection and training needed to encourage these higher impact jobs may pay off in more cost-effective programs.[2]

[2] At the same time, we note that home performance jobs involve a variety of measures that may not all be cost-effective based on energy savings alone, because those measures also contribute to non-energy benefits valued by homeowners—such as home safety, equipment longevity, health, and comfort. Home performance programs face funding barriers due to agencies' cost-benefit justification requirements based on energy savings alone.

Contractor Implications

Bigger jobs with big impacts on houses provide a great way for contractors to prosper while delivering superior quality and value. Moreover, bigger jobs mean that fewer customers are needed to fuel firm growth, and customers who experience the big improvements in home performance from a whole house job can be excellent sources of referrals. But acquiring the ability to offer a broader workscope requires contractors to offer both HVAC and shell work, either by partnering with other trades or expanding their own in-house capabilities.

Comparing Opportunities for Startups with Those for Existing Businesses

Only two of the interviewed contractors began as new home performance startups and grew enough to be considered larger contractors. Both are now full service whole house contractors that offer shell and HVAC work with their own staff. One of the startups transitioned very quickly from diagnostics only, to shell work, to doing HVAC work. When this firm began installing HVAC systems with in-house staff, their rate of growth increased significantly. The other company started as an HVAC contractor that also did shell work. Both now generate most of their income from the HVAC aspects of their work. These examples indicate that home performance startups can experience rapid growth and that benefits of adopting home performance are not limited to existing contractors.

The other startups focusing on shell work generally did not experience the growth of the startups focusing on HVAC.

Established contractors, however, may have to educate their existing current customer base on the added value of a performance-tested approach. One contractor effectively used a newsletter and form letter to educate his past customers on his new approach, attempting to stimulate new referrals from old customers that would better fit his new business model.

Program Implications

Programs should distinguish between issues confronting startups and those challenging existing contractors. Programs can best support startups with home performance customer leads and business planning support to help them access capital. Similarly, programs can best help existing contractors by improving program-related lead generation and customer referrals.

Contractor Implications

Startups should consider qualifying themselves to do HVAC work in-house. Existing contractors should work to educate their current customer base on the advantages of performance tested comprehensive whole house work.

Using Inspection Fees to Screen for Serious Customers

The majority of contractors interviewed conduct detailed home performance testing as part of the inspection-estimate process. Most charge for this testing, typically to pre-qualify serious customers with specific problem-based motivations, such as health issues, high bills or uncomfortable rooms. The fees usually do not cover the actual cost of the inspection, and they are not considered a primary source of income, except for a couple of the smaller diagnostic-only contractors in areas without program subsidies. Some part—typically the larger part—of the actual inspection cost becomes part of the contractor's overhead, to be recouped in installation project prices. The typically high sales rates for home performance projects make this strategy possible and fair to all.

Survey results also showed that free inspections can still be effective in some situations. Several contractors operating in areas with home performance-related subsidies and/or whole house competitors

offering free inspections provide free inspections, which are also linked to other extra efforts to screen or pre-qualify customers, such as prequalification for financing, and making certain that all decision makers would be at the home for the inspection.

Finally, a single contractor focused on new construction used neither the qualifying inspection fee nor the free inspection strategy but instead included the cost of testing in project bid pricing.

Overall, these results suggest that inspection fees are a critical part of the early home performance business model. The ability to get a high job-closing rate appears to be due at least in part to the customer screening that the inspection fee provides. The inspection fee screens for customers with enough interest, need, and ability to take action, who will pay the fee with the conviction that they will be able to make use of the information the testing will provide. The surveyed contractors charged from zero, as noted above, to $250 for their home inspections. Most contractors reported charging closer to $100, both inside and outside any local subsidy programs. Some of the contractors varied the fee based on demand. When jobs are booked at least ten weeks ahead (as an example), the fee is raised until the job backlog drops back below the threshold.

Optimizing Fees

Determining the optimal inspection fee is a considerable challenge for contractors. Too high an inspection fee may deter many good customers, reducing the contractor's access to income from those potential installations and possibly causing the contractor to become dependent on the income from the inspection fee itself. The surveyed contractors offering inspection-only services without installation or general contracting charge the full cost of their inspections—from $450 to $650—since they have no other source of income. This limits their markets. One inspection-only contractor includes post-installation inspection as part of the initial fee; others include supervision. Although these are excellent practices, they may force the inspector's price even higher. It is essential for contractors starting out in the home performance process to understand this relationship between inspection fee, number of customers and the closing rate on jobs so they can find the "sweet spot" at which their total income and profit (inspection income + installation income) are maximized.

One frequent complaint of the inspection/supervision approach is the amount of time required to educate or oversee the installation contractors on proper practices. A customer who insists on hiring an untrained contractor can significantly increase the cost of supervising the job. Directing the customer to educated installation contractors becomes an important part of the inspection process. This typically will lead the inspecting contractor into general contracting or even installation unless the inspecting contractor has other sources of income that are consulting-focused, such as teaching or building science forensics.

Program Implications

It is important to encourage contractors to underwrite part of the inspection cost. This will help drive contractors towards business models focused on generating income from the installations rather than the inspections. Treating part of the inspection's cost as an overhead item, coupled with adequate overhead cost recovery in pricing, results in the same total job price but a much more viable business.

Contractor Implications

Contractors should adjust the inspection fee to find the sweet spot where there are enough leads at a high enough closing rate that profits are optimized. The survey (as well as existing program experience) suggests that this level may be around $100 to $150. The contractor must also charge enough for the installations that that revenue more than covers the lost income from the "overhead"

time spent inspecting and testing the building and supervising installations. If program subsidies are available for the inspections, strong efforts at customer prequalification before the inspection may replace using the inspection fee to prequalify potential customers.

Building Relationships During the Sales and Inspection Process

According to the contractors interviewed, customer relations and customer education are more important to the sales process than technical skills.

Techniques that rely on creating relationships and building trust, without the expense of performance testing or whole house inspections, have been taught in the heating and remodeling industries for some time. Those techniques can sometimes backfire due to the appearance of insincerity. However, the hands-on objectivity of the whole house testing process tends to support the development of trust as the customer can actually see the results of the testing. For example, the customer can be asked to accompany and help the inspector with small tasks, such as recording measurements or looking for air leaks during a blower door test. This not only demonstrates the inspector's competence and sincerity but also permits the customer to physically see and believe in the problems in the home, increasing their confidence in the process and the value of the proposed work. No direct sales effort is needed during the inspection process. The sales step is typically a separate later visit to provide results and cost estimates, although the customer is often already sold on the project because of the inspection experience.

Some contractors have adopted a one-stop closing process by verifying that all decision makers are at the inspection, sometimes by waiving the inspection fee. Other techniques include centralization of the sales presentation with an individual who travels between inspectors, visiting as many as six homes in a day. This sales system was supported by a serious and sustained marketing effort that also featured the availability of subsidized financing in its communications.

Of course, referrals from existing, satisfied customers help contractors establish a trust relationship with their new customers. In deed, the most successful contractors interviewed use this approach. Other reported valuable sources of referrals include well-informed friends, independent home inspectors, and program marketing by reputable allies such as a state agency or a utility.

Advertising in the Yellow Pages was not considered by the interviewed contractors to be an effective marketing tool. This is a direct corollary to the observations about the importance of customer referral and relationship building, since such advertising is essentially anonymous and impersonal.

Program Implications

Sales training that focuses on customer relationship building should be an important part of contractor training. The marketing training for contractors should focus on developing their ability to generate customers by a referral process. This may include educating third party professionals, such as home inspectors, code officials, and health departments. Related trades with frequent contact with prospective whole house customers, such as roofers or painters, can also become referral agents by being trained in the fundamentals of building science and the advantages of a performance tested whole house approach.

Contractor Implications

Contractors should seek out sales training that focuses on relationship building over the use of formula approaches to closing a sale. The process should be sure to include the customer in the testing. Contractors should develop their business process to maximize customer referrals and should develop

relationships with key third parties by offering formal or informal building science education and possibly incentives.

Addressing the Price Objection with In-Home Financing at Hand

The primary customer resistance occurs when the expanded whole house proposal is being presented and the customer is faced with a price tag that is more than what s/he thought they would see or more than what s/he has readily on hand. Being able to offer financing right at the customer's kitchen table is a huge help to closing the sale, regardless of the interest rate of the financing. A number of the contractors in agency-subsidized programs pointed to their exclusive access to discounted or readily available financing as an important part of their ability to expand their business. Outside those subsidized programs, most of the interviewed contractors used HVAC manufacturer or supply house loan programs or accessed unsubsidized Fannie Mae loans through a local utility or other facilitator.

Answering the price objection with financing may not mean the customer actually uses the financing. It may simply address the customer's initial concern that they may not be able to afford the project. After customers have convinced themselves that they want the work done, they often find other sources of funds. The offered financing package may not often be used—but a low rate of use may not be a true indicator of its value as part of the presentation package.

