DOE/EE-1206

research into action inc

Final Report

Market Effects of the Better Buildings Neighborhood Program

Final Evaluation Volume 5

American Recovery and Reinvestment Act of 2009

June 2015

Prepared For:

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy

DOE/EE-1206

Final Report

Market Effects of the Better Buildings Neighborhood Program

Final Evaluation Volume 5

American Recovery and Reinvestment Act of 2009

June 2015

Funded By:

Prepared By:

Research Into Action, Inc.
NMR Group, Inc.

Prepared For:

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy

research into action inc

www.researchintoaction.com

PO Box 12312
Portland, OR 97212

3934 NE Martin Luther King Jr. Blvd., Suite 300
Portland, OR 97212

Phone: 503.287.9136
Fax: 503.281.7375

Contact:
Jane S. Peters, President
Jane.Peters@researchintoaction.com

ACKNOWLEDGEMENTS

This research project was initiated and directed by Jeff Dowd of the U.S. Department of Energy's (DOE) Office of Energy Efficiency & Renewable Energy (EERE). Project management and technical oversight was provided by Edward Vine, Staff Scientist, of Lawrence Berkeley National Laboratory (LBNL), and Yaw Agyeman, Project Manager at LBNL.

Our team of evaluators would like to thank Jeff and Ed for their support and guidance on this project. Also we would like to thank the staff of DOE's Better Buildings Neighborhood Program (BBNP). Danielle Sass Byrnett led the staff, with key program support provided by Steve Dunn and Dale Hoffmeyer, as well as by account managers and numerous contractors. We thank Danielle and her staff and contractors for their openness and willingness to talk with us at length and answer numerous email questions.

We interviewed all 41 BBNP grant recipients, as well as 6 subgrantees, and requested project documentation and other information from many of these contacts. The grantees and subgrantees had many people wanting them to explain their activities and their accomplishments during the past five years; although we were one of the many, they were overwhelmingly friendly and cooperative, usually talking with us for several hours to explain what they were doing and what their experiences had been. We anticipate future discussions will continue to illuminate the varied activities and accomplishments of the BBNP, and we look forward to those discussions.

We are grateful to the technical advisors that Ed Vine assembled for this research. They guided our detailed evaluation plans and reviewed our draft reports. Their critiques, insights, and interpretations greatly improved the work. Our peer review team comprised Marian Brown, Phil Degens, Lauren Gage, and Ken Keating. Our DOE review team comprised Jeff Dowd and Dale Hoffmeyer. Preliminary research also was reviewed by DOE staff Danielle Sass Byrnett, Claudia Tighe, and Bill Miller.

Finally, DOE staff, their contractors, and LBNL AND National Renewable Energy Laboratory (NREL) staff related to BBNP were all extremely responsive to our team's requests for data and were very helpful during the planning and implementation of the evaluation activities. They understood program realities and continually worked to improve the program and its offerings. In addition, they were continually balancing the need for accuracy in reporting without trying to overburden the grantees that are oftentimes short-staffed and over-worked.

NOTICE

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

GLOSSARY

Within the body of this report, there are several technical terms that require explanation, as their meanings are specific to energy efficiency activity.

ARRA	American Recovery and Reinvestment Act; provided funding for BBNP
Audit	A process that obtains information on building (including home) features that affect energy use, identifies energy efficiency measures that appear to be appropriate for the building, and estimates potential annual energy savings; can be conducted on-line or by someone walking through the building. Audits culminate in an audit report describing the findings and opportunities. Also called "energy audit."
BBNP program	Refers to both the federal Better Buildings Neighborhood grant program administered by DOE and to the local programs grant recipients administered in their target markets. To avoid confusion, the text refers to DOE for the federal program and to the grantees for the local programs.
Funding Opportunity Announcement (FOA)	Issued by DOE to inform the public of the opportunity to apply for BBNP grant funding and outline the application requirements.
Free-rider	A participant who on some level may have used the program regardless of the BBNP influence. Determining free-ridership values is a large component in calculating net-to-gross ratio.
Grant	BBNP funding provided by DOE. Grant funding requires recipients to make best efforts and adhere to fraud-prevention practices but, unlike contracts, does not require the recipient to deliver a specified outcome.
Grantee	A recipient of an ARRA-funded, DOE-administered BBNP grant.
Gross impacts	Offer a perspective on the magnitude of overall impacts that can be traced back to the program; however, they do not constitute an estimate of the new or additive impacts from BBNP funding over and above what would have accrued had the funds been used by other federal programs. As such, gross impacts represent an upper bound estimate and net impacts, which account for this next best use of program funds by way of a counterfactual or base case scenario, represent a lower bound estimate.
Home Performance with ENERGY STAR® (HPwES)	A public-private voluntary partnership program administered by DOE in conjunction with the U.S. Environmental Protection Agency (EPA) to promote whole home upgrades.
Interest rate buy down	Use of program funds to lower the interest rate on loans to program participants; program participants pay the lender the program-established rate and the program administrator pays the lender the incremental amount necessary to meet the lender's requirements for supporting the program.
Leadership in Energy & Environmental Design (LEED)	A green building certification program that recognizes best-in-class building strategies and practices.

Leveraging	A technique to multiply gains and losses; for BBNP, leveraging refers to grantees obtaining non-DOE funds to complement their BBNP funding and increase or extend its program activities.
Loan loss reserve	Money set aside to reimburse a lender for losses made on loans.
Market effects	A change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy efficient products, services, or practices and is causally related to market intervention(s) (Eto, Prahl, and Schlegel, 1996).
MMBtu	Millions (MM = one thousand thousands) British thermal units of energy, used in this context to quantify energy savings.
Net savings	Total amount of a parameter of interest (kWh, kW, MMBtu, CO_2e, water) directly saved by a program; calculated by multiplying gross verified savings by the NTG ratio, it takes into account the realization rate and results of the free-rider and spillover analysis to provide a value of energy savings directly related to the program influence.
Net-to-gross (NTG) ratio	A ratio value determined through the process of surveying decision-makers who implemented projects in order to account for free-ridership and spillover effects. The NTG ratio is multiplied by gross verified savings to produce net savings.
Program administrator	An entity (i.e., BBNP grant recipient, utility, or energy efficiency agency) that administers energy efficiency programs by offering its target market information, supporting services, incentives, and/or financing for energy efficiency, renewable energy, and/or related outcomes, and conducts the activities necessary to deliver these offerings.
Retrofit	See “upgrade.”
Spillover savings	Energy savings from upgrades motivated by the program yet not receiving program incentives.
Subgrantee	An entity that received BBNP funding from a grantee to administer local BBNP programs.
Sweep	An outreach approach used by some grantees that attempts to reach virtually every building (including home) owner of the targeted type in the targeted neighborhood; an outreach worker that knocks on every door is engaging in a sweep.
Upgrade	Change to a building (including home) that reduces its annual energy consumption, typically by increasing its energy efficiency; the change can be to the building shell (insulation, air sealing) and/or to equipment or systems (HVAC, refrigeration, hot water, appliances, thermal solar, photovoltaic, etc.). Also called “retrofit.”

PREFACE

This evaluation report is one of a suite of six reports providing a final evaluation of the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP). The evaluation was conducted under contract to Lawrence Berkeley National Laboratory (LBNL) as a procurement under LBNL Contract No. DE-AC02-05CH11231 with DOE.

The suite of evaluation reports comprises:

- *Evaluation of the Better Buildings Neighborhood Program* (Final Synthesis Report, Volume 1)
- *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2)
- *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3)
- *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4)
- *Market Effects of the Better Buildings Neighborhood Program* (Final Evaluation Volume 5)
- *Spotlight on Key Program Strategies from the Better Buildings Neighborhood Program* (Final Evaluation Volume 6)

The evaluation commenced in late 2011 and concluded in mid-2015. The evaluation issued two preliminary reports:

- *Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program* (December 28, 2012; appendices in a separate volume) (Research Into Action and NMR Group, 2012a, 2012b)
- *Preliminary Energy Savings Impact Evaluation: Better Buildings Neighborhood Program* (November 4, 2013) (Research Into Action, Evergreen Economics, Nexant, and NMR Group, 2013)

Four firms conducted the multi-faceted evaluation:

- Research Into Action, Inc. led the teams and process evaluation research.
- Evergreen Economics conducted the analysis of economic impacts, the billing regression analysis of program savings, and worked with Nexant to estimate program savings.
- Nexant, Inc. led the impact evaluation, conducted project measurement and verification (M&V) activities, and estimated program savings and carbon emission reductions.
- NMR Group, Inc. led the market effects assessment.

LBNL managed the evaluation; DOE supported it.

This document is *Market Effects of the Better Buildings Neighborhood Program*. NMR was the principal author and evaluator, supported in both roles by Research Into Action.

The NMR team was led by Greg Clendenning, supported by David Barclay, Nicole Rosenberg, Kiersten von Trapp, and Lynn Hoefgen. (Matt Rusteika, Jesse Ram, and Cheryl Browne supported the preliminary work, which laid the foundation for this final evaluation.)

The Research Into Action team was led by Jane S. Peters and Marjorie McRae, supported by Joe Van Clock, Jordan Folks, Jun Suzuki, Meghan Bean, Ryan Bliss, Mersiha McClaren, Alexandra Dunn, Hale Forster, Doré Mangan, Maria Everhart, Nathaniel Albers, and Susan Lutzenhiser. Amber Stadler and Sara Titus provided production support.

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) administered the Better Buildings Neighborhood Program (BBNP) to support programs promoting whole building energy upgrades. BBNP distributed a total of $508 million to support efforts in hundreds of communities served by 41 grantees. DOE awarded funding of $1.4 million to $40 million per grantee through the competitive portions of the Energy Efficiency and Conservation Block Grant (EECBG) Program ($482 million from American Recovery and Reinvestment Act of 2009 [ARRA, the Recovery Act] funds) and the State Energy Program (SEP; $26 million). DOE awarded grants between May and October 2010, intended to provide funding over a three-year period ending September 30, 2013. In 2013, DOE offered an extension to programs that included a BBNP-funded financing mechanism to operate through September 30, 2014, using BBNP funds exclusively for financing.

While the federal government has issued periodic funding opportunities for energy efficiency, none has been on the scale of BBNP.

State and local governments received the grants and worked with nonprofits, building energy efficiency experts, contractor trade associations, financial institutions, utilities, and other organizations to develop community-based programs, incentives, and financing options for comprehensive energy-saving upgrades. Each of the 41 grant-funded organizations, assisted by 24 subgrantees, targeted a unique combination of residential, multifamily, commercial, industrial, and agriculture sector buildings, depending on their objectives.

This report provides the market effects findings from a comprehensive impact, process, and market effects evaluation of the original grantee program period, spanning fourth quarter (Q4) 2010 through third quarter (Q3) 2013. A team of four energy efficiency evaluation consulting firms designed and conducted the evaluation – Research Into Action, Inc. (lead contractor), Evergreen Economics, Nexant, Inc., and NMR Group, Inc. – which was managed by Lawrence Berkeley National Laboratory (LBNL) and supported by DOE. NMR Group led the market effects research. The study constitutes one report among a suite of six evaluation reports assessing BBNP.

EVALUATION OBJECTIVES AND METHODS

This study seeks to identify indications that BBNP may have had an effect on the local building improvement markets in which the program operated. We define the building improvement market as the demand and supply of equipment and services related to replacing, expanding, or enhancing components of buildings' energy end-use systems and envelope.

A market effect is "a change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy efficient products, services, or practices and is causally related to market intervention(s)" (Eto, Prahl, and Schlegel, 1996). For BBNP, the expected market effects are unlikely to be changes in technologies, but rather changes in the delivery channels, institutional supports for, and demand for implementation of the technologies, which is the subject of this study.

Key elements of BBNP activities in the market include training and workforce development, financing and other incentives, and marketing and outreach. BBNP activities may result in several key outcomes in the energy efficiency upgrade market that are examined in this assessment:

- Increased marketing of energy efficiency in general, and whole house, whole building efficiency upgrades specifically
- Increased demand for whole house, whole building efficiency upgrades
- Increased numbers of highly trained contractors who take a whole home approach to upgrades
- Increased adoption of energy efficient building practices by contractors
- Increased availability and sales of high efficiency equipment, products, and services
- Increase in both the range of measures and the resulting building savings

This study examines the extent to which changes in the energy efficient upgrade market have occurred between fourth quarter (Q4) 2010 through third quarter (Q3) 2013, as influenced by BBNP.

We surveyed 147 participating contractors, 446 nonparticipating contractors, and 291 distributors working in the service territories of 25 sampled grantees. We selected grantees based on a stratified sample of most successful, average, and least successful residential programs, determined using latent profile analysis, as well as a stratum of the top five commercial programs. We conducted this step after performing advanced statistical analyses of performance metrics estimated for each grantee.

Following the contractor surveys, we conducted in-depth interviews with ten survey respondents who had identified either positive or negative market effects resulting from BBNP. Of the ten interviewees, eight reported positive market effects of BBNP during the survey and two reported negative market effects.

We surveyed 2,399 participant homeowners in 24 grantee programs and 2,429 nonparticipant homeowners in the home improvement market (recent or planned activity) in areas served by all 41 grantees. We conducted in-depth interviews with 20 financial partners of grantees comprising five organizational types (such as credit unions, banks, and community development financial institutions). We obtained information from grantees through in-depth interviews, reviews of their DOE-required Technical Reports, and review of DOE's BBNP program tracking data. (The companion report *Process Evaluation of the Better Buildings Neighborhood Program* [Final Evaluation Volume 4] provides methodological detail.)

We used the results of these efforts to estimate early indicators of local market effects in the grantee areas selected. By looking at early indications of market effects across grantees, we have been able to draw general conclusions about early indications of local effects generated by the federal program as a whole. However, it is important to note the designed market assessment activities did not examine early indications of national market effects. Instead, the evaluation focuses on early indications of local effects. Because each grantee market is different, we did not directly extrapolate sub-sample findings to the full population of grantees. However, we were able to draw general conclusions on the presence or absence of early indicators of market effects generated by BBNP grantee funding. In addition, for each of the indicators, we attempted to isolate the impact of BBNP from other efficiency programs, such

as DOE's SEP or DOE's EECBG Program by asking respondents to rate the influence or importance of BBNP alone on the given indicator of interest.

The reader is cautioned that sustained market effects is highly unlikely to be attained for such an innovative practice (whole house or whole building upgrades) in such a short time frame (grants lasting three years in duration). Nor is it likely an evaluation such as this, conducted coincidently with the program closeout, can determine sustained changes. Thus, we measured early or leading indicators of possible changes in the market that suggest BBNP will stimulate an eventual market transformation. Subsequent evaluations will need to assess whether market effects occurred.

BBNP GOALS AND OBJECTIVES

DOE designed BBNP to meet the three principal ARRA goals (Table ES-1), as well as seven objectives developed by DOE staff to guide the BBNP initiative (Table ES-2). Below, we identify which of the three types of evaluation (impact, process, or market effects) provide findings relevant to our assessment of goal and objective attainment. This study addresses the goals and objectives flagged in the tables as relating to the market effects evaluation. For an investigation of the other goals and objectives noted in the tables, see the companion reports *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2), and *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4).

Table ES-1: ARRA Goals

GOALS	EVALUATION TYPE		
	Impact	Process	Market Effects
Create new jobs and save existing ones	✓	✓	✓
Spur economic activity and invest in long-term growth	✓	✓	✓
Provide accountability and transparency in spending BBNP funds	✓	✓	

Table ES-2: BBNP Objectives

OBJECTIVES	EVALUATION TYPE		
	Impact	Process	Market Effects
Develop sustainable energy efficiency upgrade programs		✓	✓
Upgrade more than 100,000 residential and commercial buildings to be more energy efficient	✓		
Save consumers $65 million annually on their energy bills	✓		
Achieve 15% to 30% estimated energy savings from residential energy efficiency upgrades	✓		
Reduce the cost of energy efficiency program delivery by 20% or more		✓	
Create or retain 10,000 to 30,000 jobs	✓		
Leverage $1 to $3 billion in additional resources	✓		

GOAL AND OBJECTIVE ATTAINMENT

By the end of the three-year evaluation period (Q4 2010 to Q3 2013) BBNP had met the three ARRA goals (Table ES-3). While the process evaluation investigated program outcomes related to all three goals, the numerical findings included in the table were generated by the impact evaluation, the details of which are presented in *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2). The table presents, among other findings, our findings of net jobs, net economic activity, and net benefit-cost ratio. For the economic metrics, the term "net" signifies BBNP's contribution to these outcomes above and beyond the outcomes that would have occurred had the BBNP funding been spent according to historical non-defense federal spending patterns.

By the end of the three-year evaluation period, BBNP met its one market-effects-related BBNP-specific objective (Table ES-4). The market effects findings indicate that BBNP met its objectives to spur energy efficiency upgrade activity, upgrade buildings, and contribute to the development of an upgrade market that would be able to continue providing services at the end of the grant period.

Table ES-3: Attainment of ARRA Goals, Q4 2010 - Q3 2013

GOALS	METRICS	RESULTS	ATTAINED?
Create new jobs and save existing ones	Number of jobs created and retained	The evaluation estimated 10,191 net jobs resulted from BBNP during the 3-year evaluation period.	Yes
Spur economic activity and invest in long-term growth	Dollars of economic activity; benefit-cost ratio	BBNP spending of $445.2 million in 3 years generated more than: • $1.3 billion in net economic activity (personal income, small business income, other proprietary income, intermediate purchases) • $129.4 million in net federal, state, and local tax revenues Estimated net benefit-cost ratio: 3.0.	Yes
Provide accountability and transparency in spending BBNP funds	Evidence of accountability and transparency	Grantees receiving ARRA funding submitted ARRA expenditure reports. Grant expenditure information was available to the public on *Recovery.gov*. BBNP DOE staff developed and maintained a program tracking database for periodic grantee reporting. Staff worked with grantees to increase the quantity and quality of reported data. Grantees had access to summary data. Evaluator-verified results will be publicly available.	Yes

Table ES-4: Attainment of Market-Effects-Related BBNP Objective

OBJECTIVES	METRICS	RESULTS	ATTAINED?	
			3-Year Verified	4-Year Unverified*
Develop sustainable energy efficiency upgrade programs	Percent of programs planning to continue after funding Evidence of continuing effects on the retrofit industry	84% of grantees reported that their programs or elements thereof would continue after the 3-year evaluation period. The evaluation found evidence of early indications of market effects, including increased: • Activity in the energy efficiency upgrade market • Adoption of energy efficient building and business practices • Marketing of energy efficiency • Availability of financing Participating contractors reported: • Changing services to be more comprehensive to adapt to BBNP (60%) • Increasing their focus on energy efficiency (46%) • Changing their standard practices in non-BBNP upgrades (34%) • Observing positive impacts on their business and the local energy efficiency market from BBNP (~50%). The Better Buildings Residential Program Solution Center and Better Buildings Residential Network continue to provide examples of replicable comprehensive approaches.	Yes	Yes

* Our evaluation did not verifiy fourth-year program achievements; however, this objective was met by Q3 2013 and so we concluded also it was met by the end of Q3 2014.

ADDITIONAL KEY FINDINGS

We found early indications that BBNP may have helped lead to local market effects. We emphasize that these indicators suggest BBNP has initiated market change; these indicators are not proof that the market has changed or that whatever change BBNP has initiated will persist past the funding cycle. Such conclusions await research conducted several years after this study.

Across multiple indicators and from multiple data sources we found evidence of early indications of local market effects influenced by BBNP. Examples of indicators include: increased activity in the energy efficiency upgrade market; increased adoption of energy efficient building and business practices, as well as sales of energy efficient equipment; increased marketing of energy efficiency; increased availability of financing; high levels of consumer awareness of BBNP; and mixed evidence of increases in trained contractors.

Our analysis in this report focuses on examining the early indicators of market effects across all of the sampled grantees also while comparing for differences among the two residential strata (that is, most and average success

strata) and the commercial strata. There are relatively few statistically significant differences between the residential and commercial strata, and most of the differences suggest somewhat higher levels of market effects for the residential grantees for a very limited number of indicators.

Large percentages of participating contractors (ranging from 46% to 56%) reported that BBNP had positive impacts on their business and the local energy efficiency market (Table ES-5). In some cases, while large percentages of participating contractors noted a change in the market, a smaller subset (often 10% to 15% of participating contractors) reported that BBNP had a great deal of influence on the change. In contrast, relatively small percentages of nonparticipating contractors and distributors (generally 10% or less) indicated that BBNP had positive impacts on their business and the local energy efficiency market or noted a market change. For example, more than half of surveyed participating contractors reported that BBNP had a positive impact on their company and the marketplace in general while just under 10% of nonparticipating contractors reported the same. In addition, BBNP contributed to increased marketing by participating contractors, which in turn led to increased upgrades, but BBNP appears to have affected the marketing practices of only a small percentage of nonparticipating contractors.

When asked to estimate the impacts of BBNP on the number of upgrades they completed, participating and nonparticipating contractors reported that BBNP had resulted in a net increase in upgrades. We estimated 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades. **It is important to emphasize that these savings associated with estimated changes in the market should be interpreted as a general indication of the order of magnitude of net savings rather than as a precise estimate of net savings, particularly the savings from commercial upgrades.** We estimated lifetime savings of 21.6 million MMBtu of savings from the net residential upgrades and 69.1 million MMBtu of savings from the net commercial upgrades. It is important to note that the lifetime savings estimates are less precise than the annual estimates.

BBNP appears to have influenced building and business practices among a portion of contractors and distributors in grantee regions (Table ES-6). For example, 72% of participating contractors made changes to their business practices, including 60% of participating contractors who reported that their services had become more comprehensive to adapt to BBNP, while 46% of participating contractors increased their focus on energy efficiency in order to adapt to the program. Further, 34% of participating contractors reported changing their standard practices in non-BBNP upgrades and 15% reported that BBNP had a great deal of influence on the changes to their standard practices. In addition, we found that distributors estimated sales of high efficiency equipment increased during the 2010 to 2013 period, and that small, yet notable, percentages of distributors reported a positive impact on sales to BBNP, as well as a positive impact on their businesses and the marketplace in general.

The study found evidence that BBNP influenced energy efficiency financing and that BBNP training affected the quality and comprehensiveness of energy efficiency upgrades, but mixed evidence that BBNP increased the number of trained contactors (Table ES-7). The surveys found that large majorities of participating and nonparticipating contractors believed there was increased availability of trained contractors, with over 40% of participating contractors reporting a great deal of influence to BBNP. In addition, nearly half of participating contractors reported that BBNP training increased the number of energy efficient upgrades, the quality of the upgrades, and the comprehensiveness or depth of the upgrades since 2010 (Table ES-6). However, analysis of contractor membership and training organizations did not find evidence of a greater increase in trained contractors in grantee regions compared to non-grantee regions. Finally, grantees indicated that most financing products developed during the BBNP grant period

would continue, and about three-quarters of financial partners reported a BBNP-generated demand for energy efficiency upgrade loans.

In general, the early indicators of market effects are greater among the residential grantee sample than the commercial grantee sample. However, participating contractor spillover (upgrade activity among customers not participating in grantee programs but conducted by participating contractors) appears to have been higher in the commercial grantee sample, while nonparticipating contractor spillover was only detected in medium success residential programs.

In summary, there is evidence of early indications of market effects, but the effects appear to be concentrated largely on a subset of participating contractors, with much smaller estimated effects among nonparticipating contractors and distributors. Further, our findings indicate that BBNP was successful in stimulating some program activity and in eliciting market change at the utility level and among financial institutions. BBNP does not appear to have been successful at creating local markets where efficiency occurs in the absence of subsidies, however, as most grantees had not yet developed the market presence to continue self-sustaining programs.

We summarize our findings for the early indicators in three tables:

- Table ES-5 presents findings for indicators relating to upgrade activity, marketing, and market effects.
- Table ES-6 presents findings for indicators relating to supply chain building practices and business practice.
- Table ES-7 presents findings for indicators relating to sustainability.

Table ES-5: Upgrade Activity, Marketing, and Market Awareness Initial Indicators of BBNP Market Effects

INDICATOR	FINDINGS
Increased activity in energy efficiency upgrade market	
Contractors report BBNP had a positive influence on their business and the marketplace	More than half (56%) of surveyed participating contractors reported BBNP is having a positive impact on their company and the marketplace in general.
	Indication of small impact of BBNP beyond participating contractors (surveyed nonparticipating contractors reported a positive impact on their business (5%) and the marketplace in general (8%)).
Distributors report BBNP had a positive influence on their business and the marketplace	Just under 10% of surveyed distributors reported that BBNP had a positive impact on their business and marketplace in general.
Contractors report BBNP will have a positive influence on their business and the marketplace over the next two years	Nearly half (46%) of surveyed participating contractors anticipate over the next two years a positive impact on their business and marketplace in general due to BBNP. Higher percentages of contractors from the most and average success residential strata agreed there would be more business – both for their companies and in the market in general – in the next two years because of BBNP than from the top five commercial stratum (a statistically significant difference).
	Smaller percentages of surveyed nonparticipating contractors indicated there will continue to be positive effects on their business (7%) and the marketplace in general (10%).
Distributors report BBNP will have a positive influence on their business and the marketplace over the next two years	Just under 10% of surveyed distributors anticipate over the next two years a positive impact on their business and marketplace in general due to BBNP.

Continued…

INDICATOR	FINDINGS
Contractors report a net increase in the number of energy efficiency upgrades influenced by BBNP	We estimate a total of 23,215 net upgrades influenced by BBNP (net upgrades account for free-ridership and spillover) compared to 16,840 BBNP-supported upgrades (upgrades that went through the BBNP program) for the 25 sampled grantee programs.
	We estimate 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades. It is important to emphasize that these savings associated with changes in the market estimates should be interpreted as a general indication of the order of magnitude of net savings rather than as a precise estimate of net savings, particularly the savings from commercial upgrades. We estimate lifetime savings of 21.6 million MMBtu of savings from the net residential upgrades and 69.1 million MMBtu of savings from the net commercial upgrades. It is important to note that the lifetime savings estimates are less precise than the annual estimates.
Increased marketing of energy efficiency by contractors	
Contractors report increased energy efficient building practices and equipment and installation; contractors report the increase influenced by BBNP	60% of surveyed participating contractors and 36% of nonparticipating contractors indicated that their marketing of energy efficiency and energy efficient features had increased since 2010. Larger percentages of participating contractors from the residential grantees reported increasing their marketing compared to participating contractors from commercial grantees (a statistically significant difference).
	29% of surveyed participating contractors and 3% of nonparticipating contractors reported that BBNP had a great deal of influence on their increased marketing.
End user awareness of local BBNP program	
Nonparticipants report being aware of local BBNP program	About one-third of surveyed nonparticipant homeowners in the home improvement market had heard of their local BBNP program; awareness was highest in the territories of most successful grantees (37%) and lowest in the territories of least successful grantees (21%).
Sources of participant awareness of BBNP program	66% of surveyed participant homeowners heard about their BBNP program through publicity sources and about one-third reported hearing about the program from each of the following sources: professional sources, contractor, program sources, and community sources.

Table ES-6: Supply Chain Building Practices and Business Practice Initial Indicators of BBNP Market Effects

INDICATOR	FINDINGS
Increased energy efficient building practices and equipment installation and sales	
Contractors report increasing their energy efficient building practices and equipment installation; contractors reported that BBNP had a high degree of influence	Surveyed participating contractors reported changing their standards practices to be more energy efficient in both BBNP (41%) and non-BBNP (34%) supported upgrades.
	41% of surveyed nonparticipating contractors reported changing their standards practices to be more energy efficient.
	15% of surveyed participating contractors and 3% of surveyed nonparticipating contractors reported BBNP had a great deal of influence on changes in their standard practices.
Distributors report increasing their sales of high efficiency equipment; distributors report the increase influenced by BBNP	About one-fifth of surveyed distributors of building envelope materials, HVAC equipment, and lighting equipment indicated that BBNP had a positive impact on their sales (17% to 20% for each equipment type).
	Smaller percentages of surveyed commercial equipment distributors noted positive impacts, ranging from 0% to 19% of distributors across equipment types.
	When asked to rate the level of BBNP's positive influence on their sales, small percentages of both residential and commercial equipment distributors indicated that the BBNP had a great deal of influence on their sales, ranging from 0% to 8% of distributors of residential equipment and 0% to 1% of distributors of commercial equipment.
Contractors report adopting a whole home retrofit approach to upgrades in nonparticipating homes	Nearly one-half of all surveyed participating contractors reported BBNP training had increased the number of energy efficient upgrades (46% of participating contractors), the quality of the upgrades (45%), and the comprehensiveness or depth of the upgrades since 2010 (44%). Larger percentages of participating contractors from the residential grantees reported BBNP training had increased the number of energy efficient upgrades and the comprehensiveness of the upgrades compared to participating contractors from commercial grantees (a statistically significant difference).

Continued…

INDICATOR	FINDINGS
Supply chain business practices have increased focus on energy efficiency	
Contractors change their business practices to increase their focus on energy efficiency	72% of surveyed participating contractors made a change to their business practice and reported the change was influenced by BBNP. 60% of participating contractors reported that their services had become more comprehensive to adapt to BBNP, 51% had begun partnerships with other firms or contractors to adapt to the program, and 46% had shifted their business to focus more on energy efficiency to adapt to the program.
Distributors change their business practices to increase their focus on energy efficiency	18% of distributors reported changing their business and stocking practices to be energy efficient.
	4% of distributors reported BBNP had a great deal of influence on changes in their standard practices.

Table ES-7: Sustainability Initial Indicators: Trained Contractors, Availability of Financing, and Persistence of Activity

INDICATOR	FINDINGS
Increased availability of trained contractors	
Contractors report an increase in the number of trained contractors; contractors reported the increase in trained contractors was influenced by BBNP	86% of participating contractors and 68% of nonparticipating contractors reported that the number of contractors trained in energy efficient building practices had increased since 2010.
	42% of participating contractors and 6% of nonparticipating contractors reported BBNP training had a great deal of influence on the increased number of contractors trained in energy efficient building practices.
Increased numbers of trained contractors in BBNP grantee regions	The analysis of changes in energy efficiency organization membership and certifications during the period from 2011 to 2013 did not show any early indications of market effects.
Grantees report trained and certified contractors	21 grantees reported providing program-supported training to 5,056 workers and certifying 2,026 certified workers; remaining grantees did not report these data.

Continued…

INDICATOR	FINDINGS
Increased availability of financing for energy efficiency upgrades	
Financial partners report changes in type and amount of loans for energy efficiency upgrades; financial partners reported the change was influenced by BBNP	About three-quarters of financial partners reported a BBNP-generated demand for energy efficiency upgrade loans.
Participants report that improved access to financing was an important factor in completing the upgrade	16% of participant homeowners received loans; of these, 75% rated the loan as playing an important role in their upgrade decision.
Persistence of Activity	
Contractors report continuing to offer upgrades	Interviewed participating contractors reported they would continue to offer upgrades; four of the ten interviewed contractors reported there would be no changes to their practices while the remaining six anticipated adjusting their practices by scaling back or seeking out other incentive programs or low-interest financing opportunities.
Programs or program features continue	Of 62 grantees and sub-grantees, 52 reported they would continue some program offerings post-grant: 7 would expand their scope or geographic reach; 13 would continue relatively unchanged; and 32 would continue some elements of program offerings or infrastructure.
Financing for energy efficiency upgrades continues	All but one of the grantees with financing reported financing would continue.
	75% of financial partners interviewed reported they would continue to offer financing for energy efficiency upgrades post-grant; of these, 53% would offer a product supportive of energy efficient upgrades that is different from their BBNP offering.

1. INTRODUCTION

The U.S. Department of Energy (DOE) administered the Better Buildings Neighborhood Program (BBNP) to support programs promoting whole building energy upgrades. BBNP distributed a total of $508 million to support efforts in hundreds of communities served by 41 grantees. DOE awarded funding of $1.4 million to $40 million per grantee through the competitive portions of the Energy Efficiency and Conservation Block Grant (EECBG) Program ($482 million from American Recovery and Reinvestment Act of 2009 [ARRA, the Recovery Act] funds) and the State Energy Program (SEP; $26 million). DOE awarded grants between May and October 2010, intended to provide funding over a three-year period ending September 30, 2013. In 2013, DOE offered an extension to programs that included a BBNP-funded financing mechanism to operate through September 30, 2014, using BBNP funds exclusively for financing.

State and local governments received the grants and worked with nonprofits, building energy efficiency experts, contractor trade associations, financial institutions, utilities, and other organizations to develop community-based programs, incentives, and financing options for comprehensive energy-saving upgrades. Each of the 41 grant-funded organizations, assisted by 24 subgrantees, targeted a unique combination of residential, multifamily, commercial, industrial, and agriculture sector buildings, depending on their objectives.

This report provides the market effects findings from a comprehensive impact, process, and market effects evaluation of the original grantee program period, spanning fourth quarter (Q4) 2010 through third quarter (Q3) 2013. A team of four energy efficiency evaluation consulting firms designed and conducted the evaluation – Research Into Action, Inc. (lead contractor), Evergreen Economics, Nexant, Inc., and NMR Group, Inc. – which was managed by Lawrence Berkeley National Laboratory (LBNL) and supported by DOE. NMR Group led the market effects research. The study constitutes one report among a suite of six evaluation reports assessing BBNP.

1.1. STUDY OVERVIEW

This study investigates market changes that may have occurred during the implementation of the BBNP, drawing from information collected from contractors serving BBNP residential and commercial participants ("participating contractors"), nonparticipating contractors, distributors, contractor membership and training organizations, residential participants and nonparticipants, and financial institutions working with the grantees.

In addition to assessing attainment of BBNP goals and objectives, this study seeks to identify indications that the BBNP may have had an effect on the local building improvement markets in which the program operated. We define the building improvement market as the demand and supply of equipment and services related to replacing, expanding, or enhancing components of the building energy end-use systems and envelope.

A market effect is "a change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy efficient products, services, or practices and is causally related to market intervention(s)" (Eto, Prahl, and Schlegel, 1996). For BBNP, the expected market effects are unlikely to be changes in technologies, but rather changes in the delivery channels, institutional supports for, and demand for implementation of the technologies.

From its inception in the 1970s, the energy efficiency industry has experienced few instances of rapid market change. Experts advising this study cautioned one would not expect a three-year program such as BBNP to have a pronounced or lasting change on the market. Accordingly, the study seeks to assess early indicators of market

effects – indicators consistent with a hypothesis that change has occurred or is occurring, yet not constituting proof any observed effects would persist beyond the program cycle.

This study seeks to understand how and why energy upgrade contractors and distributors change their business practices in a way that promotes greater adoption of energy efficiency. It explores the market for energy efficient products, services, or practices to assess changes in the market or in market actors' behavior resulting from BBNP activities.

1.2. BBNP DESCRIPTION

DOE administered the BBNP to support programs promoting whole building energy upgrades. BBNP distributed over $500 million to support hundreds of communities served by 41 grantees. While the federal government has issued periodic funding opportunities for energy efficiency, none has been on the scale of BBNP.

DOE issued two competitive funding opportunity announcements (FOAs) for BBNP grants. The first, drawing on EECBG funding, was issued in October 2009. The second, drawing on SEP funding, was issued in April 2010. DOE awarded grants between May and October 2010 intended to provide funding over a three-year period ending September 30, 2013, a period that DOE subsequently extended by a year for programs that included a BBNP-funded financing mechanism to operate using BBNP funds exclusively for financing.

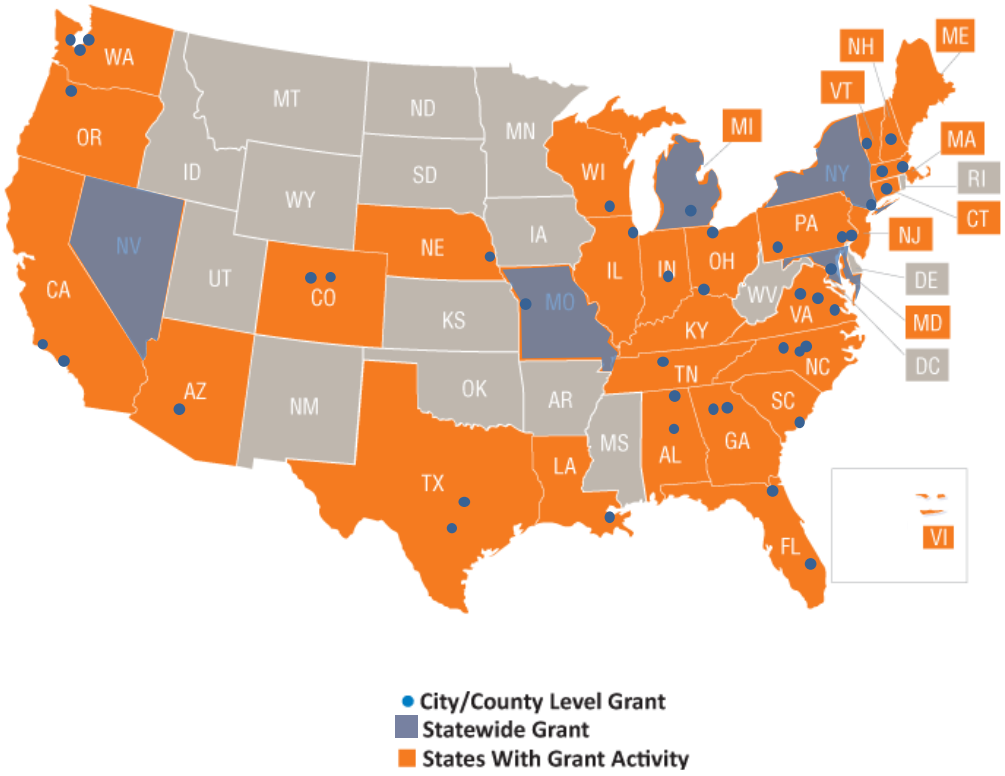
Each grant recipient proposed and implemented unique programs designed to address the energy efficiency needs, barriers, and opportunities within its jurisdiction. However, all of the recipients' programs were broadly designed around three common purposes: (1) to obtain high-quality upgrades resulting in significant energy improvements (upgrades also described as whole building or comprehensive), (2) to incorporate a viable strategy for program sustainability, which DOE defined as continuing beyond the grant period without additional federal funding, and (3) to fundamentally and permanently transform energy markets to make energy efficiency and renewable energy the options of first choice (DOE, 2009).

Through the EECBG FOA, DOE sought "innovative, 'game–changing' whole building efficiency programs" (DOE, 2009). DOE recognized that innovation is a form of experimentation and is not without risk of failure. The BBNP program at that national level was looking to identify the most effective approaches; DOE was not expecting every local BBNP-funded program to be equally, or even moderately, effective.

DOE provided BBNP grants to 41 recipients operating programs in 32 states and territories. The jurisdictions recipients served varied widely. Some recipients served only a single city or county, while others served entire states. One recipient, the Southeast Energy Efficiency Alliance (SEEA), funded sub-recipient (subgrantee) programs in five states and the U.S. Virgin Islands. The sizes of grants awarded through BBNP also varied, ranging from $1.3 million to $40 million.

Figure 1-1 shows the states with BBNP activity and illustrates whether the grant recipient represented the state or a city or county within the state. Appendix A provides tables listing the grantee awards in descending order by size and alphabetically by grantee.

Figure 1-1: BBNP Grantees by Location



1.3. BBNP GOALS AND OBJECTIVES

DOE designed BBNP to meet the three principal ARRA goals (Table 1-1), as well as seven objectives developed by DOE staff to guide the BBNP initiative (Table 1-2). Below, we identify which of the three types of evaluation (impact, process, or market effects) provide findings relevant to our assessment of goal and objective attainment. This study addresses the goals and objectives flagged in the tables as relating to the market effects evaluation. For an investigation of the other goals and objectives noted in the tables, see the companion reports *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2), and *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4).