The contractors interviewed consistently reported that the primary source of whole-house retrofit financing is contractor originated. This means that the contractor can provide the application and get rapid approval for the loan without losing sales momentum. In some areas contractors and local banks collaborate to allow contractors to originate loans, and the Fannie Mae process also works in this way. At least one successful contractor felt that the customer's ability to finance the project is so significant that he requires pre-qualification for financing prior to doing the home inspection.

Program Implications

Programs should facilitate easy access to financing. Due to the reported importance of financing, programs should consider even a mild subsidy on financing for participating contractors, if budget allows.

Contractor Implications

Contractors should seek out easy financing through suppliers and manufacturers, utility programs and local banks. Information on financing should be part of every whole-house sales presentation.

Managing Cash Flows with Commodity Bids

Seven of the contractors indicated that they still did some conventional jobs that were not up to home performance standards. In those conventional jobs they were generally still competing based largely on price. Three of these were large shell contractors who had been in business for some time. Another three were smaller newer contractors just entering the business. One was a remodeling contractor.

In these cases the HVAC and shell contractors are effectively still in transition. They may be small and without enough whole house customer leads to afford to say no to a customer who does not support the home performance business process, or they may be long term businesses with a large existing customer base such that they continue to get requests for price-based or limited workscope bids. The startups that experienced significant growth had no prior customer base but had enough financial strength and access to new customers to be able to focus more exclusively on home performance jobs.

Some of the trades contractors reported operating under a double standard, with one set of inspection and installation practices for customers within a funded program and another for customers for more conventional work outside the funded program, where the contractor feels more cost pressure. In these cases the installation workscope is also typically limited to a single improvement type such as windows, sidewall installation, or furnace installation. This may be unavoidable during the contractor's transition to mostly home performance work.

Many of the contractors said that their transition to home performance was most hampered by the initial lack of demand for a higher quality product that was not cost competitive with other bidders. This refers mainly to the contractors' initial transition to client referral-based marketing and to the inability of the contractors to differentiate their installation quality in their early days of adopting home performance practices. Customers may tend to rely on price when they don't have information that they trust regarding other potential differentiating factors.

Program Implications

Most contractors are unlikely to be able to move all of their work into the home performance model all at one time. In fact it may take some time for many contractors to transition entirely, if ever. A program requirement for all customers of the contractor to be given a home performance level of service may be unrealistic for both new and existing contractors to implement. During this transition period it becomes difficult to establish which customers should be subject to the program's quality assurance standards. Tracking referrals from the program might be used to make sure that contractors are offering the level of service required for participation in the program to the customers provided to them by program marketing.

Contractors may also need support in developing a sales approach that helps them communicate the desirability and effectiveness of performance test-based comprehensive project scopes and their installations over conventional untested piecemeal installation practices. It would be useful for programs to develop information that shows the greater effectiveness achieved when installations are tested.

Contractor Implications

For maximum success, contractors should work toward a goal of generating enough referrals and other sources of home performance leads to allow them to refuse customers who do not want to pursue the home performance process. Doing home performance work and whole house jobs with significant impact on the customer's living environment is the best way to get more customers who want the same benefits.

Contractors could look for documentation on how performance testing enhances the actual delivered performance of installations and use that information in their presentation process.

Getting the Most out of Subcontracting

Nine of the sixteen contractors interviewed use subcontractors to install a significant portion of the improvements required. Subcontracting HVAC work was a significant strategy for most of the larger shell contractors. On the other hand, for HVAC specialists, subcontracting shell work was less common even though the shell work is typically the smaller part of a whole house workscope. One reason for this may be that shell subcontractors are often not certified or using performance testing techniques, which places an extra responsibility for performance testing on the prime contractor.

Since there appear to be benefits from offering all services in-house, it will be important to watch the development of these contractors over time, to see if there is a trend towards more work being done by the contractor's own crews. Since customer referral is a key factor in business success for home

performance contractors, it could be important for job performance and referral that there are quality assurance and quality control processes in place for subcontracted work.

Program Implications

Programs should support contractors' efforts to subcontract work, but require that work to be performance tested.

Contractor Implications

Contractors can benefit by establishing relationships with quality subcontractors, either program participants or other reliable specialty contractors outside the program.

Ensuring Profitability through Higher Closing Rates and Managing Cost-of-Sales

Higher closing rates have been promoted as a benefit of home performance, but the evidence from the interviews shows that contractors can succeed with a lower closing rate if they are careful to monitor their profit percentage on jobs. A majority of the contractors reported job-closing rates of over 50%—far better than in typical conventional jobs. However, some larger contractors are successful at generating enough work and profits with free inspections despite much lower closing rates. These contractors are apparently using higher gross profit margins to compensate for the overhead of doing more inspections that do not result in installations. This model appears to be less economically efficient than the higher-closing-rate model, resulting in the extra costs of many unproductive inspections needing to be borne by the other customers who do have the work done. Additional effort in customer prequalification also appears to be successful in addressing this issue and increasing the closing rates.

Program Implications

Contractors need to be informed that the increased cost-of-sales, due to the contractor subsidizing the cost of inspections, can be returned from increased profits from installations. However, they should also understand the economic limitations of the low-price model.

Contractor Implications

Lower inspection prices may yield more inspections but not enough additional sales to offset the overall increase in the cost of sales. This will require a higher pricing structure to be adopted for installations. This makes the contractor vulnerable to competition from others with more optimal inspection pricing.

Promoting Services versus Promoting Product

The majority of the contractors interviewed did not specifically promote Energy Star branded products. This is likely because the home performance sales process is service focused, not product focused. The contractors go into buildings with the goal of determining the customers' most pressing needs. They therefore tend not to rely on selling specific brands or promoting product attributes unless those products contribute to the best solution for the key problems in a building. The contractors who successfully establish a trust relationship with their customers may not need the additional selling power of Energy Star products to help them sell jobs—and often the most important home improvements do not involve Energy Star products, in any case. As indicated elsewhere, the contractors were doing very little appliance-related work, so the Energy Star labeling was potentially useful mostly in the area of building products and equipment.

This finding applied both inside geographic territories with broad local Energy Star product promotions and in areas without any local Energy Star promotion. The emerging "Home Performance with Energy Star®" programs, in contrast, seek to add the Energy Star branding's credibility to performance-based whole house approaches rather than to specific products. This implies that the Home Performance with Energy Star branding of the service may be an important way to link Energy Star to the home performance contractors' service-based sales approach.

Program Implications

The Home Performance with Energy Star program should be used to increase consumer confidence. In addition, Energy Star product sales training should be adapted for use in the home performance sales process in order to increase the adoption of Energy Star equipment, materials, and appliances. This also suggests that home performance programs could be expanded to include assessment and encouragement of appliance upgrades not directly connected with HVAC or shell problems, such as refrigerators and laundry equipment.

Contractor Implications

Energy Star represents a supplemental way to demonstrate to the customer that the contractor is offering quality, if this approach can be coordinated with the overall home performance approach. Energy Star may also provide opportunities to further broaden the contractor's scope and value to the homeowner.

6 HOME PERFORMANCE BEST PRACTICES

The survey provided information on the technical practices most commonly used by successful home performance contractors.

Allowing Three to Four Hours in the House

Contractors doing inspections reported that they typically spent three to four hours doing the inspection. Including travel plus analysis of the inspection data, pricing, and proposal development, contractors typically reported spending a full eight hours on the inspection and developing the proposal for a customer.

With the process taking this long, it is uncommon to find a one-stop close in this business outside of heavily funded programs with fairly fixed workscopes. In a one-stop close the contractor develops the workscope and prepares the estimate while on the job site. After three to four hours of going through a house, everyone needs a break. The contractor is unlikely to sit down and develop a proposal in front of the customer, although one very successful contractor does this using a two-person inspection and sales team. New contractors are more likely to have to take the work home and then make a separate visit to close the job.

In the case of the contractor using a one-stop close with a two-person team, the testing was separated from the sales and estimation process. This reduces the time required for the inspection and allows the most effective salesperson to do sell more jobs, without the burden of doing all the testing themselves. The salesperson was able to meet with the decision makers and often come to agreement on a contract after the inspection had commenced and initial findings were available for an estimate.

Some of the contractors interviewed incorporate the pre-retrofit diagnostics into the installation, rather than performing the inspection up front before developing their proposal. This can limit the amount of information a contractor is working with and can lead to unpleasant surprises for both contractor and customer during the job. However, it does make sense to limit testing of systems that are known to need a high level of work, such as poorly designed distribution systems that cannot perform even minimally enough for the testing methods to be useful. A good change order process is probably important for contractors attempting this approach.

Listening to the customer and addressing all their performance related needs may take more time but is reported to also lead to larger job sizes.

The average time taken by the interviewed contractors to get back the customer with a proposal is about five to seven working days, although this varied widely in the sample. No contractors reported this interval to be a problem in the sales process. The contractors going beyond this time period indicated that they were not happy with their own performance. Two contractors provided reports the same day. Neither provided customized reports; the response to the customer was described as more of an estimate, with information development such as building energy modeling occurring after the sale. One larger whole house contractor provided a customized report with modeling in two days.

Program Implications
The one-stop close is enticing due to its potentially lower cost of sales. However, unless the improvements subsidized by the program are fairly tightly defined, resulting in consistent workscopes, it may be best to avoid promoting a one-stop closing process. Contractors may evolve to a one-stop close, but this model seems difficult for newly trained entrants.

Contractor Implications
After the home inspection and analysis, expect to make a second visit to the customer to close the job, at least while learning the home performance business.

Conducting a Wide Range of Diagnostic Tests
The use of blower doors, duct testing of some type, and combustion safety testing were the most common test procedures. Actual measurements of coil airflow were not common. Duct testing practices were regional due to variations in duct location relative to the outside. Carbon monoxide safety testing is a strong part of contractors' testing protocols. Ventless combustion appliances are considered dangerous, and most contractors interviewed are insuring that ranges and ovens have at least an operable exhaust vent in the area. The one contractor who works on new construction rarely tests for CO. All other contractors routinely perform comprehensive CO testing. Combustion equipment is seldom tested for efficiency. Equipment replacement recommendations tend to be made based on equipment age and condition rather than tested efficiency.

There was a general trend among the contractors to avoid doing detailed testing-in (during a pre-retrofit inspection before the job is sold) that could instead be done during the installation process. A good example of this is duct testing. Testing-in with ducts was less common than testing out, apparently because of the common (and usually correct) assumption that most ducts are inadequately sealed or designed.

Responses indicated a typical level of diagnostic testing centered around combustion safety, including the following:

- Carbon monoxide in ambient indoor air
- Combustion Appliance Zone (CAZ) pressure testing
- Combustion appliance vent pressure testing

The contractors interviewed generally agree that these are the key areas in which they must be sure that problems do not exist before starting work. This concern is due to a combination of program requirements, concern for liability, and peace of mind. Some contractors also worked in housing where the CAZ was not directly associated with the living area. One contractor stated that the CO and vent pressure tests were not routine because potential problems in the CAZ did not translate to problems in the home. The contractors seemed more likely to reduce up front duct testing than to reduce upfront health and safety testing.

In a similar example, thermostats were more often recommended for replacement with electronic devices without checking the anticipators for proper setting.

Indoor Air Quality (IAQ) and Health & Safety

Aside from the CO and pressure issues mentioned above, IAQ diagnostics are usually limited to a moisture inspection, without analytical investigation. Molds are not identified, since most contractors agreed that any mold in the building needs to be addressed whether or not it is inherently a health risk. In this view, whether rightly or wrongly, naming the mold species only adds an additional and unnecessary cost. Most of the contractors stated that they corrected moisture problems, not mold problems, and that they did not specifically contract to mitigate/clean existing mold from buildings.

There were only a couple of contractors who have performed any radon testing and they did so only if the customer initiated the request. No contractor was testing for Volatile Organic Compounds (VOC's). Additionally, only contractors working on low income Title X housing are providing lead-safe work practices and lead testing is not performed by any contractor interviewed.

Installation of carbon monoxide detectors did not seem to be a standard operating procedure. Very few contractors interviewed reported installing CO detectors and no one indicated that fire egress was evaluated or discussed with customers.

Building Shell

Only two contactor performed infrared (IR) imagery, and both used it only on a limited basis. The equipment costs constrains some contractors, but it seemed that the contractors are not aware of how valuable a tool for shell analysis IR imagery can be, or have not considered the added value of thermal imagery in a customer report or analysis when subcontractors are being directed in insulation and air sealing. Programs should seek ways to encourage IR as a sales tool as well as an important diagnostic technique. This could include purchase subsidies or tool sharing arrangements. IR is also an inspection procedure that is commonly recognized and asked for by customers.

Air Distribution

Duct leakage was usually measured when ducts were placed outside the "Pressure Boundary" of the building. Contractors considered the leakage inconsequential when ducts were located inside the pressure boundary, i.e., a basement or second-floor joist system. Only two contractors responded that they *always* do duct testing; most of them said they "usually" do duct testing, typically at the end of the installation, when the installers are still there to remedy defects.

Pressure Balancing

During the phone interviews, contractors were asked about the frequency with which they perform pressure-balancing tests of the conditioned zones of the building. Three contactors responded that they do not provide balance tests as part of the Home Performance inspection, while eight contractors routinely provide such testing. In addition, four contractors interviewed occasionally provide such testing, but mostly in cases involving specific complaints or distribution system modifications.

Of those contractors who routinely provide pressure-balancing testing, the larger HVAC companies stated that they did not provide the testing at the time of the general building inspection and diagnostics, but did provide the testing at the completion of all installation work. They stated that pressure-balancing problems usually exist in buildings, and that to test "up front" is an unproductive exercise because the work that is proposed on areas of distribution repair, shell modifications, ventilation, etc., will change the building dynamics and not necessarily for the benefit of balanced pressures. However, at the completion of all scheduled work, a technician can accurately evaluate and correct the levels of imbalance that exist. Their conclusion was that no matter what the findings of the

initial building inspection, pressure balancing would ultimately need to be performed before the job was complete.

Program Implications

Careful attention should be given to specifying minimum standard home inspection scope and protocols, in order to assure consistent program quality and customer satisfaction. Scope and procedures may differ among home performance programs, based on program goals, but the standards should be intentional rather than accidental and variations among contractors within a program should be closely monitored to assure that the program is achieving its intended effects.

Contractor Implications

Home performance contractors must be prepared to meet program standards. Occupant safety is a crucial aspect of any home performance work and must be done properly. Inspection standards should be consistent for every house, and contractors should expect to continue expanding their skills and services with experience in order to provide true whole house retrofits.

Developing Building Models

All the contractors interviewed develop some sort of building model for a variety of purposes, such as heating and cooling plant sizing, distribution system sizing, estimating savings, providing investment and payback information to customers, etc.

A number of the contractors expressed concerns about the accuracy of models but at the same time very few of the contractors were validating models against fuel bills or collecting post-retrofit billing data for analysis. The difficulty of accessing actual fuel bills and taking into account customer behavior were cited as reasons for not tracking post retrofit performance. Contractors did trust the software to help customers make investment decisions and to compare the relative savings potential of various improvements.

ACCA Manual J-type sizing procedures for HVAC installations were used by contractors not relying on Manual J for modeling, but only when equipment replacement was required. Manual D was used only infrequently for distribution sizing.

There was a stated tendency for some contractors to delay the development of modeling and equipment and distribution sizing information until after the job is sold. This tendency might be correlated to the closing rates in the businesses, with lower closing rates creating an increased tendency to delay investment in the development of the job until after the sale.

Program Implications

Programs funded as part of energy efficiency initiatives may have an interest in focusing contractor and customer attention on cost effective energy efficiency improvements and may see building modeling as a way to provide accurate information to both the contractor and the customer on where to make investments. Developing a building model is a major time commitment for the contractor but seems to be considered core part of home performance and whole house contracting, even by private contractors outside of programs. Improving contractors' access to pre and post retrofit fuel usage data may assist the contractors in developing more accurate building models and improve both the desire and the accuracy of projecting savings. Providing feedback to contractors on their estimated energy savings may also act as an incentive to model.

The time required to develop a model and project savings for an individual building clearly interferes with the implementation of a one-stop close. One of the contractors doing a one-stop close continued

forward with modeling and savings projection after the sale. Information on the evaluated success in meeting projected savings in other similar houses was provided at the time of sale to help build credibility for savings claims in the absence of the results of modeling.

Contractor Implications

Contractors should consider using information from the modeling process to assist in sales and to help increase credibility with the customer. Validating the model against actual energy bills may be necessary to maintain customers' belief in the savings projections.

Activities Falling Outside the Scope of Home Performance

The survey revealed that environmental hazard mitigation and electric baseload reduction typically did not fall within home performance and whole house contractors' typical workscopes.

Environmental Hazard Mitigation

Only one of the contractors promoted IAQ mitigation specialty services, in this case radon, even though health was listed as a major concern of their customers. One reason for this might be the mitigation industry's separation of testing from mitigation. Testing specialists in this area typically do not have the specialized building science knowledge of the home performance contractors, resulting in workscopes that contractors may not be comfortable with. Another reason could be the high cost of liability insurance for contractors specially trained in IAQ hazard assessment and mitigation. The additional overhead cost of that insurance can easily impair the home performance contractor's ability to compete against other contractors for non-mitigation jobs.

Home performance work may be done that reduces the growth of mold and minor mold growths may be cleaned up, but none of the contractors reported willingness to do mold mitigation under the supervision of testing specialists.

Similarly, few of the contractors had a specific program in place for addressing lead contamination.

Program Implications

Programs should consider whether the boundaries of their program should include emerging health and safety practices that may not yet be commonly used by residential contractors. Whether or not such practices are to be included in a program's definition of home performance contracting, the full range of health and safety concerns likely to be encountered must be clearly and consistently treated in training, marketing, and quality control in order to provide boundaries for both contractors and clients.