Table 1-1: ARRA Goals

GOALS	EVALUATION TYPE		
	Impact	Process	Market Effects
Create new jobs and save existing ones	✓	✓	✓
Spur economic activity and invest in long-term growth	✓	✓	✓
Provide accountability and transparency in spending BBNP funds	✓	✓	

Table 1-2: BBNP Objectives

OBJECTIVES	EVALUATION TYPE		
	Impact	Process	Market Effects
Develop sustainable energy efficiency upgrade programs		✓	✓
Upgrade more than 100,000 residential and commercial buildings to be more energy efficient	✓		
Save consumers $65 million annually on their energy bills	✓		
Achieve 15% to 30% estimated energy savings from residential energy efficiency upgrades	✓		
Reduce the cost of energy efficiency program delivery by 20% or more		✓	
Create or retain 10,000 to 30,000 jobs	✓		
Leverage $1 to $3 billion in additional resources	✓		

1.4. DESCRIPTION OF CURRENT ENERGY EFFICIENCY UPGRADE MARKET

The energy efficiency upgrade market (Figure 1-2) includes a number of market actors, programs, policies, and factors. Energy efficiency serves as a core driver for some actors and factors – such as energy efficiency program administrators, energy efficiency loan programs, and home performance contractors – as well branding and marketing, such as Home Performance with ENERGY STAR® (HPwES). BBNP program activities work primarily through these market actors to affect the market for energy efficiency upgrades.

Energy efficiency does not serve as a core driver for many other actors, such as lenders, building owners, large numbers of contractors, and large segments of the materials and equipment market. BBNP program activities can influence these other actors to raise the importance of energy efficiency. For example, marketing and outreach can raise building owner awareness of the value and benefits of energy efficiency upgrades, thereby increasing demand.

The market effects study focused on several core elements of the market, including contractors, equipment distributors, energy efficiency program administrators, participant homeowners, and financing partners.

The home improvement and repair market, which includes the energy efficiency upgrade market, is a substantial portion of the U.S. economy, affecting millions of housing units and representing hundreds of billions of dollars in economic activity annually.

The Joint Center for Housing Studies (JCHS, 2011a, 2011b) of Harvard University, which regularly examines the home improvement and repair market, published reports in 2011 and 2013 that focused on the period from 2007 to 2012. JCHS found even during the Great Recession, the home improvement and repair market represented 2.8% of gross domestic product (GDP). During the 2007 to 2012 time period, spending on the home improvement and repair market ranged from a peak of $326 billion in expenditures in 2007 to a low of $275 billion in 2011. The JCHS studies found spending on building envelope replacement parts (siding, windows, and doors), as well as spending on systems upgrades (HVAC systems), grew by nearly 3% from 2007 to 2011, largely due to the demand for energy efficiency upgrades. Further, in 2011, the JCHS found nearly 25% of households that undertook home improvements indicated improving energy efficiency was a goal of the project (this is equal to over 5 million households).

The American Housing Survey (AHS) of the U.S. Census Bureau also collects data on the number of households that undertake an energy efficiency project of some kind. Echoing the findings of the JCHS studies, the 2011 AHS found 10,355,000 housing units in the U.S. – or 9% of occupied housing units – undertook an energy efficiency project of some kind in 2010 and 2011.[1]

Finally, according to the McGraw-Hill Construction data, since 2005, the green share of new single-family residential construction has grown from 2% of the market in 2005 to 23% in 2013, while the percentage of remodelers who reported more than 60% of their projects included green building activity increased from 8% of remodelers in 2011 to 16% in 2013 (McGraw-Hill Construction, 2014).

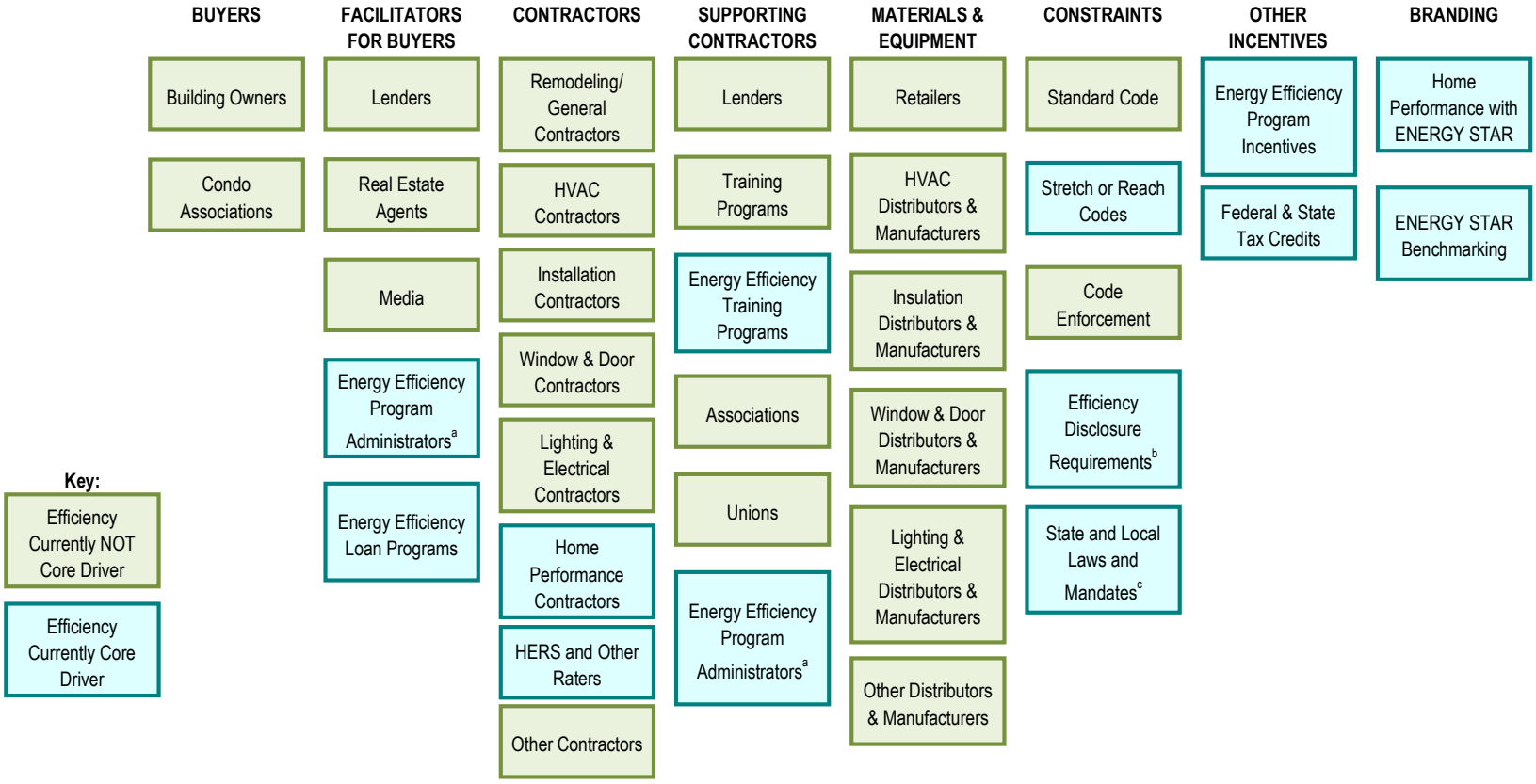
1.5. MARKET EFFECT OBJECTIVES AND INDICATORS

One purpose of BBNP grants was to fund programs that transform energy markets. Key elements of BBNP activities in the market include training and workforce development, financing and other incentives, and marketing and outreach. BBNP activities may result in several key outcomes in the energy efficiency upgrade market that are examined here, largely through self-reports from market actors:

- Increased marketing of energy efficiency in general, and whole house, whole building efficiency upgrades specifically
- Increased demand for whole house, whole building efficiency upgrades
- Increased numbers of highly trained contractors who take a whole home approach to upgrades
- Increased adoption of energy efficient building practices by contractors
- Increased availability and sales of high efficiency equipment, products, and services
- Increase in both the range of measures and the resulting building savings

[1] The American Housing Survey asks about energy efficiency projects completed over the past two years.

Figure 1-2: Energy Efficiency Upgrade Market Model



[a] Examples include utilities and public benefit corporations or trusts, such as the New York State Energy Research and Development Authority (NYSERDA) or Efficiency Maine.

[b] Example: Austin's Energy Conservation Audit and Disclosure (ECAD) ordinance, Austin City Code, Chapter 6-7, which requires Austin homes and buildings 10 years old or older that receive electricity from Austin Energy to have an energy audit and disclose the information to buyers before they are sold.

[c] Example: Connecticut's Public Act 11-80, An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future, which requires that by 2030, 80% of residences in Connecticut be weatherized.

These outcomes contribute increased energy efficiency, reduced energy use and greenhouse gas emissions, and a self-sustaining upgrade industry. Figure 1-3 links these expected outcomes to BBNP elements.

The reader is cautioned that sustained market effects highly unlikely to be attained for such an innovative practice (whole house or whole building upgrades) in such a short time frame (grants lasting three years in duration).[2] Nor is it likely an evaluation such as this, conducted coincidently with the program closeout, can determine sustained changes. Thus, we measured early or leading indicators of possible changes in the market that suggest BBNP will stimulate an eventual market transformation. Subsequent evaluations will need to assess whether market effects occurred.

Also we sought indications that BBNP's interventions will continue after its funding ends. One way the work might continue would be for local utilities to adopt the program efforts after BBNP funding ends. Such an outcome would constitute a change in the market from DOE's perspective. In other words, prior to BBNP, most ratepayer-funded programs did not support whole house or whole building upgrades; subsequent to BBNP, some ratepayer-funded programs will support these upgrades.[3] We note, however, from the perspective of the efficiency evaluation community, this outcome does not constitute market transformation, interpreted as a change in the market where efficiency occurs in the absence of subsidies. Similarly, the work of the intervention continues if lenders continue to provide financing options with or without credit enhancements; market transformation occurs when lending continues without credit enhancements.

Finally, we conducted in-depth interviews (IDIs) with contractors to understand the mechanisms of BBNP market effects, contractor business models, and any potential negative effects resulting from BBNP processes or requirements.

Thus, we looked for early signs of one or more of the following activities: (1) the program continues without DOE funding (possibly under a new name or new program administrator); (2) lenders continue to provide financing (with or without credit enhancements); and (3) contractors continue to conduct whole house or whole building upgrades. We lack information to assess whether customers continue to request whole house or whole building upgrades.

---

2 Members of our evaluation advisory committee consider that the earliest programs might expect to see market effects is five to six years after launch. We note that while the BBNP grant period is three years, most grantee programs did not launch until six months or more after DOE awarded the grants.

3 See *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4, Section 9.2) for more information.

Figure 1-3: Expected Outcomes and Links to BBNP Elements

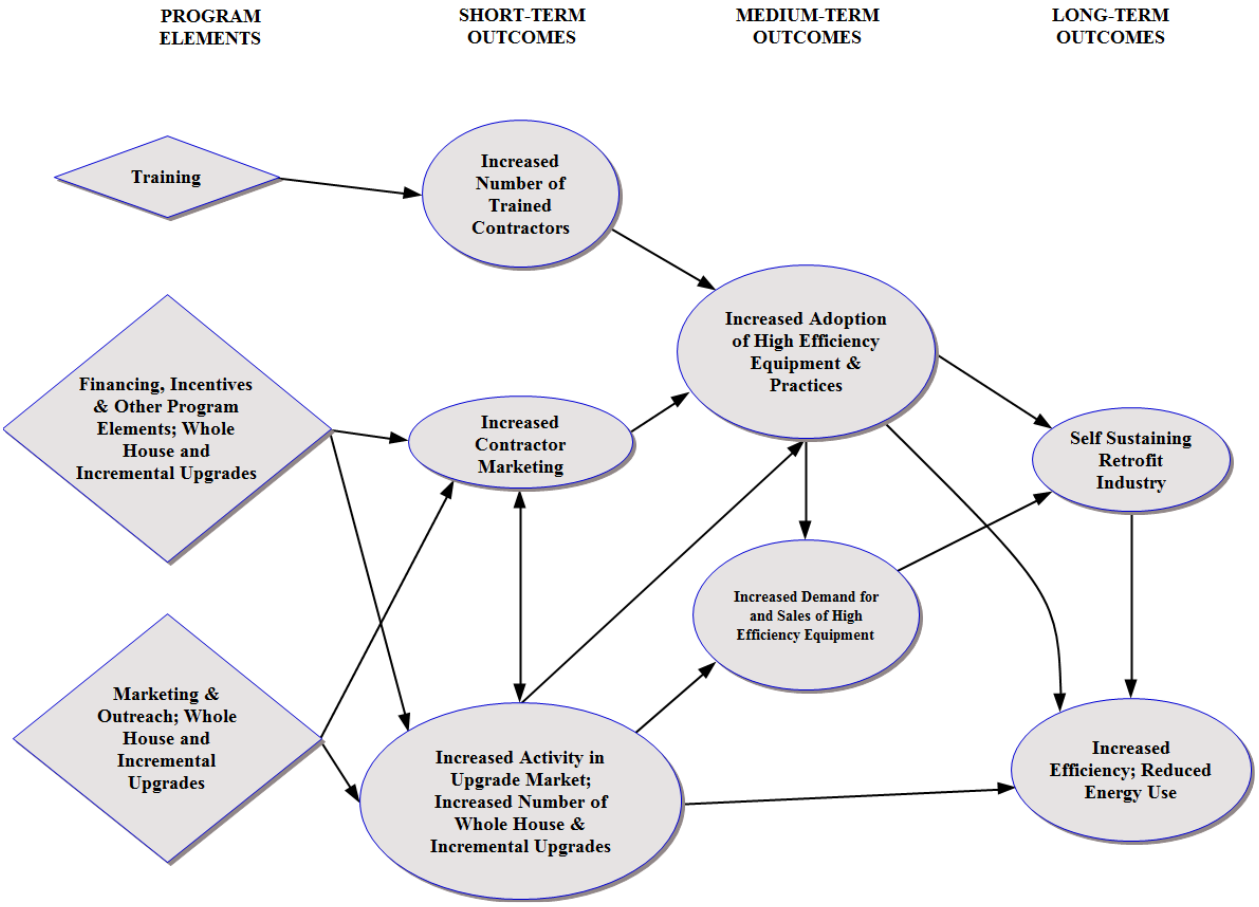


Table 1-3 provides an overview of the individual indicators of each expected outcome and early indicators of market effects of BBNP and the data source for each indicator examined. For most of the indicators, such as increased availability of trained contractors or adoption of energy efficient building practices, we first attempted to determine whether a given outcome (early indicator of a market change) has occurred, then examined whether the data source (that is, contractors, distributors, partnering financial institutions) linked the change to BBNP. In other words, we examined the links to the program to determine whether the indicators associated with those links point to program influence on the early indicator of market change or a market effect. For each of the indicators we attempted to isolate the impact of BBNP from other efficiency programs such as DOE's SEP or DOE's EECBG Program by asking respondents to rate the influence or importance of BBNP alone on the given indicator of interest.

The key data sources included surveys with participating contractors, nonparticipating contractors, and distributors, as well as interviews with partnering financial institutions and surveys of participant homeowners, as described in Section 2. Finally, we gathered additional data estimating the number of trained contractors in grantee regions through organizations such as Efficiency First, Building Performance Institute (BPI), North American Technician Excellence (NATE), and Home Energy Pros (but not necessarily trained by BBNP).

Table 1-3: Expected Outcomes and Indicators of BBNP Market Effects

OUTCOME	INDICATOR	SOURCE
Increased activity in energy efficiency upgrade market (see section 3.1)	Contractors report BBNP had a positive influence on their business and the marketplace	Contractor survey
	Distributors report BBNP had a positive influence on their business and the marketplace	Distributor survey
	Contractors report BBNP will have a positive influence on their business and the marketplace over the next two years	Contractor survey
	Distributors report BBNP will have a positive influence on their business and the marketplace over the next two years	Distributor survey
	Contractors report a net increase in the number of energy efficiency upgrades influenced by BBNP	Contractor survey
Increased marketing of energy efficiency by contractors (see section 3.2)	Contractors report increasing the amount they market energy efficiency; contractors report BBNP influenced the increase in their marketing	Contractor survey
End user awareness of local BBNP program (see section 3.3)	Nonparticipants aware of local BBNP program	Nonparticipant survey
	Sources of participant awareness of BBNP program	Participant survey
Increased energy efficient building practices and equipment installation and sales (see section 3.4)	Contractors report increased energy efficient building practices and equipment installation; contractors report BBNP influenced the increase	Contractor survey
	Distributors report increasing their sales of high efficiency equipment; distributors report BBNP influenced the increase	Distributor survey
	Contractors report adopting a whole home retrofit approach to upgrades in nonparticipating homes	Contractor survey
Supply chain business practices have increased focus on energy efficiency (see section 3.5)	Contractors change their business practices to increase their focus on energy efficiency	Contractor survey
	Distributors change their business practices to increase their focus on energy efficiency	Distributor survey
Increased availability of trained contractors (see section 3.6)	Contractors report an increase in the number of trained contractors; contractors report BBNP influenced the increase in trained contractors t	Contractor survey
	Increased numbers of trained contractors in BBNP grantee regions	Data from Efficiency First, Home Energy Pros, BPI, NATE
	Grantees report trained and certified contractors	BBNP program data

Continued…

OUTCOME	INDICATOR	SOURCE
Increased availability of financing for energy efficiency upgrades (see section 3.8)	Financial partners report changes in type and amount of loans for energy efficiency upgrades; financial partners report BBNP influenced the change	Financial institutions interview
	Participants report that improved access to financing was an important factor in completing the upgrade	Participant survey
Persistence (see section 3.9)	Contractors report continuing to offer upgrades	Contractor interview
	Programs or program features continue	Program administrator interview and Technical Reports
	Financing for energy efficiency upgrades continues	Financial institutions interview

2. METHODOLOGY

To perform its analysis, we fielded phone surveys with energy upgrade contractors and equipment distributors,[4] conducted in-depth interviews with contractors, performed a secondary data analysis of changes in contractor association memberships and certifications issued by credentialing organizations, conducted intercept interviews with participant and nonparticipant homeowners, and performed in-depth interviews with financial institutions. Table 2-1 summarizes our data collection methods

Table 2-1: Summary of Data Collection Methods

POPULATION	METHOD	COUNTS
Participating contractors	Computer-Assisted Telephone Interviewing (CATI) Survey	22 grantees (25 grantee programs); 147 respondents
Nonparticipating Contractors	CATI Survey	22 grantees (25 grantee programs); 446 respondents
Distributors	CATI Survey	22 grantees (25 grantee programs); 291 respondents
Participating contractors	In-depth Interview (phone)	10 interviewees
Participant homeowners	Web Survey	24 grantees; 2,399 respondents
Nonparticipant homeowners	Web-Intercept Survey	41 grantees, 2,429 respondents
Financial institutions	In-depth Interview (phone)	20 financial partners
Grantees	In-depth Interview (in-person and phone)	40 grantees 8 subgrantees
Program-level	Document and database review	NA
Contractor association memberships and certifications	Database reviews	Five contractor associations and certification organizations

As the final step, we estimated the general scale of energy savings associated with the early indicators of BBNP market effects. To accomplish this, we requested contractors to estimate the net number of energy efficiency upgrades influenced by BBNP. The estimate included the net impacts (including both free-ridership and spillover) of BBNP for participating contractors and an estimate of nonparticipant spillover for nonparticipating contractors. In addition, we asked contractors to estimate the average energy savings of upgrades completed with the program and those upgrades completed outside of the program.

[4] Equipment distributors are an important part of the energy efficiency upgrade market. They are primarily engaged in the wholesale distribution of equipment and supplies, such as heating and air conditioning equipment and supplies, building envelope materials, or hydronic plumbing equipment and supplies. They serve as an intermediary between manufacturers and contractors.

We used the results of the impact evaluation to convert the contractors' estimates of net energy efficiency upgrades into an estimate of the general scale of BTUs of energy savings. Because there was no onsite verification of savings from spillover projects, the interpreted savings estimate is a general indication of the magnitude of net savings rather than as a precise estimate of net savings.

We used the results of these efforts to estimate early indicators of local market effects in the grantee areas selected. By looking at early indications of market effects across grantees, we have been able to draw general conclusions about early indications of local effects generated by the federal program as a whole. However, it is important to note the designed market assessment activities did not examine early indications of national market effects. Instead, the evaluation focuses on early indications of local effects. Because each grantee market is different, we did not directly extrapolate its findings to the full population of grantees from a sub-sample. However, we were able to draw general conclusions on the presence or absence of market effects generated by BBNP grantee funding.

2.1. CONTRACTORS AND DISTRIBUTORS

We conducted surveys with contractors participating in BBNP, nonparticipating contractors, and energy efficiency equipment distributors in several strata of grantees: grantees with residential programs from each three success groupings (most, average, and least) and the top five commercial grantee programs (based on BTUs of savings).[5] Table 2-2 reports the number of grantees and survey respondents in each stratum. We estimated overall sampling errors at the 90% confidence level of 7.7% for participating contractors, 5.2% for nonparticipating contractors, and 5.7% for distributors (see Appendix B and Appendix C for more details).

Table 2-2: Contractor and Distributor Survey Sample by Stratum*

STRATA	NUMBER OF GRANTEES	PARTICIPATING CONTRACTORS	NONPARTICIPATING CONTRACTORS	DISTRIBUTORS
Most Successful (Residential)	6	43	128	78
Average (Residential)	13	75	211	139
Least Successful (Residential)	1	—	9	8
Top 5 Commercial	5	29	98	66
Total Grantee Programs	25[a]	147	446	291

* Twenty-two grantees were included in the sample. Three of the grantees were included for both their residential and commercial programs.

5 We defined 12 numerical success metrics corresponding to the program's multi-faceted objectives and estimated their values for each local residential BBNP program. We conducted latent profile analysis (LPA) to cluster programs into groups with similar performance on the 12 indicators. LPA revealed programs clustered into three groups; their average group values on the 12 metrics were consistent with an interpretation of a most successful group, an average group, and a least successful group for residential programs. For more detail, see *Drivers of Success in Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3).

Because of the small number of grantees and survey respondents in the low success stratum, we did not report results from the low success stratum individually.

2.1.1. APPROACH

Our sample focused on those grantees with community-based programs (that is, programs administered at the community, city, or county level) and excluded statewide programs (such as New York [NYSERDA] or Maine) as well as grantees with large numbers of subgrantees operating multiple unique programs (such as Los Angeles County and SEEA). We excluded statewide programs because of the difficulty in isolating indicators of market effects influenced by BBNP from the market effects of larger, previously existing programs, while data for individual subgrantees are not available and preclude the selection of subgrantees.

2.1.2. SURVEY SAMPLING

Table 2-3 presents the 22 grantees included in the contractor and distributor survey samples.[6]

Table 2-3: Grantees Included in the Final Market Effects Survey

- Austin, TX
- Chicago Metro Agency for Planning
- CSG, Bainbridge Island, WA
- Fayette County, PA
- Greensboro, NC
- Kansas City, MO
- Philadelphia, PA
- Portland, OR
- San Antonio, TX
- State of Michigan*
- Toledo-Lucas Co. Port Authority (OH)
- Boulder County, CO*
- Connecticut Innovations, Inc.
- Eagle County, CO
- Greater Cincinnati Energy Alliance
- Indianapolis, IN
- Omaha, NE
- Phoenix, AZ
- Rutland, VT
- Seattle, WA*
- State of New Hampshire
- Wisconsin Energy Efficiency Project

* Selected grantees for both their residential and commercial programs

We compiled lists of participating contractors obtained from data requests that we placed with the 22 grantees and from the grantees' websites. We conducted telephone surveys with participating contractors between September 2013 and February 2014.

For nonparticipating contractors and distributors, we identified a geographic region for each grantee from which we drew the sample (see Appendix B and Appendix C for more details). We used Standard Industrial Classification (SIC) codes to identify residential and commercial contractors and energy equipment distributors from a purchased list (InfoUSA).[7] We supplemented the purchased list with publicly availably membership lists from the BPI.[8] Appendix B

6 Twenty-two grantees and 25 grantee programs were included in the sample. Three of the grantees were included for both their residential and commercial programs.

7 InfoUSA, a product of the Infogroup, provides business and consumer data, including contact information, for marketing and research purposes. See: http://www.infousa.com/.

8 BPI is a standards development and credentialing organization for residential energy efficiency retrofit work (*http://www.bpi.org/*).

and Appendix C provides the SIC codes we used. Nonparticipating contractor and distributor survey respondents were randomly selected from these lists. We conducted telephone surveys with nonparticipating contractors between September 2013 and February 2014 and with distributors between October and November 2013.

2.1.3. CONTRACTOR IN-DEPTH INTERVIEWS

Following the contractor computer-assisted telephone interviewing (CATI) surveys, we conducted in-depth interviews with ten survey respondents who had identified either positive or negative market effects resulting from BBNP between March and April 2014. Of the ten interviewees, eight reported positive market effects to BBNP and two reported negative market effects. Our interview sample included 47 participating contractors who had identified positive or negative market effects from BBNP. Because the purpose of the interviews was to understand the mechanisms of the market effects, we prioritized survey respondents based on their responses to several survey questions pertaining to BBNP market effects. See *Appendix E: Contractor In-Depth Interviews* for more details.

The purpose of the interviews was to understand the mechanisms of the market effects – how the market effects happened and the role of the grantee program. In addition, the interviews helped us to understand contractor business models and any potential negative market effects from BBNP.

2.1.4. CHARACTERISTICS OF CONTRACTORS AND DISTRIBUTORS SURVEYED AND INTERVIEWED

The types of services and equipment offered by participating contractors reflects the structure of the BBNP program: about two-thirds of participating contractors provided building energy assessments, HVAC and water heating services and equipment, and building envelope improvements (Table 2-4). The nonparticipating sample also reflects the market of the (non-program) building remodeling industry: about two-thirds said their companies performed general contracting, remodeling services, and HVAC and water heating services and equipment. Consistent with BBNP program designs that seek to increase the delivery of energy assessments, participating contractors were about twice as likely as nonparticipating contractors (30%) to perform energy assessments.

Table 2-4: Types of Services and Equipment Offered by Contractor Company (Multiple Responses)

SERVICES/EQUIPMENT	PARTICIPATING CONTRACTORS (N=147)	NONPARTICIPATING CONTRACTORS (N=446)
HVAC and water heating	66%	64%
Home or building energy assessments	66%	30%
Building envelope	65%	52%
General contracting	57%	62%
Remodeling	55%	68%
Lighting	46%	43%
Renewable energy (Unprompted)	6%	4%
Other	12%	14%

Most contractors' companies were small (Table 2-5). While nonparticipating contractor companies had more full-time employees (FTEs) on average than participating contractor companies (32 vs. 24), the median number of FTEs among participating contractor companies was twice as large as the nonparticipating contractor companies (10 vs. 5).

Table 2-5: Contractor Company Size

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING CONTRACTORS (N=147)	NONPARTICIPATING CONTRACTORS (N=446)
1 to 5	31%	51%
6 to 10	23%	20%
11 to 20	20%	13%
21 to 50	16%	9%
51 to 100	4%	4%
101 or more	3%	3%
Don't know/ Refused	3%	1%
Mean	24	32
Median	10	5

Nonparticipating contractor companies appeared more likely to be small firms than did participating contractor companies, with nonparticipating contractors (51%) more commonly having five or fewer FTEs than participating contractors (31%). Our study did not obtain data that provides insight into this finding of size differences. However, a recent market effects evaluation of the California Investor-Owned Utility's (IOU's) whole house program, Energy Upgrade California, similarly found an association between contractor size and participation. That study found the most successful and effective partnering contractors were larger firms that invested resources in their firms in a number of ways. This included hiring and training staff to market the services, maintaining consistency and quality of delivery, and managing the substantial technical and administrative work associated with completing home assessments, obtaining rebates, and assuring compliance with program rules (DNV GL, 2014). We know of no other studies that have investigated size differences, yet the California study suggests that larger companies may have more resources to acquire the training, dedicate the time, and incur the expenses possibly involved in participating in incentive programs. Regardless of the possible advantages accruing to larger firms, nearly one-third of the surveyed BBNP contractors were small firms.

Table 2-6 shows the equipment that the distributors reported selling. A large majority of distributors reported selling HVAC and water heating systems (90%). Less than one-quarter reported selling refrigeration equipment (22%) and slightly more than one-fifth reported selling building envelope products such as insulation, windows, and air sealing (21%). Unprompted, 9% of distributors mentioned that they sold renewable energy equipment.

Table 2-6: Energy Related Products Sold by Distributors since 2010 (Multiple Responses)

ENERGY RELATED PRODUCT	DISTRIBUTORS (N=291)*
HVAC and water heating systems	90%
Refrigeration equipment	22%
Building envelope materials (insulation, windows, air sealing)	21%
Lighting equipment	9%
Renewable energy equipment (Unprompted)	9%
Other	3%

* Because distributors may sell more than one product type, percentage totals greater than 100%.

Most distributors' companies were relatively small, with more than one-third of companies (34%) having five or fewer FTEs (Table 2-7).

Table 2-7: Distributor Company Size by Stratum

NUMBER OF FULL-TIME EMPLOYEES	DISTRIBUTORS (N=291)
1 to 5	34%
6 to 10	20%
11 to 20	18%
21 to 50	13%
51 to 100	5%
101 or more	5%
Don't know/ Refused	4%
Mean*	62
Median	10

* The mean is noticeably higher than the median because of one distributor's response being more than three standard deviations away from the mean. Without this response, the mean number of FTEs per distributor is 26.

2.2. CONTRACTOR MEMBERSHIP AND TRAINING ORGANIZATIONS

In an effort to detect early indications of market effects pertaining to increases in the number of trained and certified contractors resulting from BBNP, we investigated changes in contractor association memberships and certifications issued by credentialing organizations during the period from 2011 to 2013, while the grantee programs were in

effect.[9] To the extent possible, we isolated changes in certifications and memberships in grantee locations in order to compare it with overall growth.

2.3. PARTICIPANT AND NONPARTICIPANT HOMEOWNERS

To inform the market effects analysis, we conducted surveys with BBNP participant and nonparticipant single-family homeowners that were eligible to participate in BBNP. Table 2-8 reports the number of grantees and survey respondents in each stratum. We collected data from the participants of 24 grantees and subgrantees. The number of grantees in the participant sample was limited by grantee willingness to take part in this research as well by our exclusion of grantees whose participants had already been contacted by the impact evaluation team. All participating homeowners for whom participating grantees had email addresses received email invitations to participate in the web survey. Results should be interpreted with caution, as the final sample may not be representative of all participants' experiences. We conducted nonparticipant surveys among all grantees with residential programs, targeting homeowners in the counties served by the programs that had conducted home improvement projects in the past two years or were planning in the upcoming year to conduct such a project.[10]

Table 2-8: Participant and Nonparticipant Survey Sample by Stratum

STRATA	PARTICIPANT HOMEOWNERS		NONPARTICIPANT HOMEOWNERS	
	Number of Grantees*	Number of Respondents	Number of Grantees	Number of Respondents
Most Successful	7	1358	11	631
Average	16	1038	26	1583
Least Successful	1	3	4	215
Total Grantee Programs	24	2399	41	2429

* The impact and process evaluation teams both collected data from program participants, and to reduce the risk of survey fatigue, only one team contacted participants from each grantee. The impact team contacted participants from a subset of grantees first, and we attempted to collect surveys from the remaining grantees' participants.

Ninety-six of participant respondents had participated in a single-family residential BBNP program, with 2% having participated in a multifamily program and 1% having participated in a commercial program (Table 2-9).

9 BBNP grantees started their programs as early as late 2010, while some started in 2011.

10 We used a mixed-mode web intercept and phone approach to recruit adult, single-family homeowners who were purchase decision-makers for energy related products/services and engaged in a home improvement project over the past two years or planned to do so in the coming year. For further methodological detail, see *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4), Appendices J and K.

Table 2-9: Proportion of Participant Respondents by Sector (n = 2399)*

RESPONSE	PERCENT
Residential	96%
Multifamily	2%
Commercial	1%
Refused	1%
Total	100%

* Respondents who did not provide a response were excluded from subsequent analysis.

2.4. ASSESSING GRANTEE SUCCESS

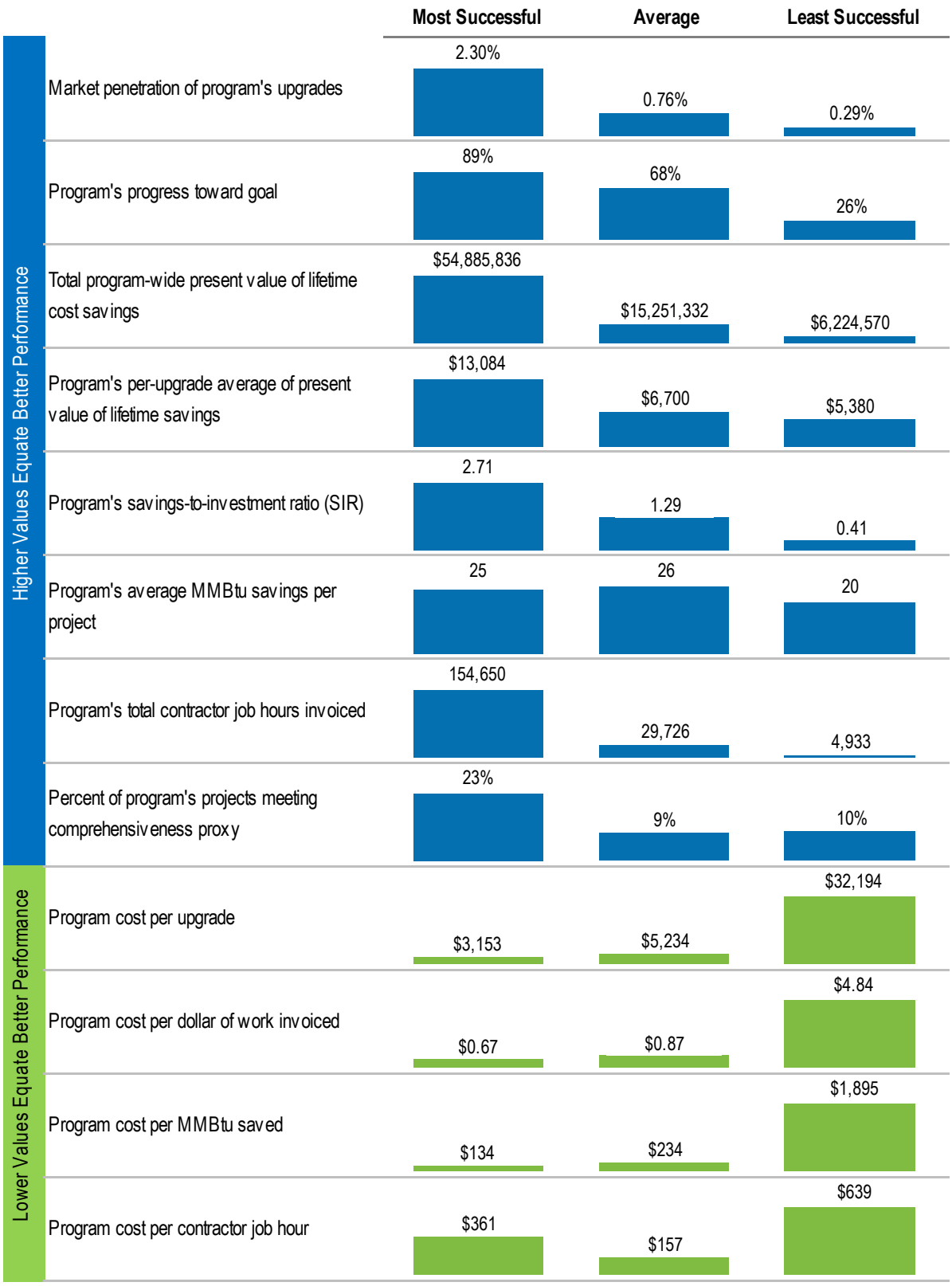
A primary goal of our evaluation was to identify factors that drove or inhibited success among grantees' and subgrantees' residential upgrade programs. As we report in *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3), using both data that grantees reported to DOE in partial fulfillment of their grant requirements and data collected by our team, we conducted a series of statistical analyses to develop a quantitative definition of grantee success that corresponds to BBNP's multiple program objectives and to identify program features and characteristics that predict success.

Due to the greater availability of data for residential programs compared with multifamily and commercial programs, the Volume 3 success analysis focused exclusively on residential programs. Further, if a grant recipient had subgrantees that ran separate and distinct programs in mutually exclusive regions, we collected and analyzed data from each individual subgrantee to capture the full diversity of program models, outcomes, and market characteristics. A total of 54 grantees and subgrantees with residential programs were included in these analyses.

First, we defined a broad range of potential measurements of program success based on theory and industry knowledge. From this list, we identified 12 quantitative performance metrics for which there were adequate data. We then conducted latent profile analysis (LPA) to cluster programs into groups that exhibited similar performance on the 12 performance metrics. LPA is an exploratory analytical technique, and our analyses sought to identify groups, or clusters, of grantees that differed meaningfully in their performance on 12 metrics of program success.

The LPA yielded three groups, and their average group values on the 12 performance metrics were consistent with an interpretation of a most successful cluster (n = 12), an average cluster (n = 35), and a least successful cluster (n = 7). The most successful cluster generally performed best on each of the metrics, the least successful cluster generally performed worst on the metrics, and the average cluster demonstrated mid-range values on the performance metrics. Thus, the LPA revealed clusters of grantees that were more or less successful relative to one another. Figure 2-1, a copy of Figure 3-1 in Volume 3, demonstrates these tiered levels of grantee success by displaying the average cluster means for each of the 12 performance metrics.

Figure 2-1: Performance metric Cluster Means (n = 54)



Next, we identified grantee and program characteristics that may predict program success and compiled the corresponding data. This dataset also included exogenous variables that we deemed as critical control variables, such as weather metrics, average energy price, median income, and other variables that may affect energy use, savings, and participation rates. We used bivariate logistic regression models to explore whether any of the proposed predictor variables predicted membership in either the least successful cluster or the most successful cluster, respectively. We report the bivariate findings in companion volume *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4). Next, we ran multivariate regression models for each dependent variable (membership in the least successful cluster versus other, and membership in the most successful cluster versus other) using the independent variables identified as meaningful predictors in the aforementioned bivariate models. We report the multivariate findings in Volume 3. Findings relevant to the market effects are discussed throughout this volume. For additional information on the methods used to identify the grantee success clusters, see Volume 3.

2.5. OTHER DATA SOURCES

We obtained our information on financing from in-depth interviews with 20 financial partners of grantees. The interviewed partners included credit unions, banks, community development financial institutions (CDFIs), organizations focused specifically on energy efficiency finance, and the government organizations associated with the grantees that administered internally managed financing programs. We provide details on findings from financial partner interviews, demand for financial products, loan performance, and benefits of offering loans for energy efficiency upgrades, in the companion report *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4).

We obtained information from grantees from in-depth interviews, reviews of their DOE-required Technical Reports, and review of DOE's BBNP program tracking data. We provide details on process findings from grantee data in the companion report *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4).

2.6. LIMITATIONS

Because of the small number of grantees and survey respondents in the low success stratum, we did not report results from this stratum individually. We initially selected grantees to be included in this study based on program data through the fourth quarter of 2012 and on the success metric developed in the preliminary evaluation.[11] However, we developed a revised success metric after the grantees were selected and surveys were completed. The revised success rankings for 11 of the 15 selected grantees were different from the preliminary success metric and only included one grantee categorized in the low success stratum. Therefore, the findings of this study may not reflect the results from the low success grantees.

[11] The preliminary evaluation included a composite success metric based on four metrics: (1) progress rate (the number of retrofits completed relative to the number of retrofits targeted); (2) conversion rate (the number of retrofits completed as compared to the number of energy audits conducted); (3) spending-to-retrofits ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the number of retrofits completed); (4) spending-to-savings ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the amount of energy saved [MMBtu]) (Research into Action and NMR, 2012a)

In addition, we completed fewer than expected surveys with participating contractors. The key factor was an error in the CATI programming that resulted in the CATI firm reading the incorrect grantee name to 147 participating contractors and 14 nonparticipating contractors who completed the survey. As a result, these respondents indicated that they were either unaware of or had not participated in the respective grantee program. The CATI firm later attempted to re-interview these respondents to ask about the correct grantee program.[12] Ultimately, we had to exclude survey responses from 53 participating contractors who were asked about the incorrect grantee.[13]

Because most of the grantees operated in an environment with other energy efficiency programs, such as SEP, EECBG and utility programs, there is potential overlapping influence of these other programs on the observed market effects. We attempted to isolate the effects of BBNP by first asking respondent to indicate if a market change had occurred, and if the respondent indicated a market change, we asked them to rate the influence of the BBNP program alone on the given indicator of interest.