Contractor Implications

A business focus on health and safety, as well as energy efficiency, should include developing a clear understanding of how construction may affect the occupants of the buildings. Contractors should also consider expanding their range of expertise to include health and safety topics even if beyond the scope of the local home performance program.

Electric Baseload Reduction

Unfortunately, high electricity baseload use is not believed to be of customer concern by most of the contractors interviewed. Little home testing is done beyond that required by utility or weatherization programs. Contractors did not seem to be concerned or interested in saving baseload dollars, even though electricity costs are generally higher and paybacks quicker. This may be due in part to lack of easy access to utility bills and the resulting low use of billing analysis as part of the diagnostic process. Increased post-retrofit access to utility bills may also increase contractor and customer interest in reliable sources of savings such as baseload measures.

Only one contractor routinely separated out baseload as part of the diagnostic process. The new construction contractor approves all types and placements of recessed lighting fixtures, but this may be primarily driven by concerns for air conditioning load and envelope leakage instead of baseload energy use.

Program Implications

Contractor education and involvement of the contractor in post retrofit energy use scorekeeping are two program design options that may help focus contractors' attention on baseload. This is an area that needs additional study.

Contractor Implications

If a contractor's business model is going to include saving energy, baseload savings seem an easy way to get fairly secure savings at a low cost.

7 TRAINING AND EDUCATION

The survey findings included information on how contractors find home performance information for themselves and for their employees as well as how they educate their customers.

Improving Public Education

Publicly funded customer education efforts in various regions of the country generally did not receive high marks for effectiveness. Energy efficiency educational efforts were referred to by some contractors as "trite," and as "repeating inaccurate information." The comments came from a mix of contractors, some in areas with home performance programs and some in areas without specific home performance programs. Some of the contractors felt that marketing experts for home performance programs might want to consult some of the participating contractors and gain a better understanding of the home performance process before launching or re-launching their ad campaigns.

Contractors are in close contact with the customer and must develop a trust relationship with the customer in order to make a sale and therefore actually save energy by installing improvements. The concern voiced by the contractors may come in part from encountering consumer focused educational efforts that interfere with the contractors attempts to differentiate themselves from other contractors that do not performance test their work or offer comprehensive workscopes.

As indicated elsewhere above, customer education was considered a key part of the sales process. The reliance on the referral process for customers seems to indicate that the contractors' customers are more readily educated by their peers.

Program Implications

This is clearly an area needing further study. There may be information available to home performance programs that indicates the effectiveness of their advertising. This could be shared with participating contractors to increase their confidence in the advertising/educational efforts. Other programs may benefit from contractor feedback. The responses from areas without home performance programs may indicate frustration with conventional consumer education that does not promote home performance.

Contractor Implications

Contractors should consider providing more formal feedback to local or regional marketing efforts, so that the marketing efforts have information on the impact of their education on the contractors attempt to sell performance tested work and comprehensive workscopes.

Enhancing On-the-Job Training

Training is considered an important investment of time and money. The larger contractors interviewed all had some type of formal on-the-job training system for employees. Most of the contractors were seeking additional training for their staff. The contractors have trouble finding qualified staff. Formal and informal apprenticeship programs, connecting more experienced staff with newcomers, are frequently used to encourage technical staff to learn more and earn more.

Some of the contractors using certification programs had integrated the certifications into their pay scales, providing explicit career direction to their employees and financial incentives for professional development.

Conferences and periodicals were listed by a number of contractors but were considered as sources of basic information and not regarded as sources of the detailed or hands-on information needed to implement new business and technical practices. These sources of information instead served as maps of the home performance territory. Contractors also accessed supplier and manufacturer trainings as a primary source of technical information.

Program Implications

Enhancing on-the-job training capabilities of smaller contractors and providing additional on-the-job training resources to larger contractors may be a way to engage the contractors in additional cost effective training.

Contractor Implications

Contractors could consider investing in outside training for certain core staff and using those staff to support the training activities of other staff.

A RESULTS OF ONLINE SURVEY

Background

The online survey provided a baseline view on the types of services being provided and on the types of testing being used. The sample was not random, but the diverse response provides an interesting look at what type of work is being done by these self selected contractors and how they use testing. The survey used is provided in Appendix B.

Respondents to the survey were separated out into private contractors, not-for-profits (such as weatherization agencies) and not-for-profits offering fee-for-service installations. After completion of the survey, respondents were individually categorized as being in a region with or without a home performance program.

The survey response was also used to help expand the range of contractors who were contacted for the phone survey.

Summary Charts

The following charts summarize the results of the survey.

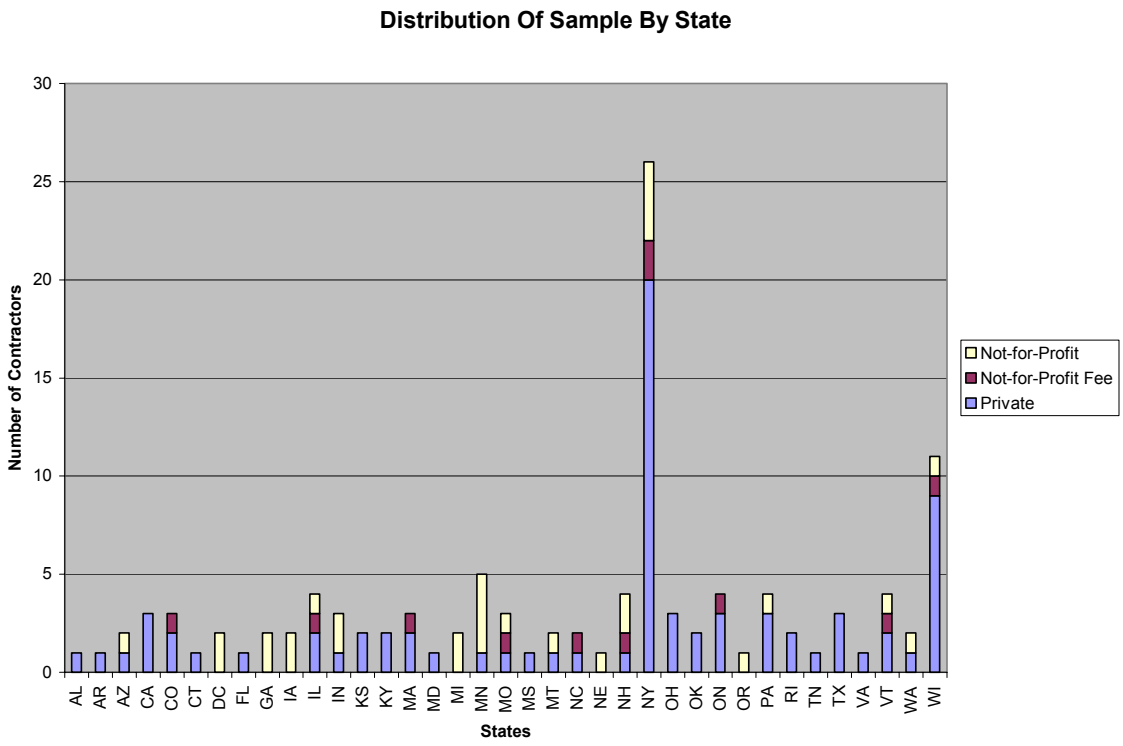

Figure 1—Geographic Distribution

The respondents to the online survey represented a surprising cross section of the country and included some Canadians (ON). States with longer term home performance market development efforts are clearly indicated**.**

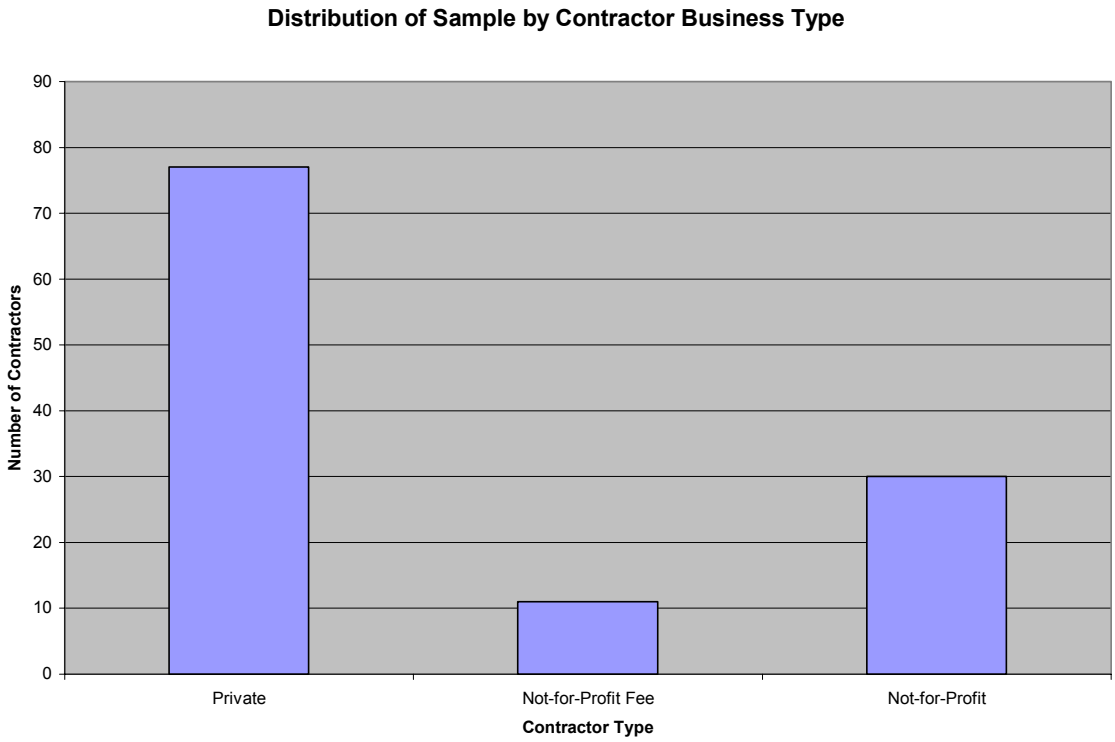

Figure 2—Distribution of Respondents by Contractor Business Type

The majority of the respondents to the online survey indicated that they were private contractors. Not-for-profit contractors were asked to indicate if they offered fee for service work.