Finally, it is important to emphasize that the energy savings estimates should be interpreted as a general indication of the magnitude of net savings rather than as a precise estimate of net savings. Because there was no onsite verification of savings from spillover upgrades, the reader should interpret savings estimates with caution. Further, because our net estimate includes both free-ridership and spillover, we cannot estimate the exact portion of the net upgrades that were spillover upgrades

12 Contacts who completed the callback survey were offered an incentive of $25.

13 Our final sample size for participating contractors was 147 and for nonparticipating contractors it was 446.

3. INITIAL INDICATORS OF BBNP MARKET EFFECTS

This chapter presents the findings pertaining to the early indicators of market effects of BBNP. For most of the indicators, we first attempted to determine whether a given outcome (early indicator of a market change) has occurred, then examined whether the data source (that is, contractors, distributors, partnering financial institutions) linked the change to BBNP. In other words, we examined the links to the program to determine whether the indicators associated with those links point to the program's influence on the early indicator of a market change or of a market effect.

Our analysis focuses on examining the early indicators of market effects across all of the sampled grantees also while examining differences among the two residential strata (that is, most and average success strata) and the commercial strata. Overall, across all strata, we found evidence of multiple indicators from multiple data sources of early indications of market effects influenced by BBNP. There are relatively few statistically significant differences between the residential and commercial strata, and most of the differences suggest somewhat higher levels of market effects for the residential grantees for a very limited number of indicators. For example, larger percentages of contractors from the residential grantees reported expectations of increased business after the conclusion of BBNP, reported increasing their marketing during BBNP, and reported effects of BBNP training on the number and comprehensiveness of upgrades. The one exception was that contractors from the commercial strata estimated higher levels of net upgrades compared to the residential strata. Because there are few differences among the strata, we present most of the results for all of the grantees sampled and a limited number of results by strata. More detailed findings by strata are presented in Appendix A.

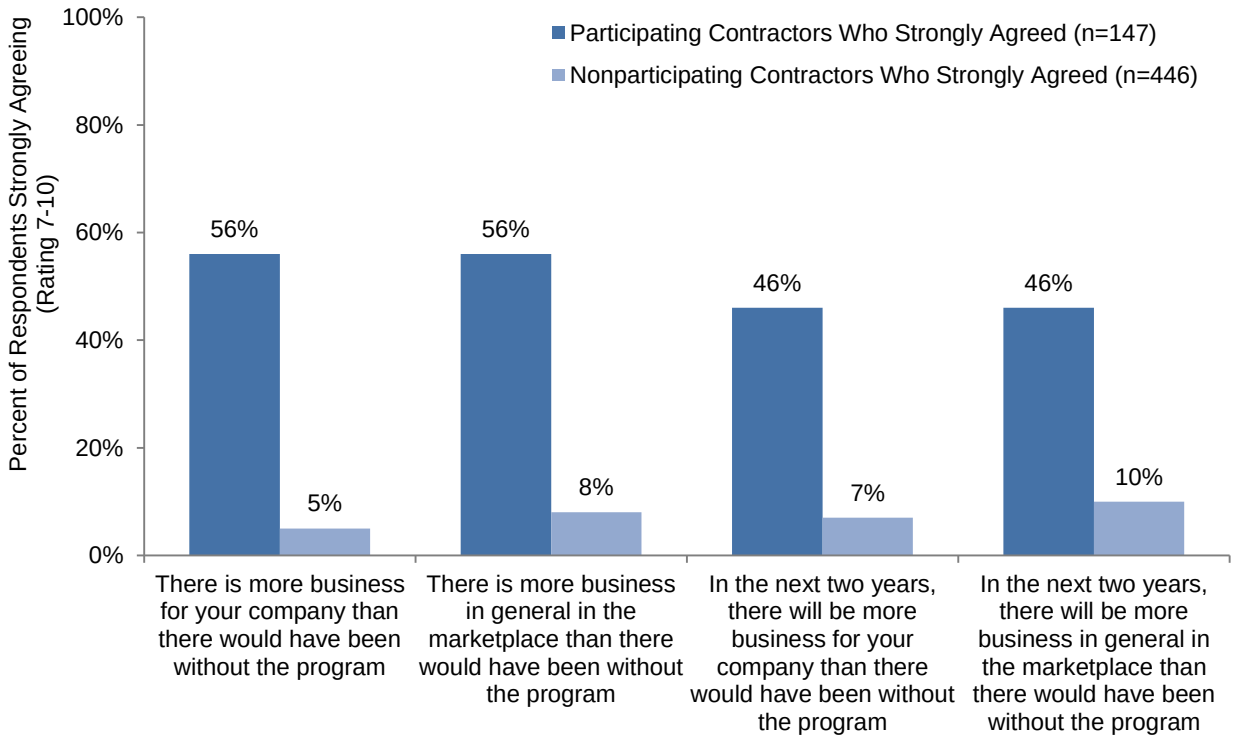
3.1. ENERGY EFFICIENCY UPGRADE MARKET ACTIVITY

One of the key expected market effects outcomes of BBNP is expanded retrofit activity by consumers and contractors. We assessed the impact of BBNP by asking contractors to rate the impact of BBNP on their business and the marketplace. In addition, we asked contractors to quantify the number of upgrades they would have completed in the absence of BBNP.

3.1.1. IMPACT OF BBNP ON CONTRACTOR BUSINESS AND THE MARKETPLACE

Figure 3-1 illustrates the percentages of respondents who strongly agreed (a rating of seven or higher) with a specific statement about the effects of BBNP on their business and the market. BBNP appears to have had a positive impact on participating contractors and the marketplace in general (according to participating contractors), and there is some evidence of spillover among nonparticipating contractors.

Figure 3-1: Contractor Assessment of the Effect of BBNP on the Market for Energy Efficiency*



* Contractors were asked to agree or disagree with the following four statements using an 11-point scale, where zero is "strongly disagree" and 10 is "strongly agree":

Analysis by Strata

Comparing responses across strata, we found somewhat higher percentages of contractors from the most and average success residential strata than from the top five commercial stratum that agreed there would be more business both for their companies and in the market in general in the next two years because of BBNP. We found a similar pattern by strata for the responses of nonparticipating contractors (see Appendix B for more details).

3.1.2. IMPACT OF BBNP ON CONTRACTOR UPGRADES

In addition to asking contractors to assess the impact of BBNP on their business and the marketplace, we asked contractors to quantify the number of upgrades that they would have completed in the absence of BBNP. We attempted to differentiate the impact of BBNP by first asking contractors about their awareness of and participation with other energy efficiency programs, such as utility-sponsored programs, the EECBG program, SEP, or Weatherization Assistance Program (WAP). Afterwards, we asked the contractors to isolate the influence of BBNP by quantifying the number of upgrades that they would have completed in the absence of BBNP.

Table 3-1 reports our estimates of the average number of net upgrades (net upgrades account for free-ridership and spillover), per grantee, that would have been completed in the absence of the 25 BBNP grantee programs sampled for this evaluation. Table 3-2 and Figure 3-2 report our estimates of the total net number of upgrades that would have been completed in the absence of the 25 sampled BBNP grantee programs. The most successful grantees have the largest average number of net upgrades, followed by the average grantees.

Overall, the respondents estimated 23,215 net upgrades influenced by BBNP, compared to 16,840 BBNP-supported upgrades (upgrades that participated in the BBNP program), with the 90% confidence interval around the estimated total ranging from 12,906 to 34,365 upgrades.[14] We estimate a net-to-gross (NTG) ratio of 1.4 (23,215 divided by 16,840), with the 90% confidence interval around the ratio ranging from a NTG of 1.34 to 1.42 (see Appendix B for details). This means that, for the sampled 25 BBNP grantees, we are relatively confident that contractors are estimating spillover into the upgrade markets served by the grantees.

We found noteworthy differences across the three strata.

- While the top five commercial stratum accounts for only 16% of the net number of upgrades and did not include any estimated nonparticipant spillover upgrades, it had a vastly higher rate of net impacts (NTG = 5.3) than the other two strata (1.4 or lower) due to high levels of spillover indicated by participating contractors.
- The most successful stratum had the lowest NTG ratio (1.0) and was the only stratum with a negative nonparticipant spillover value. It is important to note, for the most successful stratum, we reduced the participating contractors' total estimate of net upgrades by the negative spillover estimated by the nonparticipating contractors (-408 upgrades) and treated nonparticipant spillover as zero. From our contractor in-depth interviews, contractors who reported negative program effects noted they had lost upgrade jobs because of increased competition, due to either participating contractors or outside contractors drawn to the region by the grantee programs, not because there were fewer upgrade jobs in the region.
- The medium success stratum was the only stratum with positive nonparticipating contractor spillover, resulting in a NTG ratio of 1.4. The addition of nonparticipating contractor spillover led to 11% more net BBNP upgrades for this stratum than there would have been in the absence of nonparticipating contractor spillover.

[14] BBNP-supported upgrades are upgrades that participated in the BBNP. Net upgrades are the upgrades contractors reported they would have completed in the absence of the BBNP grantee programs.

Table 3-1: Per Grantee Average Number of Contractor Reported Net Upgrades Influenced by BBNP

STRATUM	NUMBER OF GRANTEES	PER GRANTEE AVERAGE NUMBER OF UPGRADES INFLUENCED BY BBNP			
		BBNP-Supported Upgrades	Participating Contractor Spillover*	Nonparticipating Contractor Spillover	Net BBNP Upgrades
Most Successful	6	1,239	42	—	1,281
Average	13	671	155	92	918
Top 5 Commercial	5	136	584	—	720
Total	25	674	223	31	929

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs. Totals include respondents from the low-success stratum. Because of the small number of grantees and survey respondents in the low success stratum, we did not report results from the low success stratum individually.

* For simplicity, this column is labeled contractor spillover. More precisely, it is the net increase over BBNP-supported upgrades reported by participating contractors after adjusting for both reported free-ridership and spillover.

Table 3-2 and Figure 3-2 report the total number of net upgrades associated with the six most successful grantees, 13 average grantees, five commercial grantees and 25 total BBNP grantee programs sampled for this evaluation. Table 3-3 provides the confidence interval for our net BBNP upgrades estimate and a NTG ratio calculated from the net and BBNP-supported upgrades. The NTG ratio of the residential grantees combined is 1.21 (see Appendix B for more details) while the commercial stratum NTG ratio has a very high value of 5.28. The commercial NTG estimate is based on a relatively small sample of five grantees with 29 participating contractors and 98 nonparticipating contractors. Further, the high NTG ratio is strongly influenced by the contractors from a single grantee; if respondents representing this grantee are excluded from the analysis, the NTG drops to 1.2.

Table 3-2: Participating and Nonparticipating Contractor Reported Net Upgrades Influenced by BBNP

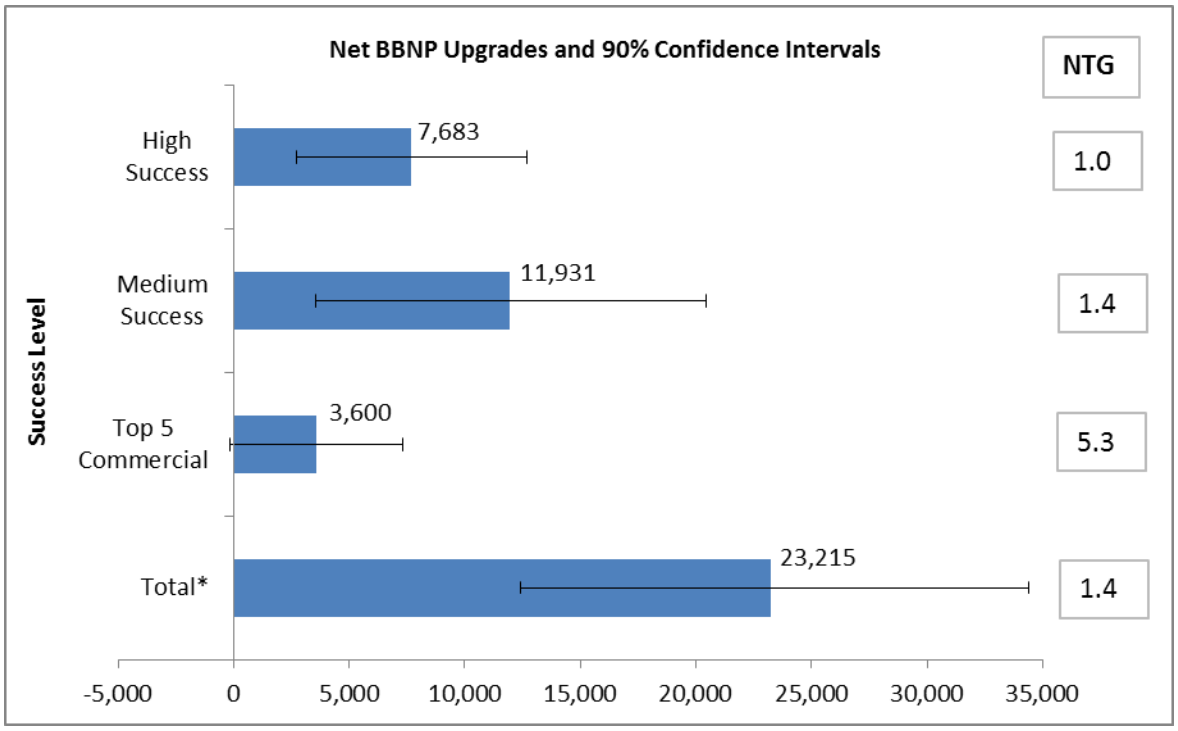
STRATUM	PER STRATUM SAMPLE TOTAL NUMBER OF UPGRADES INFLUENCED BY BBNP			
	BBNP-Supported Upgrades	Participating Contractor Spillover*	Nonparticipating Contractor Spillover	Net BBNP Upgrades
Most Successful	7,431	252	—	7,683
Average	8,727	2,014	1,191	11,931
Top 5 Commercial	682	2,918	—	3,600
Total	16,840	5,595	783**	23,215

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs. Totals include respondents from the low-success stratum. Because of the small number of grantees and survey respondents in the low success stratum, we did not report results from the low success stratum individually.

* For simplicity, this column is labeled contractor spillover. More precisely, it is the net increase over BBNP-supported upgrades reported by participating contractors after adjusting for both reported free-ridership and spillover.

** Total nonparticipant spillover takes into account the negative spillover estimated by nonparticipating contractors from the most successful grantees.

Figure 3-2: Estimate of Net Upgrades Influenced by BBNP



Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs.

Table 3-3: Net Upgrades Influenced by BBNP with Confidence Interval and NTG Estimate

STRATUM	PER STRATUM SAMPLE TOTAL NUMBER OF UPGRADES INFLUENCED BY BBNP			
	Net BBNP Upgrades	90 Percent Confidence Interval*		Overall NTG
		Low	High	
Most Successful	7,683	2,426	12,964	1.03
Average	11,931	3,556	20,444	1.37
Top 5 Commercial	3,600	—	7,342	5.28
Total	23,215	12,906	34,365	1.38

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs. Totals include respondents from the low-success stratum. Because of the small number of grantees and survey respondents in the low success stratum, we did not report results from the low success stratum individually.

* The 90% confidence intervals were based on the mean values and standard deviations of net BBNP upgrades for each stratum and for the total population (therefore, the confidence interval for the total is not equal to the sum of the strata)

There are a very limited number of evaluations of whole building upgrade programs that include assessments of market effects or spillover in their net assessment of program impacts to compare to these findings. However, several have found positive effects for whole building upgrade programs. A recent market effects evaluation of the California IOU's whole house program, Energy Upgrade California, found a positive effect on the whole house

upgrade market, with significantly higher percentages of homeowners who have undertaken major home improvements incorporating whole building upgrades in the California IOUs' territories compared to the study comparison areas (DNV GL, 2014). In addition, evaluations in Massachusetts and New York found similar NTG values of 1.12 for each program. An evaluation of the Massachusetts Home Energy Assessment program, using a combination of participant self-reports, discrete choice modeling and trade ally interviews, estimated an overall NTG ratio of 1.12 (Cadmus, 2011). Similarly, a 2006 evaluation of the New York HPwES program used a combination of homeowner and contractor surveys to estimate a NTG ratio of 1.12 (Quantec and Summit Blue, 2006).

3.1.3. NEGATIVE NET BBNP UPGRADES

Fifteen contractors, six of whom were participating contractors, reported during the CATI survey that they would have completed more upgrades from 2010 to 2013 if BBNP had not existed.[15] Overall, the contractors estimated that they would have completed 699 more upgrades if BBNP had not existed.

Our in-depth interviews examined why some contractors reported negative program effects. Some contractors (five of ten) reported that BBNP hurt their businesses because of the increased competition it generated in their territory. They described dynamics such as BBNP unevenly promoting certain contractors over others, competing contractors using subcontractors to get around BBNP rules, BBNP drawing contractors to come from other geographic areas, and nonparticipating contractors leveraging program opportunities. Two contractors commented on competing companies' use of subcontractors, which the contractors believed enabled competing companies to sidestep BBNP's employment rules, such as prevailing wages. These contractors believed that competing companies, therefore, were able to charge lower rates to their customers, while contractors who observed program rules, such as themselves, needed to charge higher prices to cover the costs involved in following program regulations.

3.1.4. EXTRAPOLATING NET BBNP UPGRADE SURVEY RESULTS

It is helpful now to recall our sampling methodology, which sampled 25 grantee programs and – for those sampled programs – surveyed samples of participating and nonparticipating contractors. In the previous section, we reported the results from our samples of contractors. In this section, we extrapolate the results from our samples of contractors to the population of contractors working in the territories of the 25 sampled grantees.

We extrapolated the net impacts from the contractor samples to the populations of participating and nonparticipating contractors in the 25-grantee programs by applying the NTG ratios reported in Table 3-3 to the number of grantee reported upgrades (Table 3-4). We used the low and high points of the confidence interval reported in Table 3-3 to estimate NTG ratios and to calculate low and high estimates of the number of net upgrades.

Table 3-4 reports our estimates of the average number of net upgrades, per grantee, influenced by the 25 BBNP grantee programs. On average, the most successful grantees have the largest number of net upgrades, followed by the Commercial grantees. Overall, we estimate 53,685 net upgrades associated with the 38,943 BBNP grantee-reported upgrades, with a low estimate of 29,847 upgrades and a high estimate of 79,470 upgrades (Table 3-5 and

[15] Twelve respondents were able to estimate the percentage increase in upgrades they would have conducted in absence of BBNP. The total number of net BBNP upgrades that we attributed to these respondents was -699, or -116 on average.

Figure 3-3). We estimate a NTG ratio of 1.38 (79,470 divided by 38,943), with the 90% confidence interval ranging from a NTG of 1.34 to 1.42. Again, we caution the reader in interpreting the very high commercial stratum NTG ratio.

Table 3-4: Extrapolated Estimate of Per Grantee Average Number of Net Upgrades Associated with BBNP

STRATUM	NUMBER OF GRANTEES	PER GRANTEE AVERAGE NUMBER OF UPGRADES ASSOCIATED WITH BBNP		
		Grantee Reported Upgrades*	NTG	Net BBNP Upgrades
Most Successful	6	2,648	1.03	2,737
Average	13	1,493	1.37	2,041
Top 5 Commercial	5	496	5.28	2,620
Total**	25	1,558	1.38	2,147

* Grantee upgrades through Third Quarter 2013 reported to DOE

** The Total is reporting the overall average for all 25 grantee programs while the individual rows are reporting the average for each stratum

Table 3-5 and Figure 3-3 report the extrapolated number of net upgrades associated with the six most successful grantees, 13 average grantees, five commercial grantees and 25 total BBNP grantee programs sampled for this evaluation.

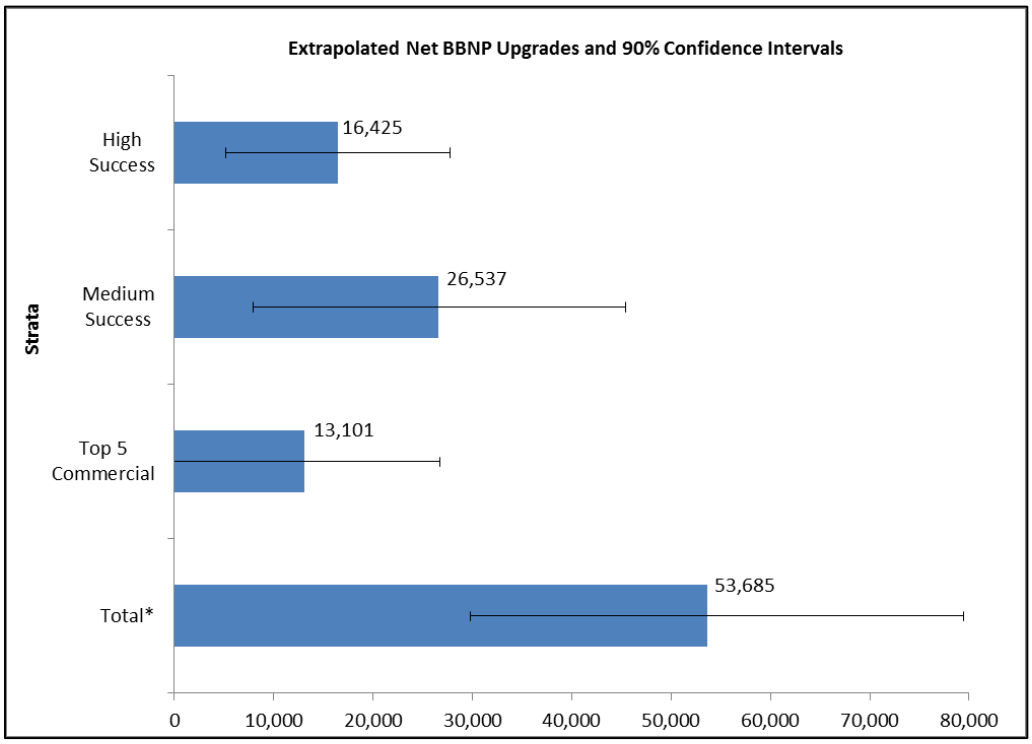
Table 3-5: Extrapolated Estimate of Net Upgrades Associated with BBNP

STRATUM	GRANTEE REPORTED UPGRADES*	NET BBNP UPGRADES	90 PERCENT CONFIDENCE INTERVAL**	
			Low	High
Most Successful	15,886	16,425	5,187	27,713
Average	19,411	26,537	7,909	45,474
Top 5 Commercial	2,482	13,101	—	26,719
Total	38,943	53,685	29,847	79,470

* Grantee upgrades through Third Quarter 2013 reported to DOE

** The low and high estimates are based on the NTG ratio calculated with the low and high low points of the 90% confidence interval reported in Table 3-3 and Table 3-4.

Figure 3-3: Extrapolated Estimate of Net Upgrades Associated with BBNP



Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs

While the number of net upgrades is large, it is important to keep in mind that the estimate is for a four-year period, from 2010 through 2013. Further, according to 2010 U.S. Census data, there are 11,447,605 housing units located in the grantee regions. According to the AHS of the U.S. Census Bureau, 9% of occupied housing units in the United States undertook an energy efficiency project of some kind in 2010 or 2011. Assuming the same rate of energy efficiency upgrades in 2012 and 2013, there were approximately 2 million residential energy efficiency upgrades in the grantee regions from 2010 through 2013. The net residential BBNP upgrades are equal to approximately 2% of the estimated 2 million energy efficiency upgrades.[16]

Net BBNP Upgrade Estimates and Participation in Other Upgrade Programs

We compared the average number of net upgrades for participating and nonparticipating contractors also who participated in other programs, such as utility-sponsored programs. Respondents that participated in other energy efficiency programs reported higher numbers of net BBNP upgrades than those who did not participate in other programs (Table 3-6; see Appendix B for more details). For example, BBNP participating contractors who participated in EECBG, SEP, or WAP had an average of 250 net BBNP upgrades, while those who had not participated in those programs had an average of 82 net BBNP upgrades (a statistically significant difference).

16 Net residential upgrades were estimated by subtracting the top five commercial stratum's net upgrades from the total net upgrades.

Table 3-6: Contractors' Mean Number of Net BBNP Upgrades by Participation in Other Programs

OTHER PROGRAM	PARTICIPATING				NONPARTICIPATING			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Mean	n	Mean	n	Mean	n	Mean
EECBG, SEP or WAP	62	250*	85	82	63	20*	383	-1
Efficiency programs sponsored by local utilities or other groups	96	200*	51	64	139	6	307	—
Benchmarking or labeling programs	12	266	17	24	22	—	76	—

* Denotes a statistically significant difference between contractors participating and contractors not participating in a given program at the 90% confidence level

Similarly, participating and nonparticipating contractors who participated in other programs reported completing more total upgrades than those who did not participate in other programs (Table 3-7). For example, participating contractors who participated in a utility or other local energy efficiency incentive program had an average number of total upgrades of 1,005, while BBNP participating contractors who had not done so had an average of 454 upgrades – a statistically significant difference. This difference also is statistically significant among BBNP nonparticipating contractors who had participated in a utility or other local energy efficiency incentive program (301) and nonparticipating contractors who had not participated in one of those programs (117).

Table 3-7: Contractors' Mean Number of Total Upgrades by Participation in Other Programs

OTHER PROGRAM	PARTICIPATING				NONPARTICIPATING			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Mean	n	Mean	n	Mean	n	Mean
EECBG, SEP or WAP	59	1,213*	80	521	59	350	267	146
Efficiency programs sponsored by local utilities or other groups	91	1,005*	48	454	117	301*	209	117
Benchmarking or labeling programs	10	977	16	342	21	216*	56	39

* Statistically significant difference between contractors participating and contractors not participating in a given program at the 90% confidence level

While we made every effort to isolate the effects of BBNP on net upgrades and on total activity in the upgrade market in the minds of our respondents, these findings strongly suggest participation in other programs may have a complementary and positive effect on net upgrades and on total activity in the upgrade market. There are several possible explanations for this: the programs may be reaching the larger contractors in their regions, or active

contractors may tend to participate in multiple programs, or it could be that the business models of contractors that participate in incentive programs are different, or it may be the case that contractors who engage in incentive programs yield more or larger projects (by attracting and enticing customers).

Estimated Energy Savings from Net BBNP Upgrades

We estimated the general scale of energy savings associated with the net upgrades of BBNP grantee programs included in this evaluation. In order to estimate energy savings, we used the contractors' estimates of the percentage of savings of upgrades completed with and without BBNP assistance, and savings estimates from the companion report *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2).

From the impacts analysis, we estimated average savings of 28.0 MMBtu per BBNP residential upgrade and 419.2 MMBtu per BBNP commercial upgrade. Per upgrade savings for non-BBNP upgrades[17] ranged from 16.1 MMBtu to 24.9 MMBtu for residential upgrades and 290 MMBtu to 473.2 MMBtu for commercial upgrades (see Appendix B for more details).[18]

In order to estimate total energy savings, we applied the average BBNP upgrade savings to the number of grantee reported upgrades and applied the non-BBNP savings estimates to the remaining net upgrades (Table 3-8 and Table 3-9). **It is important to emphasize that these savings associated with estimated changes in the market should be interpreted as a general indication of the order of magnitude of net savings rather than as a precise estimate of net savings, particularly the savings from commercial upgrades.** For example, we assumed 16.1 MMBtu for each of the 539 spillover upgrades in the most successful stratum. Overall, we estimated 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades.

We estimate lifetime savings of 21.6 million MMBtu of savings from the net residential upgrades and 69.1 million MMBtu of savings from the net commercial upgrades. It is important to note that the lifetime savings are less precise than the annual estimate.[19]

---

17 Non-BBNP upgrades are upgrades completed without the support of BBNP

18 For non-BBNP upgrades, average per-upgrade savings varied by strata and by participating and non-participating contractors. See Appendix B for more details.

19 To estimate lifetime savings we applied the lifetime savings factors estimated in *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2). The team calculated the average ratio of verified lifetime to annual savings for each sample project, by sector, and applied it across the population of the residential and commercial sectors to estimate lifetime savings. This methodology is expected to be reliable under the assumption that the installed measure mix is roughly consistent across grantees. Volume 2 Appendix B (Section B.8.3) provides further details.

Table 3-8: Estimated Energy Savings, Net Residential BBNP Upgrades

SECTOR	GRANTEE-REPORTED UPGRADES (Q3, 2013)	NET BBNP UPGRADES	ENERGY SAVINGS, GRANTEE REPORTED UPGRADES (MILLION MMBtu)	ENERGY SAVINGS, SPILLOVER UPGRADES (MILLION MMBtu)	TOTAL ENERGY SAVINGS, NET BBNP UPGRADES (MILLION MMBtu)*
Most Successful (Residential)	15,886	16,425	0.4	< 0.1	0.5
Average (Residential)	19,411	26,537	0.5	0.2	0.7
Total	35,297	42,962	1.0	0.2	1.2

* Total energy savings may not equal the sum of the reported individual savings columns due to rounding.

Table 3-9: Estimated Energy Savings, Net Commercial BBNP Upgrades

SECTOR	GRANTEE-REPORTED UPGRADES (Q3, 2013)	NET BBNP UPGRADES	ENERGY SAVINGS, GRANTEE REPORTED UPGRADES (MILLION MMBtu)	ENERGY SAVINGS, SPILLOVER UPGRADES (MILLION MMBtu)	TOTAL ENERGY SAVINGS, NET BBNP UPGRADES (MILLION MMBtu)*
Top 5 Commercial	2,482	13,101	1.0	5.0	6.1

* Total energy savings may not equal the sum of the reported individual savings columns due to rounding.

It is important to emphasize that these savings estimates should be interpreted as a general indication of the magnitude of net savings rather than as a precise estimate of net savings, particularly for the commercial stratum. Because there was no onsite verification of the contractor-reported spillover upgrades, the types of measures installed, or savings realized from the upgrades, the reader should interpret savings estimates with caution. Further, because our net estimate includes both free-ridership and spillover, we cannot estimate the exact portion of the net upgrades that were spillover upgrades. If the estimates of net upgrades include substantial levels of free-ridership and spillover, the savings would be lower for residential upgrades (because contractors estimated that their spillover upgrades had less savings than their BBNP upgrades) while the savings would be higher for commercial upgrades (because contractors estimated commercial spillover upgrades to have *more* savings than BBNP upgrades).

3.1.5. END USER REPORTED SPILLOVER

To determine end user spillover, we asked BBNP participant homeowners and nonparticipant homeowners living in a BBNP program's target area: 1) whether they had installed any un-incented efficiency measures that were not incented by their local BBNP program since participating in the program or in the past two years, respectively, and 2) the influence the local BBNP program(s) had on their decision to install the measure. Over one-third (36%) of

participants and 13% of nonparticipants had installed an un-incented efficiency measure and reported that the program had at least some influence on their decision to install the measure (a rating of 3 or above on a scale of 0 to 10).

Table 3-10 displays the un-incented measures that participants and nonparticipants installed due, in part, to the influence of a BBNP program. Lighting measures were the most common un-incented measures installed among both participants and nonparticipants. Further, 15% of participants conducted un-incented appliance installations that they reported were influenced by BBNP.

Table 3-10: Measures Installed without Incentives and Influenced by Local BBNP Program

MEASURES	PARTICIPANT HOMEOWNERS (N = 2,399)		NONPARTICIPANT HOMEOWNERS (N = 2,429)	
	N	Percent	N	Percent
One or more measures	861	36%	327	13%
Lighting	694	29%	188	8%
Air or Duct Sealing	Not Asked	Not asked	128	5%
Consumer electronics	Not Asked	Not Asked	113	5%
Appliance	364	15%	111	4%
Insulation	171	7%	103	4%
Showerhead or faucet aerator	Not Asked	Not asked	100	4%
Windows	191	8%	99	4%
HVAC	Not Asked	Not asked	89	4%
Hot water heater	Not Asked	Not asked	71	3%
Other	137	6%	17	1%

Section 3.3 *End User Awareness of Local BBNP Program* states that about one-third of surveyed nonparticipants were aware of their local BBNP program, which implies that about 42% of nonparticipants who were aware of the program reported spillover that occurred as a result of the program. This figure (42%) is roughly consistent with the proportion of participants reporting spillover (36%).

3.2. MARKETING OF ENERGY EFFICIENCY BY CONTRACTORS

Sixty percent of participating contractors and 36% of nonparticipating contractors indicated that their marketing of energy efficiency and energy efficient features had increased since 2010 (Table 3-11). Participating contractors who had increased their energy efficiency marketing represented 60% of net BBNP upgrades. A larger percentage of participating contractors (36%) indicated that they increased their energy efficiency marketing “a lot” compared to nonparticipating contractors (19%). In addition, 29% of participating contractors, who were responsible for 21% of all upgrades and 48% of net BBNP upgrades, reported that BBNP had strongly influenced their increased marketing, while 3% of nonparticipating contractors reported that BBNP had strongly influenced their increased marketing.

Table 3-11: Changes in Contractor Marketing of Energy Efficiency and the BBNP Influence on Marketing

AMOUNT OF CHANGE	PARTICIPATING CONTRACTORS (N=147)			NONPARTICIPATING CONTRACTORS (N=446)		
	Percent of:			Percent of:		
	Contractors*	Total Upgrades	Net BBNP Upgrades	Contractors	Total Upgrades	Net BBNP Upgrades
Increased a lot	36%	17%	44%	19%	16%	4%
Increased a little	24%	26%	24%	17%	4%	1%
Decreased a lot	1%	1%	-	2%	<1%	
Decreased a little	4%	1%	<1%%	1%	<1%	-
Stayed the same	17%	11%	6%	24%	9%	-2%
Don't know/Refused	3%	<1%	<1%	3%	<1%	-
Do not market energy efficiency	15%	9%	22%	35%	5%	<-1%
High degree of BBNP influence on increase*	29%	21%	48%	3%	1%	1%

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

One contractor in-depth interviewee reported that increases in his company's marketing budget, made possible by BBNP sales, influenced his company's revenues even after the program ended. In addition to a host of other changes the company made to its business structure, it had increased its marketing. The contractor explained how, together, those changes generated non-BBNP sales in the aftermath of the program:

> *"There was some [increase in business outside of the program] because we were able to increase our sales budgets, and our advertising, and our equipment, and crew sizes, and all of that kind of stuff which we were able to leverage into new business… Just to give you an idea, the year before [the program] we did $350,000 in business, and the [first year of the program] we did $1 million, and the next year $2 million… Now that the program is gone, we're down to about $1 million. Anything above that $350,000 this year is essentially residual business that we wouldn't have had if it wasn't for the program helping us build our infrastructure."*

Thirty-two percent of all participating contractors and 12% of all nonparticipating contractors reported that the number of upgrades that they completed had increased because of changes to their marketing (Table 3-12).

Table 3-12: Impact of Changes to Marketing Energy Efficiency on Contractors' Upgrades

AMOUNT OF CHANGE	PARTICIPATING CONTRACTORS (N=147)		NONPARTICIPATING CONTRACTORS (N=446)	
	Increased Marketing	Decreased Marketing	Increased Marketing	Decreased Marketing
Increased a lot	20%	—	4%	—
Increased a little	12%	—	8%	—
Decreased a lot	—	—	—	—
Decreased a little	—	1%	—	<1%
Stayed the same	22%	3%	19%	2%
Don't know/Refused	6%	1%	4%	<1%
Did not change marketing/Don't know of marketing changes	20%		27%	
Do not market energy efficiency	15%		35%	

3.2.1. ANALYSIS BY STRATA

When we examined marketing practices by strata, we found that a statistically significantly higher percentages of participating contractors from the most and average success strata had increased their marketing compared to participating contractors from the top five commercial stratum, but no differences in the percentages of participating contractors who reported that BBNP had strongly influenced their increased marketing.[20]

3.3. END USER AWARENESS OF LOCAL BBNP PROGRAM

About one-third (32%) of surveyed nonparticipants in the home improvement market (single-family homes) were aware of at least one BBNP energy efficiency program in their area.[21] Likelihood of awareness increased with the success level of the grantee, with most successful grantees having the highest percentage of aware nonparticipants (Table 3-13).

[20] See Section 4.2.B.2.1 *Energy Efficiency Upgrade Market Activity* (this volume) for more information.

[21] The survey instrument piped in the precise name or names of the BBNP residential program(s) available to the respondent based on the county the respondent reported residing in.

Table 3-13: Nonparticipant Homeowners' Awareness of Local BBNP Program by Stratum (n=2,429)

STRATA	PERCENT AWARE	N
Most Successful	37%	631
Average*	32%	1,583
Least Successful*, **	21%	215
Total Awareness	32%	2,429

* Statistically significantly lower than most successful, $p < .05$.

** Statistically significantly lower than average, $p < .05$.

Due to survey length constraints, we did not ask nonparticipant homeowners how they became aware of their local BBNP program. However, to help establish which marketing channels were most effective, we asked participants how they heard about the BBNP program they participated in.

Participant survey findings suggest grantees' effectively reached large groups of participants through their mass outreach efforts (Table 3-14). Two-thirds (66%) of residential participants learned about their local BBNP-funded program through the program's mass media outreach efforts, like mass media advertisements, the program website, and direct mail. Participants were approximately half as likely to report learning about the program from program representatives and events (36%), promotion of the program at community events (32%), and contractors (27%). In the commercial sector, participants most often heard about the local BBNP program through the program (84%) and professional sources (63%).

Table 3-14: How Participant Respondents Heard about the Grantee's Program(s) (Multiple Responses Allowed)

RESPONSE	RESIDENTIAL (N = 2399)*	MULTIFAMILY (N = 55)	COMMERCIAL (N=19)
Publicity Sources (All)	66%	62%	58%
Professional Sources (All)	37%	45%	63%
Contractor or someone offering energy efficiency related products or services	27%	31%	37%
Program Sources (All)	36%	49%	84%
Community Sources (All)	32%	35%	26%
None of these	1%	0%	0%

Source: Participant Survey Q4, Q5, Q6, Q7 and grantee-conducted survey.

* Includes data from grantee conducted survey.

Participants in the most successful grantee programs were more likely to have heard about the program through publicity sources (71%), than participants in less successful programs (60%). These results together indicate successful grantees were better able to reach a wide audience, and increase overall awareness of their programs.[22]

3.4. ENERGY EFFICIENT BUILDING PRACTICES

Adoption of energy efficient products, services, or practices by contractors in regions with BBNP grantees is another indicator of potential market effects. To gauge changes in building practices, we asked contractors about changes in energy savings and changes that they have made to their building and audit practices, and asked them to identify the level of influence that BBNP may have had on any of these changes.

3.4.1. CHANGES IN ENERGY REDUCTION

For each year (from 2010 to 2013), we asked participating contractors to estimate the average energy reductions resulting from the BBNP-supported upgrades that they completed. The average percentages increased over the years, from 32% in 2010 to 35% in 2013 (Table 3-15). Percentages varied only slightly across strata.

Table 3-15: Contractors' Mean Estimated Energy Reductions Resulting from Upgrades Supported by BBNP by Stratum*

STRATUM**	2010		2011		2012		2013	
	N	Mean	N	Mean	N	Mean	N	Mean
Most Successful	23	32%	25	28%	28	30%	27	32%
Average	43	32%	44	34%	48	35%	53	36%
Top 5 Commercial	10	36%	11	33%	13	31%	12	36%
Total	76	32%	80	32%	89	33%	92	35%

* Percentages are from valid responses only: Responses of *don't know*, *do not sell*, and *refused* were removed.

** We did not complete surveys with any participating contractors from the low success stratum.

When we asked participating contractors to estimate the energy reductions resulting from their non-BBNP upgrades, their average estimates (Table 3-16) were consistently lower than their estimates for their BBNP-supported upgrades (Table 3-15), yet the estimated reductions still increased from 26% in 2010 to 29% savings in 2013. Nonparticipating contractors estimated slightly lower levels of savings, beginning at 25% in 2010 and increasing only slightly to 26% by 2013. These differences indicate either BBNP participation might encourage contractors to apply these practices to all of their upgrades (a sign of spillover) or BBNP attracts contractors already focused on increasing energy

[22] For additional findings, see *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4), especially Chapter 6 "Driving Demand for Upgrade Services."

efficiency. During an in-depth interview, one contractor linked the audits involved in the program design to greater energy savings whether or not BBNP incentivized the upgrades resulting from the audits:

> *"I definitely think we saved a lot more with the program than without the program because it drove a lot of audits in a short period of time and people saved a lot of energy from that point forward. I definitely think the program made a huge impact on energy consumption."*

For most years, participating contractors' mean estimates were statistically significantly higher among average success and top five commercial strata in comparison to most successful participating contractors. There are several possible explanations for this: medium success and top five commercial grantees were more successful in increasing the efficiency practices of their partnering contractors, or medium success and top five commercial grantees partnered with higher performing contractors, for example.

Table 3-16: Contractors' Mean Estimated Energy Reductions Resulting from Non-BBNP Upgrades by Stratum

STRATUM [a]	PARTICIPATING					NONPARTICIPATING				
	N [b]	2010	2011	2012	2013	N [b]	2010	2011	2012	2013
Most Successful	25	16%	17%	18%	19%	53	25%	24%	25%	25%
Average	55	29%[c]	30%[c]	31%[c]	32%[c]	90	25%	25%	25%	27%
Top 5 Commercial	10	40%[c]	37%	39%[c]	39%[c]	39	23%	23%	24%	25%
Total	90	26%	27%	28%	29%	182	25%	24%	25%	26%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Percentages are from valid responses only: Responses of *don't know*, *do not sell*, and *refused* were removed. Therefore, sample sizes vary for each year and upgrade type.

[c] Statistically significantly different from contractors from the most successful stratum at the 90% confidence level

During in-depth interviews, two contractors reported BBNP helped increase the energy savings of the upgrades that they completed outside of the program. One contractor explained the type of work he does now is more comprehensive than it was prior to the program. The other contractor added BBNP increased energy savings by encouraging contractors in the region to integrate more ductwork into their projects. The contractor added that the program had a "global effect" on energy saving practices in the city.

3.4.2. CHANGES IN STANDARD AND MEASURE LEVEL PRACTICES

Participating contractors reported changing their standards practices to be more energy efficient in both BBNP-supported (41%) and non-BBNP (34%) upgrades, while 41% of nonparticipating contractors reported changing their standards practices to be more energy efficient (Table 3-17) - the difference in changes in standard practices between participating and nonparticipating contractors was not statistically significant. Twenty to thirty percent of participating contractors reported making changes to measure specific practices important to whole home projects while 26% to 41% of nonparticipating contractors made changes to measure specific practices. The difference in any measure level change between participating (21%) and nonparticipating (26%) contractors was not statistically significant, though the differences in changes to building envelope and lighting practices were statistically significant.

It may be that nonparticipating contractors followed less energy efficient practices in these areas at the beginning of the BBNP time period.

Table 3-17: Contractors that Made Changes to their Building Upgrade Practices since 2010 by Measure Type and Overall (Multiple Responses)

SERVICES/EQUIPMENT	BBNP-SUPPORTED UPGRADES		NON-BBNP SUPPORTED UPGRADES			
	n	Percent of Participating Contractors	n	Percent of Participating Contractors	n	Percent of Nonparticipating Contractors
Building Envelope	88	25%	88	24%	233	36%
HVAC and Water Heating	88	26%	88	27%	284	35%
Ductwork	82	24%	82	24%	243	27%
Lighting	61	30%	61	23%	189	41%
Any Measure-Level Changes	125	29%	125	21%	403	26%
Standard Practices	130	41%	131	34%	445	41%

Base: Percentages for measure-specific changes was from the number of contractors that reported offering the measure.

Participating contractors who had made changes to their standard practices were somewhat more likely to have increased the amount of discussion about energy efficiency with their customers receiving BBNP upgrades (13% of surveyed participating contractors) than they were with customers receiving non-BBNP upgrades (8%). Considerably more than participating contractors, nonparticipating contractors most commonly mentioned that they had begun using more efficient materials (18%) since 2010 (Table 3-18). Nonparticipating contractors may have been more likely than participating contractors to begin using higher efficiency equipment because participating contractors may have already used higher efficiency equipment as part of their standard practices.

Table 3-18: Changes to Contractors' Standard Upgrade Practices Made Since 2010 (Multiple Responses)

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=130)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=131)	Nonparticipating Contractors (n=445)
Talk about energy efficiency more with customers	13%	8%	11%
Use more efficient materials	8%	8%	18%
Offer better quality services/equipment	8%	8%	8%

Continued…

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=130)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=131)	Nonparticipating Contractors (n=445)
Explain how high efficiency equipment works and why it is higher efficiency	6%	5%	7%
Offer new services	6%	4%	4%
Conduct services more thoroughly/comprehensively	5%	7%	3%
Encourage/assist with program(s) participation	5%	2%	<1%
Compare efficiency levels of different equipment	2%	5%	4%
Explain payback period and savings over time	2%	3%	4%
Increased training	2%	5%	2%
Increased/changed advertising	2%	2%	2%
Other	2%	4%	3%
Nothing/None	56%	63%	56%
Don't know/Refused	3%	3%	3%

We asked contractors who were aware of BBNP and who had indicated they had made changes to their standard practices since 2010 how influential BBNP was in changing their standard practices for non-BBNP upgrades. Contractors used an 11-point scale in which zero meant "no influence at all" and ten meant "a great deal of influence." Fifteen percent of surveyed participating contractors reported BBNP represented a great deal of importance (rating seven or higher) in changing standard practices – this 15% of participating contractors represented 7% of all upgrades and 15% of all net BBNP upgrades (Table 3-19). A small percentage of nonparticipating contractors (3%) gave ratings of seven or higher; they represented small shares of total (1%) and net BBNP (2%) upgrades. There were no statistically significant differences across strata.

Table 3-19: Influence of BBNP on Contractors' Standard Practices for Non-BBNP Upgrades by Stratum

STRATUM*	PARTICIPATING CONTRACTORS (N=147)			NONPARTICIPATING CONTRACTORS (N=437)		
	Percent of:			Percent of:		
	Participants Rating 7-10	Total Upgrades**	Net BBNP Upgrades*	Nonparticipants Rating 7-10	Total Upgrades	Net BBNP Upgrades
Most Successful	21%	12%	32%	2%	2%	<1%
Average	13%	4%	7%	4%	1%	3%
Top 5 Commercial	10%	5%	1%	—	—	—
Total	15%	7%	15%	3%	1%	2%

* We exclude results associated with the low success stratum from this table because of the small sample size.

** Percentages based on the total number of upgrades for each stratum and overall.

In-depth interviewees offered insight into ways BBNP had changed their standard building practices. One contractor reported BBNP had a "global effect" on energy saving practices in the city by encouraging contractors to more commonly integrate ductwork into their projects. Another reported using BBNP practices in non-BBNP upgrades caused him and his company to focus on high quality and consistent upgrades:

> *"Even though I mentioned I'm my own boss. I'm accountable. We [contractors] need to be kept in check just the same to make sure we're doing a consistent job across the board across the industry... As far as the accountability, it is huge – I love it! It's made us a better company… I have one of the checklists right now that we follow… No matter what, this is our standard. This checklist right here, straight from the [program], this is what we're accountable to, whether it is a [BBNP] job or not."*

3.4.3. CHANGES IN AUDIT PRACTICES

Sixty-one percent of participating contractors who conducted energy audits reported an increase in the number of audits since 2010 (Table 3-20): forty-two percent of participating contractors with whom we asked about energy audits estimated the number of energy audits that they conducted had increased a lot since 2010 and 19% said it had increased a little. More than two-fifths of these participating contractors (44%) reported a great deal of influence to BBNP (rating 7 to 10 on a scale of 0 to 10) on increases in the number of energy audits that they conducted during that period.

Table 3-20: Changes to the Number of Energy Audits Contractors Conduct Since 2010

CHANGES TO NUMBER OF AUDITS	PARTICIPATING CONTRACTORS (N=57)
Increased a lot	42%
Increased a little	19%
Decreased a lot	5%

Continued…

CHANGES TO NUMBER OF AUDITS	PARTICIPATING CONTRACTORS (N=57)
Decreased a little	7%
Stayed the same	23%
Don't know/Refused	4%
High degree of BBNP influence on increases in number of audits*	44%

Base: Participating contractors asked about the energy audits they conduct

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence.

3.5. SALES AND AVAILABILITY OF HIGH EFFICIENCY EQUIPMENT AND PRODUCTS

Distributors who were aware of BBNP rated their agreement with statements about the influence of the program on their business and the marketplace in general in the present and the future using a scale from zero to ten, where zero is "strongly disagree" and ten is "strongly agree." Table 3-21 shows that just under ten percent of all surveyed distributors agreed that BBNP had a positive impact on their business and the marketplace in general. Nearly two-thirds of distributors were unaware of BBNP, and the remaining distributors either disagreed or had a neutral rating (rating of four to six) of BBNP.[23]

Table 3-21: Distributors' Agreement with Statements about BBNP Influence on Energy efficient equipment Market

STATEMENT*	PERCENT OF DISTRIBUTORS (N=291)				
	Rating 0-3	Rating 4-6	Rating 7-10	Don't know	Unaware of BBNP
My company has more business today than it would have had without BBNP	13%	10%	8%	3%	66%
The marketplace in general has more business today than it would have had without BBNP	11%	11%	9%	3%	66%
There will be more business for my company than there would have been without BBNP	12%	9%	9%	4%	66%
There will be more business in general in the marketplace than there would have been without BBNP	12%	9%	8%	4%	66%

Base: Only distributors aware of BBNP were asked these questions, but percentages are drawn from surveyed distributors.

* Using a scale of zero to ten where zero means "strongly disagree" and ten means "strongly agree," we consider ratings of seven to ten as a "strongly agree.".

[23] We do not interpret a rating of zero to three as a negative impact of BBNP but rather as not having an impact.

3.5.1. ANALYSIS BY STRATA

Distributors from the most successful and average strata were statistically significantly more likely to have reported a positive impact to BBNP than were distributors from the top five commercial stratum (see Appendix B).

3.5.2. SALES OF HIGH EFFICIENCY EQUIPMENT AND MATERIALS

Another indicator of BBNP market effects is the level of sales of high efficiency equipment and materials. If BBNP results in increased demand for energy efficiency upgrades and adoption of energy efficient building practices, an expected market effect is increased sales of high efficiency equipment reported by distributors after the program ended or beyond the increase due to program participants. We asked distributors if BBNP had a positive or negative effect on sales of building envelope materials and services, HVAC and water heating equipment, lighting equipment, and refrigeration equipment. Notable percentages of distributors of residential equipment indicated that the program had a positive impact on their sales of residential equipment, ranging from 17% to 20% of distributors for each equipment type (Table 3-22). Smaller percentages of commercial equipment distributors noted positive impacts, ranging from 0% to 19% of distributors.

If distributors said the program had a positive impact on sales, we asked them to rate the level of BBNP's positive influence on their sales using a scale of zero to ten, where zero means "no influence at all" and ten means "a great deal of influence." We considered ratings of seven or higher as indication that the program had a higher degree of influence. Smaller percentages of both residential and commercial equipment distributors indicated the BBNP had a great deal of influence on their sales, ranging from 5% to 8% of distributors of residential equipment and 2% to 13% of distributors of commercial equipment (Table 3-22).

Table 3-22: BBNP Impact on Distributor Sales by Equipment Type and Sector

EQUIPMENT TYPE	N	DISTRIBUTORS REPORTING POSITIVE IMPACT OF BBNP		DISTRIBUTORS RATING 7-10*	
		Percent	Count	Percent	Count
Residential					
Building envelope materials	44	20%	9	5%	2
HVAC and water heating systems	200	18%	36	7%	13
Lighting equipment	18	17%	3	6%	1
Other products or services	25	20%	5	8%	5
Commercial					
Building envelope materials	13	15%	2	8%	1
HVAC and water heating systems	61	16%	10	2%	1
Lighting equipment	9	0%	—	—	—
Other products or services	8	13%	1	13%	1

Continued…

EQUIPMENT TYPE	N	DISTRIBUTORS REPORTING POSITIVE IMPACT OF BBNP		DISTRIBUTORS RATING 7-10*	
		Percent	Count	Percent	Count
Residential and Commercial					
Refrigeration equipment**	63	19%	12	0%	0

Base: Distributors selling the specified equipment. To prevent respondent fatigue, we limited our questions about program influence to a maximum of two equipment types for each respondent.

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence.

** We asked distributors about both residential and commercial refrigeration equipment regardless of whether we considered them residential or commercial distributors.

Sales of specific high efficiency technologies appear to have increased from 2010 to 2013. For example, nearly one-half of residential distributors who sold the building envelope materials reported increased sales in insulation (45%), duct sealing (48%), and air sealing (46%, 6 of 13 respondents) since 2010 (see Appendix B for more details). Distributors estimated a 21% increase in insulation sales, 34% increase in duct sealing sales, and 39% increase in air sealing sales.

Similarly, residential high efficiency HVAC and water heating equipment sales experienced a modest trend upward during the 2010 to 2013 period. For example, the percentage of high efficiency gas storage hot water heaters increased from 42% of hot water heaters in 2010 to 51% in 2013, while high efficiency natural gas furnace sales increased from 56% of natural gas furnace sales in 2010 to 63% in 2013. Furthermore, high efficiency central air conditioning systems increased from 35% to 41% of central air conditioning system sales (see Appendix B for more details).

Commercial distributors reported large percentages of their HVAC and hot water heating sales were high efficiency. More than one-half of natural gas furnaces were high efficiency in both 2010 and 2013; moreover, the shares increased by 21% from 2010 through 2013, going from 51% of sales in 2010 to 62% in 2013. The largest change in the percentage of systems that were high efficiency was among medium-sized air-cooled unitary or split systems (5.4 to less than 20 tons), increasing from 39% in 2010 to 60% in 2013 (Appendix B). Overall, the increase in sales noted by distributors, along with the assessment by a smaller subset of distributors that BBNP had a positive influence on sales (Table 3-22), suggests that BBNP may have influenced the increased sales high efficiency technologies. However, we do not have sufficient data to quantify the influence or definitively say that BBNP had an influence on sales.

3.6. BUSINESS PRACTICES

Another factor that contributed to the BBNP market effects analysis was the impact on business practices. We sought to learn whether BBNP had changed contractor and distributor business practices (such as increasing their business' focus on energy efficiency).[24]

3.6.1. CONTRACTOR BUSINESS PRACTICES

We asked participating contractors whether they had changed specific business practices in order to adapt to BBNP. Overall, 72% of participating contractors made a change to their business practice because of BBNP (Table 3-23). Sixty percent of participating contractors reported that their services had become more comprehensive to adapt to BBNP, 51% reported that they had begun partnerships with other firms or contractors to adapt to the program, and 46% reported that they had shifted their business to focus more on energy efficiency to adapt to the program.

Table 3-23: Contractor Business Practice Changes Resulting from BBNP

BUSINESS PRACTICE CHANGES RESULTING FROM BBNP	PARTICIPATING CONTRACTORS (N=134)
Services became more comprehensive to adapt to BBNP	60%
Business began to partner with other firms or other contractors to adapt to BBNP	51%
Business practices changed to focus more on energy efficiency to adapt to BBNP	46%
Made one or more of the above changes	72%

Base: Participating contractors asked about business practices

During the in-depth interviews, participating contractors provided more details as to how BBNP had affected their business practices. For example, one contractor described how BBNP had influenced his company to focus on energy efficiency to prevent missing project opportunities:

> *"I think from the company standpoint it was something that we were either in or we were out, and if we were out we were missing opportunities, so it forced the sales representative or it forced the company as a whole to pay more attention to those types of things—understanding that if we weren't offering it, we were probably losing opportunities."*

[24] We assessed business practices separately from building practices (see Section 3.4). While both topics have some overlap, we considered *building* practices as actions that involve contractor efforts while in the field, and we considered *business* practices as actions that are determined and implemented at corporate, owner, or management-levels.

Another contractor reported BBNP had influenced his decision to include a varied portfolio of energy efficiency offerings, including customer financing. He indicated that these changes, along with his BBNP certification, contributed to increasing sales. He provided one example:

> *"We're doing a job this week that [is valued at] $33,000. It's all new windows for the house, we're taking out the [homeowner's] chimney; we're doing the whole nine yards. [The homeowner] is incentivized by three things: 1) our vertical integration, which came about because of the program, 2) the available cheap capital, the loan to do the job—our knowledge of that came about through the program, and 3) the certification that we have within the program."*

One contractor explained, because of BBNP, her company was more focused on energy efficiency and provided customers with more comprehensive assistance than they had provided prior to BBNP:

> *"If we get a call from someone who says, 'We want insulation,' and we start to talk to them about the home's existing construction—home as a system, etc.—we can bring them along to understand the air sealing part and then have them understand why we want to address it fully."*

Analysis by Strata

Comparing BBNP impacts on business practices across the strata, we found that a higher percentage of participating contractors from the most successful strata reported partnering with other firms or contractors to adapt to the program compared participating contractors in the top five commercial strata (see Appendix B).

3.6.2. DISTRIBUTOR BUSINESS PRACTICES

Sixteen percent of surveyed distributors reported changing (since BBNP began) their business and stocking practices to be more energy efficient. For example, 13% of distributors talk to customers about energy efficiency or explain how energy efficiency works, while 12% stock more energy efficient equipment (see Appendix B).

We asked those distributor reporting a change in their business and stocking practices to rate the influence of BBNP on those changes using a scale of zero to ten, where zero means "no influence at all" and ten means "a great deal of influence." Table 3-24 shows that 4% of surveyed distributors rated the program as having a high degree of influence (rating 7-10) on changing business and stocking practices. Of those distributors who reported a change in their stocking practices, 23% reported that BBNP had a high degree of influence on the changes.

Table 3-24: Distributors Reporting a High Degree of BBNP Influence on Business and Stocking Practice Changes

DISTRIBUTORS REPORTING HIGH DEGREE OF BBNP INFLUENCE ON BUSINESS AND STOCKING PRACTICE CHANGES	N	RATING A HIGH DEGREE OF INFLUENCE (7-10)*
All Surveyed Distributors	291	4%
Among Distributors that Identified Changes Since the Start of BBNP	52	23%

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Only distributors aware of BBNP and had made business and stocking practice changes since BBNP began were asked this question.

We asked surveyed distributors who were aware of BBNP whether they had increased their businesses' focus on energy efficiency, made their services more comprehensive, or developed partnerships with other firms, all with the goal of adapting to BBNP. Overall, 16% of distributors made a change to their business practice because of BBNP (Table 3-25). Eight percent of distributors reported they had shifted their business to focus more on energy efficiency to adapt to BBNP, 12% agreed their services had become more comprehensive to adapt to the program, and 10% said they had begun partnerships with other firms to adapt to the program.

Table 3-25: Distributor Business Changes Resulting from BBNP

BUSINESS CHANGES RESULTING FROM BBNP	PERCENT OF DISTRIBUTORS (N=291)*
Changed to focus more on energy efficiency to adapt to BBNP	8%
Services became more comprehensive to adapt to BBNP	12%
Business began to partner with other firms to adapt to BBNP	10%
Made one or more of the above changes	16%

* We asked only distributors aware of BBNP these questions, but percentages are drawn from all surveyed distributors. Because the table presents Yes/No responses to three different questions, percentages do not sum to 100%.

3.7. AVAILABILITY OF TRAINED CONTRACTORS

We asked contractors if the number of contractors trained in energy efficient building practices or technologies had increased, and if so, what was the influence of BBNP on the increase.[25] Nearly nine in ten participating contractors (86%) and more than two-thirds of nonparticipating contractors (68%) reported the number of contractors trained in energy efficient building practices had increased since 2010 (Table 3-26). Slightly more than two-fifths of participating contractors (42%) and a small percentage of nonparticipating contractors (6%) indicated BBNP training had a high degree of influence on that increase.[26] As shown in Table 3-26, the participating contractors who thought BBNP had a high degree of influence on the number of trained contractors represented only 24% of total upgrades but nearly one-half of net BBNP upgrades (48%). BBNP training appears to have had an impact on the participating contractors but a limited impact on the nonparticipating contractors.

25 We did not specify that the training was sponsored by BBNP, and we did not ask the contractors to identify the training organizations. However, we did ask contractors to indicate if they had received any training in energy efficient building practices, including trainings sponsored by BBNP. Eighty seven percent of participating contractors had received any energy efficient training and 61% attended BBNP-sponsored training, compared to 57% of nonparticipating contractors who had received any energy efficient training and 4% who attended BBNP-sponsored training (see Appendix B for more details).

26 Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we considered ratings of seven to ten as a "high degree" of influence.

Table 3-26: Increases in Contractor Training in Energy Efficient Building Practices since 2010 and BBNP Influence

TRAINING ATTENDANCE AND BBNP INFLUENCE	PARTICIPATING CONTRACTORS (N=147)			NONPARTICIPATING CONTRACTORS (N=446)		
	Percent of:			Percent of:		
	Participants	Total Upgrades	Net BBNP Upgrades	Nonparticipants	Total Upgrades	Net BBNP Upgrades
Number of trained contractors has increased since 2010	86%	60%	93%	68%	24%	3%
BBNP training had high degree of influence on increased number of trained contractors*	42%	24%	48%	6%	3%	5%

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

We asked contractors to assess whether BBNP training affected the local energy efficiency upgrade market by increasing or decreasing the quantity, quality, or comprehensiveness of the upgrades performed in their local market. Nearly one-half of surveyed participating contractors, representing the majority of net BBNP upgrades, reported that BBNP training had increased the number of energy efficient upgrades, the quality of the upgrades, and the comprehensiveness or depth of the upgrades since 2010 (Table 3-27).

Table 3-27: BBNP Training Influence on Increases in Elements of Upgrade Market Reported by Contractors (Multiple Responses)

BBNP TRAINING INCREASED ELEMENT SINCE 2010*	PARTICIPATING CONTRACTORS (N=147)			NONPARTICIPATING CONTRACTORS (N=437)		
	Percent of:			Percent of:		
	Participants	Total Upgrades	Net BBNP Upgrades	Nonparticipants	Total Upgrades	Net BBNP Upgrades
Number of energy efficient upgrades	46%	26%	73%	2%	2%	<1%
Quality of energy efficient upgrades	45%	29%	72%	2%	2%	1%
Comprehensiveness of energy efficient upgrades	44%	27%	66%	2%	2%	1%

* Percentages represent contractors that indicated BBNP training had increased the element "a lot" or "a little."

Also we asked contractors during in-depth interviews to identify the aspects of BBNP training that had positively affected their local energy efficiency upgrade market. Their responses reinforced the survey results. Four contractors reported that BBNP training had enhanced their ability to increase sales, specifically through teaching them marketing and sales techniques; some reflected that the program refined their ability to communicate with customers about upgrades:

> *"There was training to help [contractors] understand how to make the sell on energy efficiency – 'What is important to the homeowners?' – [answering questions] like that. All of the contractors had to do that [training], and I think that was really helpful for them. The result was for [the contractors] to share stories and techniques."*

Also they indicated that the program's technical training provided them with the ability to perform more comprehensive audits and identify additional upgrade opportunities that they might not have done prior to program training. One interviewee noted that BBNP "opened your eyes" to upgrade opportunities that contractors may not typically target.

3.7.1. ANALYSIS BY STRATA

When we examined contractors' assessments of the availability of trained contractors and the effects of BBNP training on the upgrade market by strata, we found several differences among the strata. For example, in terms of contractors' assessments of the number of trained contractors, a statistically significantly higher percentage of participating contractors in the medium success stratum reported a high degree of influence to BBNP on the increase in the number of trained contractors compared to contractors from the top five commercial stratum. In terms of contractors' assessments of the impact of training on the upgrade market, a statistically significantly higher percentage of participating contractors in the most successful stratum reported that BBNP training resulted in an increased number of energy efficient upgrades as well as more comprehensive upgrades compared to participating contractors from the top five commercial stratum (Appendix B).

3.7.2. CONTRACTOR MEMBERSHIP AND TRAINING ORGANIZATIONS

In addition to the survey data, we investigated changes in contractor association memberships and certifications issued by credentialing organizations during the period from 2011 to 2013, while the grantee programs were in effect.[27] To the extent possible, we isolated changes in certifications and memberships in grantee locations in order to compare them with overall growth.

Our analysis included data from the following organizations: Home Energy Pros (HEP),[28] National Association of Home Builders (NAHB),[29] NATE,[30] BPI,[31] and Efficiency First.[32] The HEP, NAHB, NATE, and Efficiency First data

---

27 BBNP grantees started their programs as early as late 2010, while some started in 2011.

28 HEP is a social network and community dedicated to home energy professionals (*http://homeenergypros.lbl.gov/*).

29 NAHB provided data for their Certified Green Professionals (CGP), a certification earned following classroom instruction in energy, water, and resource efficiency in residential building and remodeling. http://www.nahb.org/category.aspx?sectionID=1174.

sets included city, state, and ZIP code data, allowing for the assignment of memberships and certifications to grantee and non-grantee locations. The BPI data set did not include city or zip code data, but instead included aggregated counts of certified professionals by state. Therefore, we could not link BPI certifications to grantees comprising areas smaller than an entire state, thus limiting its analysis.

All five organizations experienced growth in memberships and certifications between January of 2011 and June of 2013. A higher growth rate in grantee areas than in non-grantee areas would be an early indication of market effects. However, within each of the five organizations, growth in grantee locations was lower than growth in non-grantee locations over this period. In contrast with the contractor surveys, this analysis does not suggest that BBNP affected the market of contractors trained and certified in energy efficient building practices.

For each organization, except for BPI for which only aggregated state-level data were available, we further investigated the membership and certification data by examining the effects of several variables on changes in memberships or certifications, including (1) whether the grantee provided training and (2) whether there had been a pre-existing energy efficiency program in the grantee area. There was only one organization – NATE – for which growth in grantee areas providing training (121%) exceeded growth in grantee areas that did not provide training (103%). Efficiency First was the only organization for which growth in grantee areas with pre-existing programs (154%) exceeded growth in grantee areas that did not have a pre-existing program (106%).

This analysis of changes in membership and certifications during the period from 2011 to 2013 does not show any early indications of market effects.

3.7.3. TRAINED AND CERTIFIED CONTRACTORS PER GRANTEE SELF-REPORT

Grantees reported data on trained and certified contractors to DOE in partial fulfillment of their grant requirements. The 21 grantees reporting training data collectively reported providing program-supported training to 5,506 contractors; the 19 grantees reporting certification data collectively reported certifying 2,026 contractors (Table 3-28).

Table 3-28: Trained and Certified Contractors per Grantee Self-Report

JOBS IMPACT	TRAINED CONTRACTORS	CERTIFIED CONTRACTORS
Number of Grantees Reporting	21	19
Minimum Number of Contractors Reported by Any Grantee	8	7

Continued…

30 The North American Technician Excellence, Inc. (NATE) is a certification program for technicians in the heating, ventilation, air-conditioning and refrigeration (HVAC/R) industry (*http://www.natex.org/*).

31 BPI is a standards development and credentialing organization for residential energy efficiency retrofit work (*http://www.bpi.org/*).

32 Efficiency First is a national nonprofit trade association for the home performance workforce that includes contractors, building product manufacturers and related businesses and organizations (*http://www.efficiencyfirst.org/about/*).

JOBS IMPACT	TRAINED CONTRACTORS	CERTIFIED CONTRACTORS
Maximum Number of Contractors Reported by Any Grantee	1,537	635
Average Number of Contractors Reported by Grantees	262	107
Total Number of Contractors Reported by Grantees	5,056	2,026

3.8. AVAILABILITY OF FINANCING FOR ENERGY EFFICIENCY UPGRADES

Thirty-six of the 41 grantees listed BBNP funds used to support financing for energy efficiency retrofits in their reporting to DOE. While most participants did not receive a loan, BBNP grantees appear to have achieved equal or higher uptake of loans for energy efficiency retrofits than previous whole home programs. Across grantees, 18% of residential retrofit projects received loans. The program-wide 18% loan uptake rate is within the 10% to 20% range that program administrators participating in the State and Local Energy Efficiency Action Network (SEE Action, 2011) Residential Retrofit Working Group cited as typical for home-energy upgrade programs that offer financing. Survey findings suggest that this 18% uptake is notably higher than the uptake of loans to finance energy efficiency upgrades in the absence of a program.[33] Two independent evaluations of grantee programs (commissioned by the grantees) found that financing was not important for most participants, yet there were some participants for whom financing was very important. This evaluation's participant survey found that 18% of residential participants used loans to finance their upgrades, but among the participants that did use financing, 73% gave high ratings to the role of the loan in their upgrade decision.[34,35]

Although BBNP programs had an increased uptake of financing, demand for financing may not have reached a level likely to attract broad interest among financial institutions. Four financial partners reported that there was little demand for the product(s) they offered or said that the demand was lower than they would have liked. Two additional financial partners stated a lack of demand for energy efficiency loans could prevent other financial institutions from offering loans for energy efficiency upgrades. The six financial partners that commented on demand for energy efficiency loans were evenly divided among credit unions, community development financial institutions, and banks.

Grantees and their financial partners agreed that energy efficiency loans had performed well over the first few years of the BBNP-supported financing programs. None of the nine grantees that cited specific default rates in their in-depth interviews cited a rate higher than 2.5%, and six reported no defaults at all. Financial partners stated that the loans had performed as well or better than similar loan products in terms of defaults and late payments. Nonetheless, grantees reported that financial institutions typically did not recognize energy savings as a factor that would lower the

33 The non-participant survey of homeowners who made energy upgrades outside of their local BBNP programs conducted for this evaluation found that only 7% used financing.

34 These participants gave a rating of 7 or higher on a scale from 0 – indicating loans associated with the program played no role in their decision to make the upgrade they did – to 10 – indicating program loans played a major role in their upgrade decision.

35 See Section 7 of *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4) for more information.

risk of energy efficiency loans, suggesting the available data on default rates was not sufficient to alter financial institutions' assessment of risk.

To make financing more attractive and widely available for participants, grantees used loan loss reserve and revolving loan funds to shift some or all of the loan-default risk from the financial institution to the program as well as interest rate buy downs to lower interest rates for participants. Many financial institution partners indicated that the availability of credit enhancements was important in their decision to offer loans for energy efficiency.

While most grantees relied on grant funds or their financial partner's capital to make loans, eight grantees, including two in the most successful group, reported turning to investors to obtain capital for their financing products (Table 3-29). These grantees most often (5 of 8) sought to bundle loans to sell to investors on secondary markets, and four had successfully sold loan portfolios to secondary investors. Three grantees obtained capital that they then loaned to program participants from partners like banks, foundations, socially responsible investors, and faith-based groups.

Table 3-29: Sources of Capital for Grantees' Financing Products

SOURCE OF CAPITAL		COUNT OF GRANTEES
Program funds (Revolving loan fund)		22
Financial institution partner		30
Secondary markets	Investor capital to make new loans	3
	Packaging and sale of existing loans	5
	Total	8

Energy efficiency loans are a relatively new financial product, and program administrators have not traditionally been active in financial markets. As a result, it can be challenging for securities backed by efficiency loans to obtain high enough ratings from financial ratings bureaus to make them attractive to investors. To overcome this challenge, the grantees that had sold loan portfolios to secondary investors most often (3 of 4) packaged their loans as municipal bonds, issued through an established government agency. One grantee sold its loan portfolio as a private transaction between the grantee's financial partner and another credit union.

Grantees offered program funds as credit enhancements to investors purchasing their loans on the secondary market. Four of the eight grantees who had turned to investors beyond their financial institution partners for capital reported offering a loan loss reserve to secondary investors to make their loan portfolios more attractive.

Both loan loss reserves and revolving loan funds regenerated as borrowers repay their loans, and grantees reported that the financing offerings these mechanisms support would continue to be available after the grant period if there are enough profits to pay for the administration of the loans and/or buy downs. In in-depth interviews, only one grantee reported that their financing offering, an interest rate buy down, would end with the grant period, although four others anticipated that elements of their financing programs would phase out in the years following the grant. Four other grantees anticipated their financing offerings would generate enough revenue through interest and fees to support their ongoing administration.

3.9. PERSISTENCE

3.9.1. CONTRACTOR PERSPECTIVE

We interviewed ten participating contractors to discuss how they would adjust to the end of BBNP. Four contractors reported the end of BBNP would not affect their practices, while the remaining six listed a number of ways that their companies planned to adjust, ranging from facilitating low-interest financing options for their customers to cutting back on staff or marketing:

- Lay-off employees hired to meet the increased demand for BBNP-supported upgrades
- Scale back on advertising budgets
- Change geographic focus away from BBNP area
- Develop vertical integration by bringing auditors "in house"
- Facilitate low-interest financing opportunities in place of BBNP incentives
- Leverage other incentive programs to replace BBNP incentives

3.9.2. PROGRAM FEATURES TO CONTINUE

A primary goal of the BBNP program was to support the development of sustainable energy efficiency upgrade programs. An analysis of grantees' Final Technical Reports and of in-depth interviews with program administrators revealed that of the 62 grantees and subgrantees, all but 10 (16%) planned to continue some program offerings after the grant period ended. Specifically, 32 (52%) grantees reported that some elements of the program offerings or infrastructure they developed during the BBNP grant period would continue. In some cases, grantees planned to continue programs under the same name but with a limited scope. In other cases, other local organizations planned to absorb and carry forward elements of a BBNP program. Thirteen grantees (21%) reported that their programs would continue relatively unchanged at the end of the BBNP grant period, and seven (11%) reported that they would be expanding their scope or geographic reach.

Most grantees that planned to continue some or all of their program activities had access to the financial resources needed to do so. Relatively few reported that they would be able to fund their program through program-generated revenue, however. Twenty-seven program administrators discussed that post-grant funding sources would be used to continue providing services without BBNP support, and they most often planned to turn to outside sources, like utility ratepayer energy efficiency funding, local governments, and other grants, for the funding. See Table 3-30 for additional detail. Eight grantees reported on plans for their programs to generate revenue on their own, but fewer than half (3 of 8) of those expressed certainty that the revenue they earned would be sufficient to support program activities. In order to generate revenue to continue to fund their program offerings, grantees reported on plans to charge contractors for leads generated by program marketing, to charge contractors fees for program-provided training, and to collect revenue from interest and fees associated with their programs' loans to participants.

Table 3-30: Funding Sources Supporting Post-BBNP Program Offerings (n=27, Multiple Responses Allowed)

FUNDING SOURCE	NUMBER OF GRANTEES
Utility/ratepayer	11
Program-generated revenue	8
Local government	6
Other grants	5
Other	6

Grantees also indicated that most financing products developed during the BBNP grant period would continue. None of the grantees that had used loan loss reserves or revolving loan funds reported plans to discontinue their loan products. While some grantees reported their interest rate buy downs would continue beyond the grant period, they expected these offerings to phase out. Only one grantee reported that their financing offerings, which consisted only of an interest rate buy down, would end with the grant period.

These findings indicate that BBNP was successful in eliciting some market change at the utility level and among financial institutions. BBNP does not appear to have been successful at creating local markets where efficiency occurs in the absence of subsidies, however, as most grantees had not yet developed the market presence to continue self-sustaining programs. This was not an accomplishment that neither the evaluation team nor the evaluation peer reviewers thought would be possible after only three years of program support.

Most of the financial partners interviewed (75%) reported that they would continue to offer financing for energy efficiency upgrades after the BBNP grant period. While some financial institutions planned to continue to offer energy efficiency loan products that existed before BBNP or were developed with BBNP grantees, over half (53%) are offering a product different from the one that they offered with the grantee. Some are using BBNP loan products as a "blueprint" for new products developed with other partners, and others plan to combine and streamline existing loan products, including those developed with the BBNP grantee. For example, one financial partner plans to create a simplified loan product that has less restrictive qualification criteria than the loan product offered with the BBNP grantee.

4. SUMMARY

4.1. GOAL AND OBJECTIVE ATTAINMENT

By the end of the three-year evaluation period (Q4 2010 to Q3 2013) BBNP had met the three ARRA goals (Table 4-1). While the process evaluation investigated program outcomes related to all three goals, the numerical findings included in the table were generated by the impact evaluation, the details of which are presented in *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2). The table presents, among other findings, our findings of net jobs, net economic activity, and net benefit-cost ratio. For the economic metrics, the term "net" signifies BBNP's contribution to these outcomes above and beyond the outcomes that would have occurred had the BBNP funding been spent according to historical non-defense federal spending patterns.

By the end of the three-year evaluation period, BBNP met its one market-effects-related BBNP-specific objective (Table 4-2). The market effects findings indicate that BBNP met its objectives to spur energy efficiency upgrade activity, upgrade buildings, and contribute to the development of an upgrade market that would be able to continue providing services at the end of the grant period.

Table 4-1: Attainment of ARRA Goals, Q4 2010 - Q3 2013

GOALS	METRICS	RESULTS	ATTAINED?
Create new jobs and save existing ones	Number of jobs created and retained	The evaluation estimated 10,191 net jobs resulted from BBNP during the 3-year evaluation period.	Yes
Spur economic activity and invest in long-term growth	Dollars of economic activity; benefit-cost ratio	BBNP spending of $445.2 million in 3 years generated more than: • $1.3 billion in net economic activity (personal income, small business income, other proprietary income, intermediate purchases) • $129.4 million in net federal, state, and local tax revenues Estimated net benefit-cost ratio: 3.0.	Yes
Provide accountability and transparency in spending BBNP funds	Evidence of accountability and transparency	Grantees receiving ARRA funding submitted ARRA expenditure reports. Grant expenditure information was available to the public on *Recovery.gov*. BBNP DOE staff developed and maintained a program tracking database for periodic grantee reporting. Staff worked with grantees to increase the quantity and quality of reported data. Grantees had access to summary data. Evaluator-verified results will be publicly available.	Yes

Table 4-2: Attainment of Market-Effects-Related BBNP Objective

OBJECTIVES	METRICS	RESULTS	ATTAINED?	
			3-Year Verified	4-Year Unverified*
Develop sustainable energy efficiency upgrade programs	Percent of programs planning to continue after funding Evidence of continuing effects on the retrofit industry	84% of grantees reported that their programs or elements thereof would continue after the 3-year evaluation period. The evaluation found evidence of early indications of market effects, including increased: • Activity in the energy efficiency upgrade market • Adoption of energy efficient building and business practices • Marketing of energy efficiency • Availability of financing Participating contractors reported: • Changing services to be more comprehensive to adapt to BBNP (60%) • Increasing their focus on energy efficiency (46%) • Changing their standard practices in non-BBNP upgrades (34%) • Observing positive impacts on their business and the local energy efficiency market from BBNP (~50%) The Better Buildings Residential Program Solution Center and Better Buildings Residential Network continue to provide examples of replicable comprehensive approaches.	Yes	Yes

* Our evaluation did not verify fourth-year program achievements; however, this objective was met by Q3 2013 and so we concluded also it was met by the end of Q3 2014.

We found early indications that BBNP may have helped lead to local market effects. We emphasize that these indicators suggest BBNP has initiated market change; these indicators are not proof that the market has changed or that whatever change BBNP has initiated will persist past the funding cycle. Such conclusions await research conducted several years after this study.

For most of the indicators, such as increased availability of trained contractors or adoption of energy efficient building practices, we first attempted to determine whether a given outcome (early indicator of a market change) has occurred, then examined whether the data source (that is, contractors, distributors, partnering financial institutions) linked the change to BBNP. In other words, we examined the links to the program to determine whether the indicators associated with those links point to program influence on the early indicator of market change or a market effect. For each of the indicators we attempted to isolate the impact of BBNP from other efficiency programs such as SEP or EECBG by asking respondents to rate the influence or importance of BBNP alone on the given indicator of interest.

Across multiple indicators and from multiple data sources we found evidence of early indications of market effects influenced by BBNP. Examples of indicators include increased activity in the energy efficiency upgrade market, increased adoption of energy efficient building and business practices as well as sales of energy efficient equipment, increased marketing of energy efficiency, increased availability of financing, high levels of consumer awareness of BBNP, and mixed evidence of increases in trained contractors.

Large percentages of participating contractors (ranging from 46% to 56%) reported that BBNP had positive impacts on their business and the local energy efficiency market (Table 4-3). In some cases, while large percentages of participating contractors noted a change in the market, a smaller subset (often 10% to 15% of participating contractors) reported that BBNP had a great deal of influence on the change. In contrast, relatively small percentages of nonparticipating contractors and distributors (generally 10% or less) indicated that BBNP had positive impacts on their business and the local energy efficiency market or noted a market change. For example, more than half of surveyed participating contractors reported that BBNP had a positive impact on their company and the marketplace in general while just under 10% of nonparticipating contractors reported the same. In addition, BBNP contributed to increased marketing by participating contractors, which in turn led to increased upgrades, but BBNP appears to have affected the marketing practices of only a small percentage of nonparticipating contractors.