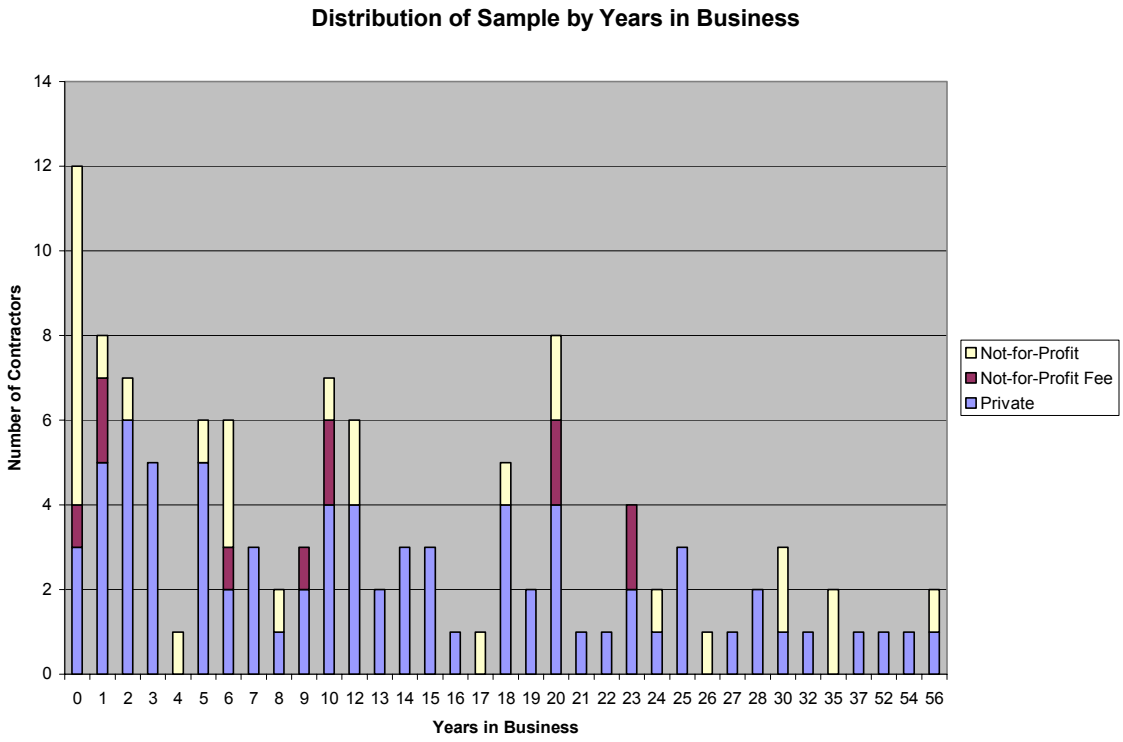

Figure 3—Distribution of Respondents by Business Experience

The respondents to the survey represented a wide range of business experience. A surprising number of the private home performance contractors had been in business for five years or more.

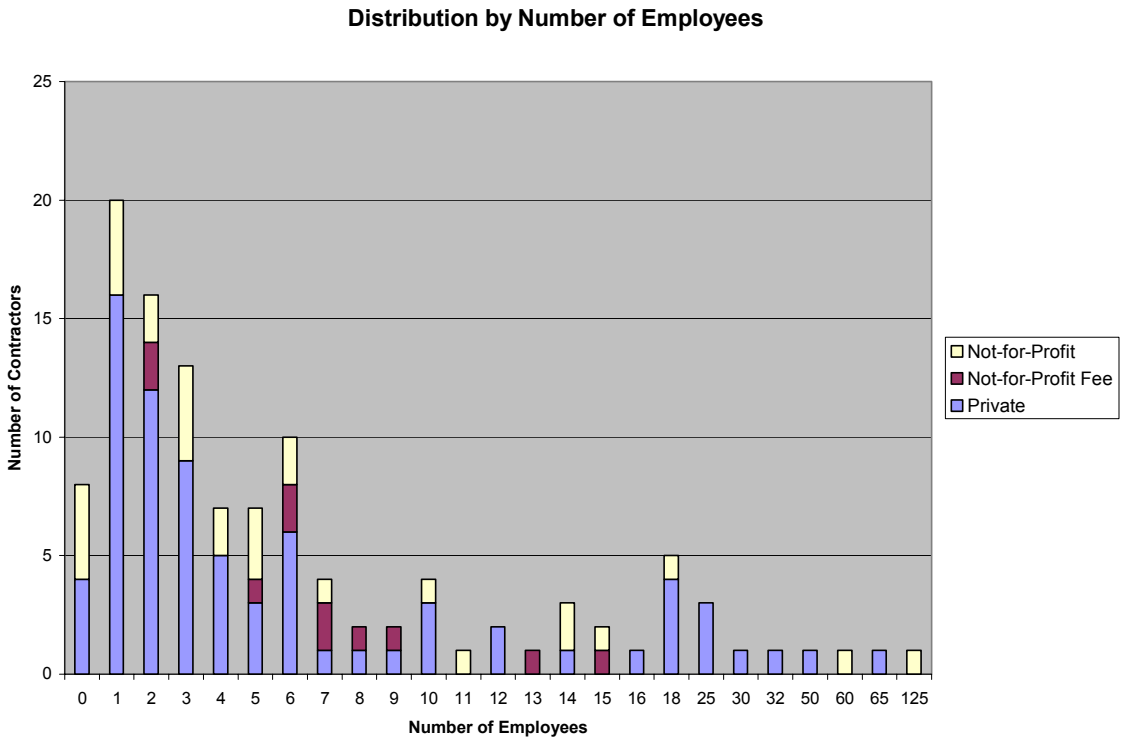

Figure 4—Distribution of Respondents by Number of Employees

The respondents to the survey tended to be mostly smaller companies.

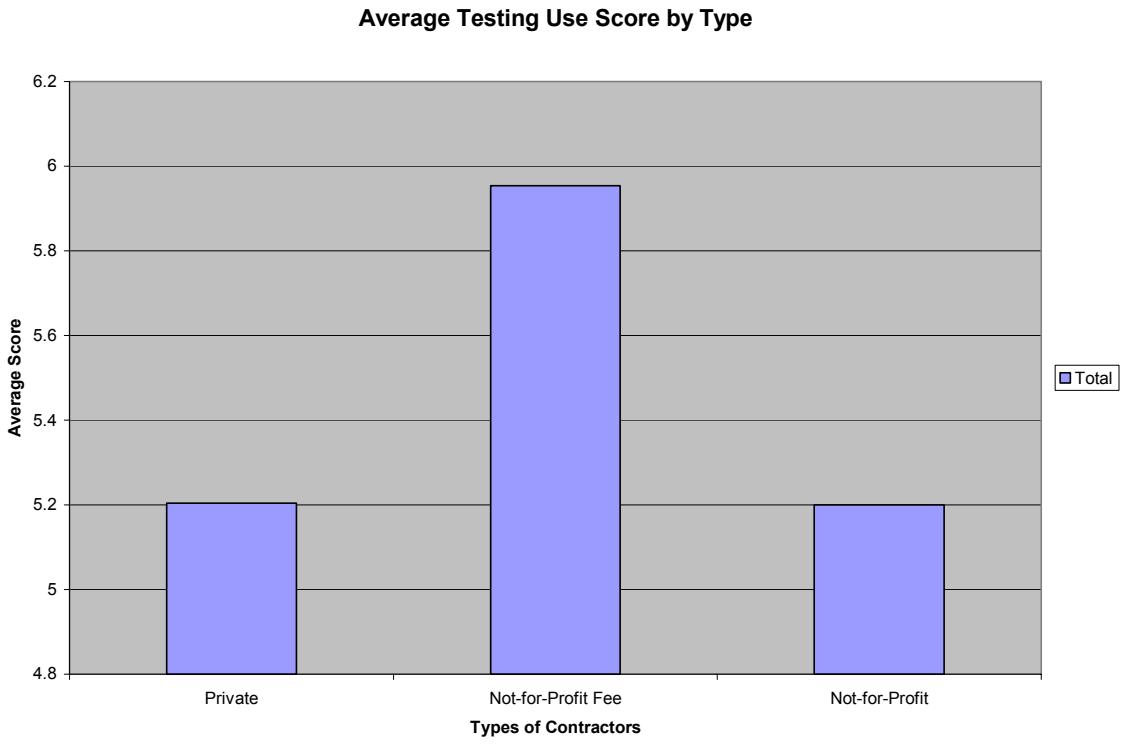

Figure 5—Average Testing Use Scores

The testing score for each contractor was generated using a value of 0 for tests used rarely, .5 for tests used sometimes and 1 for tested used always. The maximum possible score was 10. The highest score reported was 9.5. The larger whole house contractors had an average score of 6.75.