When asked to estimate the impacts of BBNP on the number of upgrades they completed, participating and nonparticipating contractors reported that BBNP had resulted in a net increase in upgrades. We estimated a NTG ratio of 1.2 for the residential programs and 5.3 for the commercial programs (the commercial NTG ratio should be interpreted very cautiously). We estimated 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades. It is important to emphasize that these savings estimates should be interpreted as a general indication of the magnitude of net savings rather than as a precise estimate of net savings, particularly the savings from commercial upgrades. We estimated lifetime savings of 21.6 million MMBtu of savings from the net residential upgrades and 69.1 million MMBtu of savings from the net commercial upgrades. It is important to note that the lifetime savings estimates are less precise than the annual estimates.

BBNP appears to have influenced building and business practices among a portion of contractors and distributors in grantee regions (Table 4-4). For example, 72% of participating contractors made changes to their business practices including 60% percent of participating contractors who reported that their services had become more comprehensive to adapt to BBNP while 46% of participating contractors increased their focus on energy efficiency in order to adapt to the program. Further, 34% of participating contractors reported changing their standard practices in non-BBNP upgrades and 15% reported that BBNP had a great deal of influence on the changes to their standard practices. In addition, we found that distributors estimated sales of high efficiency equipment increased during the 2010 to 2013 period, and that small yet notable percentages of distributors reported a positive impact on sales to BBNP, as well as a positive impact on their businesses and the marketplace in general.

The study found evidence that BBNP influenced energy efficiency financing, that BBNP training affected the quality and comprehensiveness of energy efficiency upgrades, but mixed evidence that BBNP increased the number of trained contactors (Table 4-5). The surveys found that large majorities of participating and nonparticipating contractors believed there was increased availability of trained contractors, with over 40% of participating contractors reporting a great deal of influence to BBNP. In addition, nearly half of participating contractors reported that BBNP training increased the number of energy efficient upgrades, the quality of the upgrades, and the comprehensiveness or depth of the upgrades since 2010 (Table 4-4). However, analysis of contractor membership and training

organizations did not find evidence of a greater increase in trained contractors in grantee regions compared to non-grantee regions. Finally, grantees indicated that most financing products developed during the BBNP grant period would continue, and about three-quarters of financial partners reported a BBNP-generated demand for energy efficiency upgrade loans.

In general, the early indicators of market effects are greater among the residential grantee sample than the commercial grantee sample. However, participating contractor spillover (upgrade activity among customers not participating in grantee programs but conducted by participating contractors) appears to have been higher in the commercial grantee sample, while nonparticipating contractor spillover was only detected in medium success residential programs.

In summary, there is evidence across a wide range of indicators of early indications of market effects, but the effects appear to be concentrated largely on a subset of participating , with much smaller estimated effects among nonparticipating contractors and distributors. Further, our findings indicate that BBNP was successful in stimulating upgrade activity and in eliciting some market change at the local level and among financial institutions. BBNP does not appear to have been successful at creating local markets where efficiency occurs in the absence of subsidies, however, as most grantees had not yet developed the market presence to continue self-sustaining programs. (We note that DOE's goal for BBNP was more modest than stimulating efficiency in the absence of all subsidies; it sought to stimulate efficiency activities that would continue in the absence of federal subsidies. Nearly 85% of grantees reported either that their programs or elements of their programs would continue after the grant funding ended.)

4.2. EARLY INDICATORS OF MARKET EFFECTS

We summarize our findings for the early indicators in three tables:

- Table 4-3 presents findings for indicators relating to upgrade activity, marketing, and market effects
- Table 4-4 presents findings for indicators relating to supply chain building practices and business practice
- Table 4-5 presents findings for indicators relating to sustainability

Table 4-3: Upgrade Activity, Marketing, and Market Awareness Initial Indicators of BBNP Market Effects

INDICATOR	FINDINGS
Increased activity in energy efficiency upgrade market	
Contractors report BBNP had a positive influence on their business and the marketplace	More than half (56%) of surveyed participating contractors reported BBNP is having a positive impact on their company and the marketplace in general.
	Indication of small impact of BBNP beyond participating contractors (surveyed nonparticipating contractors reported a positive impact on their business (5%) and the marketplace in general (8%)).
Distributors report BBNP had a positive influence on their business and the marketplace	Just under 10% of surveyed distributors reported that BBNP had a positive impact on their business and marketplace in general.
Contractors report BBNP will have a positive influence on their business and the marketplace over the next two years	Nearly half (46%) of surveyed participating contractors anticipate over the next two years a positive impact on their business and marketplace in general due to BBNP. Higher percentages of contractors from the most and average success residential strata agreed there would be more business both for their companies and in the market in general in the next two years because of BBNP than from the top five commercial stratum (a statistically significant difference).
	Smaller percentages of surveyed nonparticipating contractors indicated there will continue to be positive effects on their business (7%) and the marketplace in general (10%).
Distributors report BBNP will have a positive influence on their business and the marketplace over the next two years	Just under 10% of surveyed distributors anticipate over the next two years a positive impact on their business and marketplace in general due to BBNP.

Continued…

INDICATOR	FINDINGS
Contractors report a net increase in the number of energy efficiency upgrades influenced by BBNP	We estimate a total of 23,215 net upgrades influenced by BBNP (net upgrades account for free-ridership and spillover) compared to 16,840 BBNP-supported upgrades (upgrades that went through the BBNP program) for the 25 sampled grantees programs.
	We estimate 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades. It is important to emphasize that these savings associated with changes in the market estimates should be interpreted as a general indication of the order of magnitude of net savings rather than as a precise estimate of net savings, particularly the savings from commercial upgrades. We estimate lifetime savings of 21.6 million MMBtu of savings from the net residential upgrades and 69.1 million MMBtu of savings from the net commercial upgrades. It is important to note that the lifetime savings estimates are less precise than the annual estimates.
Increased marketing of energy efficiency by contractors	
Contractors report increased energy efficient building practices and equipment and installation; contractors report the increase influenced by BBNP	60% of surveyed participating contractors and 36% of nonparticipating contractors indicated that their marketing of energy efficiency and energy efficient features had increased since 2010. Larger percentages of participating contractors from the residential grantees reported increasing their marketing compared to participating contractors from commercial grantees (a statistically significant difference).
	29% of surveyed participating contractors and 3% of nonparticipating contractors reported that BBNP had a great deal of influence on their increased marketing.
End user awareness of local BBNP program	
Nonparticipants report being aware of local BBNP program	About one-third of surveyed nonparticipant homeowners in the home improvement market had heard of their local BBNP program; awareness was highest in the territories of most successful grantees (37%) and lowest in the territories of least successful grantees (21%).
Sources of participant awareness of BBNP program	66% of surveyed participant homeowners heard about their BBNP program through publicity sources and about one-third reported hearing about the program from each of the following sources: professional sources, contractor, program sources, and community sources.

Table 4-4: Supply Chain Building Practices and Business Practices Initial Indicators of BBNP Market Effects

INDICATOR	FINDINGS
Increased energy efficient building practices and equipment installation and sales	
Contractors report increasing their energy efficient building practices and equipment installation; contractors reported that BBNP had a high degree of influence.	Surveyed participating contractors reported changing their standards practices to be more energy efficient in both BBNP (41%) and non-BBNP (34%) supported upgrades.
	41% of surveyed nonparticipating contractors reported changing their standards practices to be more energy efficient.
	15% of surveyed participating contractors and 3% of surveyed nonparticipating contractors reported BBNP had a great deal of influence on changes in their standard practices.
Distributors report increasing their sales of high efficiency equipment; distributors report the increase influenced by BBNP	About one-fifth of surveyed distributors of building envelope materials, HVAC equipment, lighting equipment indicated that BBNP had a positive impact on their sales (17% to 20% for each equipment type).
	Smaller percentages of surveyed commercial equipment distributors noted positive impacts, ranging from 0% to 19% of distributors across equipment types.
	When asked to rate the level of BBNP's positive influence on their sales, small percentages of both residential and commercial equipment distributors indicated that the BBNP had a great deal of influence on their sales, ranging from 0% to 8% of distributors of residential equipment and 0% to 1% of distributors of commercial equipment.
Contractors report adopting a whole home retrofit approach to upgrades in nonparticipating homes	Nearly one-half of all surveyed participating contractors reported BBNP training had increased the number of energy efficient upgrades (46% of participating contractors), the quality of the upgrades (45%), and the comprehensiveness or depth of the upgrades since 2010 (44%). Larger percentages of participating contractors from the residential grantees reported BBNP training had increased the number of energy efficient upgrades and the comprehensiveness of the upgrades compared to participating contractors from commercial grantees (a statistically significant difference).

Continued…

INDICATOR	FINDINGS
Supply chain business practices have increased focus on energy efficiency	
Contractors change their business practices to increase their focus on energy efficiency	72% of surveyed participating contractors made a change to their business practice and reported the change was influenced by BBNP. 60% of participating contractors reported that their services had become more comprehensive to adapt to BBNP, 51% had begun partnerships with other firms or contractors to adapt to the program, and 46% had shifted their business to focus more on energy efficiency to adapt to the program.
Distributors change their business practices to increase their focus on energy efficiency	18% of distributors reported changing their business and stocking practices to be energy efficient.
	4% of distributors reported BBNP had a great deal of influence on changes in their standard practices.

Table 4-5: Sustainability Initial Indicators: Trained Contractors, Availability of Financing, and Persistence of Activity

INDICATOR	FINDINGS
Increased availability of trained contractors	
Contractors report an increase in the number of trained contractors; contractors reported the increase in trained contractors was influenced by BBNP	86% of participating contractors and 68% of nonparticipating contractors reported that the number of contractors trained in energy efficient building practices had increased since 2010.
	42% of participating contractors and 6% of nonparticipating contractors reported BBNP training had a great deal of influence on the increased number of contractors trained in energy efficient building practices.
Increased numbers of trained contractors in BBNP grantee regions	The analysis of changes in energy efficiency organization membership and certifications during the period from 2011 to 2013 did not show any early indications of market effects.
Grantees report trained and certified contractors	21 grantees reported providing program-supported training to 5,056 workers and certifying 2,026 certified workers; remaining grantees did not report these data.

Continued…

INDICATOR	FINDINGS
Increased availability of financing for energy efficiency upgrades	
Financial partners report changes in type and amount of loans for energy efficiency upgrades; financial partners reported the change was influenced by BBNP	About three-quarters of financial partners reported a BBNP-generated demand for energy efficiency upgrade loans.
Participants report that improved access to financing was an important factor in completing the upgrade	16% of participant homeowners received loans; of these, 75% rated the loan as playing an important role in their upgrade decision.
Persistence of Activity	
Contractors report continuing to offer upgrades	Interviewed participating contractors reported they would continue to offer upgrades; four of the ten interviewed contractors reported there would be no changes to their practices while the remaining six anticipated adjusting their practices by scaling back or seeking out other incentive programs or low-interest financing opportunities.
Programs or program features continue	Of 62 grantees and sub-grantees, 52 reported they would continue some program offerings post-grant: 7 would expand their scope or geographic reach; 13 would continue relatively unchanged; and 32 would continue some elements of program offerings or infrastructure.
Financing for energy efficiency upgrades continues	All but one of the grantees with financing reported that financing would continue.
	75% of financial partners interviewed reported that they would continue to offer financing for energy efficiency upgrades post-grant; of these, 53% would offer a product supportive of energy efficient upgrades is different from their BBNP offering.

REFERENCES

Cadmus. (2011). *2010 Net-to-Gross Findings: Home Energy Assessment*. Prepared for the Electric and Gas Program Administrators of Massachusetts. Waltham, Mass.: The Cadmus Group, Inc.

DNV GL. (2014). *Final Report: Baseline Characterization. Market Effects Study of Investor-Owned Utility Whole House Retrofit Programs in California*. California Public Utility Commission (CPUC).

DOE (U.S. Department of Energy). (2009). *Financial Assistance Funding Opportunity Announcement* (No. DE-FOA-0000148). Retrieved from U.S. Department of Energy website: *http://energy.gov/sites/prod/files/edg/media/DE-FOA-0000112.pdf*

Eto, J., Prahl, R., & Schlegel, J. (1996). *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs* (Report No. LBNL-39058). Berkeley, CA: Lawrence Berkeley National Laboratory.

JCHS (Joint Center for Housing Studies) of Harvard University. (2011a). *A New Decade of Growth for Remodeling*. Cambridge, MA: Harvard University.

JCHS (Joint Center for Housing Studies) of Harvard University. (2011b). *The U.S. Housing Stock: Ready for Renewal*. Cambridge, MA: Harvard University.

LBNL (Lawrence Berkeley National Laboratory). (2011). *Request for Proposal* (RFP No. DY-2011-06). Retrieved from Lawrence Berkeley National Laboratory website: https://bbnp.pnnl.gov/sites/default/files/program-materials/c-692_LBNL_BBNP_Eval_RFP.pdf

McGraw-Hill Construction. (2014). *The State of Residential Green Building*.

Quantec & Summit Blue, LLC. (2006). *Home Performance with ENERGY STAR Program: Market Characterization, Market Assessment and Causality (MCAC) Evaluation Final Report.* New York State Energy Research and Development Authority (NYSERDA).

Research Into Action, Inc., Evergreen Economics, Nexant, Inc., and NMR Group, Inc. (2013). *Preliminary Energy Savings Impact Evaluation: Better Buildings Neighborhood Program*. Retrieved from U.S. Department of Energy website: http://www1.eere.energy.gov/analysis/pdfs/energy_savings_impact_bbnp_110413.pdf

Research Into Action, Inc. and NMR Group, Inc. (2012a). *Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program - Final Report*. Retrieved from U.S. Department of Energy website: http://www1.eere.energy.gov/analysis/pdfs/bbnp_preliminary_process_market_eval_report_011513.pdf

Research Into Action, Inc. and NMR Group, Inc. (2012b). *Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program - Final Report Appendices*. Retrieved from U.S. Department of Energy website: http://www1.eere.energy.gov/analysis/pdfs/bbnp_preliminary_process_market_eval_report_appendices_011513.pdf

SEE Action (State and Local Energy Efficiency Action Network) Residential Retrofit Working Group. (2011). *Roadmap for the Home Energy Upgrade Market*. Retrieved from U.S. Department of Energy website: *https://www4.eere.energy.gov/seeaction/system/files/documents/retrofit_energyupgradesroadmap.pdf*

APPENDICES

APPENDIX A. GRANTEE AWARDS

Table A-1 provides a list of grantees sorted alphabetically. Table A-2 identifies the grantees in decreasing order of grant award.

Table A-1: BBNP Grant Recipients

GRANTEE NAME	TOTAL GRANTED
ADECA, AL (SEP)	$3,013,751
Austin, TX	$10,000,000
Boulder County, CO	$25,000,000
Camden, NJ	$5,000,000
Chicago Metro Agency for Planning	$25,000,000
Commonwealth of MA (SEP)	$2,587,976
Connecticut Innovations, Inc.	$4,171,214
CSG, Bainbridge Island, WA	$4,884,614
Eagle County, CO	$4,916,126
Fayette County, PA	$4,100,018
Greater Cincinnati Energy Alliance (GCEA)	$17,000,000
Greensboro, NC	$5,000,000
Indianapolis, IN	$10,000,000
Kansas City, MO	$20,000,000
Los Angeles County, CA	$30,000,000
Lowell, MA	$5,000,000
NYSERDA	$40,000,000
Omaha, NE	$10,000,000
Philadelphia, PA	$25,000,000
Phoenix, AZ	$25,000,000
Portland, OR	$20,000,000
Rutland, VT	$4,487,588
San Antonio, TX	$10,000,000
Santa Barbara County, CA	$2,401,309
Seattle, WA	$20,000,000
Southeast Energy Efficiency Alliance	$20,000,000

Continued…

GRANTEE NAME	TOTAL GRANTED
St. Lucie County, FL	$2,941,500
State of Maine	$30,000,000
State of Maine (SEP)	$4,538,571
State of Maryland	$20,000,000
State of Michigan	$30,000,000
State of Michigan (SEP)	$4,994,245
State of Missouri	$5,000,000
State of Nevada (SEP)	$5,000,000
State of New Hampshire	$10,000,000
Toledo-Lucas Co. Port Authority (OH)	$15,000,000
Town of Bedford, NY	$1,267,874
Town of University Park, MD	$1,425,000
VDMME, VA (SEP)	$2,886,500
WDC, WA (SEP)	$2,587,500
Wisconsin Energy Efficiency Project	$20,000,000
Total	$508,203,786

Table A-2: BBNP Recipient Grant Recipients in Decreasing Order of Grant Amounts

GRANTEE NAME	TOTAL GRANTED
NYSERDA	$40,000,000
Los Angeles County, CA	$30,000,000
State of Maine	$30,000,000
State of Michigan	$30,000,000
Boulder County, CO	$25,000,000
Chicago Metro Agency for Planning	$25,000,000
Philadelphia, PA	$25,000,000
Phoenix, AZ	$25,000,000
Kansas City, MO	$20,000,000
State of Maryland	$20,000,000
Portland, OR	$20,000,000
Seattle, WA	$20,000,000

Continued…

GRANTEE NAME	TOTAL GRANTED
Southeast Energy Efficiency Alliance	$20,000,000
Wisconsin Energy Efficiency Project	$20,000,000
Greater Cincinnati Energy Alliance	$17,000,000
Toledo-Lucas Co. Port Authority (OH)	$15,000,000
Austin, TX	$10,000,000
Indianapolis, IN	$10,000,000
State of New Hampshire	$10,000,000
Omaha, NE	$10,000,000
San Antonio, TX	$10,000,000
Camden, NJ	$5,000,000
Greensboro, NC	$5,000,000
Lowell, MA	$5,000,000
State of Missouri	$5,000,000
State of Nevada (SEP)	$5,000,000
State of Michigan (SEP)	$4,994,245
Eagle County, CO	$4,916,126
CSG, Bainbridge Island, WA	$4,884,614
State of Maine (SEP)	$4,538,571
Rutland, VT	$4,487,588
Connecticut Innovations, Inc.	$4,171,214
Fayette County, PA	$4,100,018
ADECA, AL (SEP)	$3,013,751
St. Lucie County, FL	$2,941,500
VDMME, VA (SEP)	$2,886,500
Commonwealth of MA (SEP)	$2,587,976
WDC, WA (SEP)	$2,587,500
Santa Barbara County, CA	$2,401,309
Town of University Park, MD	$1,425,000
Town of Bedford, NY	$1,267,874
Total	$508,203,786

APPENDIX B. DETAILED ANALYSIS OF INITIAL INDICATORS OF MARKET EFFECTS: CONTRACTOR AND DISTRIBUTOR SURVEYS AND INTERVIEWS

This appendix reports the findings from telephone surveys of 147 contractors participating in Better Buildings Neighborhood Program (BBNP), 446 contractors not participating in BBNP (nonparticipating contractors), and 291 distributors of energy efficient equipment not included in the main body of the report. Contractor and distributor survey respondents represented 22 grantees and 25 programs.[36] A complete listing of frequency responses for each survey item is provided in Appendix C and Appendix D.

This appendix reports statistically significant differences in survey responses by stratum. We did not test for differences between participating and nonparticipating contractors because the primary purpose of the nonparticipating contractor surveys was not to serve as a comparison group to the participating contractors but rather to examine the extent to which BBNP affected the energy upgrade market.

As part of the market effects analysis, we conducted surveys with contractors participating in BBNP, nonparticipating contractors, and energy efficiency equipment distributors. The surveys collected data on the potential market effects of BBNP, including:

- Number of homes/buildings with energy upgrades during program implementation
- Changes in building and business practices and changes in the energy efficiency upgrade market
- Ways contractors changed their marketing in response to program changes
- Whether and how the contractors' marketing changes made a difference in the observed level of program activity
- Training and availability of qualified contractors
- Jobs created and retained
- The stock of current building materials and changes compared to pre-BBNP stocks
- Barriers to energy efficiency upgrades
- Knowledge of and participation in other programs
- Changes in the number of upgrades respondents associated with BBNP versus other programs and outside influences, and to which particular aspects of BBNP (for example marketing, incentives, and training) that they reported the most influence

[36] Three of the grantees were included for both their residential and commercial programs.

- Additional contractor characteristics, such as the range of services they provide and whether these things have changed as a result of BBNP involvement

Key elements of BBNP's activities in the market included training and workforce development, financing and other incentives, and marketing and outreach. We examined whether BBNP's activities resulted in several key outcomes in the energy efficiency upgrade market through self-reports from the contractor and distributor surveys. These outcomes include:

- Increased activity in energy efficiency upgrade market
- Increased availability of trained contractors
- Increased marketing of energy efficiency by contractors
- Adoption of energy efficient building practices
- Increased sales of high efficiency equipment and products
- Changes in business practices by contractors and distributors

These outcomes contribute to increased energy efficiency, reduced energy use and greenhouse gas emissions, and a self-sustaining upgrade industry.

B.1. CHARACTERISTICS OF CONTRACTORS AND DISTRIBUTORS

This section provides a summary of the characteristics of the contractor and distributor survey respondents.

B.1.1. CONTRACTORS

Surveyed Contractors

We completed surveys with 593 contractors from 25 BBNP grantee programs, including 147 participating contractors and 446 nonparticipating contractors.[37] As described in the methodology presented in Appendix B and Appendix C, we selected grantees based on their success levels and classified them into three strata of residential programs and one stratum of commercial programs. Table B-1 presents a summary of the contractor survey sample by stratum. In this report, where relevant, we tested for statistical significance at the 90% confidence level between strata. Because we did not complete any surveys with participating contractors in the low success stratum and completed only nine surveys with nonparticipating contractors in that stratum, this report does not include results for those nine respondents in tables that compare results across strata.

[37] We considered respondents participants if 1) they had been on a grantees list of participating contractors and confirmed participation during the survey (n=124) or 2) they had not been on a grantee participation list, but had indicated that they had participated in the program *and* they had been able to quantify the number of upgrades (at least one upgrade) that they had completed through the program (n=23).

Table B-1: Contractor Survey Sample by Stratum and Participation

STRATUM	NUMBER OF GRANTEES*	PARTICIPATING		NONPARTICIPATING	
		n	Percent	n	Percent
Most Successful	6	43	29%	128	29%
Average	13	75	51%	211	47%
Least Successful	1	—	—	9	2%
Top 5 Commercial	5	29	20%	98	22%
Total	25*	147		446	

* Twenty-two grantees were included in the sample. Three of the grantees were included for both their residential and commercial programs. We chose the sector (residential vs. commercial) about which to ask each contact by assigning them to the sector for which they reported in the survey that the majority of their retrofit work was completed or the majority of their business sales made – if their work or sales were evenly split across sectors, we randomly assigned a sector about which to ask. For some participating contractors, we were able to determine which sector that they had served through the program prior to fielding; we asked these contractors about that sector.

Nearly two-thirds of the total energy upgrades that contractors reported conducting between 2010 and 2013 (66%) were completed by participating contractors (Table B-2).

Table B-2: Contractors' Mean and Total Number of Energy Upgrades Completed in Existing Buildings, 2010 to 2013

YEAR	PARTICIPATING (N=147)		NONPARTICIPATING (N=446)	
	Mean Number of Upgrades*	Total Number of Upgrades	Mean Number of Upgrades	Total Number of Upgrades
2010	226	25,327	43	12,037
2011	219	26,774	44	12,888
2012	215	28,972	51	15,308
2013**	235	32,190	61	19,409
2010-2013	815	113,263	183	59,641

* We estimated the total number of upgrades for 21 respondents, using the average number of upgrades per employee (53) multiplied by the number of full-time employees that the respondents reported were in their company. We replaced ten respondents' total upgrade estimates because their responses were three standard deviations above the mean number of completed upgrades per reported full-time employee (423 or higher). We imputed the total number of upgrades for an additional 11 respondents who were unable to estimate the number of upgrades that they had completed but were able to estimate a percentage change in the number of upgrades they would have completed in absence of the program.

** Given the timing of survey fielding (September 2013 through February 2014), many survey respondents had estimated the number of upgrades they would have completed by the end of 2013.

Participating contractors' average number of upgrades from 2010 to 2013 was more than four times that of nonparticipating contractors. On average, participating and nonparticipating contractors' most active year was 2013. Among participating contractors, the average number of upgrades varied from year to year, falling from 226 in 2010 to 219 in 2011 and 215 in 2012, then increasing to 235 in 2013. The reported averages among nonparticipating contractors increased more linearly across years, beginning at 43 in 2010 and ending at 61 in 2013. Table B-3 reports the mean number of upgrades that respondents reported completing from 2010 to 2013 by participation and stratum.

Table B-3: Contractors' Mean and Total Number of Energy Upgrades Completed in Existing Buildings by Stratum, 2010 to 2013

STRATUM*	PARTICIPATING			NONPARTICIPATING		
	N	Mean Number of Upgrades**	Total Number of Upgrades	N	Mean Number of Upgrades	Total Number of Upgrades
Most Successful	39	920	35,890	89	240	21,323
Average	74	840	62,132	154	198	30,562
Top 5 Commercial	26	586	15,241	77	87	6,725
Total	139	815	113,263	320	183	59,610

* We excluded results associated with the low success stratum from this table because of the small sample size.

** Given the timing of survey fielding, many survey respondents had estimated the number of upgrades they would have completed by the end of 2013. We estimated the total number of upgrades for 21 respondents: we replaced ten respondents' estimates because they were outliers and 11 because they were unable to estimate the number of upgrades that they completed but were able to estimate a percentage change in the number of upgrades they would have completed in absence of the program.

In total, the program administrators for the 25 BBNP grantee programs included in our surveys reported that they had completed 38,943 BBNP upgrades through Q3, 2013.[38] Table B-4 compares the reported number of upgrades by BBNP grantees and contractor survey respondents.[39] Participating contractors from the survey reported completing 16,840 BBNP upgrades,[40] or more than 40% of the total upgrades reported by grantees (43%).

38 Residential upgrade counts only include upgrades to single-family homes.

39 Contractors estimated BBNP upgrades for 2010 through 2013.

40 From here forward, when the report refers to BBNP, it is referring to the specific grantee about which the respondent was asked questions.

Table B-4: Grantee and Contractor Survey Respondent-Reported BBNP Upgrades by Stratum

STRATUM [a]	BBNP UPGRADES REPORTED BY GRANTEE [b]		BBNP UPGRADES REPORTED BY CONTRACTORS [c]		PERCENT OF GRANTEE REPORTED UPGRADES
	Sum	Percent	Sum	Percent	
Most Successful	15,886	41%	7,431	44%	47%
Average	19,411	51%	8,727	52%	45%
Top 5 Commercial	2,482	6%	682	4%	27%
Total	38,943		16,840		43%

[a] We did not complete surveys with any participants from the low success stratum.

[b] The retrofit counts are limited to the 22 grantees included in the preliminary process and market impacts evaluation. The counts only include residential upgrades for 19 of the 22 grantees whose participating contractors were interviewed about residential upgrades, and commercial upgrades for the five grantees whose contractors were interviewed about their commercial upgrades. Contractors completed surveys between mid-September 2013 and February 2014. Grantees reported their upgrades through Q3, 2013.

[c] For purposes of estimating net BBNP upgrades, we imputed the number of BBNP upgrades for 12 respondents who were able to estimate the percentage change in the total upgrades that they would have completed in absence of BBNP. To estimate these values, we used the median number of BBNP upgrades that had been reported for the same grantee that they represented.

Larger contractor firms are more likely to complete more upgrades. Participating contractors from companies with 21 or more full-time employees (FTEs) performed statistically significantly more upgrades from 2010 through 2013, on average (2,307), than all other participating contractors' company size categories presented in Table B-5. Similarly, nonparticipating contractors from companies of this size also completed statistically significantly more upgrades (611) than all other nonparticipating contractors' company sizes, on average. In this report, where relevant, we tested for statistical significance at the 90% confidence level between company sizes.

Table B-5: Contractors' Mean Number of Energy Upgrades Completed in Existing Buildings by Company Size, 2010 to 2013

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING		NONPARTICIPATING	
	n	Mean Number of Upgrades [a]	n	Mean Number of Upgrades
1 to 5	45	216	172	86
6 to 10	32	478[b]	62	126
11 to 20	26	552[b]	37	121
21 or more	32	2,307[c]	53	611[c]

[a] Given the timing of survey fielding, many survey respondents had estimated the number of upgrades they would have completed by the end of 2013. We estimated the total number of upgrades for 21 respondents by using the average number of upgrades per employee (53) multiplied by the number of FTEs that the respondents reported were in their company. We replaced ten respondents' estimates because they were outliers (the response being three standard deviations above the mean number of completed upgrades per employee). We imputed the total number of upgrades for an additional 11 respondents who were unable to estimate the number of upgrades that they had completed but were able to estimate a percentage change in the number of upgrades they would have completed in absence of the program.

[b] Statistically significantly different from contractors with one to five FTEs at the 90% confidence level.

[c] Statistically significantly different from all other contractor size categories at the 90% confidence level.

As with total upgrades, contractors with 21 or more FTEs completed statistically significantly more BBNP upgrades from 2010 through 2013, on average (283), than most other participating contractors' company sizes presented in Table B-6.

Table B-6: Contractor Survey Respondent-Reported BBNP Upgrades by Company Size, 2010 to 2013

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING	
	n	Mean Number of BBNP Upgrades [a]
1 to 5	45	37
6 to 10	31	127[b]
11 to 20	28	75[b]
21 or more	32	283[c]
Total [d]	140	120

[a] For purposes of estimating net BBNP upgrades, we imputed the number of BBNP upgrades for 12 respondents who were able to estimate the percentage change in the total upgrades that they would have completed in absence of BBNP. To estimate these values, we used the median number of BBNP upgrades that had been reported for the same grantee that they represented.

[b] Statistically significantly different from contractors with one to five FTEs at the 90% confidence level.

[c] Statistically significantly different from contractors with one to five FTEs and 11 to 20 FTEs at the 90% confidence level.

[d] The total row includes participating contractors who did not know how many employees were at their company but had estimates for their number of BBNP upgrades.

On average, participating contractors, in comparison to nonparticipating contractors, estimated that larger shares of their work involved *existing* (as opposed to new construction) homes and buildings: Participating contractors reported, on average, that 83% of their residential upgrades and 80% of their commercial upgrades included retrofits, while nonparticipating contractors on average indicated that 76% of their residential upgrades and 74% of their commercial upgrades were in retrofit projects. These differences are not surprising given that BBNP incentivizes upgrades in *existing* homes and buildings and does not incentivize new construction (Table B-7).

Table B-7: Estimated Percentages of Contractors' Residential and Commercial Work Involving Upgrades in Existing Buildings and Homes

STATISTICS	PARTICIPATING		NONPARTICIPATING	
	Percent of:		Percent of:	
	Residential Work	Commercial Work	Residential Work	Commercial Work
N	134	109	420	361
Mean	83%	80%	76%	74%
Median	95%	90%	90%	90%

Participating contractors' reports of the number of BBNP and total upgrades that they completed from 2010 to 2013 indicated that, on average, 31% of their business was supported by BBNP. Most commonly, less than 25% of their business was funded by BBNP (57% of respondents). On average, participating contractors completed 120 BBNP upgrades from 2010 to 2013 (Table B-8).

Table B-8: Percentage of Contractor Business Funded by BBNP, 2010 to 2013

PERCENTAGE OF BUSINESS FUNDED BY BBNP	PARTICIPATING (N=118)*
0% to less than 25%	57%
25% to less than 50%	11%
50% to less than 75%	19%
75% to 100%	14%
Mean Percent	31%
Mean number of BBNP upgrades (n=140)	120

* We calculated percentages for respondents who were able to estimate the number of program upgrades and total upgrades that they completed from 2010 to 2013. We did not calculate percentages if contractors' estimates of their total upgrades were three standard deviations above the mean number of completed upgrades per employee (10 respondents estimated more than 423 upgrades per employee).

Interviewed Contractors

Table B-9 shows the number of total upgrades and BBNP-supported upgrades that the in-depth contractor interviewees completed. According to their reports, in total, they had completed 23,942 upgrades from 2010 to 2013, and 7% of those were BBNP-supported.

Table B-9: In-Depth Contractor Interviewee Total and BBNP-Supported Energy Upgrades Completed in Existing Buildings, 2010 to 2013

INTERVIEWEE	TOTAL UPGRADES	PROGRAM UPGRADES
1	10,200	7
2	52	52
3	65	50
4*	1,400	45
5	10,000	1,000
6	560	200
7	430	100
8	55	30
9	370	80
10	810	50
Total	23,942	1,614

Note: Interviewees four and ten were not the original Computer-Assisted Telephone Interviewing (CATI) survey respondent contacts, but represented the same companies as the CATI survey respondent contacts. The figures above are those reported by the original survey respondent contacts during the CATI survey.

* This respondent had been unable to estimate the number of BBNP upgrades she had completed through the program. We imputed this value for the purposes of analysis.

B.1.2. DISTRIBUTORS

We completed surveys with 291 distributors from 25 BBNP grantee programs. Low success stratum distributors comprised the smallest share of the sample (3%). As described in the methodology presented in Appendix C, we selected grantees based on their success levels and classified them into three strata of residential programs and one stratum of commercial programs. Table B-10 presents a summary of the distributor survey sample by stratum. Throughout the report, we tested for statistical significance at the 90% confidence interval between strata. Because there were only eight distributor respondents in the low success stratum, we did not include the results for those eight respondents in tables that compare results across strata.

Table B-10: Distributor Survey Sample by Stratum

STRATUM	NUMBER OF GRANTEES*	DISTRIBUTORS	
		n	Percent
Most Successful	6	78	27%
Average	13	139	48%
Least Successful	1	8	3%
Top 5 Commercial	5	66	23%
Total		291	

* Twenty-two grantees were included in the sample. Three of the grantees were included for both their residential and commercial programs. We chose the sector (residential vs. commercial) about which to ask each contact by assigning them to the sector for which they reported in the survey that the majority of their business sales were made – if their sales were evenly split across sectors, we randomly assigned a sector about which to ask.

B.2. INITIAL INDICATORS OF BBNP MARKET EFFECTS

B.2.1. ENERGY EFFICIENCY UPGRADE MARKET ACTIVITY

One of the key expected market effects outcomes of BBNP is expanded retrofit activity by consumers and contractors. We assessed the impact of BBNP by asking contractors to rate the impact of BBNP on their business and the marketplace. In addition, we asked contractors to quantify the number of upgrades that they associated with BBNP.

We asked contractors to assess whether BBNP had an effect on their business and the market for energy efficiency upgrades and whether it would have an effect in the next two years. Contractors were asked to agree or disagree with the following four statements using an 11-point scale, where zero is “strongly disagree” and 10 is “strongly agree”:

- There is more business for your company than there would have been without the program.
- There is more business in general in the marketplace than there would have been without the program.
- In the next two years, there will be more business for your company than there would have been without the program.
- In the next two years, there will be more business in general in the marketplace than there would have been without the program.

Depending on the statement in question, the percentage of total upgrades that these participating contractors represent ranges from 26% to 41% (see Table B-11 to Table B-14); the nonparticipating contractors represent a small amount of upgrades, ranging from 4% to 6% (surveyed contractors completed a total of 172,904 upgrades from 2010 through 2013).

More than one-half of participating contractors (56%) strongly agreed that there was more business for their company because of BBNP. It is important to consider not only the percentage of contractors who associated changes with BBNP, also but the relative portion of the upgrade marketplace that the contractors represented. These participating contractors represented 41% of all upgrades completed by all respondents from 2010 through 2013 (Table B-11). A much smaller percentage of nonparticipating contractors, 5%, reported that the BBNP grantee program had increased the amount of business for their companies.

Similarly, 56% of participating contractors strongly agreed that there was more business in general in the marketplace than there would have been without the program. These contractors represented 38% of all upgrades completed by all respondents from 2010 to 2013 (Table B-12). Again, a much smaller percentage of nonparticipating contractors (8%, representing 5% of all upgrades) perceived an increase in business in general in the marketplace due to the program.

When considering the energy efficiency market in the next two years, slightly less than one-half of participating contractors strongly agreed that there will be more business for their company (46%) and that there will be more business in general in the marketplace (46%) than there would have been without the program. A small percentage of nonparticipating contractors strongly agreed that there would be an increase in business either for their own company (7%) or in the marketplace in general (10%).

Given that the programs were drawing to a close at the time of survey fielding, it is not surprising that a larger percentage of participants indicated positive impacts on their *current* business and the market than on *future* business for themselves and the marketplace.[41]

Comparing responses among strata, we found that somewhat higher percentages of contractors from the two residential strata agreed that there would be more business for their companies and in the market in general in the next two years because of BBNP than did contractors from the top five commercial stratum. Similarly, for the nonparticipating contractors, higher percentages of contractors from the two residential strata reported that BBNP had positively affected their businesses and the marketplace.

A somewhat higher percentage of nonparticipating contractors from the most and average success strata compared to nonparticipants in the top five commercial strata reported that BBNP led to more business for their companies. In addition, participating and nonparticipating contractors from the medium success stratum who noted an increase in business were responsible for a higher percentage of the upgrades in their regions than was the case among contractors from the other strata (Table B-11), suggesting that medium success grantees affected the businesses of relatively larger contractors.

41 The preliminary evaluation found that a slightly higher percentage of contractors expected more positive impacts in the near future (next two years) compared to impacts on their current business and the market.

Table B-11: Contractors Who Strongly Agreed that There Was More Business for Their Company because of BBNP by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	N	Percent of Participants Who Strongly Agreed (7-10)[b]	Percent of All Upgrades[c]	N	Percent of Nonparticipants Who Strongly Agreed (7-10)	Percent of All Upgrades
Most Successful	43	53%	30%	128	6%[d]	2%
Average	75	61%	49%	211	7%[d]	7%
Top 5 Commercial	29	48%	41%	98	—	—
Total	147	56%	41%	446	5%	4%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Contractors were asked to agree or disagree with the statements using an 11-point scale, where zero is "strongly disagree" and ten is "strongly agree." Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors for each stratum and overall.

[c] Percentages of upgrades are based on the total number of upgrades for each stratum and overall (57,213 for High Success, 21,966 for top five commercial, etc.).

[d] Statistically significantly different from contractors from the top five commercial stratum at the 90% confidence level.

Similarly, nonparticipating contractors from the average and most successful strata were significantly more likely than contractors from the top five commercial stratum to strongly agree (Table B-12).

Table B-12: Contractors Who Strongly Agreed that There Was More Business in General because of BBNP by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	N	Percent of Participants Who Strongly Agreed (7-10)[b]	Percent of All Upgrades[c]	N	Percent of Nonparticipants Who Strongly Agreed (7-10)	Percent of All Upgrades
Most Successful	43	53%	25%	128	9%[d]	4%
Average	75	61%	46%	211	9%[d]	7%
Top 5 Commercial	29	48%	41%	98	3%	1%
Total	147	56%	38%	446	8%	5%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Contractors were asked to agree or disagree with the statements using an 11-point scale, where zero is "strongly disagree" and 10 is "strongly agree." Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors for each stratum and overall.

[c] Percentages of upgrades are based on the total number of upgrades for each stratum and overall (57,213 for most successful, 21,966 for top five commercial, etc.).

[d] Statistically significantly different from contractors from the top five commercial stratum at the 90% confidence level.

Participating contractors from the average stratum and nonparticipating contractors from the average and most successful strata were more likely to agree that there would be more business for their companies in the next two years because of BBNP than were contractors from the top five commercial stratum (Table B-13).

Table B-13: Contractors Who Strongly Agreed that There will Be More Business for Their Company in the Next Two Years because of BBNP by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	n	Percent of Participants Who Strongly Agreed (7-10)[b]	Percent of All Upgrades[c]	n	Percent of Nonparticipants Who Strongly Agreed (7-10)	Percent of All Upgrades
Most Successful	43	44%	24%	128	9%[d]	3%
Average	75	55%[d]	36%	211	9%[d]	7%
Top 5 Commercial	29	28%	15%	98	1%	0.2%
Total	147	46%	29%	446	7%	4%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Contractors were asked to agree or disagree with the statements using an 11-point scale, where zero is "strongly disagree" and 10 is "strongly agree." Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors for each stratum and overall.

[c] Percentages of upgrades are based on the total number of upgrades for each stratum and overall (57,213 for most successful, 21,966 for top five commercial, etc.).

[d] Statistically significantly different from contractors from the top five commercial stratum at the 90% confidence level.

Participating and nonparticipating contractors from the average and most successful strata were more likely to agree that there would be more business in the market in general in the next two years because of BBNP than were contractors from the top five commercial stratum (Table B-14).

Table B-14: Contractors Who Strongly Agreed that There will Be More Business in General in the Next Two Years because of BBNP by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	n	Percent of Participants Who Strongly Agreed (7-10)[b]	Percent of All Upgrades[c]	n	Percent of Nonparticipants Who Strongly Agreed (7-10)	Percent of All Upgrades
Most Successful	43	42%[d]	13%	128	13%[d]	4%
Average	75	57%[d]	37%	211	12%[d]	8%
Top 5 Commercial	29	21%	15%	98	2%	2%
Total	147	46%	26%	446	10%	6%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Contractors were asked to agree or disagree with the statements using an 11-point scale, where zero is "strongly disagree" and 10 is "strongly agree." Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors for each stratum and overall.

[c] Percentages of upgrades are based on the total number of upgrades for each stratum and overall (57,213 for most successful, 21,966 for top five commercial, etc.).

[d] Statistically significantly different from contractors from the top five commercial stratum at the 90% confidence level.

Net Upgrades Associated with BBNP

The following section includes estimates of net BBNP upgrades, starting with a description of how we calculated those estimates. This section also provides some explanations for any negative effects of BBNP reported by some contractors. Lastly, it extrapolates these estimates to the broader population within the geographic regions of the 25 grantee programs.

It is important to note that the high NTG for the commercial stratum should be interpreted very cautiously. The estimate is based on a relatively small sample of five grantees with 29 participating contractors and 98 nonparticipating contractors. Further, the high NTG ratio is strongly influenced by the contractors from a single grantee; if respondents representing this grantee are excluded from the analysis, the NTG drops to 1.2.

Methodology for Estimating Net BBNP Upgrades

We estimated the number of energy efficiency upgrades associated with the 25 grantee programs included in this market assessment. This provided an estimate of the net impacts of the BBNP grantees for participating contractors (that is, the estimate includes both free-ridership and spillover) and an estimate of nonparticipant spillover for nonparticipating contractors. We estimated a NTG ratio for the grantees by combining the total estimated net number of energy efficiency upgrades from participating and nonparticipating contractors and dividing by the total number of BBNP-supported upgrades reported by participating contractors. It is important to note that the estimate applies only to these 25 grantee programs, all of which were chosen because of their success levels, and that the estimate does not apply to BBNP overall. Further, the NTG for the commercial stratum should be interpreted very cautiously. Also it is important to note that we cannot directly estimate energy savings from any of the spillover upgrades because we do not have data on the type of equipment installed or replaced in the non-BBNP upgrades. Further, the data are

self-reported and have not been corroborated by field studies. However, later in this section we provide an estimate of savings by using the contractors' estimates of the percentage of savings of upgrades completed with and without BBNP assistance, and savings estimates from the companion report *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2).

We took several steps to estimate the number of net BBNP upgrades; Table B-15 illustrates the steps with responses from several contractors.

- Respondents (participating and nonparticipating contractors) indicated whether the number of energy efficiency upgrades they would have completed in the absence of BBNP activities during the 2010-2013 period, with all other things remaining the same (that is, the economy, energy prices, and other energy efficiency programs), would have been higher, lower, or the same.

- If respondents thought the number of upgrades would have been higher in absence of the program, we asked them to estimate the percentage higher than the total number of upgrades that they conducted from 2010 through 2013 would have been. If they thought the number of upgrades would have been lower, we asked them to estimate the percentage of the total number of upgrades that they would have completed during this period. From those estimates, we estimated the number of upgrades that the respondent would have conducted in absence of the program.[42] See column C in Table B-15.

- Subtracting this value from a respondent's estimate of total upgrades performed between 2010 and 2013 (column A) provides an initial estimate of the net impacts of BBNP for participating contractors (that is, the estimate includes both free-ridership and spillover) and an estimate of nonparticipant spillover for nonparticipating contractors (column D).

  For example, respondent 1 completed 160 upgrades between 2010 and 2013 (column A) and estimated that he/she would have completed 128 upgrades in the absence of the BBNP grantee (column C); we estimated a net impact of 32 upgrades for the respondent (column D & J). The same respondent completed five upgrades with BBNP, resulting in an estimated NTG ratio of 6.4 for the respondent (that is, 32 divided by five = 6.4; column K), meaning that the BBNP grantee program resulted in spillover upgrades for the respondent. Respondent 2 had an NTG value of less than one. The respondent estimated 1,080 upgrades in the absence of the BBNP grantee – or 2,520 net upgrades – but completed 3,000 upgrades with the grantee, resulting in an estimated NTG of 0.84 (that is, 2,520 divided by 3,000 = 0.84). .

[42] Sixteen participating contractors and 123 non-participating contractors were unable to estimate the total number of upgrades that they had conducted from 2010 to 2013. Eleven of these respondents (eight participating contactors and three non-participating contractors) were able to estimate a percentage change in absence of the program. We estimated the total number of upgrades for these 11 respondents in order to estimate net upgrades. We found that the respondents who were able to estimate total upgrades had conducted 53 upgrades per FTE on average. To estimate the total upgrades for the 11 respondents, we multiplied the number of FTEs that they had reported by 53. The remaining 128 respondents were treated as zero values for the net upgrades analysis.

- Next, we used respondents' ratings of the impacts of BBNP on their business and the energy efficiency upgrade market as a consistency check of program influence on net upgrades. We combined the four question series (footnoted in Table B-15) into a scale and used an average score of seven or higher (that is, rating BBNP as having a positive impact on their business and the upgrade market) as the minimum required score to use a respondent's estimate of net impacts (column I).[43] Nonparticipating contractors, such as respondent 7, with a score below seven received a spillover value of zero (that is, zero nonparticipant spillover upgrades):
  - A rating of seven or higher = 100% net (that is, the program had a strong impact on their business, all BBNP projects are counted as net upgrades). For example, respondent 1.
  - A rating of six = 80% net (that is, 80% of BBNP projects are counted as net upgrades).
  - A rating of five = 60% net. For example, respondent 3.
  - A rating of four = 40% net.
  - A rating of three = 20% net.
  - A rating of two or lower = 0% net (that is, strong disagreement that BBNP had a positive effect on their business; none of the BBNP projects are counted as net upgrades).
- We applied this rule similarly to participants who said that there would have been no change in absence of the program. These respondents had initial net upgrade values of zero; however, if they gave positive ratings to BBNP, we proportionally assigned them percentages of BBNP program upgrades.
- For participating contractors identifying negative market effects (that is, they would have completed more projects without BBNP), we inversely applied a similar rule based on the respondents' agreement with the impact of BBNP on their business.[44] For example, respondent 5 below indicated that he/she would have conducted 480 upgrades in absence of the program and had conducted 400 in total, resulting in an initial net upgrade value of -80. This respondent then gave an average rating of three to the scale questions and, in particular, gave a rating greater than two to the statement "There is more business for your company than there would have been without the program," showing a slight positive impact of the program. We assigned this respondent 80% of the negative *net* upgrades, increasing the final net upgrade value to -64 (80% of -80 = -64).

---

43 The four-question scale has a Cronbach's α of 0.90. Cronbach's α is a measure of inter-item correlation and scale reliability. A score of 0.9 or higher is generally considered an excellent indication of inter-item correlation and scale reliability (DeVellis, R. F. (1991). *Scale Development Theory and Applications*. Second Edition. London: Sage Publications).

44 The in-depth interviews examined why some contractors reported negative program effects. They described dynamics such as BBNP unevenly promoting certain contractors over others, competing contractors utilizing subcontractors to get around BBNP rules, BBNP drawing contractors to come from other geographic areas, and nonparticipating contractors leveraging program opportunities.

- Last, for participating contractors, we examined the ratio of net BBNP upgrades to the number of upgrades completed with BBNP (that is, individual NTG ratios) to identify any outliers. Four participants had NTG ratios more than three standard deviations above or below the mean NTG ratio. Three outlier respondents estimated that, for every one BBNP upgrade, they had completed 60 or more additional upgrades as a result of the program. We replaced their estimates of net upgrades with their estimated number of BBNP upgrades.[45] For example, respondent 6 in had completed 650 total upgrades from 2010 to 2013, four of which were BBNP upgrades, and estimated that he/she would have completed only 98 upgrades in absence of the program, resulting in an initial NTG ratio of 138 (552 divided by four). We assigned a net upgrade value to this respondent equal to the number of BBNP upgrades that he/she completed, resulting in an NTG value of 1.0.

[45] These respondents had values over seven for the program influence scale.

Table B-15: Examples of Estimating Contractors' Net BBNP Upgrades

RESPONDENT	[A] NUMBER OF UPGRADES, 2010 TO 2013	[B] BBNP UPGRADES	[C] UPGRADES WITHOUT BBNP	[D] INITIAL NET BBNP UPGRADES (A – C)	[E] SCALE 1[a]	[F] SCALE 2[b]	[G] SCALE 3[c]	[H] SCALE 4[d]	[I] AVERAGE SCALE 1 TO 4	[J] FINAL NET BBNP UPGRADES (BASED ON E IF I < 7)	[K] NTG ([J/ [B])
1	160	5	128	32	10	10	10	10	10	32	6.4
2	3,600	3,000	1,080	2,520	10	8	7	5	7.5	2,520	0.84
3[e]	400	210	40	360	5	5	5	5	5	126	0.6
4[f]	17	11	17	0	10	10	10	10	10	11	1
5[g]	400	90	480	-80	3	4	7	7	5.25	-64	-0.71
6[h]	650	4	98	552	10	10	10	10	10	4	1
7[i]	385	0	347	38	6	5	6	8	6.25	0	N/A

[a] Scale 1: There is more business for your company than there would have been without the program.

[b] Scale 2: There is more business in general in the marketplace than there would have been without the program.

[c] Scale 3: There will be more business for your company than there would have been without the program [in the next two years].

[d] Scale 4: There will be more business in general in the marketplace than there would have been without the program [in the next two years].

[e] Respondent 3: Final net BBNP upgrades = (0.6)*(column B), based on response of 5 to Scale 1 (column E)

[f] Respondent 4: Final net BBNP upgrades = (column B), based on no reported change in number of upgrades (column C) but positive responses of 10 to Scale 1 through 4 (column E through I)

[g] Respondent 5: Final net BBNP upgrades = (0.8)*(column D), based on negative initial net upgrades (column D) and a slightly positive response of 3 to Scale 1 (column E)

[h] Respondent 6: Final net BBNP upgrades = column B, based on initial NTG being greater than three standard deviations from the mean (552/4=138)

[i] Respondent 7: Final net BBNP upgrades = (column B), based on nonparticipation and response of 6 to Scale 1 (column E)

Resulting Net BBNP Upgrade Estimates

Table B-16 reports our estimates of the average number of net upgrades, per grantee, associated with the 25 BBNP grantee programs included in this evaluation while Table B-17 reports estimates of the total net number of upgrades associated with the 25 BBNP grantee programs included in this evaluation (net upgrades account for free-ridership and spillover). On average, the most successful grantees have the largest number of net upgrades, followed by the average grantees.

Overall, the respondents estimated 23,215 net upgrades associated with BBNP (net upgrades account for free-ridership and spillover), compared to 16,840 BBNP-supported upgrades (upgrades that went through the BBNP program), with the 90% confidence interval ranging from 12,906 to 34,365 upgrades. We estimated a NTG ratio of 1.4 (23,215 divided by 16,840), with the 90% confidence interval ranging from a NTG of 1.34 to 1.42. This means that, for the 25 BBNP grantee programs included in this market effects analysis, we are relatively confident that contractors are estimating spillover into the upgrade markets served by the grantees.

We found noteworthy differences across the three strata.

While the top five commercial stratum accounts for only 16% of the net number of upgrades and did not include any estimated nonparticipant spillover upgrades, it had a vastly higher rate of net impacts (NTG = 5.3) than the other two strata (1.4 or lower). The high NTG for the commercial stratum should be interpreted very cautiously in part because it is based on a relatively small sample of five grantees with 29 participating contractors and 98 nonparticipating contractors. Further, the high NTG ratio is strongly influenced by the contractors from a single grantee; if respondents representing this grantee are excluded from the analysis, the NTG drops to 1.2.

The most successful stratum had the lowest NTG ratio (1.0) and was the only stratum with a negative nonparticipant spillover value. It is important to note that for the most successful stratum, we reduced the participating contractors' total estimate of net upgrades by the negative spillover estimated by the nonparticipants (-408 upgrades) and treated nonparticipant spillover as zero. In the contractor IDIs, contractors who reported negative program effects noted that they had lost upgrade jobs because of increased competition, either due to participating contractors or to outside contractors drawn to the region by the grantee programs, not because there were fewer upgrade jobs in the region.

The medium success stratum was the only stratum with positive nonparticipant spillover, resulting in a NTG ratio of 1.4. The addition of nonparticipant spillover led to 11% more net BBNP upgrades for this stratum than there would have been in the absence of nonparticipant spillover.

Table B-16: Per Grantee Average Number of Contractor Reported Net Upgrades Influenced by BBNP

STRATUM	NUMBER OF GRANTEES	BBNP-SUPPORTED UPGRADES (PER GRANTEE)	NET NUMBER OF UPGRADES (PARTICIPANT); (PER GRANTEE)	NONPARTICIPANT SPILLOVER (PER GRANTEE)	NET BBNP UPGRADES (PER GRANTEE)
Most Successful	6	1,239	1,281	—	1,281
Average	13	671	826	92	918
Top 5 Commercial	5	136	720	—	720
Total	25	674	897	31	929

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs

Table B-17 reports the total number of net upgrades associated with the six most successful grantees, 13 average grantees, five commercial grantees and 25 total BBNP grantee programs included in this evaluation.

Table B-17: Participating and Nonparticipating Contractor-Reported Net Upgrades Associated with BBNP by Stratum

STRATUM	BBNP-SUPPORTED UPGRADES	NET NUMBER OF UPGRADES (PARTICIPANT)	NONPARTICIPANT SPILLOVER	NET BBNP UPGRADES	90 PERCENT CONFIDENCE INTERVAL, NET BBNP UPGRADES*		OVERALL NTG
					Low	High	
Most Successful	7,431	7,683	—	7,683	2,426	12,964	1.0
Average	8,727	10,741	1,191	11,931	3,556	20,444	1.4
Top 5 Commercial	682	3,600	—	3,600	-	7,342	5.3
Total	16,840	22,432	783**	23,215	12,906	34,365	1.4

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs

* The 90% confidence interval was based on the mean values of net BBNP upgrades for each stratum and for the total population.

** Total nonparticipant spillover takes into account the negative spillover estimated by nonparticipants from the most successful grantees.

Table B-18 reports the total number of net upgrades associated with the residential grantee programs included in this evaluation.

Table B-18: Participating and Nonparticipating Contractor-Reported Net Upgrades Associated with BBNP, Residential Grantees

STRATUM	BBNP-SUPPORTED UPGRADES	NET NUMBER OF UPGRADES (PARTICIPANT)	NONPARTICIPANT SPILLOVER	NET BBNP UPGRADES	90 PERCENT CONFIDENCE INTERVAL, NET BBNP UPGRADES*		OVERALL NTG
					Low	High	
Residential Grantees	16,158	18,832	783**	19,615	10,136	29,708	1.21

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs

* The 90% confidence interval was based on the mean values of net BBNP upgrades for each stratum and for the total population.

** Total nonparticipant spillover takes into account the negative spillover estimated by nonparticipants from the most successful grantees.

Table B-19 presents the 90% confidence interval around the estimates of BBNP-supported upgrades, net BBNP upgrades, and the NTG ratio.

Table B-19: Participating and Nonparticipating Contractor-Reported Net Upgrades Associated with BBNP, Residential Grantees

STRATUM	BBNP-SUPPORTED UPGRADES	90 PERCENT CONFIDENCE INTERVAL, BBNP-SUPPORTED UPGRADES *		NET BBNP UPGRADES	90 PERCENT CONFIDENCE INTERVAL, NET BBNP UPGRADES*		90 PERCENT CONFIDENCE INTERVAL, NTG	
		Low	High		Low	High	Low	High
High Success	7,431	2,413	12,449	7,683	2,426	12,964	1.01	1.04
Medium Success	8,727	4,584	12,870	11,931	3,556	20,444	0.78	1.59
Residential Grantees (High and Medium)	16,158	9,657	22,659	19,615	10,136	29,708	1.05	1.31
Top 5 Commercial	682	0	1,501	3,600	0	7,342	0	4.89
Total	16,840	9,657	24,160	23,215	12,906	34,365	1.34	1.42

Base: 147 participating contractors and 446 nonparticipating contractors from 25 BBNP grantee programs

* The 90% confidence interval was based on the mean values of BBNP supported upgrades and net BBNP upgrades for each stratum and for the total population.

Also we examined net BBNP upgrades by contractor firm and found that participating contractors' firms with 21 or more FTEs completed statistically significantly more net BBNP upgrades than all other company sizes, on average (see Table B-20). Participating contractors' firms with 21 or more FTEs completed statistically significantly more net BBNP upgrades than all other company sizes, on average (444) (Table B-20). Nonparticipating contractors from companies with six to ten employees were the most active among nonparticipating contractors in terms of net BBNP upgrades.

Table B-20: Mean Estimate of Contractor Net Upgrades Associated with BBNP by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING		NONPARTICIPATING	
	n	Mean Number of Net BBNP Upgrades	n	Mean Number of Net BBNP Upgrades
1 to 5	45	31	226	0.4
6 to 10	34	79*	87	5
11 to 20	30	107**	56	0
21 or more	34	444**	71	4

* Statistically significantly different from contractors' firms with one to five FTEs at the 90% confidence level

** Statistically significantly different from all other sized contractors' firms at the 90% confidence level

Net BBNP Upgrade Estimates and Participation in Other Upgrade Programs

We compared the average number of BBNP upgrades for both participating and nonparticipating contractors also who participated in other programs, such as utility-sponsored programs (Table B-21).

Table B-21: Contractors' Mean Number of BBNP Upgrades by Participation in Other Programs

OTHER PROGRAM	PARTICIPATING			
	Participant in Other Program		Nonparticipant in Other Program	
	n	mean	n	mean
EECBG, SEP, or WAP	59	193*	81	67
Efficiency programs sponsored by local utilities or other groups	90	147	50	72
Benchmarking or labeling programs	11	52	16	7

* Denotes a statistically significant difference between contractors participating and contractors not participating in a given program at the 90% confidence level

Estimated Energy Savings from Net BBNP Upgrades

We estimated the general scale of energy savings associated with the net upgrades of BBNP grantee programs included in this evaluation. In order to estimate energy savings, we used the contractors' estimates of the percentage of savings of upgrades completed with and without BBNP assistance, and savings estimates from the companion report *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2).

First, we estimated per project savings of upgrades completed with BBNP. Table B-22 reports the number of BBNP upgrades and associated gross verified savings from the companion report *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2). Using these findings, we estimated average savings of 28.0 MMBtu per residential upgrade and 419.2 MMBtu per commercial upgrade.

Table B-22: BBNP Verified Gross Energy Savings Q4 2010 - Q3 2013

SECTOR	REPORTED UPGRADES*	GROSS VERIFIED SOURCE SAVINGS (MMBtu)	SAVINGS PER BBNP UPGRADE (MMBtu)
Residential	73,704	2,064,822	28.0
Commercial	3,529	1,479,237	419.2

* We use the Project Level Databases provided by U.S. Department of Energy (DOE) to obtain the number of reported upgrades.

Next, we applied findings from the billing analysis portion of the impact report to estimate per BBNP upgrade energy usage before the energy upgrades and percentage of usage savings from the upgrades.[46] Converting per upgrade electric and natural gas usage and savings reported in the billing analysis into MMBtu, we estimated 10.1% savings for every BBNP residential upgrade and 11.9% of savings for every BBNP commercial upgrade. Using the per upgrade energy savings and percentage usage savings, we estimated an average per upgrade energy usage before the energy upgrades of 284 MMBtu for residential upgrades and 3,613 MMBtu for commercial upgrades.[47]

We took several steps to estimate per project savings for non-BBNP upgrades; Table B-23 and Table B-24 include the major inputs of our calculations.

- Because participating contractors overestimated the percentage savings of their BBNP-supported upgrades by 300% or more, we assumed that they overestimated the savings achieved in their non-BBNP upgrades by the same margin.[48] We used the ratio of the percentage of savings from BBNP-supported upgrades from

[46] We relied on the billing analysis because the M&V analysis was not able to estimate comparable energy savings values on a per project level.

[47] We divided the per project energy savings by the percentage of usage savings to estimate pre-upgrade usage.

[48] For example, participating contractors from the most successful stratum estimated 30.4% savings for their residential BBNP upgrades while the results from the billing analysis of the impact evaluation found 10.1% savings.

the impact analysis to the contractors' estimates (Column A ÷ Column B) to adjust their estimated percentage of savings from non-BBNP upgrades: Column D = (Column C ÷ ((Column A ÷ Column B)).

- For example, we estimated that residential upgrades completed outside of BBNP in most successful grantee regions achieved 5.8% savings whereas the contractor reported estimate was 17.5%.

〉 We applied the adjusted percentage usage savings to our estimate of average usage to estimate per upgrade savings: Column F = Column D * Column E

〉 We assumed that nonparticipating contractors overestimated their savings by the same margin and used the same procedure to estimate savings from non-participating contractor spillover upgrades (Table B-24).

Table B-23: Participating Contractor Estimated Energy Savings, Non-BBNP Upgrade

SECTOR	N	[A] CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, BBNP UPGRADE	[B] BILLING ANALYSIS ESTIMATED PERCENTAGE USAGE SAVINGS, BBNP UPGRADE	[C] CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, NON-BBNP UPGRADE	[D] ADJUSTED CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, NON-BBNP UPGRADE	[E] ESTIMATED ANNUAL ENERGY USAGE (MMBtu)	[F] SAVINGS PER NON-BBNP UPGRADE (MMBtu)
Most Successful (Residential)	28	30.4%	10.1%	17.5%	5.8%	277	16.1
Average (Residential)	53	34.4%	10.1%	30.5%	9.0%	277	24.9
Top 5 Commercial	13	34.3%	11.9%	38.8%	13.4%	3,532	473.2

Table B-24: Non-participating Contractor Estimated Energy Savings, Non-BBNP Upgrade

SECTOR	N	[A] CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, BBNP UPGRADE	[B] BILLING ANALYSIS ESTIMATED PERCENTAGE USAGE SAVINGS, BBNP UPGRADE	[C] CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, NON-BBNP UPGRADE	[D] ADJUSTED CONTRACTOR ESTIMATED PERCENTAGE USAGE SAVINGS, NON-BBNP UPGRADE	[E] ESTIMATED ANNUAL ENERGY USAGE (MMBtu)	[F] SAVINGS PER NON-BBNP UPGRADE (MMBtu)
Most Successful (Residential)	53	30.4%	10.1%	24.8%	8.2%	277	22.8
Average (Residential)	90	34.4%	10.1%	25.5%	7.5%	277	20.8
Top 5 Commercial	39	34.3%	11.9%	23.8%	8.2%	3,532	290.0

In our last step, we estimated the general scale of energy savings associated with BBNP net upgrades (Table B-25 and Table B-26). We estimated residential and commercial energy savings separately because the commercial savings are substantially larger than the residential savings and because our contractor estimates of the percentage of savings relies upon a small number of participating and nonparticipating contractor estimates (13 and 29, respectively).[49] In addition, because of the extremely high NTG ratio estimated by the commercial contractors and the limited sample size, we urge the reader to interpret the estimated commercial energy savings very cautiously. We applied the average BBNP upgrade savings (28.0 MMBtu per residential upgrade and 419.2 MMBtu per commercial upgrade) to the number of grantee reported upgrades and applied the non-program savings to the remaining net upgrades. For example, we assumed 16.1 MMBtu for each of the 539 spillover upgrades in the most successful stratum. Overall, we estimated 1.2 million MMBtu of savings from the net residential upgrades and 6.1 million MMBtu of savings from the net commercial upgrades. These energy savings estimates should be interpreted as indicating order of magnitude and not interpreted as precise values.

It is important to emphasize that these savings estimates should be interpreted as a general indication of the magnitude of net savings rather than as a precise estimate of net savings, particularly the commercial energy savings. Because there was no onsite verification of savings from spillover upgrades, the reader should interpret savings estimates with caution. Further, because our net estimate includes both free-ridership and spillover, we cannot estimate the exact portion of the net upgrades that were spillover upgrades. If the estimates of net upgrades include substantial levels of free-ridership and spillover, the savings would be lower for residential upgrades (because contractors estimated that their spillover upgrades had less savings than their BBNP upgrades) while the savings would be higher for commercial upgrades (because contractors estimated commercial spillover upgrades to have *more* savings than BBNP upgrades).

Table B-25: Estimated Energy Savings, Net Residential BBNP Upgrades

SECTOR	GRANTEE-REPORTED UPGRADES (Q3, 2013)	NET BBNP UPGRADES	ENERGY SAVINGS, GRANTEE REPORTED UPGRADES (MILLION MMBtu)	ENERGY SAVINGS, SPILLOVER UPGRADES (MILLION MMBtu)	TOTAL ENERGY SAVINGS, NET BBNP UPGRADES (MILLION MMBtu)*
Most Successful (Residential)	15,886	16,425	0.4	< 0.1	0.5
Average (Residential)	19,411	26,537	0.5	0.2	0.7
Total	35,297	42,962	1.0	0.2	1.2

* Total energy savings may not equal the sum of the reported individual savings columns due to rounding.

[49] It is important to note that our samples sizes for estimating the net number of commercial upgrades is larger (29 participating contractors and 98 nonparticipating contractors), but smaller numbers of commercial contractors were able to estimate the percentage of usage savings.

Table B-26: Estimated Energy Savings, Net Commercial BBNP Upgrades

SECTOR	GRANTEE-REPORTED UPGRADES (Q3, 2013)	NET BBNP UPGRADES	ENERGY SAVINGS, GRANTEE REPORTED UPGRADES (MILLION MMBtu)	ENERGY SAVINGS, SPILLOVER UPGRADES (MILLION MMBtu)	TOTAL ENERGY SAVINGS, NET BBNP UPGRADES (MILLION MMBtu)*
Top 5 Commercial	2,482	13,101	1.0	5.0	6.1

* Total energy savings may not equal the sum of the reported individual savings columns due to rounding.

Most Important Program Components

We asked contractors to rate the importance of five common BBNP elements on increasing the number of upgrades or audits that they had conducted from 2010 to 2013 (Table B-27). Using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important," both participating (81%) and nonparticipating (13%) contractors most commonly indicated that rebates and incentives had a strong degree of importance (a rating of seven or higher) on the number of upgrades or audits. The participating contractors who rated rebates and incentives as seven or higher represented 59% of all upgrades and 91% of net BBNP upgrades. Also, during in-depth interviews, contractors most commonly pointed to the attractiveness of program rebates and incentives (five of ten contractors). For example, one interviewee found that because customers pursued program incentives and the program required air leakage testing, the program-required testing activity highlighted issues that needed to be addressed in customers' homes but were not necessarily covered by program rebates and otherwise would not have been found:

> *I can't guarantee everybody that they're going to get a rebate through [the program], but it requires a test-in or a test-out… We're bringing in air hoods and testing equipment, and we might say, 'The best thing for you to do is not to invest in this $7,000 duct job, but, really, if we enhance this return air on this side and seal your ducts up in the attic, you'd be a lot better off.' And so [even if those measures] didn't qualify for [BBNP rebates], [customers] were educated and we provided a good service to increase the [energy] efficiency.*

After rebates, 61% of participating contractor survey respondents reported a high level of importance to free or reduced cost energy assessments, followed by marketing and outreach (56% of respondents) and low-interest financing (56%).

Table B-27: Contractor Rating of Importance of Individual Program Elements to Energy Efficiency Upgrades or Audits

INDIVIDUAL PROGRAM ELEMENT	PARTICIPATING (N=147)			NONPARTICIPATING (N=446)		
	Percent of:			Percent of:		
	Participants Rating 7-10	Total Upgrades	Net BBNP Upgrades	Nonparticipants Rating 7-10	Total Upgrades	Net BBNP Upgrades
Rebates and incentives	81%	59%	91%	13%	7%	5%
Free/reduced cost assessments	61%	35%	77%	11%	6%	5%
Marketing and outreach	56%	29%	52%	12%	6%	5%
Low-interest financing	56%	29%	48%	11%	5%	3%
Building science training	44%	25%	36%	10%	5%	4%
Sales training	41%	24%	30%	9%	5%	3%
Other (Unprompted)	14%	14%	11%	2%	1%	—

B.2.2. MARKETING OF ENERGY EFFICIENCY BY CONTRACTORS

One-third of participating contractors reported that their marketing messaging had changed since 2010; they represented nearly two-fifths of net BBNP upgrades (38%).[50] Nearly one-fifth of participating contractors (19%) said that their changes in marketing messaging were greatly influenced (rating seven to ten on a scale of zero to ten) by BBNP. A notably smaller percentage of nonparticipating contractors (15%) had changed their messaging, with only 2% of nonparticipating contractors estimating that BBNP had a high degree of influence on changes in messaging that they had made (Table B-28).

50 We examined changes in marketing based on the size of the contractor firms and found that participating contractors from companies with six to ten FTEs (26%) and 21 or more FTEs (24%) were statistically significantly more likely than contractors from companies with 11 to 20 FTEs (7%) to find that BBNP was highly influential in changing their marketing messaging about energy efficiency. However, there were no differences in the assessment of BBNP's influence on increases in marketing (Section 4.2.C.3).

Table B-28: Contractor Marketing Messaging Changes since 2010 and BBNP Influence

MARKETING MESSAGING CHANGES AND BBNP INFLUENCE	PARTICIPATING (N=147)			NONPARTICIPATING (N=446)		
	Percent of:			Percent of:		
	Participants	Total Upgrades	Net BBNP Upgrades	Nonparticipants	Total Upgrades	Net BBNP Upgrades
Marketing messaging has changed	33%	16%	38%	15%	9%	4%
High degree of BBNP influence on marketing message changes*	19%	12%	33%	2%	1%	5%

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

When we examined marketing practices by strata, statistically significantly higher percentages of participating contractors from the most successful and average strata had increased their marketing compared to participating contractors from the top five commercial Stratum, but we found no differences in the percentages of contractors who associate the change with BBNP (Table B-29).

Table B-29: Contractors' Increases to Amount of Energy Efficiency and Energy Efficient Features Marketing Since 2010 and BBNP Influence by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	n	Percent Reporting Increase in Marketing [b]	Percent Reporting High Degree of BBNP Influence [b]	n	Percent Reporting Increase in Marketing	Percent Reporting High Degree of BBNP Influence
Most Successful	43	70%[c]	35%	128	33%	4%
Average	75	63%[c]	29%	211	37%	3%
Top 5 Commercial	29	41%	21%	98	38%	2%
Total	147	61%	29%	446	36%	3%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Percentages reporting increase represent contractors who indicated the amount of marketing increased "a lot" or "a little." Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

[c] Statistically significantly different from contractors in the top five commercial stratum at the 90% confidence level.

In terms of marketing messaging, we did not find differences in the percentages of contractors who reported that their marketing messaging had changed since 2010, but did find that statistically significantly higher percentages of participating contractors from the most successful and average strata associated the changes in their marketing messaging to BBNP compared to participating contractors from the top five commercial stratum (Table B-30).

Table B-30: Contractor Marketing Messaging Changes Since 2010 and BBNP Influence by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	n	Percent Reporting Change in Messaging	Percent Reporting High Degree of BBNP Influence [b]	n	Percent Reporting Change in Messaging	Percent Reporting High Degree of BBNP Influence
Most Successful	43	37%	21%[c]	128	14%	—
Average	75	33%	25%[c]	211	17%	4%[d]
Top 5 Commercial	29	28%	—	98	14%	2%
Total	147	33%	19%	446	15%	2%

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we consider ratings of seven to ten as a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

[c] Statistically significantly different from contractors in the top five commercial stratum at the 90% confidence level.

[d] Statistically significantly different from contractors in the most successful stratum at the 90% confidence level.

Comparing the percentage of contractors who reported that the number of upgrades that they completed had increased because of changes to their marketing did not vary by strata (Table B-31).

Table B-31: Impact of Changes to Marketing Energy Efficiency on the Amount of Contractors' Upgrades by Stratum

STRATUM*	PARTICIPATING		NONPARTICIPATING	
	n	Percent Reporting Increase in Upgrades**	n	Percent Reporting Increase in Upgrades
Most Successful	43	37%	128	13%
Average	75	33%	211	14%
Top 5 Commercial	29	21%	98	11%
Total	147	32%	446	13%

* We excluded results associated with the low success stratum from this table because of the small sample size.

** Percentages reporting increase represent contractors who indicated that the amount of marketing increased the number of upgrades "a lot" or "a little."

Participating contractors from companies with 6 to 10 FTEs (26%) and 21 or more FTEs (24%) were statistically significantly more likely than contractors from companies with 11 to 20 FTEs (7%) to find that BBNP was highly influential in changing their marketing messaging about energy efficiency. Nonparticipating contractors from all company sizes were statistically significantly more likely than contractors from companies with 11 to 20 FTEs to find that BBNP was highly influential in the change (Table B-32).

Table B-32: BBNP Influence on Changes in Contractor Marketing Messaging Since 2010 by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING		NONPARTICIPATING	
	n	Percent of Participants Rating 7-10*	n	Percent of Nonparticipants Rating 7-10
1 to 5	45	18%	226	1%**
6 to 10	34	26%**	87	5%**
11 to 20	30	7%	56	-
21 or more	34	24%**	71	4%**

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we considered ratings of seven to ten as indicating a "high degree" of influence.

** Statistically significantly different from contractor firms with 11 to 20 FTEs at the 90% confidence level

We did not see any statistically significant differences among different sized contractor firms when comparing contractors' responses about BBNP's influence on increases they had made to the amount that they market energy efficiency.

We did, however, see differences among different sized nonparticipating contractor firms when comparing the contractors' estimates of increases in the number of upgrades resulting from increases they had made in the amount of energy efficiency marketing that they had conducted. Table B-33 shows that nonparticipating contractors from companies with 11 to 20 FTEs (23%) were statistically significantly more likely than contractors from companies with five or fewer FTEs (9%) to have experienced increases in upgrades.

Table B-33: Increase in Amount of Contractor Upgrades from Increases in Marketing Energy Efficiency by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING		NONPARTICIPATING	
	n	Percent of Participants Seeing Increase	n	Percent of Nonparticipants Seeing Increase
1 to 5	45	24%	226	9%
6 to 10	34	41%	87	13%
11 to 20	30	23%	56	23%*
21 or more	34	38%	71	15%

* Statistically significantly different from contractor firms with one to five FTEs at the 90% confidence level.

Contractors identified the marketing channels that were effective in driving demand for energy efficiency upgrades (Table B-34). Participating contractors most commonly used the internet as an energy efficiency upgrade marketing channel (63%) and most frequently found it to be one of the most effective marketing channels (38%). Nonparticipating contractors also were most likely to confirm using the internet (40%) and identified it most often as an effective means of stimulating demand (26%). Nearly one-quarter of participating contractors (24%) used co-

branding with BBNP and 16% of participating contractors used co-messaging with BBNP as energy efficiency marketing channels; they were not likely to consider co-branding (3%) or co-messaging (2%) with BBNP as the most effective method in increasing customer interest. Table B-34 shows their responses in full.

Table B-34: Effective Contractor Energy Efficiency Marketing Channels (Multiple Responses)

MARKETING CHANNEL	PARTICIPATING (N=147)		NONPARTICIPATING (N=446)	
	Channels Used	Most Effective	Channels Used	Most Effective
Internet*	63%	38%	40%	26%
Direct mail*	28%	10%	15%	6%
Co-branding with BBNP*	24%	3%	N/A	N/A
Newspaper*	22%	5%	9%	2%
Radio*	19%	3%	7%	3%
Co-messaging with BBNP*	16%	2%	-N/A	-N/A
Billboards*	5%	—	4%	1%
Television	3%	1%	2%	1%
Cold Calling/Direct sales	3%	3%	2%	3%
Phone book	2%	1%	3%	1%
Events/Trade Shows	2%	1%	2%	1%
Other	8%	9%	7%	4%
Word of Mouth/Referrals	14%	16%	17%	16%
Nothing	N/A	—	N/A	<1%
Do not market energy efficiency	15%	N/A	35%	N/A
Don't know/Refused	2%	10%	3%	8%

* We prompted respondents with these marketing channels when asking what marketing channels they used (all other channels were unprompted). We did not use any prompts when asking which marketing channel had been most effective.

In terms of the messaging used in marketing, participating (78%) and nonparticipating (52%) contractors were most likely to say that they emphasize saving energy or money. They also were most likely to say that they emphasize this type of messaging more than they had in 2010 (15% of both groups). Second most frequently, these contractors reported emphasizing comfort (69% of participating contractors and 39% of nonparticipating contractors) and that they emphasize comfort more now than they had in 2010 (11% of both groups). Table B-35 shows their other responses.

Table B-35: Contractor Energy Efficiency Marketing Message Changes Since 2010 (Multiple Responses)

ENERGY EFFICIENCY MARKETING MESSAGE TOPICS (PROMPTED)*	PARTICIPATING (N=147)		NONPARTICIPATING (N=446)	
	Messaging Topics Used	Emphasize More Now	Messaging Topics Used	Emphasize More Now
Saving energy or money*	78%	15%	52%	15%
Comfort*	69%	11%	39%	2%
Safety*	59%	3%	32%	1%
Comprehensive whole building/house upgrades*	56%	2%	32%	2%
Health*	54%	6%	31%	1%
Programs/rebates	1%	1%	1%	1%
Other*	8%	5%	5%	3%
Don't know/Refused	—	1%	—	1%
Did not change messaging	N/A	52%	N/A	50%
Do not market energy efficiency	15%	N/A	35%	N/A

* We prompted respondents with these messaging topics when asking what they used in their marketing. We did not use any prompts when asking which messaging they emphasize more now.

B.2.3. ADOPTION OF ENERGY EFFICIENT BUILDING PRACTICES BY CONTRACTORS

Adoption of energy efficient products, services, or practices by contractors in regions with BBNP grantees is another indicator of potential market effects. Examining the building practices of participating and nonparticipating contractors allowed us to assess early changes in the market or in market actors' behavior resulting from BBNP activities. To gauge changes in building practices, we asked contractors about changes in energy savings and changes that they have made to their building and audit practices, as well as asked them to identify the level of influence that BBNP may have had on any of these changes.

When asked to describe changes to their upgrade practices for their BBNP upgrades, participating contractors offering building envelope upgrades most commonly indicated that they conducted their services more comprehensively (10%), offered better quality services/equipment (6%), and offered higher efficiency equipment and measures. For their non-BBNP upgrades, participating contractors most commonly identified the same practices. Nonparticipating contractors most commonly identified offering higher efficiency equipment and measures (16%), offering better quality services/equipment (12%), and offering more comprehensive services (8%). Table B-36 provides additional details.

Table B-36: Changes to Contractors' Building Envelope Service and Upgrade Practices Made Since 2010 (Multiple Responses)

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=88)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=88)	Nonparticipating Contractors (n=233)
Conduct services more thoroughly/comprehensively	10%	6%	8%
Offer better quality services/equipment	6%	9%	12%
Offer higher efficiency equipment/measures	5%	8%	16%
Offer new services	2%	2%	2%
Offer/conduct energy efficiency services more frequently	2%	—	2%
Increased staff training	—	2%	2%
Changed to meet new codes	—	—	<1%
Other	—	1%	—
No changes to this practice	72%	70%	64%
Don't know/Refused	2%	1%	3%

Base: Contractors offering building envelope services and upgrades

For contractors providing HVAC and water heating services, participating (13%) and nonparticipating contractors (19%) most commonly indicated that they had begun offering higher efficiency equipment and measures in their upgrades. Table B-37 presents the full results.