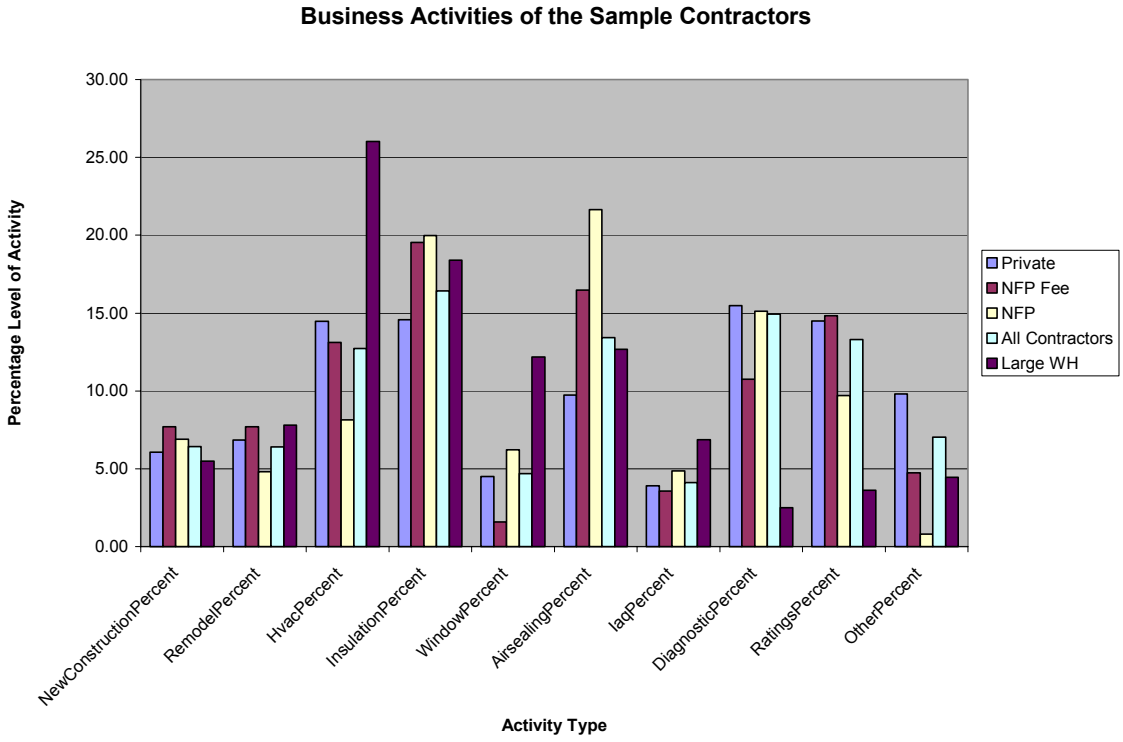

Figure 6—Contractor Business Activities

The business activities of the contractors show some interesting trends, most notably the dramatically increased percentage of HVAC installation activities for what were identified as larger whole house contractors. These contractors were selected based on having non-zero activity in both HVAC and envelope work, including windows, air sealing and insulation. These contractors were also selected based on a minimum score for the use of testing of 5.5 or higher.

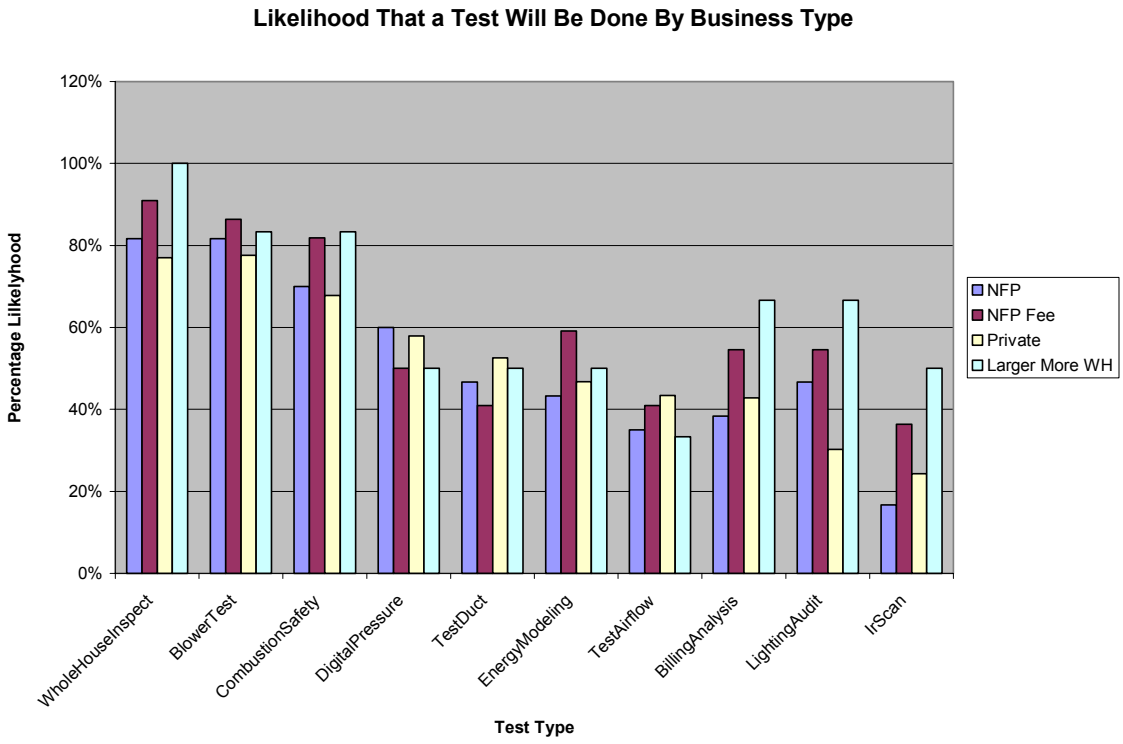

Figure 7—The Likelihood of Contractors Using Various Tests

The likelihood that a contractor would use a specific test was analyzed across the various types of contractors. Of interest here is the correlation between not-for-profits with fee for service operations and larger whole house contractors. Also of interest is the commitment of the whole house contractors to billing analysis and lighting baseload analysis, tasks that are much less common for the typical home performance contractor.

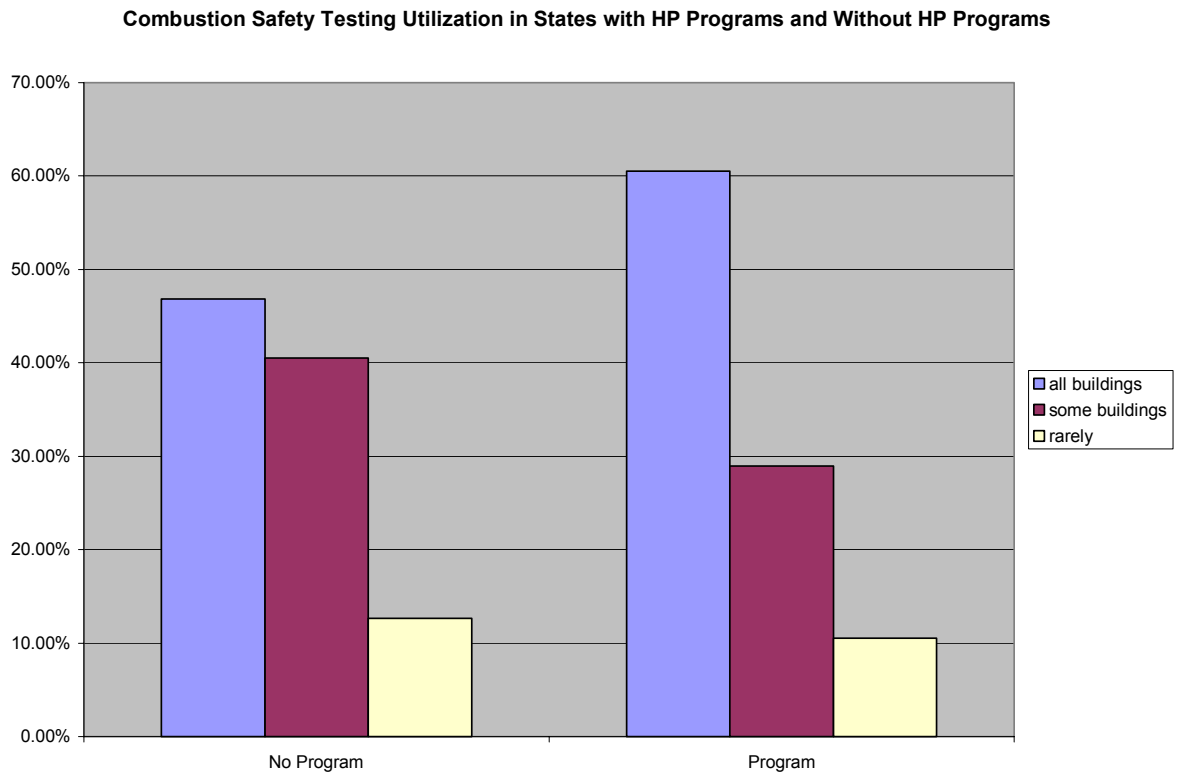

Figure 8—Combustion Safety Testing by Contractors in States With and Without Home Performance Programs