Table B-37: Changes to Contractors' HVAC and Water Heating Service and Upgrade Practices Made Since 2010 (Multiple Responses)

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=88)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=88)	Nonparticipating Contractors (n=284)
Offer higher efficiency equipment/measures	9%	13%	19%
Offer better quality services/equipment	6%	10%	12%

Continued…

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=88)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=88)	Nonparticipating Contractors (n=284)
Conduct services more thoroughly/comprehensively	5%	6%	7%
Offer new services	2%	5%	4%
Encourage/assist with program(s) participation	2%	1%	<1%
More staff training	1%	2%	—
Restructured company/added or decreased jobs	1%	—	<1%
Offer/conduct energy efficiency services more frequently	—	1%	—
Increased/changed advertising	—	1%	1%
Changed to meet new codes	—	—	<1%
Other	—	1%	1%
No changes to this practice	73%	67%	62%
Don't know/Refused	—	—	1%

Base: Contractors offering HVAC and water heating services and upgrades

For contractors providing ductwork services, participating contractors most commonly identified offering higher efficiency equipment and measures in their BBNP ductwork projects (9%) as changes to their ductwork services. See Table B-38 for more details.

Table B-38: Changes to Contractors' Ductwork Service and Upgrade Practices Made Since 2010 (Multiple Responses)

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=82)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=82)	Nonparticipating Contractors (n=243)
Offer higher efficiency equipment/measures	9%	6%	11%
Conduct services more thoroughly/comprehensively	5%	6%	6%

Continued…

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=82)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=82)	Nonparticipating Contractors (n=243)
Offer better quality services/equipment	5%	6%	11%
Increased staff training	2%	1%	—
Offer new services	1%	6%	1%
Offer/conduct energy efficiency services more frequently	1%	—	—
Restructured company/added or decreased jobs	1%	—	<1%
Encourage/assist with program(s) participation	1%	—	—
Other	—	1%	—
No changes to this practice	72%	70%	77%
Don't know/Refused	2%	1%	2%

Base: Contractors offering ductwork services and upgrades

For contractors providing lighting services, participating and nonparticipating contractors most commonly identified offering higher efficiency equipment or better quality services and equipment as changes to their lighting practices (Table B-39).

Table B-39: Changes to Contractors' Lighting Upgrade Practices Made Since 2010 (Multiple Responses)

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=61)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=61)	Nonparticipating Contractors (n=189)
Offer higher efficiency equipment/measures	15%	13%	17%
Offer better quality services/equipment	8%	15%	14%
Offer new services	5%	2%	4%
Conduct services more thoroughly/comprehensively	3%	3%	7%

Continued…

CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=61)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=61)	Nonparticipating Contractors (n=189)
Offer/conduct energy efficiency services more frequently	2%	—	1%
Increased staff training	2%	2%	1%
Encourage/assist with program(s) participation	2%	—	1%
Increased/changed advertising	—	2%	2%
Changed to meet new codes	—	—	1%
Other	2%	—	—
No changes to this practice	62%	62%	66%
Don't know/Refused	—	—	2%

Base: Contractors offering lighting services and upgrades

Factors in Building Practice Changes

When asked why their upgrade practices had changed, contractors most frequently pointed to a growing increase in consumers' values around and awareness of energy efficiency (Table B-40). Nonparticipating contractors (19%) listed this factor most frequently, as did participating contractors in reference to their BBNP-supported jobs (18%) and non-BBNP jobs (15%). Overall, customers' changing demands was the next most oft-cited reason. In addition, participating contractors identified the increased availability of financing as a factor in their BBNP-supported jobs (6%) and non-BBNP jobs (7%).

Table B-40: Factors Explaining Changes to Contractors' Upgrade Practices Made Since 2010 (Multiple Responses)

FACTORS EXPLAINING CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=131)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=131)	Nonparticipating Contractors (n=445)
Consumers see value in energy efficiency upgrades/more awareness	18%	15%	19%
Customer demands changed	10%	8%	12%

Continued…

FACTORS EXPLAINING CHANGES SINCE 2010	BBNP-SUPPORTED UPGRADES, PERCENT OF RESPONDENTS (N=131)	NON-BBNP SUPPORTED UPGRADES, PERCENT OF RESPONDENTS	
		Participating Contractors (n=131)	Nonparticipating Contractors (n=445)
Financing is more readily available	6%	7%	2%
Availability of incentives	5%	2%	<1%
Increased experience and improved techniques	2%	5%	1%
BBNP Grantee program changed	2%	2%	1%
Change in codes/industry standards	—	2%	4%
Keeping up with new technology/new equipment	—	2%	3%
Increased advertising	—	2%	2%
Program training/requirements	—	2%	1%
Other	2%	3%	2%
Don't know/Refused	2%	1%	4%

We compared contractors' responses, according to company size, regarding the level of influence that BBNP had on changes they had made to their standard practices for jobs that do not go through the program. Nonparticipating contractors from companies with six to ten FTEs (7%) were statistically significantly more likely than those from companies with five or fewer FTEs (1%) or 21 or more FTEs (1%) to say that BBNP was highly influential in this change. Table B-41 provides more details.

Table B-41: Influence of BBNP on Contractors' Standard Practices for Non-BBNP Upgrades by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PARTICIPATING		NONPARTICIPATING	
	n	Percent Rating 7-10*	n	Percent Rating 7-10
1 to 5	45	11%	226	1%
6 to 10	34	21%	87	7%**
11 to 20	30	20%	56	2%
21 or more	34	12%	71	1%

* Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we considered ratings of seven to ten as indicating a "high degree" of influence.

** Statistically significantly different from contractor firms with five or fewer FTEs or 21 or more FTEs at the 90% confidence level

Differences between BBNP-supported Upgrades and non-BBNP-supported Upgrades

Participating contractor survey respondents described how their BBNP-supported upgrades differed from their non-BBNP upgrades. As shown in Table B-42, slightly more than one-half (51%) reported that there was no difference. Those reporting a difference most commonly indicated that they used a whole house or whole building approach in their BBNP upgrades than they did in their non-BBNP upgrades (13%).

Table B-42: How Contractors' Typical BBNP Upgrades Differ from the Typical Non-BBNP Upgrades

RESPONSE	PARTICIPATING (N=131)
Take whole house or whole building approach with program	13%
Customers receive incentives/financing	9%
More paperwork/hassles	5%
More measures are installed/conducted	4%
More QA/QC and procedures	4%
Customers are more engaged/motivated	3%
Less measures are installed/conducted	2%
More attention to safety	2%
Other	4%
No difference	51%
Don't know	6%

Changes in Audit Practices

Among the participating contractors who answered detailed questions about the audits they conduct,[51] the majority said that they conducted comprehensive assessments involving diagnostic tools (82%) and/or simple walkthrough assessments (81%). A somewhat smaller share (56%) reported conducting checklist audits (Table B-43).

Table B-43: Types of Energy Audits Contractors Perform (Multiple Responses)

AUDIT TYPE	PARTICIPATING (N=57)
Comprehensive assessment (involving diagnostic tools)	82%
Walk through assessment (involving a simple review of major building systems)	81%
Checklist audits (involving a checklist of questions)	56%

Base: Participating contractors asked about the energy audits they conduct

[51] As a result of problems with the survey instrument, we did not ask some participating contractors detailed questions about the audits they conduct.

Eighty-four percent of participating contractors reported modeling savings estimates from the measures recommended from their audit findings. When prompted, they most commonly responded that their savings estimates were specific to the customers' measures (75%); more than three-fifths indicated that they modeled savings using utility bill data, and slightly more than one-half (54%) modeled savings using predetermined measure values (Table B-44).

Table B-44: Contractors Energy Audit Modeling Practices (Multiple Responses)

AUDIT MODELING ELEMENT	PARTICIPATING (N=57)
Provide customers with savings estimates from recommended measures	84%
Estimate savings specific to individual customers' measures	75%
Estimate savings based on customer utility bill energy usage data	63%
Estimate savings based on pre-determined measure values	54%

Base: Participating contractors asked about the energy audits they conduct

We asked participating contractors to estimate the costs incurred by their companies, programs, and customers for conducting audits. As shown in Table B-45, on average, the amounts that BBNP pays for energy audits ($358) were highest and the mean cost to customers was the lowest ($260). Nearly one-half of participating contractors (47%) said that they offered discounts or refunds to customers if the customers did not go through an incentive program and completed a retrofit project with them.

Table B-45: Contractor Estimates of Mean Costs for Conducting Audits

PAYMENT SOURCE	PARTICIPATING (N=57)	
	n	Mean Cost
Cost to firm	51	$354
BBNP pays to customer or contractor	38	$358
Charge for customers	49	$260

Base: Participating contractors who were asked about the energy audits they conduct; we removed outlier estimates that were three standard deviations from the mean.

B.2.4. SALES AND AVAILABILITY OF HIGH EFFICIENCY EQUIPMENT AND PRODUCTS

As shown in Table B-46, distributors from the most successful and average strata were statistically significantly more likely to strongly agree with any of the statements than were distributors from the top five commercial stratum.

Table B-46: Distributors' Agreement with Statements about BBNP Influence on Energy Efficient Equipment Market by Stratum

STRATUM [a]	PERCENT OF DISTRIBUTORS RATING 7-10 [b]			
	My company has more business today than it would have had without BBNP	The marketplace in general has more business today than it would have had without BBNP	There will be more business for my company than there would have been without BBNP	There will be more business in general in the marketplace than there would have been without BBNP
Most Successful (n=78)	12%[c]	12%[c]	10%[c]	10%[c]
Average (n=139)	10%[c]	11%[c]	12%[c]	10%[c]
Top 5 Commercial (n=66)	2%	2%	3%	3%
Total (n=283)	8%	9%	9%	8%

Base: Only distributors aware of BBNP were asked these questions, but percentages are drawn from all surveyed distributors.

[a] We excluded results associated with the low success stratum from this table because of the small sample size.

[b] Using a scale of zero to ten where zero means "strongly disagree" and ten means "strongly agree," we considered ratings of seven to ten as meaning "strongly agree."

[c] Statistically significantly different from distributors from the top five commercial stratum at the 90% confidence level

Distributors from the largest companies (21 or more FTEs) were statistically significantly more likely to strongly agree with any of the statements than were distributors from the smallest companies (1 to 5 FTEs). Additionally, distributors from moderately large companies (11 to 20 FTEs) were statistically significantly more likely than distributors from the smallest companies to strongly agree that there will be more business for their company in the future because of BBNP (Table B-47).

Table B-47: Distributors' Agreement with Statements about BBNP Influence on Energy Efficient Equipment Market by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PERCENT OF DISTRIBUTORS RATING 7-10*			
	My company has more business today than it would have had without BBNP	The marketplace in general has more business today than it would have had without BBNP	There will be more business for my company than there would have been without BBNP	There will be more business in general in the marketplace than there would have been without BBNP
1 to 5 (n=98)	4%	5%	3%	4%
6 to 10 (n=59)	10%	7%	10%	7%
11 to 20 (n=53)	9%	13%	11%**	11%
21 or more (n=69)	13%**	13%**	16%**	14%**

* Using a scale of zero to ten where zero means "strongly disagree" and ten means "strongly agree," we considered ratings of seven to ten as meaning "strongly agree."

** Statistically significantly different from distributors with one to 5 FTEs at the 90% confidence level

Building Envelope Material Sales

We asked distributors selling building envelope materials a series of questions designed to gauge any changes in sales of the building envelope materials that they sold from 2010 through 2013.

Building envelope distributors reported the different types of building envelope materials that they sold. Nearly two-thirds of building envelope distributors (66%) reported selling insulation materials. Next, most commonly, they sold duct sealing (52%) and air sealing (30%) materials. Only 8% of distributors offering building envelope materials indicated that they sold windows (Table B-48).

Table B-48: Building Envelope Materials Sold by Distributors Since 2010

BUILDING ENVELOPE MATERIAL (PROMPTED)	RESIDENTIAL (N=47)		COMMERCIAL (N=14)		TOTAL (N=61)	
	Percent	Count	Percent	Count	Percent	Count
Insulation	70%	33	50%	7	66%	40
Duct sealing	53%	25	50%	7	52%	32
Air sealing	28%	13	36%	5	30%	18
Windows	9%	4	7%	1	8%	5

Base: Distributors indicating that they sold building envelope materials. Six distributors (of 61) did not sell any of the four materials listed above.

Nearly one-half of residential distributors who sold the respective materials reported increased sales in insulation (45%), duct sealing (48%), and air sealing (six of 13) since 2010. Nearly all commercial distributors who sold insulation (six of seven) reported that insulation material sales had increased since 2010. Commercial distributors also were likely to report that their duct sealing (four of seven) and air sealing (two of five) material sales had increased since 2010. Two of the four distributors of windows reported an increase in ENERGY STAR® windows. We encourage caution in interpreting these results given the small sample sizes. Table B-49 presents these results.

Table B-49: Percentage and Count of Distributors Reporting Building Envelope Material Sales Increases Since 2010

BUILDING ENVELOPE MATERIAL	RESIDENTIAL			COMMERCIAL		
	N	Percent	Count	N	Percent	Count
Insulation	33	45%	15	7	86%	6
Duct sealing	25	48%	12	7	57%	4
Air sealing	13	46%	6	5	40%	2
ENERGY STAR windows	4	50%	2	1	—	—

Base: Respondents who sell the specified measure

If distributors indicated that they had experienced sales increases or decreases in building envelope materials, we asked them to estimate the percentage change in sales over that period. Table B-50 shows their mean estimates. Distributors more commonly indicated increases in sales, rather than decreases, and estimated large changes. For example, distributors estimated a 21% increase in insulation sales and a 34% increase in duct sealing sales. The few distributors who indicated a decrease in sales estimated large decreases (Table B-50). Again, due to small sample sizes, these results should be interpreted with caution.

Table B-50: Mean Percentage Change in Distributors' Building Envelope Material Sales Since 2010

BUILDING ENVELOPE MATERIAL	INCREASE IN SALES		DECREASE IN SALES	
	N	Mean Percent Increase	N	Mean Percent Decrease
Insulation	20	21%	5	-24%
Duct sealing	15	34%	2	-50%
Air sealing	7	39%	2	-30%
ENERGY STAR windows	2	55%	—	—

Base: Distributors who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

HVAC and Water Heating Equipment Sales

Of the residential HVAC and water heating equipment distributors, the vast majority sold HVAC equipment (86%), and more than two-thirds sold water heating equipment (70%). Among commercial HVAC and water heating equipment distributors, more than two-thirds sold HVAC equipment (69%) and water heating equipment (70%). Table B-51 presents these results.

Table B-51: Type of HVAC and Water Heating Equipment Sold by Distributors since 2010 (Multiple Responses)

EQUIPMENT TYPE	RESIDENTIAL (N=201)	COMMERCIAL (N=61)
HVAC equipment	86%	69%
Water heating equipment	70%	70%
Neither*	<1%	2%

Base: Distributors of HVAC and water heating equipment

* These distributors were not asked additional questions about HVAC and water heating equipment.

Distributors selling HVAC and water heating equipment answered a series of questions assessing whether sales of energy efficient HVAC and water heating equipment had increased since BBNP implementation started. We asked distributors to estimate the total number of systems they sold for specific HVAC and water heating equipment types in 2010 and 2013. Table B-52 includes their responses.

The residential HVAC and water heating equipment with the highest average sales in 2010 and 2013 were residential gas storage hot water heaters, followed by natural gas furnaces and central air conditioners. Average sales of gas storage water heaters increased by 25% between 2010 and 2013, increasing from 1,079 units in 2010 to 1,352 units in 2013. In those same years, HVAC distributors sold more commercial natural gas furnaces than any other type of commercial HVAC and water heating equipment, selling 46 units in 2010 and 63 units in 2013, on average – a 38% increase. Second most commonly, they sold commercial central air conditioners, which increased in sales by 32% between the two years (increasing from 35 to 47 units).

Table B-52: Mean Number of Distributors' HVAC and Water Heating System Sales in 2010 and 2013

MEAN NUMBER OF SYSTEMS SOLD	RESIDENTIAL		COMMERCIAL	
	2010	2013	2010	2013
Natural Gas Furnaces				
N	133	147	29	33
Mean	361	399	46	63
Natural Gas Boilers				
N	147	155	30	32
Mean	129	70	13	22
Oil Furnaces				
N	152	155	34	34
Mean	12	11	0.3	0.3
Oil Boilers				
N	154	155	36	35
Mean	12	10	0.3	1
Central Air Conditioners				
N*	136	144	31	34
Mean	289	408	35	47
Gas Tankless or Gas On-Demand Hot Water Heaters				
N*	117	122	32	34
Mean	30	40	8	20
Gas Storage Hot Water Heaters				
N	113	119	31	31
Mean	1,079	1,352	6	7
Heat Pump Water Heaters				
N*	119	121	32	33
Mean	7	13	2	4

Base: Distributors who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

* Where the difference in sales between years was unusually high, we removed responses that were more than three standard deviations from the mean difference.

We asked HVAC and water heating equipment distributors whether sales of energy efficient HVAC equipment have increased during the BBNP period of 2010 to 2013. The following two tables show the mean percentages of their residential (Table B-53) and commercial (Table B-54) equipment that were high efficiency.

According to residential distributor responses, residential high efficiency HVAC and water heating equipment sales experienced a modest trend upward during the period from 2010 to 2013. The increase in the percentage of gas storage hot water heaters that were high efficiency was the most dramatic change, increasing from 42% of hot water heaters in 2010 to 51% of hot water heaters in 2013. High efficiency natural gas furnaces and central air conditioners, which represent sizable shares of the overall residential HVAC and water heating market (see Table B-53), also showed notable increases in high efficiency representation: high efficiency natural gas furnace sales increased from 56% of natural gas furnace sales in 2010 to 63% in 2013, and high efficiency central air conditioning system sales increased from 35% to 41% of central air conditioning system sales in those two years.

Table B-53: Mean Percentage of Residential Distributors' HVAC and Water Heating Equipment Sales that were High Efficiency in 2010 and 2013 (Residential)

MEAN PERCENTAGE OF SALES	2010	2013
Natural Gas Furnaces (Annual Fuel Utilization Efficiency [AFUE] of 94% or Greater)		
N	112	119
Mean Percent	56%	63%
Natural Gas Boilers (AFUE of 90% or Greater)		
N	91	88
Mean Percent	48%	52%
Oil Furnaces (AFUE of 85% or Greater)		
N	45	44
Mean Percent	41%	47%
Oil Boilers (AFUE of 85% or Greater)		
N	38	35
Mean Percent	49%	53%
Central Air Conditioners (15 Seasonal Energy Efficiency Ratio (SEER) or Greater)		
N	122	133
Mean Percent	35%	41%

Continued…

MEAN PERCENTAGE OF SALES	2010	2013
Gas Tankless or Gas On-Demand Hot Water Heaters (Energy Efficiency [EF] 0.82 or Greater)		
N	68	77
Mean Percent	64%	71%
Gas Storage Hot Water Heaters (EF of 0.67 or Greater)		
N	72	75
Mean Percent	42%	51%
Heat Pump Water Heaters (EF of 2.0 or Greater)		
N	26	31
Mean Percent	54%	61%

Base: Distributors who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

Commercial distributors reported that large percentages of their HVAC and hot water heating sales were high efficiency. More than one-half of natural gas furnaces were high efficiency in both 2010 and 2013; moreover, the shares increased by 21% from 2010 through 2013, going from 51% of sales in 2010 to 62% in 2013. The largest change in the percentage of systems that were high efficiency was among medium-sized air-cooled unitary or split systems (5.4 to less than 20 tons), increasing from 39% in 2010 to 60% in 2013 (Table B-54).

Table B-54: Mean Percentage of Commercial Distributors' HVAC and Water Heating Equipment Sales that were High Efficiency in 2010 and 2013 (Commercial)

MEAN PERCENTAGE OF SALES	2010	2013
Natural Gas Furnaces (AFUE of 94% or Greater)		
N	23	27
Mean Percent	51%	62%
Natural Gas Boilers (AFUE of 90% or Greater)		
N	17	17
Mean Percent	64%	81%
Oil Furnaces (AFUE of 85% or Greater)		
N	5	7
Mean Percent	61%	50%

Continued…

MEAN PERCENTAGE OF SALES	2010	2013
Oil Boilers (AFUE of 85% or Greater)		
N	6	6
Mean Percent	83%	72%
Air-Cooled Unitary or Split Systems < 5.4 tons (12.0 Energy Efficiency Ratio [EER])		
N	19	19
Mean Percent	45%	62%
Air-Cooled Unitary or Split Systems ≥ 5.4 to < 20 (11.5 EER)		
N	19	18
Mean Percent	39%	60%
Air-Cooled Unitary or Split Systems ≥ 20 tons (10.5 EER)		
N	18	18
Mean Percent	36%	46%
Gas Tankless or Gas On-Demand Hot Water Heaters (EF 0.82 or Greater)		
N	13	18
Mean Percent	79%	69%
Gas Storage Hot Water Heaters (EF of 0.67 or Greater)		
N	13	12
Mean Percent	52%	52%
Heat Pump Water Heaters (EF of 2.0 or Greater)		
N	5	2
Mean Percent	40%	50%

Base: Distributors who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

Lighting Equipment Sales

Lighting equipment distributors answered a series of questions about the types of standard and high efficiency lighting equipment that they sold, the percentage of total lighting sales represented by such equipment, and whether sales of energy efficient lighting equipment had increased since 2010. The purpose of these questions was to assess the extent of penetration of high efficiency lighting in the market and to gauge whether this penetration had changed since the start of BBNP. Because few distributors (18 residential and 9 commercial) reported selling lighting equipment, results should be interpreted with caution.

Table B-55 shows the types of lighting fixtures that lighting distributors sell. Residential lighting distributors were most likely to report selling light emitting diode (LED) fixtures (nine of 18) and screw-base fixtures (eight of 18). Commercial lighting distributors most commonly indicated that they sold T5 lamps and ballasts (four of nine).

Table B-55: Lighting Fixture Types Sold by Distributors Since 2010

LIGHTING TYPE OFFERED	PERCENT OF LIGHTING DISTRIBUTORS	COUNT
Residential (n=18)		
LED fixtures	50%	9
Screw-base fixtures	44%	8
Fluorescent tube fixtures	33%	6
Pin-Base CFL fixtures	33%	6
Other high efficiency fixtures	11%	2
Commercial (n=9)		
T5 lamps and ballasts	44%	4
T8 lamps and ballasts	33%	3
LED lamps or luminaries	33%	3
High-bay fluorescent fixtures	33%	3
T12 lamps and ballasts	22%	2
Hardwired CFL fixtures	22%	2
Metal halide fixtures	11%	1
LED exit signs	11%	1
Light Emitting Capacitor (LEC) exit signs	11%	1

Lighting equipment distributors reported the different types of lighting controls that they sold. Residential distributors most commonly sold photo controls (ten of 18), and commercial distributors most commonly sold photo controls (four of nine) and dimmers (four of nine). Table B-56 includes more details.

Table B-56: Lighting Control Types Sold by Distributors Since 2010

LIGHTING CONTROL TYPE	RESIDENTIAL LIGHTING DISTRIBUTORS SELLING (N=18)		COMMERCIAL LIGHTING DISTRIBUTORS SELLING (N=9)	
	Percent	Count	Percent	Count
Photo controls	56%	10	44%	4
Dimmers	50%	9	44%	4
Motion sensors	50%	9	33%	3
Occupant sensors	50%	9	33%	3
None of the above	33%	6	33%	3

Base: Distributors of lighting

We asked lighting equipment distributors to estimate the percentage of their lighting sales that were represented by different types of standard and high efficiency lighting equipment in 2010 and 2013. As shown in Table B-57, for residential distributors, changes in the average percentage of lighting sales represented by high efficiency lighting from 2010 through 2013 varied. Sales of LED fixtures (as percentages of lighting sales) decreased slightly from 2010 (61%) to 2013 (58%), while sales of pin-base compact fluorescent light (CFL) fixtures increased from 6% to 14% of total sales, while sales of fluorescent tube fixtures remained nearly the same (25% in 2013 compared to 24% of total sales in 2010). Sales of screw-base fixtures (which could use either incandescent or CFL bulbs) declined from 2010 (70%) to 2013 (54%). Commercial lighting distributors did not report changes in the types of lighting equipment sales between 2010 and 2013. We reemphasizes that the sample sizes here are particularly small, so the reader should interpret the findings with caution.

Table B-57: Mean Percentage of Distributors' Lighting Sales by Type of Lighting Equipment in 2010 and 2013

LIGHTING FIXTURE TYPE	2010		2013	
	N	Mean Percent	N	Mean Percent
Residential				
LED fixtures	4	61%	5	58%
Screw-based fixtures	5	70%	6	54%
Fluorescent tube fixtures	4	24%	5	25%
Pin-Based CFL fixtures	2	6%	3	14%
Other high efficiency fixtures	1	100%	2	60%

Continued…

LIGHTING FIXTURE TYPE	2010		2013	
	N	Mean Percent	N	Mean Percent
Commercial				
LED lamps or luminaries	3	17%	3	17%
T5 lamps and ballasts	4	22%	4	22%
T8 lamps and ballasts	3	13%	3	13%
T12 lamps and ballasts	2	44%	2	44%
High-bay fluorescent fixtures	3	23%	3	23%
Hardwired CFL fixtures	2	4%	2	4%
Metal halide fixtures	1	0%	1	0%
LED exit signs	1	50%	1	50%
LEC exit signs	1	8%	1	8%

Base: Distributors who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

Considering all of the lighting control types that they sold, distributors were most likely to report increases in sales for occupant and motion sensors. Two-thirds of the residential distributors who sold them (6 of 9) said that sales of occupant sensors had increased during the period from 2010 to 2013, and more than one-half of these distributors (5 of 9) reported an increase in sales of motion sensors. Commercial distributors most commonly identified occupant sensors as having increased in sales (2 of 3). Table B-58 includes further details.

Table B-58: Percentage of Distributors Reporting that Lighting Controls Sales Increased Since 2010

LIGHTING CONTROL TYPE	RESIDENTIAL			COMMERCIAL		
	N	Percent	Count	N	Percent	Count
Occupant sensors	9	67%	6	3	67%	2
Motion sensors	9	56%	5	3	33%	1
Photo controls	10	40%	4	4	25%	1
Dimmers	9	33%	3	4	25%	1

Base: Respondents who sell the specified measure

Table B-59 shows the mean increases in lighting control sales that these distributors estimated.

Table B-59: Mean Increases in Distributors' Lighting Control Sales Since 2010

LIGHTING CONTROL TYPE	RESIDENTIAL		COMMERCIAL	
	N	Mean Percent	N	Mean Percent
Occupant sensors	2	48%	1	20%
Motion sensors	3	60%	2	15%
Photo controls	1	75%	1	20%
Dimmers	1	75%	—	—

Base: Respondents who sell the specified measure. Sample sizes exclude responses of Don't Know or Refused.

Refrigeration Equipment Sales

We asked all refrigeration equipment distributors if they sold residential and/or commercial refrigeration equipment.[52] As shown in Table B-60, more than two-thirds of refrigeration distributors sold residential refrigeration equipment (68%), and more than three-fifths of refrigeration distributors sold commercial refrigeration equipment (63%).

Table B-60: Refrigeration Equipment Sold by Distributors Since 2010

REFRIGERATION EQUIPMENT TYPE	RESIDENTIAL (N=46)*		COMMERCIAL (N=19)*		TOTAL (N=65)	
	Percent	Count	Percent	Count	Percent	Count
Residential	67%	31	68%	13	68%	44
Commercial	63%	29	63%	12	63%	41

Base: Distributors indicating that they sold refrigeration equipment

* Refers to the sector with which we associated the respondent throughout other survey questions.

Table B-61 shows the average number of refrigeration units in 2010 and 2013 that refrigeration distributors sold. Their average sales changed modestly between the two years.

[52] Unlike with other measure types, we chose to ask refrigeration equipment distributors about *both* residential and commercial refrigeration equipment to provide adequate sample sizes for the follow-up sales questions.

Table B-61: Mean Number of Distributors' Refrigeration Equipment Unit Sales in 2010 and 2013

MEAN NUMBER OF UNITS SOLD	RESIDENTIAL		COMMERCIAL	
	2010	2013	2010	2013
N	34	36	28	27
Mean	14	13	6*	8*

Base: Distributors indicating that they sold the specified refrigeration equipment type

* Because one distributor's response was more than three standard deviations from the mean, we removed this response from the estimate.

Table B-62 shows the average percentages of refrigeration units that were ENERGY STAR certified and sold in 2010 and 2013. The average percentages of ENERGY STAR-certified refrigeration equipment increased notably from 2010 to 2013 for both residential and commercial sales. In 2010, distributors estimated that, on average, 39% of residential refrigeration equipment sales were ENERGY STAR certified, whereas that figure increased to 60% for 2013 sales. Similarly, ENERGY STAR-certified commercial refrigeration equipment reportedly represented 37% of refrigeration sales in 2010 and then jumped to 58% in 2013.

Table B-62: Mean Percentage of Distributors' Refrigeration Equipment Sales that were ENERGY STAR in 2010 and 2013

MEAN PERCENTAGE	2010	2013
Residential		
N	7	10
Mean Percent	39%	60%
Commercial		
N	13	15
Mean Percent	37%	58%

Base: Distributors indicating that they sold the specified refrigeration equipment type

B.2.5. AVAILABILITY OF TRAINED CONTRACTORS

Participating contractors (87%) were more likely than nonparticipating contractors (57%) to have received some type of training in energy efficient building practices. More than three-fifths of participating contractors (61%) had attended some type of BBNP-sponsored training, with 46% attending technical training and 40% attending sales and marketing training. Four percent of nonparticipating contractors reported attending either type of BBNP-sponsored training (Table B-63).

Table B-63: Contractor Training in Energy Efficient Building Practices and Program Influence

TRAINING ATTENDANCE	PARTICIPATING (N=147)	NONPARTICIPATING (N=446)
Received any energy efficient building practices training	87%	57%
Attended either type of BBNP-sponsored training	61%	4%
Attended BBNP-sponsored training in building practices or technologies	46%	3%
Attended BBNP-sponsored training in sales and marketing	40%	3%

When we examined contractors' assessments of the availability of trained contractors by strata, it found several differences among the strata. For example, a statistically significantly higher percentage of nonparticipating contractors in the Commercial stratum reported an increase in the number of contractors trained in energy efficient building practices, while a statistically significantly higher percentage of participating contractors in the average stratum reported a high degree of influence to BBNP for the increase (Table B-64).

Table B-64: Increases in Contractor Training in Energy Efficient Building Practices since 2010 and BBNP Influence by Stratum

STRATUM [a]	PARTICIPATING			NONPARTICIPATING		
	n	Percent Reporting Increase in Training	Percent Reporting High Degree of BBNP Influence [b]	n	Percent Reporting Increase in Training	Percent Reporting High Degree of BBNP Influence [b]
Most Successful	43	84%	37%	128	62%	5%
Average	75	87%	49%[c]	211	68%	9%
Top 5 Commercial	29	86%	31%	98	74%[d]	4%
Total	147	86%	42%	446	68%	6%

a We excluded results associated with the low success stratum from this table because of the small sample size.

b Using a scale of zero to ten where zero means "no influence at all" and ten means "a great deal of influence," we considered ratings of seven to ten as indicating a "high degree" of influence. Percentages of respondents are based on the total number of each respective population of participating and nonparticipating contractors.

c Statistically significantly different from contractors in the top five commercial stratum at the 90% confidence level.

d Statistically significantly different from contractors in the most successful stratum at the 90% confidence level.

A statistically significantly higher percentage of participating contractors in the most successful stratum reported a high degree of influence to BBNP training on increasing the number of energy efficient upgrades and the comprehensiveness or depth of the upgrades compared to participating contractors from the top five commercial stratum (Table B-65).

Table B-65: BBNP Training Influence on Increases in Elements of Upgrade Market Reported by Contractors by Stratum (Multiple Responses)

BBNP TRAINING INCREASED ELEMENT SINCE 2010 [a]	PERCENT OF STRATUM [b]			
	Most Successful	Average	Top Five Commercial	Total
Participating Contractors				
n	43	75	29	147
Number of energy efficient upgrades	56%[c]	45%	34%	46%
Quality of energy efficient upgrades	51%	45%	34%	45%
Comprehensiveness of energy efficient upgrades	53%[c]	44%	31%	44%
Nonparticipating Contractors				
n	128	211	98	446
Number of energy efficient upgrades	1%	3%[d]	1%	2%
Quality of energy efficient upgrades	1%	4%[e]	1%	2%
Comprehensiveness of energy efficient upgrades	1%	4%[e]	1%	2%

[a] Percentages represent contractors that indicated BBNP training had increased the element "a lot" or "a little."

[b] We excluded results associated with the low success stratum from this table because of the small sample size.

[c] Statistically significantly different from contractors in the top five commercial stratum at the 90% confidence level.

[d] Statistically significantly different from contractors in the most successful stratum at the 90% confidence level.

[e] Statistically significantly different from contractors in all other strata at the 90% confidence level.

Table B-66 presents contractors' assessments of the extent to which BBNP training influenced the number of energy efficient upgrades, the quality of the upgrades, and the comprehensiveness or depth of the upgrades they had performed since 2010. A majority of participating contractors reported increases in the number of energy efficient upgrades, the quality of the upgrades, and the comprehensiveness or depth of the upgrades since 2010. Smaller shares of participating contractors thought the number (6%), quality (7%), and/or comprehensiveness (8%) of upgrades had stayed the same despite BBNP training. Very small percentages of contractors said that BBNP training had decreased the number, quality, and/or comprehensiveness of energy efficient upgrades.

Table B-66: BBNP Training Influence on Elements of Upgrade Market Reported by Contractors

INFLUENCE OF BBNP TRAINING ON UPGRADES SINCE 2010	PARTICIPATING (N=147)			NONPARTICIPATING (N=446)		
	Number of energy efficient upgrades	Quality of energy efficient upgrades	Comprehensiveness of energy efficient upgrades	Number of energy efficient upgrades	Quality of energy efficient upgrades	Comprehensiveness of energy efficient upgrades
Increased a lot	26%	27%	25%	1%	1%	1%
Increased a little	20%	18%	19%	1%	2%	1%
Decreased a lot	1%	1%	1%	—	—	<1%
Decreased a little	1%	1%	1%	<1%	<1%	<1%
Stayed the same	6%	7%	8%	1%	<1%	<1%
Don't know/Refused	7%	7%	7%	1%	1%	1%
Did not receive BBNP training	39%	39%	39%	23%	23%	23%
Not aware of BBNP	—	—	—	73%	73%	73%

B.2.6. BUSINESS PRACTICES

Another factor that contributed to the BBNP market effects analysis was the impact on business practices. We sought to learn whether BBNP had changed contractor and distributor business practices (such as increasing their business' focus on energy efficiency).[53]

Comparing BBNP impacts on business practices across the strata, we found that a higher percentage of participating contractors from the most successful stratum reported partnering with other firms or contractors to adapt to the program compared to participants in the top five commercial stratum (Table B-67).

[53] We assessed business practices separately from building practices (analyzed in Section 3.2.1). While both topics have some overlap, we considered building practices as actions that involve contractor efforts while in the field and we considered business practices as actions that are determined and implemented at a corporate, owner, or management-levels.

Table B-67: Contractor Business Practice Changes Resulting from BBNP by Stratum

STRATUM*	PERCENT OF PARTICIPATING			
	n	Services became more comprehensive to adapt to BBNP	Business began to partner with other firms or other contractors to adapt to BBNP	Business practices changed to focus more on energy efficiency to adapt to BBNP
Most Successful	38	68%	61%**	45%
Average	72	60%	51%	47%
Top 5 Commercial	24	50%	33%	42%
Total	134	60%	51%	46%

Base: Participating contractors asked about business practices; sample sizes are smaller for the final column (Business practices changed to focus more on energy efficiency to adapt to BBNP)

* We excluded results associated with the low success stratum from this table because of the small sample size.

** Statistically significantly different from contractors in the top five commercial stratum at the 90% confidence level.

Distributors

Distributors who had changed their business or stocking practices since the start of BBNP listed factors other than BBNP to explain the changes they had made; among other factors, they listed changes in customer awareness, the economy, and utility or other program incentives. Their responses are presented in Table B-68.

Table B-68: Non-BBNP Factors Explaining Distributor Business and Stocking Practice Changes Since Start of BBNP (Multiple Responses)

NON-BBNP FACTORS EXPLAINING CHANGES IN BUSINESS AND STOCKING PRACTICES	PERCENT OF DISTRIBUTORS (N=291)*
Customer desire/awareness	
Economy	1%
Labor availability/changes	1%
Training	1%
Government involvement/mandates	1%
Utility and other incentive programs	1%
The general market	1%
Other	1%
No other factors	12%
Don't know/Refused	2%

Continued…

NON-BBNP FACTORS EXPLAINING CHANGES IN BUSINESS AND STOCKING PRACTICES	PERCENT OF DISTRIBUTORS (N=291)*
Did not make any changes	16%
Not aware of BBNP	66%

* Only distributors aware of BBNP and reporting some change in their business or stocking practices since the start of BBNP were asked this question, but percentages are drawn from all surveyed distributors. Because the question allowed multiple responses, percentages total to greater than 100%.

We asked distributors who were aware of BBNP to describe how, if at all, their business and stocking practices had changed since BBNP began. Distributors most commonly said that they now explain to their customers how energy efficient equipment works (13%) and that, in general, they talk more about energy efficiency with their customers (13%). Table B-69 presents other changes that they commonly described.

Table B-69: Distributor Business and Stocking Practice Changes since Start of BBNP (Multiple Responses)

CHANGES IN BUSINESS PRACTICES SINCE START OF BBNP	PERCENT OF DISTRIBUTORS (N=291)*
Explain to customers how high efficiency works	13%
In general, talk about energy efficiency more with customers	13%
Compare efficiency levels of different equipment	12%
Talk to customers about payback periods	12%
Stock more efficient materials	9%
Nothing/None	15%
Don't know/Refused	1%
Not aware of BBNP	66%

* Only distributors aware of BBNP were asked these questions, but percentages are drawn from all surveyed distributors. Because the question allowed multiple responses, percentages total to greater than 100%.

B.2.7. JOBS

Contractors

To gauge the impact of BBNP on job growth and retention, we asked contractors if they had hired any new employees because of BBNP or if they had been able to retain existing staff because of BBNP. As shown in Table B-70, more than two-fifths (43%) of participating contractors said BBNP had enabled them to hire additional employees, and nearly one-third (31%) said it had enabled them to retain employees they otherwise would not have been able to retain. In total, they estimated their companies hired 251.5 new employees because of BBNP. On average, their companies each hired 4.4 new employees. They estimated that BBNP allowed them to retain 199

employees in total (4.9 employees on average) that they otherwise would have had to let go.[54] As shown in Table B-70, the mean number of employees for all sampled contractors (those who did and did not hire or retain staff) is 1.7 hires and 1.4 retentions.

Table B-70: Contractor Job Growth and Retention Resulting from BBNP

STATISTIC	PARTICIPATING CONTRACTORS (N=134)	
	Employee Hiring	Employee Retainment
Percent of Surveyed Contractors Reporting BBNP Job Growth or Retention	43%	31%
Total Employees Hired or Retained by Surveyed Contractor	251.5	199.0
Mean Employees Hired or Retained for Surveyed Contractors	1.7	1.4

During the in-depth interviews, a few contractors reflected on the impacts that their companies experienced from hiring staff because of BBNP. One of the contractors reported that the hiring provided an influx of talent to his firm even though there was no net change in the number of employees by the end of BBNP:

> *"We had some high-level employees that we brought on to help with the overall operations management. We found some good support staff and some good auditors that are still with us; some of them are part-time now. Overall, [the hiring] brought on a lot of good staff that have stayed even though other staff from other programs may have moved on. [It created] an influx of talent that was positive."*

Another contractor noted that adding employees presented risks to organizations that increased staff to adapt to BBNP but did not downsize as BBNP reached the end of the program cycle. However, the contractor described how keeping auditors on staff at HVAC and insulation contracting companies could contribute to advancing energy efficiency:

> *"If [the program] could sustain [auditor jobs], you might more commonly find [HVAC and insulation] contractors in that type of business as opposed to as a sole proprietor or group of auditors. I think that would be good if it were sustainable, because if you have an auditor on [HVAC or insulation contracting companies'] staff, [then the companies would] try to integrate energy efficiency into the work that [they] do."*

Distributors

Also we asked distributors if they had hired any new employees because of BBNP or if they had been able to retain existing staff because of BBNP. Three percent of distributors said that BBNP had allowed them to hire additional employees and an equal proportion said that it allowed them to retain employees that they otherwise would not have been able to retain. In total, they estimated that companies hired 64.5 new employees because of BBNP, or 0.2 new

[54] We asked respondents how many full-time employees and how many part-time employees they hired. For the purposes of analysis, we assumed that any part-time employees would work halftime, counting them as 0.5 of an employee.

employees on average for surveyed distributors.[55] The respondents estimated that BBNP enabled them to retain 54.0 employees in total, for an average 0.2 retained employees for all sampled distributors (Table B-71).[56]

Table B-71: Distributor Job Growth and Retention Resulting from BBNP

STATISTIC	DISTRIBUTORS (N=291)	
	Employee Hiring	Employee Retainment
Percent of Surveyed Distributors Reporting BBNP Job Growth or Retention	3%	3%
Total Employees Hired or Retained by Surveyed Distributor	64.5	54.0
Mean Employees Hired or Retained by Surveyed Distributors	0.2	0.2

We compared differences in job growth and business practice changes by contractor and distributor company sizes. There were no statistically significant differences among contractors. There were, however, some statistically significant differences among distributors: distributors from companies with six to ten employees (7%) were more likely than distributors from smaller companies (1%) to have been able to hire staff because of BBNP; the largest companies (21 or more FTEs, 7%) were statistically significantly more likely than companies with five or fewer (1%) or 11 to 20 (0%) FTEs to have been able to retain staff because of BBNP; and the largest companies (12%) changed their focus to energy efficiency to adapt to BBNP more frequently than companies with 11 to 20 employees (4%). Table B-72 provides more details.