Private contractors working in states with programmatic support for home performance were more likely to do combustion efficiency testing. But only 13% of the private contractors in other states rarely tested combustion safety, a rate just slightly higher than reported by the contractors from states with home performance programs.

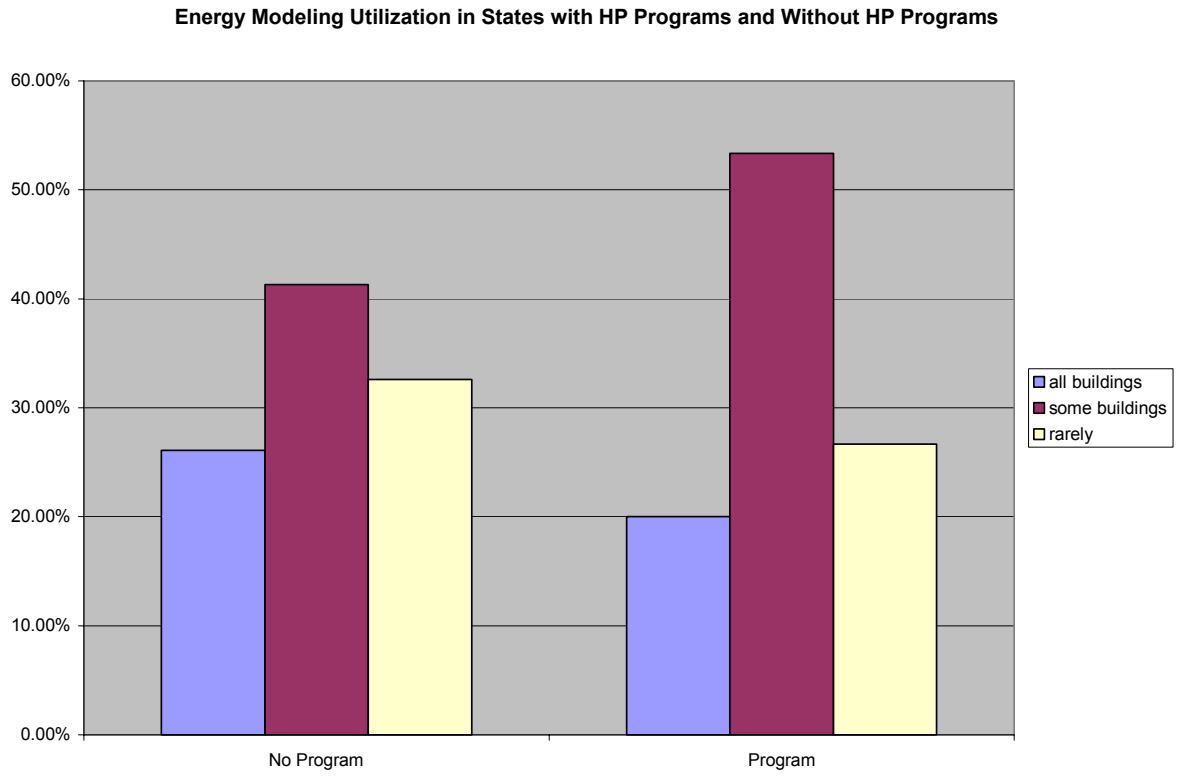

Figure 9—Energy Modeling by Contractors in States With and Without Home Performance Programs

Energy modeling was surprising prevalent in private contractors outside of states with program support for home performance.

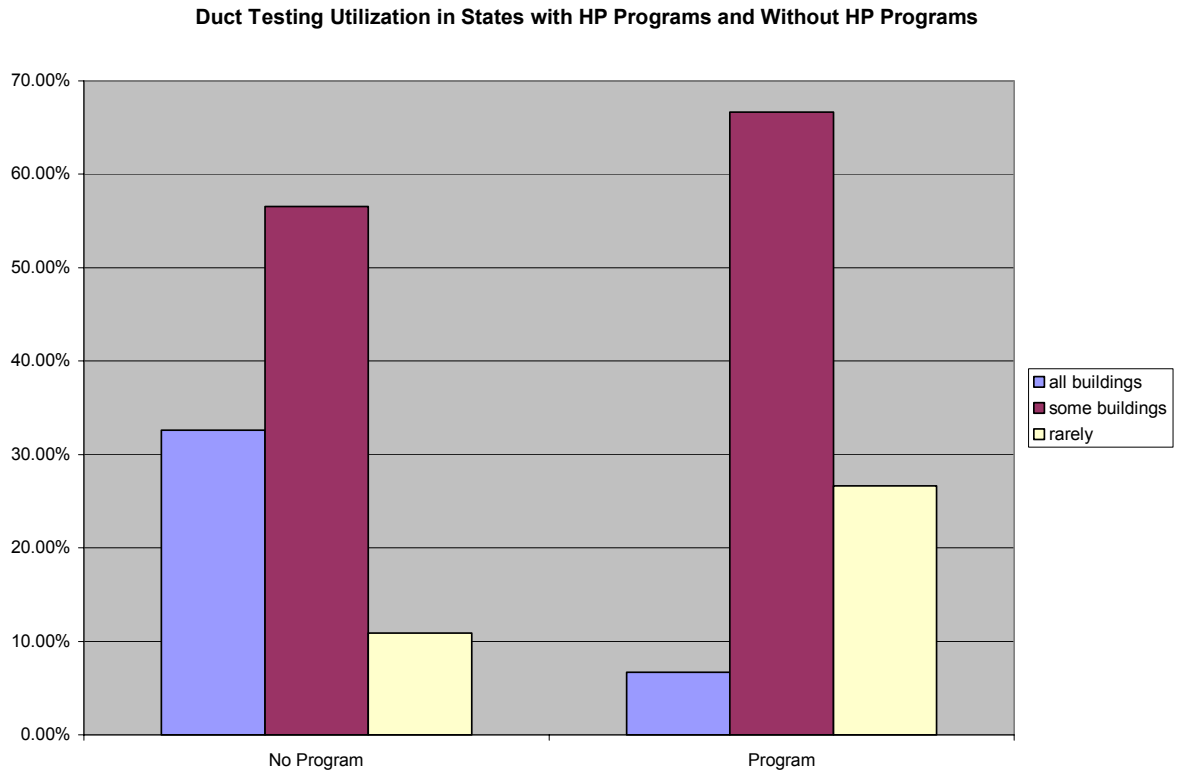

Figure 10—Duct Testing by Contractors in States With and Without Home Performance Programs

Probably as a result of the northern states (NY and WI) lead in supporting home performance, the use of duct testing in programs is actually stronger outside of the funded programs. Other testing types were fairly consistent between contractors in funded states and those outside funded states.

B ONLINE SURVEY FORM

Home Performance Contracting Services
Research Survey

Contact Information

Your Name: First [ ] Last [ ]

Company Name: [ ]

Address: [ ]

City: [ ]

State: [Please select State/Province OR International]

Zip: [ ]

Telephone: [ ]

Email Address: [ ]

Website: [ ]

Your Job: (•) Owner ( ) Auditor/Inspector

( ) Other [(please specify)]

Business Information

Years in business as a contractor: [0]

Company size ($ per year) [Please select a value]

Type of business (•) Private ( ) Not-for-Profit Doing Fee-for-Service ( ) Not-for-Profit

Number of employees doing this type of work: [ ]

Please indicate the types of services your company provides:	% of Total Volume
New Home Construction	0 %
Remodeling	0 %
HVAC	0 %
Insulation	0 %
Windows	0 %
Air Sealing	0 %
IAQ Remediation	0 %
Diagnostic Investigations	0 %
Energy Ratings	0 %
Other	0 %

Basic Performance Testing Information

Do you:

Do a blower test in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Test the duct systems in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do combustion safety testing in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Test the airflow of ducts in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do a whole house inspection on:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do an IR scan in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do a lighting & appliance audit in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do digital pressure diagnostics in:	☐ All Buildings	☐ Some Buildings	☒ Rarely or

			Never
Do energy modeling on:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never
Do a billing analysis on:	☐ All Buildings	☐ Some Buildings	☒ Rarely or Never

General Comments on Home Performance and Your Business:

Submit Survey

<< Return to previous page

C PHONE SURVEY FORM

Home Performance Contracting Services Survey

Company Name:
Name:
Interviewer:

How did you transition to Home Performance? (circle one)

New Business Existing NFP Other

What led you to make the transition?

What was the transition like?

Describe the structure of business model:

% of total work that is Home Performance

# of persons employed and their tasks

Tasks

Describe Task	Number of Persons
General Manager	
Repair and Installation Manager	
Account Manager	
Air conditioning replacement crews	
Wx. crews	

Circle one of the following:

Full service contractor

Specialty contractor allied with subcontractors

Diagnostic services with subcontractors

Other

Annual gross sales:

What provided you assistance when making the transition? (Keys to success) Circle those that apply:

What barriers/hindrances exist to your business?

Are there business practices you recommend be part of any Home Performance service?

What are your customer demographics and what are their concerns?

Areas of Customer Concerns

	High, Medium, or Low	Description
Energy Efficiency		
Customer Comfort		
Health and Safety		
Building Preservation		
Other (describe)		

Business Practices

	Always/Usually	Occasionally	Never/ Seldom	Special Considerations
Use fees for inspections				
Report to customer in addition to estimate				
Average days from inspection to estimate/report				
Estimating software				
Commercial				
Spreadsheet				
Performance Guarantees				
Energy				
Comfort				
Other				

Job Pricing				
Fixed Price				
Time and Materials				
Unit Pricing from preset numbers				
Performance Incentives for :				
Sales				
Other				
Crew				
Employee Costs				
Pay Scales Relative to Competition				
Benefits				

Capitalization

Source of funding for new:	*Enter Explanation:*
Installation Equipment	
Diagnostic Equipment	

Partnering

Do you partner with	Always/Usually	Occasionally	Never	Comments
Insulators				
HVAC				
Roofers				
Diagnostics provider				
Other – Solar window screens				

Marketing and Sales Practices

Five biggest sources of leads in order	**High-Medium-Low**	**Comments**	**Special Considerations**
Yellow Pages			
Customer Referrals			
Third Party Referrals			
Return Customers			
Workshops			
Home Shows			
Mailing			
Email			

Web			
Radio			
TV			
Print Ads			

Do you use a presentation book?

Do you provide references?

Who talks to customers first? Staff Position:

Do they use a script or have training to ask certain in depth questions?

Who sets appointments?

How many inspections or estimates per week? #__

Estimated closing rate on jobs: %

Average job size: $

Average job workscope:

How long is your inspection? Hrs

How long before they get a report or an estimate?

Is the customer present for the inspection?

Do they assist in the process?

Do you offer financing?

Do you encounter questions about up selling (selling more than customer wanted)?

Do you encounter questions about credibility?

Does the crew get performance feedback after the job is complete?

Testing.

Testing Procedure/Protocol	Always/ Usually	Occasionally	Never/ Seldom	Circumstances When Testing is Not Required
How often are diagnostic tests conducted at the beginning of each building inspection? (standardized test in…)				
How often are diagnostic tests conducted at the end of each				

day that work is in progress?				
How often are diagnostic tests conducted at the completion of all scheduled work? (standardized test out…)				
Within the vents of combustion appliances				
Within combustion appliance zones				
Oven vents and range tops				
Ambient house levels				
Building interior moisture level				
Mold identification/sampling				
Volatile organic compounds				
Radon monitoring				
Lead (sampling/XRF)				
Combustion appliance vent pressure (draft)				
Duct leakage – total				
Leakage – to outdoors				
Pressure drops at supply and return registers (pressure pan)				
Total airflow measurements for heating/cooling distribution				
Combustion efficiency (SSE)				
Heat exchanger testing				
Cooling efficiency (EER)				
Thermostat & anticipator				
Exhaust fan flow measurements				
Blower door testing				
Pressure balance testing of conditioned zones				
Zonal pressures for transition areas				
“Worst case” combustion appliance zone testing				
Intrusive inspection (probing/core sampling)				
Infrared imaging				
Moisture metering				

Refrigerator watt/hour				
Water heater efficiency (SSE)				
Water flow rates				
DHW temperatures				
Wattage measurements of lighting				

What did you use for technical standards early on or before home performance?

Any particular order you think is best for home performance diagnostics?

Short Cuts

Are there shortcuts taken or steps omitted…?	Enter Description:
To save time:	
That come with experience	
That come from inexperience?	

Design Practices .

Design Procedure	Always/ Usually	Occasionally	Never/ Seldom	Specific Software or Calculations Tools Used	Circumstances When Design is Not Applied
Energy modeling					
Energy use analysis (billing)					
Building air flow standards calculated for specific buildings					
Ventilation rates calculated for specific buildings					
Manual J (heat load analysis)					
Manual D (distribution design)					

How do you fell about the value of computer generated modeling and analysis?

Describe how you use computer generated modeling and analysis (types of reports and to whom):

Installation Practices

	Always/ Usually	Occasionally	Never/ Seldom	Special Considerations / Installation Standards
Heating				
Energy Star appliances selected				
High efficiency sealed combustion installations				
Mid efficiency combustion atmospheric/powered installations				
Ventless gas fireplace installations				
Vented gas and solid fuel fireplaces/stoves				
Combustion appliance clean and tune				
Combustion appliance general servicing				
Air Conditioning				
Energy Star appliances selected				
High efficiency (SEER 13 or greater)				
Mid efficiency (SEER 10 – 12)				
Clean/tune service				
Refrigerant charge/general servicing				
Heat pump installations				
Distribution Systems				
Hard duct installed				
Flex duct installed				
Sealed with metal tape				
Sealed with mastic				
Supply duct insulation				
Ventilation				
Energy Star appliances selected				
Bathroom exhaust fans				
Kitchen range hoods				
Central exhaust system				
Whole house fans				
Supply only ventilation				
Balanced supply and				

exhaust				
Combustion make-up				
HRV & ERV				
Insulation				
High density cellulose				
High density fiberglass (BIBS)				
Lead safe work practices				
Windows				
Energy Star labeled units selected/installed				
Lead safe work practices				
Air Sealing				
Blower door assisted				
Lead safe work practices				
High density cellulose used in air sealing (interstitial framing)				
Appliances & Lighting				
Energy Star labeled appliances/lighting				
High efficiency appliance installations				
High efficiency lighting Fixture installations				
Compact florescent lighting installations				
DHW clean and tune				
Oven/range clean & tune				
Health & Safety				
Lead abatement				
Asbestos abatement				
Radon mitigation				
Smoke, fire, carbon monoxide detectors				
Moisture control				
Mold remediation				
Hygrometer installation				

Quality Assurance

	Always/ Usually	Occasion ally	Never/ Seldom	Special Considerations
Standardized building report completed for all work				
Quality assurance inspections performed during work in progress				
Quality assurance inspections at completion of work				
Tracking fuel/energy consumption on completed buildings				
Comprehensive "testing out" of completed buildings				
Customer satisfaction survey utilized				
3rd party inspections				

Training

Where have you gotten training on building science and performance testing?	Primary Source	Secondary Source	Never	Comment
Conferences				
Fee Based Workshops				
Low Income Weatherization				
Community College				
Vocational School				
Apprenticeship				
Online				
Books				
Other (What)				

Where do your employees get trained?

What do you consider the most important training resources?

How many days a year of training do your employees get, on average?

Problems and Barriers

What do you see as your core problem areas in developing this business model?	Primary Barrier	Secondary Barrier	Not An Issue	Describe Issue
Training				
Diagnostics				
Sales				
Marketing				
Business				
Installation				
Other				

D SUMMARY INFORMATION ON CONTRACTORS INTERVIEWED

Climate	Type	Origin	Size	Had Existing Contracting Business	Years HP	Average Job Size	NFP
Heating	Shell+	Shell	Large	Existing	3	9000	
Heating	Shell+	Shell	Large	Existing	3	8000	
Heating	Shell+	Shell	Large	Existing	4+	4000	NFP
Heating	WH	Remodeling	Large	Existing	2	12000	
Heating	WH	WH	Large	New	2	9000	
Mixed	WH	HVAC	Large	Existing	4+	18000	
Mixed	WH	Shell	Large	Existing	1	20000	
Heating	WH	Shell	Large	Existing	2	5000	NFP
Mixed	WH	GC	Large	New	4+	8000	
Cool	WH	Shell	Large	Existing	4+	5000	
Heating	General	GC	Med	New	2	2000	
Heating	Shell+	Shell	Med	Existing	2	5000	
Heating	General	GC	Small	New	3	5000	
Heating	General	Shell	Small	Existing	2	2000	
Heating	General	GC	Small	New	3	2000	
Cool	General	Shell	Small	New	2	3000	