Table B-72: Distributor Job Growth and Business Practice Changes by Company Size

NUMBER OF FULL-TIME EMPLOYEES	PERCENT OF DISTRIBUTORS				
	Hired staff because of BBNP	Retained staff because of BBNP	Changed to focus more on energy efficiency to adapt to BBNP	Services became more comprehensive to adapt to BBNP	Business began to partner with other firms to adapt to BBNP
1 to 5 (n=98)	1%	1%	6%	8%	7%
6 to 10 (n=59)	7%[a]	3%	10%	17%	17%
11 to 20 (n=53)	2%	—	4%	13%	13%
21 or more (n=69)	6%	7%[b]	12%[c]	13%	13%

[a] Statistically significantly different from distributors with one to five FTEs at the 90% confidence level.

[b] Statistically significantly different from distributors with one to five FTEs and 11 to 20 FTEs at the 90% confidence level.

[c] Statistically significantly different from distributors with 11 to 20 FTEs at the 90% confidence level.

[55] We asked respondents how many full-time employees and how many part-time employees they hired. For the purposes of analysis, we assumed that any part-time employees would work halftime, counting them as 0.5 of an employee.

[56] In terms of all surveyed distributors, not just those who hired or retained employees because of BBNP, distributors hired an average of 0.2 employees and retained 0.2 employees because of BBNP.

Extrapolated Job Growth

We extrapolated the job growth and retention findings from the sample to the populations of participating contractors and distributors (not limited to those who supplied participating contractors) serving the jurisdictions of the 25 sampled grantee programs. We estimate these populations to be 585 participating contractors and 1,427 distributors. As shown in Table B-73, the 25 sampled BBNP programs influenced an estimated 1,317 positions hired and 1,057 positions retained, for 2,374 contractor and distributor employees.

Table B-73: Extrapolated Estimate of Hired and Retained Employees Influenced by BBNP

TRADE ALLY	ESTIMATED POPULATION	TOTAL HIRED	TOTAL RETAINED
Participating Contractors	585	1,001	792
Distributors	1,427	316	265
Total Employees	NA	1,317	1,057

B.3. AWARENESS OF AND PARTICIPATION IN OTHER ENERGY EFFICIENCY PROGRAM AWARENESS AND PARTICIPATION

We asked contractors and distributors about their awareness of other energy efficiency incentive programs.

B.3.1. CONTRACTORS

As shown in Table B-74, participating contractors showed a high level of awareness of other programs and policies that encourage the installation of energy efficient equipment in buildings and homes, ranging from 61% of participating contractors who were aware of EECBG, SEP, and WAP programs to 95% who were aware of federal or state tax credits for energy efficiency improvements. Awareness among non-participating contractors was lower, ranging from 37% who were aware of EECBG, SEP, and WAP programs to 78% who were aware of federal or state tax credits. BBNP participating contractors also were more likely to participate in these other programs than were BBNP nonparticipating contractors.

Table B-74: Contractor Awareness of and Participation in Non-BBNP Existing Home and Building Energy Efficiency Programs (Multiple Responses)

OTHER PROGRAM	PARTICIPATING (N=147)		NONPARTICIPATING (N=466)	
	Percent Aware	Percent Participated	Percent Aware	Percent Participated
Local BBNP program	100%	100%	27%	—
Federal/state tax credits for energy efficiency improvements	95%	N/A	78%	N/A
Efficiency programs sponsored by local utilities or other groups	86%	65%	68%	30%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)*	83%	41%	58%	22%
EECBG, SEP or WAP	61%	42%	37%	14%

Base: We asked all contractors about each program; as a result, percentages total to greater than 100%. We did not ask contractors about their participation in tax credit programs. We did not ask residential contractors whether they were aware of benchmarking and labeling programs (for participating contractors n=29 and for nonparticipating contractors n=98).

Table B-75 compares contractors' awareness of other programs by stratum. Most successful and average strata contractors were statistically significantly more likely than top five commercial contractors to have been aware of the programs listed. There were no statistically significant differences between the most successful and average strata.

Table B-75: Contractor Awareness of Existing Home and Building Programs and Policies by Stratum (Multiple Responses)

PROGRAM OR POLICY	MOST SUCCESSFUL	AVERAGE	TOP 5 COMMERCIAL	TOTAL*
Participating Contractors				
N	43	75	29	147
BBNP	100%	100%	100%	100%
Federal/state tax credits for energy efficiency improvements	98%	96%	90%	95%
Efficiency programs sponsored by local utilities or other groups	84%	91%**	76%	86%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)	N/A	N/A	83%	N/A
EECBG, SEP or WAP	65%	64%	48%	61%

Continued…

PROGRAM OR POLICY	MOST SUCCESSFUL	AVERAGE	TOP 5 COMMERCIAL	TOTAL*
Nonparticipating Contractors				
N	128	211	98	446
BBNP	34%	30%	13%	27%
Federal/state tax credits for energy efficiency improvements	82%	84%**	74%	81%
Efficiency programs sponsored by local utilities or other groups	73%**	74%**	61%	71%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)	N/A	N/A	58%	N/A
EECBG, SEP or WAP	41%**	41%**	24%	37%

Base: We asked all contractors about each program; as a result, percentages total to greater than 100%. We did not ask residential contractors whether they were aware of benchmarking and labeling programs.

* We excluded results associated with the low success stratum from this table because of the small sample size.

** Statistically significantly different from the top five commercial stratum at the 90% confidence level.

Table B-76 shows contractor rates of participation in these other programs by stratum. We found no statistically significant differences across strata.

Table B-76: Contractor Rates of Participation in Existing Home and Building Programs and Policies by Stratum (Multiple Responses)

PROGRAM OR POLICY	MOST SUCCESSFUL	AVERAGE	TOP 5 COMMERCIAL	TOTAL*
Participating Contractors				
N	43	75	29	147
Efficiency programs sponsored by local utilities or other groups	63%	64%	72%	65%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)	N/A	N/A	41%	N/A
EECBG, SEP or WAP	49%	40%	38%	42%

Continued…

PROGRAM OR POLICY	MOST SUCCESSFUL	AVERAGE	TOP 5 COMMERCIAL	TOTAL*
Nonparticipating Contractors				
N	128	211	98	446
Efficiency programs sponsored by local utilities or other groups	33%	28%	37%	31%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)	N/A	N/A	39%	N/A
EECBG, SEP or WAP	16%	13%	13%	14%

Base: We asked all contractors about each program; as a result, percentages total to greater than 100%. We did not ask residential contractors whether they were aware of benchmarking and labeling programs.

* We excluded results associated with the least successful stratum from this table because of the small sample size.

Among participating contractors compared according to their participation in other programs, we found no statistical differences in the percentage of contractors who strongly agreed that there had been more business for their company than there would have been in the absence of BBNP (see Table B-77 through Table B-80).

Nonparticipating contractors who had participated in EECBG-funded or utility-sponsored programs were statistically significantly more likely than nonparticipating contractors who had not participated in EECBG-funded or utility-sponsored programs to strongly agree with the statement (21% vs. 2%). These patterns were quite similar across all four statements about BBNP influence questions and non-BBNP program participation

Table B-77: Contractors Who Strongly Agreed that There Was More Business for their Company with BBNP by Participation in Other Programs (Multiple Responses)

OTHER PROGRAM	PERCENT OF PARTICIPATING WHO STRONGLY AGREED (7-10)				PERCENT OF NONPARTICIPATING WHO STRONGLY AGREED (7-10)			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Percent	n	Percent	n	Percent	n	Percent
EECBG, SEP or WAP	62	61%	85	53%	63	21%*	383	2%
Efficiency programs sponsored by local utilities or other groups	96	56%	51	57%	139	9%*	307	3%
Benchmarking or labeling programs**	12	42%	17	53%	22	—	76	—

* Denotes a statistically significant difference between participation and nonparticipation in the listed program at the 90% confidence level.

** Base: Contractors asked about commercial projects

Table B-78: Contractors Who Strongly Agreed that There Was More Business in General with BBNP by Participation in Other Programs

OTHER PROGRAM	PERCENT OF PARTICIPATING WHO STRONGLY AGREED (7-10)				PERCENT OF NONPARTICIPATING WHO STRONGLY AGREED (7-10)			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Percent	N	Percent	n	Percent	n	Percent
EECBG, SEP or WAP	62	58%	85	55%	63	24%*	383	5%
Efficiency programs sponsored by local utilities or other groups	96	57%	51	55%	139	12%*	307	6%
Benchmarking or labeling programs**	12	42%	17	53%	22	—	76	4%*

* Denotes a statistically significant difference between participation and nonparticipation in the listed program at the 90% confidence level.

** Base: Contractors asked about commercial projects

Table B-79: Contractors Who Strongly Agreed that There will Be More Business for Their Company in the Next Two Years with BBNP by Participation in Other Programs

OTHER PROGRAM	PERCENT OF PARTICIPATING WHO STRONGLY AGREED (7-10)				PERCENT OF NONPARTICIPATING WHO STRONGLY AGREED (7-10)			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Percent	n	Percent	n	Percent	n	Percent
EECBG, SEP or WAP	62	44%	85	48%	63	21%*	383	5%
Efficiency programs sponsored by local utilities or other groups	96	47%	51	45%	139	9%	307	6%
Benchmarking or labeling programs**	12	25%	17	29%	22	—	76	1%

* Denotes a statistically significant difference between participation and nonparticipation in the listed program at the 90% confidence level.

** Base: Contractors asked about commercial projects

Table B-80: Contractors Who Strongly Agreed that There will Be More Business in General in the Next Two Years with BBNP by Participation in Other Programs

OTHER PROGRAM	PERCENT OF PARTICIPATING WHO STRONGLY AGREED (7-10)				PERCENT OF NONPARTICIPATING WHO STRONGLY AGREED (7-10)			
	Participant in Other Program		Nonparticipant in Other Program		Participant in Other Program		Nonparticipant in Other Program	
	n	Percent	n	Percent	n	Percent	n	Percent
EECBG, SEP or WAP	62	42%	85	48%	63	25%*	383	8%
Efficiency programs sponsored by local utilities or other groups	96	47%	51	43%	139	14%	307	9%
Benchmarking or labeling programs**	12	25%	17	18%	22	5%	76	1%

* Denotes a statistically significant difference between participation and nonparticipation in the listed program at the 90% confidence level.

** Base: Contractors asked about commercial projects

B.3.2. DISTRIBUTORS

Table B-81 compares distributors' awareness of various energy efficiency programs. Distributors were most likely to be aware of federal or state tax credits for energy efficiency improvements (91%). Nearly one-quarter of the commercial distributors (74%) were aware of benchmarking or labeling programs such as LEED or ENERGY STAR Portfolio Manager, and more than two-thirds of surveyed distributors (70%) were aware of efficiency programs sponsored by local utilities or other groups. Distributors were least likely to be aware of EECBG, SEP, and WAP (40%) and BBNP (34%).

Table B-81: Distributor Awareness of Existing Home and Building Programs by Sector (Multiple Responses)

PROGRAM OR POLICY	RESIDENTIAL (N=225)	COMMERCIAL (N=66)	TOTAL (N=291)
Federal/state tax credits for energy efficiency improvements	92%	89%	91%
Benchmarking or labeling programs (ex. LEED or ENERGY STAR Portfolio Manager)	N/A	74%	74%
Efficiency programs sponsored by local utilities or other groups	72%	62%	70%
EECBG, SEP or WAP	42%	35%	40%
BBNP	36%	26%	34%

Base: We asked all surveyed distributors about each program; as a result, percentages total to greater than 100%. We did not ask residential distributors whether they were aware of benchmarking and labeling programs.

APPENDIX C. CONTRACTOR SURVEY METHODS AND RESULTS

This appendix provides additional details of the methodology used to develop samples and population estimates for participating and nonparticipating contractors.

In designing the sample for nonparticipating contractors, we first identified the geographic region for each grantee. The goal was to systematically identify a geographic region for each grantee that captured an adequate population of contractors working in the grantee locations without defining a region that was so large that it would be impossible to detect potential market effects. Grantees areas included major metropolitan regions, small cities or towns within major metropolitan regions, medium-sized cities, rural counties, and small towns.

C.1. OVERVIEW OF APPROACH

We conducted surveys with contractors participating in BBNP and nonparticipating contractors in several strata of grantees: grantees with residential programs from each of three success groupings (most, average, and least) and the top five commercial grantee programs (based on BTUs of savings).[57] Table C-1 reports the number of grantees and survey respondents in each stratum.

Table C-1: Contractor Survey Sample by Stratum

STRATA	NUMBER OF GRANTEES	PARTICIPATING CONTRACTORS	NONPARTICIPATING CONTRACTORS
Most Successful	6	43	128
Average	13	75	211
Least Successful	1	—	9
Top 5 Commercial	5	29	98
Total Grantee Programs	25*	147	446

* Twenty-two grantees were included in the sample. Three of the grantees were included for both their residential and commercial programs.

Because of the small number of grantees and survey respondents in the low success strata, we have not reported results from this stratum individually.

[57] We defined 12 numerical success metrics corresponding to the program's multi-faceted objectives and estimated their values for each local BBNP program. We conducted latent profile analysis (LPA) to cluster programs into groups with similar performance on the 12 indicators. LPA revealed programs clustered into three groups; their average group values on the 12 metrics were consistent with an interpretation of a most successful group, an average group, and a least successful group. For more detail, see *Drivers of Success in Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3).

We initially selected grantees by choosing from five strata of grantees based on program data through the fourth quarter of 2012 and drawing a stratified random sample of each population (participating contractors and nonparticipating contractors designed to achieve a 90/10 precision level for each population in each stratum). The original five strata were the top five residential grantee programs (based on the number of residential upgrades), the top five commercial grantee programs (based on BTUs of savings), and five grantees with residential programs from each of the three success groupings – most, average, and least – based on the success metric developed in the preliminary evaluation.[58] However, we developed a revised success metric after the grantees were selected and surveys were completed. The revised success rankings for 11 of the 15 selected grantees were different from the preliminary success metric. Further, three of the top five residential programs (based on data through the fourth quarter of 2012) were no longer among the top five residential programs as of the third quarter of 2013. As a result, we used the revised success categorizations and grouped the grantees from the "top five residential" stratum with their corresponding "success" stratum.

The sample was focused on those grantees with community-based programs (that is, programs administered at the community, city, or county level) and excluded statewide programs (such as New York [NYSERDA] or Maine). Also it excluded grantees with large numbers of subgrantees operating multiple unique programs (such as Los Angeles County and SEEA). Statewide programs were excluded because of the difficulty in separating out indicators of market effects associated with BBNP from the market effects generated by larger, previously existing programs, while data for individual subgrantees were not available and precluded the selection of subgrantees.

C.2. SAMPLING

Table C-2 presents the 22 grantees that we included in the contractor survey samples.

Table C-2: Grantees Included in the Final Market Effects Survey

- Austin, TX
- Chicago Metro Agency for Planning
- CSG, Bainbridge Island, WA
- Fayette County, PA
- Greensboro, NC
- Kansas City, MO
- Philadelphia, PA
- Portland, OR
- San Antonio, TX
- State of Michigan*
- Toledo-Lucas Co. Port Authority (OH)
- Boulder County, CO*
- Connecticut Innovations, Inc.
- Eagle County, CO
- Greater Cincinnati Energy Alliance
- Indianapolis, IN
- Omaha, NE
- Phoenix, AZ
- Rutland, VT
- Seattle, WA*
- State of New Hampshire
- Wisconsin Energy Efficiency Project

* Grantees that were selected for both their residential and commercial programs

[58] The preliminary evaluation included a composite success metric based on four metrics: (1) progress rate (the number of retrofits completed relative to the number of retrofits targeted); (2) conversion rate (the number of retrofits completed as compared to the number of energy audits conducted); (3) spending-to-retrofits ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the number of retrofits completed); (4) spending-to-savings ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the amount of energy saved [MMBtu]). Research into Action & NMR. (2012). *Final Report: Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program.* Berkeley, CA: Lawrence Berkeley National Labs.

We compiled lists of participating contractors obtained from data requests placed to the 22 grantees and from the grantees' websites. The number of participating contractors varied dramatically among the grantees, ranging from nine (Indianapolis, IN) to 195 (State of Michigan). We conducted interviews with participating contractors between September 2013 and February 2014.

For nonparticipating contractors, we identified a geographic region for each grantee from which the sample was drawn (detailed below). For each grantee, we developed an initial population of nonparticipating contractors with data from a purchased list (InfoUSA).[59] Using Standard Industrial Classification (SIC) codes, we identified commercial and residential contractors. We supplemented the purchased list with publicly availably membership lists from the Building Performance Institute (BPI).[60] Appendix C provides the SIC codes used, while the following section provides more details on the identification of the geographic region of each grantee and our process in preparing the sample lists. We conducted the interviews with non-participating contractors between September 2013 and February 2014.

C.3. IDENTIFYING GRANTEE SERVICE TERRITORY AND PREPARING THE SAMPLE

We identified a geographic region for each grantee from which we drew the sample of nonparticipating contractors. We sought to systematically identify grantee geographic regions that captured an adequate population of contractors working in the grantee locations without defining a region that was so large that we would be unable to detect potential market effects.

Grantees are located in a range of locations, including major metropolitan regions, small cities or towns within major metropolitan regions, medium-sized cities, rural counties, and small towns. We categorized grantees' locations according to the Center for Disease Control's National Center for Health Statistics (NCHS) – 2006 Urban-Rural Classification Scheme for Counties.[61] The NCHS report classifies counties into one of six categories, four urban and two rural, as shown in Table C-3.

59 InfoUSA, a product of the Infogroup, provides business and consumer data, including contact information, for marketing and research purposes. See: *http://www.infousa.com/*.

60 BPI is a standards development and credentialing organization for residential energy efficiency retrofit work (*http://www.bpi.org/*).

61 See: *http://www.cdc.gov/nchs/data_access/urban_rural.htm.*

Table C-3: NCHS – 2006 Urban-Rural Classification Scheme for Counties

NCHS URBAN-RURAL COUNTY CODE	DEFINITION
Large metro, central	Counties in a Metropolitan Statistical Area (MSA) of 1 million or more population that: 1) contain the entire population of the largest principal city of the MSA; or 2) are completely contained within the largest principal city of the MSA; or 3) contain at least 250,000 residents of any principal city in the MSA
Large fringe metro	Counties in a MSA of 1 million or more population that do not qualify as large central
Medium metro	Counties in a MSA of 250,000 to 999,999 population
Small metro	Counties in a MSA of 50,000 to 249,999 population
Nonmetro, micropolitan	Counties in a micropolitan statistical area
Nonmetro, noncore	Counties not in a micropolitan statistical area

Next, we distinguished between grantees working in a specific city, town, or neighborhood within the county or MSA, and grantees working in an entire county or entire metro region. Based on this distinction, we defined the geographic region from which we drew the sample of nonparticipating contractors according to the rules described in Table C-4. Table C-7 provides more detail on the grantee classification.

Table C-4: Geographic Area for Sampling Nonparticipating Contractors

NCHS URBAN-RURAL COUNTY CODE	LOCATION WITHIN COUNTY	SAMPLING REGION
Large metro (central or fringe)	Primary city or entire county	County
Large metro (central or fringe)	Neighborhood, town, or city, but not the primary city	Geographic region encompassing 10 mile radius from the edge of grantee location
Medium or small metro	Entire county	County
Medium or small metro	City or town within the county	Geographic region encompassing 10 mile radius from the edge of grantee location
Nonmetro (micropolitan or noncore)	County, city, or town	County

For each grantee, we developed an initial population of nonparticipating contractors with data from a purchased list (InfoUSA). Using Standard Industrial Classification (SIC) codes, we identified commercial and residential contractors. We supplemented the purchased list with publicly availably membership lists from the Building Performance Institute (BPI).[62]

62 BPI is a standards development and credentialing organization for residential energy efficiency retrofit work (*http://www.bpi.org/*).

C.3.1. SAMPLE CLEANING

Based on the prepared search criteria, InfoUSA provided 97,225 contractor contacts. We reviewed each list and undertook the following steps to prepare the samples for fielding:

- We removed a nonparticipating contractor who, based on the description of their primary SIC code, did not work in trades and activities that are commonly associated with energy upgrades. [63]
- If contacts appeared in the participating contractor list, we removed them from the nonparticipating contractor lists.
- If contacts appeared in both the nonparticipating contractor and distributor lists, we chose to include them in the distributor survey sample given that the distributor sample was smaller than the contractor sample.
- Three grantees were studied for both their residential and commercial efforts.[64] Many contractors appeared in lists of both residential and commercial contacts. We asked these contacts about only one type of grantee program, residential or commercial. We chose the sector (residential vs. commercial) based on the sector for which they reported completing the majority of their retrofit work or business sales. If their work or sales were evenly split across sectors, we randomly assigned a sector about which to ask.
- Using the same grantee geographic regions, we developed lists of BPI-certified contractors from the publicly available list and search engine available on the BPI website (*http://www.bpi.org/*)

After these steps, there were 79,638 contractor contacts.

C.3.2. POPULATION ESTIMATES AND SURVEY TARGETS

Using the dispositions (call records) from the preliminary evaluation effort in which we conducted similar surveys with contractors,[65] we estimated that 14% of the nonparticipating contractor contacts would be eligible to complete the survey; these were used as the original population estimates. We assumed that 100% of participating contractor contacts would be eligible to complete the survey.

Based on the original population estimates, we derived grantee-specific survey targets by attempting to achieve a sampling error of 10% or less at the 90% confidence level for each stratum (with associated error margins assuming a 50/50 proportion of responses). We developed target numbers of completed surveys for each individual grantee based on three factors: the percent of the stratum population represented by the grantee, the percent of retrofits (residential programs) or savings (commercial programs) represented by the grantee, and the sample size for each grantee.

---

63 For example, contractors with the following SIC code descriptions were removed: convenience stores, janitor service, and printers.

64 Contractors and distributors that were classified as commercial counted toward the top five commercial stratum completes. All other strata targeted contractors and distributors that were classified as residential.

65 This survey effort was conducted in August and September 2012 as part of the preliminary market effects evaluation.

We completed surveys with 52% of the target for the participating contractors and 122% of the target for nonparticipating contractors (Table C-5). The lower than expected number of completed surveys with participating contractors was likely due to two factors:

- Fewer respondents confirmed participation in BBNP. In the preliminary evaluation, 88% of respondents who had been on the participant list had confirmed that they were participants in BBNP; however, in the final evaluation, only 61% of respondents on the participant list confirmed participation.
- CATI programming errors. The CATI firm read the incorrect grantee name to 147 participating contractors and 14 nonparticipating contractors who completed the survey. As a result, these respondents indicated that they were either unaware of or had not participated in the respective grantee program. The CATI firm later attempted to re-interview these respondents to ask about the correct grantee program.[66] Ultimately, we had to exclude survey responses from 53 participating contractors who were asked about the incorrect grantee.

Table C-5: Final Evaluation Targeted and Completed Surveys

SURVEY GROUP	FINAL EVALUATION (2013*)		
	Survey Targets	Surveys Completed	Percent of Targets Completed
Contractors	650	593	91%
Participating	284	147	52%
Nonparticipating	366	446	122%

* We completed some contractor surveys in 2014.

After fielding the survey, we used the survey dispositions and the original population estimates from InfoUSA to estimate populations of nonparticipating contractors for each grantee. Based on the population estimates and sample sizes, we estimated overall sampling errors at 90% confidence level of 7.7% for participating contractors and 5.2% for nonparticipating contractors.[67] Table C-6 presents the population estimates, survey completes, and the resulting sampling errors for each stratum.

66 Contacts who completed the callback survey were offered an incentive of $25.

67 Sampling errors were estimated assuming a 50/50 proportion of responses.

Table C-6: Estimated Population, Number of Completed Surveys, and Sampling Error by Stratum

STRATUM	FINAL ESTIMATED POPULATION		NUMBER OF COMPLETES		SAMPLING ERROR
	Count	Percent	Count	Percent	
Participating Contractors					
Most Successful	180	31%	43	29%	15.3%
Average	270	46%	75	51%	10.5%
Least Successful	5	1%	0	0%	NA
Top 5 Commercial	130	22%	29	20%	15.0%
Total	585		147		7.7%
Nonparticipating Contractors					
Most Successful	8,133	34%	128	29%	10.0%
Average	11,708	49%	211	49%	7.3%
Least Successful	460	2%	9	2%	NA
Top 5 Commercial	3,536	15%	98	22%	10.5%
Total	23,837		446		5.2%

* We developed nonparticipating contractor population estimates using survey dispositions relative to original population estimates. Figures do not always sum to totals due to rounding.

C.4. GRANTEE RURAL-URBAN CODING AND SAMPLING GEOGRAPHY

Table C-7 provides the number of grantee counties associated with each NCHS code. In some cases, grantees' programs are active in multiple counties. As a result, individual grantees may have had more than one sampling rule applied to them.

Table C-7: Grantees and Counties in Survey Sample Associated with NCHS – 2006 Urban-Rural Classification County Codes

NCHS URBAN-RURAL COUNTY CODE	NUMBER OF GRANTEES*	NUMBER OF COUNTIES
Large metro, central	14	15
Large fringe metro	7	22
Medium metro	10	20
Small metro	5	9
Nonmetro, micropolitan	7	26

Continued…

NCHS URBAN-RURAL COUNTY CODE	NUMBER OF GRANTEES*	NUMBER OF COUNTIES
Nonmetro, noncore	4	14
Total	22	106

* Twelve grantee territories were in multiple counties that were associated with different county codes. For example, Michigan's territory was in ten counties with four different county codes (large metro, central; large fringe, metro; medium metro; and nonmetro, micropolitan).

Table C-8 presents the counties used for sampling for each grantee and the county codes assigned to them.

Table C-8: Grantees Sampling Locations, Counties, and NCHS – 2006 Urban-Rural Classification County Codes

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Austin, TX	Primary City	Travis	Large metro, central
Boulder County, CO	Entire County	Denver	Large metro, central
	Entire County	Boulder	Medium metro
	Entire County	Garfield	Nonmetro, noncore
Chicago Metro Agency for Planning	Entire County	Dupage, Kane, Kendall, Lake, McHenry, and Will	Large fringe metro
	Primary City	Cook	Large metro, central
	Primary City	Winnebago	Medium metro
Connecticut	City/Town	Hartford	Large metro, central
	City/Town	Middlesex and Tolland	Large fringe metro
	City/Town	Fairfield, New Haven, and New London	Medium metro
	City/Town	Windham	Nonmetro, micropolitan
CSG, Bainbridge Island, WA	City/Town	Kitsap	Small metro
	Primary City	Kitsap	Small metro
Eagle County, CO	Entire County	Eagle	Nonmetro, micropolitan
	Entire County	Gunnison and Pitkin	Nonmetro, noncore
Fayette County, PA	Entire County	Fayette	Large fringe metro

Continued…

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Greater Cincinnati Energy Alliance	City/Town	Boone and Kenton	Large fringe metro
	Entire County	Campbell and Hamilton	Large metro, central
	Entire County	Boone and Kenton	Large fringe metro
	Primary City	Hamilton	Large metro, central
Greensboro, NC	Primary City	Guilford	Medium metro
Indianapolis, IN	Primary City	Marion	Large metro, central
	Primary City	Tippecanoe	Small metro
Kansas City, MO	Primary City	Jackson	Large metro, central
Michigan	City/Town	Wayne	Large metro, central
	City/Town	Macomb, Oakland, and St. Clair	Large fringe metro
	City/Town	Clinton, Kent, and Washtenaw	Medium metro
	Entire County	St Joseph	Nonmetro, micropolitan
	Primary City	Wayne	Large metro, central
	Primary City	Macomb and Washtenaw	Large fringe metro
	Primary City	Grand Traverse and Marquette	Nonmetro, micropolitan
New Hampshire	City/Town	Hillsborough	Medium metro
	City/Town	Grafton	Nonmetro, micropolitan
	Primary City	Coos	Nonmetro, micropolitan
Omaha, NE	Primary City	Douglas and Lancaster	Medium metro
Philadelphia, PA	Entire County	Philadelphia	Large metro, central
	Entire County	Bucks, Chester, Delaware, and Montgomery	Large fringe metro
Phoenix, AZ	City/Town	Maricopa	Large metro, central

Continued…

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Portland, OR	Entire County	Multnomah	Large metro, central
	Entire County	Clackamas, Columbia, Washington, and Yamhill	Large fringe metro
	Entire County	Lane, Marion, and Polk	Medium metro
	Entire County	Clatsop, Crook, Hood, Josephine, and Klamath	Nonmetro, micropolitan
	Entire County	Jefferson, Lake, and Tillamook	Nonmetro, noncore
	Entire County	Benton, Deschutes, and Jackson	Small metro
Rutland County, VT	Entire County	Rutland	Nonmetro, micropolitan
San Antonio, TX	Primary City	Bexar	Large metro, central
Seattle, WA	Primary City	King	Large metro, central
Toledo-Lucas Co. Port Authority (OH)	Entire County	Fulton, Lucas, Ottawa, and Wood	Medium metro
	Entire County	Ashland, Auglaize, Crawford, Defiance, Hancock, Huron, Marion, Mercer, Sandusky, Seneca, Tuskarawas, Van Wert, and Wayne	Nonmetro, micropolitan
	Entire County	Hardin, Henry, Holmes, Jackson, Paulding, Putnam, Williams, and Wyandot	Nonmetro, noncore
	Entire County	Allen, Erie, and Richland	Small metro
Wisconsin Energy Efficiency Project	Primary City	Milwaukee	Large metro, central
	Primary City	Dane	Medium metro
	Primary City	Racine	Small metro

C.5. SIC CODES USED TO IDENTIFY CONTRACTORS

We used the following SIC codes to identify residential program contractors:

- 1521 General Residential Construction – Single-family
- 1521-05 Home Improvements
- 1522 General Residential Construction – Multifamily
- 1542 General Contractors
- 1711 Plumbing, Heating, and Air Conditioning Contractors
- 1711-11 Solar Heating Contractors

- 1711-31 Energy Management Systems & Products
- 1731 Electrical Contractors
- 1742 Plastering, Drywall, Acoustical, and Insulation
- 1751 Carpentry
- 7623 Refrigeration and Air-conditioning Service and Repair

The following SIC codes were used to identify commercial program contractors:

- 1541 General Contractors – Industrial
- 1542 General Contractors
- 1711 Plumbing, Heating, and Air Conditioning Contractors
- 1731 Electrical Contractors
- 1742 Plastering, Drywall, Acoustical, and Insulation
- 7623 Refrigeration and Air-conditioning Service, and Repair

C.6. FREQUENCY OUTPUTS, CONTRACTOR SURVEYS

C.6.1. SAMPLE VARIABLES

GRANTEE. Grantee Assignment (n=593)

CATEGORY	PERCENT
Austin	3%
Bainbridge	3%
Boulder	11%
Chicago	7%
Connecticut	3%
Eagle County	4%
Fayette	1%
GCEA	3%
Greensboro	1%
Indiana	2%
Kansas City	3%

Continued…

CATEGORY	PERCENT
Michigan	11%
New Hampshire	4%
Omaha	3%
Philadelphia	10%
Phoenix	9%
Portland	4%
Rutland	1%
San Antonio	5%
Seattle	5%
Toledo	3%
Wisconsin	4%

GRANTEE AREA. (n=593)

CATEGORY	PERCENT
Bainbridge Island and Bremerton	3%
Bexar County	5%
Boulder, Garfield, and Denver Counties	11%
Chicago metropolitan area and Rockford	7%
Coos, Grafton and Hillsborough Counties	4%
Eagle, Pitkin, and Gunnison Counties	4%
Eastern and Central Oregon	4%
Fayette County	1%
Hamilton, Kenton, Boone, and Campbell Counties	3%
Jackson, Platt, and Clay Counties	3%
King County	5%
Marion and Tippecanoe Counties	2%
Milwaukee, Madison, and Racine	4%
Northeast, Southeast, and Central Connecticut	3%
Northwest Ohio	3%

Continued…

CATEGORY	PERCENT
Omaha and Lincoln	3%
Rutland County	1%
Southeast Michigan and Kent, Clinton, Marquette, and Grand Traverse Counties	11%
the city of Greensboro	1%
the city of Phoenix	9%
the Greater Philadelphia region	10%
Travis County	3%

GRANTEE PROGRAM NAME (n=593)

CATEGORY	PERCENT
Austin Energy's Clean Energy Accelerator Program	3%
Better Buildings New Hampshire	4%
Better Buildings for Michigan	11%
Better Buildings Greensboro Program	1%
Better Buildings Northwest Ohio Program	3%
Clean Energy Works Oregon Program	4%
Community Power Works Program of Seattle	5%
CPS Energy Savers Program of San Antonio	5%
Denver Energy Challenge, Boulder EnergySmart & Garfield Clean Energy Programs	11%
EcoHouse Project and Near Eastside Sweeps Programs	2%
Energize Phoenix Program	9%
Energy Impact Illinois	7%
Energy Smart Colorado Program	4%
EnergyWorks KC Program of Kansas City	3%
EnergyWorks Program of Philadelphia	10%
Fayette County Better Buildings Initiative	1%
Greater Cincinnati Energy Alliance Program	3%
Neighbor to Neighbor Energy Challenge	3%
NeighborWorks of Western Vermont Program	1%

Continued…

CATEGORY	PERCENT
Omaha and Lincoln's reEnergize Program	3%
RePower Bainbridge and RePower Bremerton Programs	3%
Wisconsin Energy Efficiency Program	4%

PARTICIPANT. Participation list flag in sample (n=593)

CATEGORY	PERCENT
Not included on participant list	66%
Included on participant list	34%

COMM_FLAG. Sector flag in sample (n=593)

CATEGORY	PERCENT
Residential	76%
Commercial	15%
Either Residential or commercial	8%

PREV_SURVEY. Interviewed previous year flag in sample (n=593)

CATEGORY	PERCENT
Not interviewed in 2012	93%
Interviewed in 2012	7%

UPGRADES_10. Upgrades completed in 2010 as reported in 2012 survey (n=38)

STATISTIC	VALUE
Mean	169.7
Median	65.0
Mode	100.0
Standard Deviation	436.8

UPGRADES_11. Upgrades completed in 2011 as reported in 2012 survey (n=38)

STATISTIC	VALUE
Mean	202.3
Median	67.5
Mode	40.0
Standard Deviation	455.3

C.6.2. SCREENING

SC3_a. Approximately what percentage of your company's business comes from projects that involve…New or existing homes? (n=593)

STATISTIC	VALUE
Mean	65.0
Median	75.0
Mode	100.0
Standard Deviation	34.1

SC3_b. Approximately what percentage of your company's business comes from projects that involve…New or existing commercial buildings? (n=593)

STATISTIC	VALUE
Mean	33.7
Median	25.0
Mode	0.0
Standard Deviation	33.5

SC3_c. Approximately what percentage of your company's business comes from projects that involve…Other? (n=593)

STATISTIC	VALUE
Mean	1.2
Median	0.0
Mode	0.0
Standard Deviation	7.2

OthSC3c. What other types of business do your projects involve? (n=24)

STATISTIC	VALUE
Industrial	29%
Landscaping	21%
Manufacturing	8%
Municipal	8%
Agriculture	4%
Roofing	4%
Sales	4%
Woodwork	4%
Other	17%

SC3Res_a. Approximately what percentage of your company's residential business comes from projects that involve…Existing homes? (n=553)

STATISTIC	VALUE
Mean	78.3
Median	90.0
Mode	100.0
Standard Deviation	25.5

SC3Res_b. Approximately what percentage of your company's residential business comes from projects that involve…New homes? (n=553)

STATISTIC	VALUE
Mean	22.7
Median	10.0
Mode	0.0
Standard Deviation	25.6

SC3Comm_a. Approximately what percentage of your company's commercial business comes from projects that involve…Existing buildings? (n=470)

STATISTIC	VALUE
Mean	75.2
Median	90.0
Mode	100.0
Standard Deviation	28.0

SC3Comm_b. Approximately what percentage of your company's commercial business comes from projects that involve…New buildings? (n=469)

STATISTIC	VALUE
Mean	24.7
Median	10.0
Mode	0.0
Standard Deviation	28.0

QGROUP. Develop residential and commercial variables. (n=593)

CATEGORY	PERCENT
Residential	79%
Commercial	21%

IN5a. Which of the following equipment or services does your company offer for [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]…? (n=593) (Multiple Responses)

RESPONSE	PERCENT
Building envelope materials	55%
HVAC and water heating	64%
Lighting	43%
Energy assessment	39%
Remodeling	65%
General contracting	61%
Other	19%

IN5a_08. Are there any other equipment or services that your company offers for [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]? (n=593)

RESPONSE	PERCENT
Yes	16%
No	84%
Don't know	-

OthIN5a. What other equipment or services does your company offer for [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes]? (Multiple Responses) (n=97)

RESPONSE	PERCENT
Renewables	27%
Plumbing/water	15%
Electrical work/appliances	13%
Roofing/siding/landscaping	11%
Carpentry/flooring	10%
Maintenance	6%
Safety	5%
Energy management systems	4%
Other	4%
Design	3%
Drywall/painting	3%
Ductwork	3%
Other	2%

IN3. About how many full-time equivalent employees work for your company? (n=542)

STATISTIC	VALUE
Mean	29.7
Median	6.0
Mode	1.0
Standard Deviation	253.8

C.6.3. RESPONDENT CHARACTERIZATION

IN6_NEW. When we spoke last you had indicated that you had performed [UPGRADES_10] upgrades in 2010 and [UPGRADES_11] upgrades in 2011 in [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]. Are those figures correct? (n=17)

RESPONSE	PERCENT
Yes	71%
No	29%
Don't know	-

IN6_i. In how many [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] did you perform energy efficiency upgrades in…2010? (n=372)

STATISTIC	VALUE
Mean	130.6
Median	10.0
Mode	0.0
Standard Deviation	438.3

IN6_ii. In how many [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] did you perform energy efficiency upgrades in…2011? (n=391)

STATISTIC	VALUE
Mean	128.1
Median	12.0
Mode	0.0
Standard Deviation	420.4

IN6_iii. In how many [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] did you perform energy efficiency upgrades in…2012? (n=415)

STATISTIC	VALUE
Mean	128.3
Median	15.0
Mode	0.0
Standard Deviation	401.5

IN6_iv. How many do you expect to work on in 2013? (n=434)

STATISTIC	VALUE
Mean	139.9
Median	15.0
Mode	0.0
Standard Deviation	448.8

IN6_TOT. So, in total, between 2010 and the end of 2013, you will have performed [SUM OF IN6] energy efficiency upgrades in [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]. Does that sound right to you? (n=446)

RESPONSE	PERCENT
Yes	97%
No	3%
Don't know	<1%

IN7. How many energy efficiency upgrades will you have performed in [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] between 2010 and the end of 2013? (n=22)

STATISTIC	VALUE
Mean	225.9
Median	100.0
Mode	50.0
Standard Deviation	343.1

SUMIN6. TOTAL UPGRADES - CALCULATIONS BASED ON IN6-IN7 (n=454)

STATISTIC	VALUE
Mean	469.8
Median	50.0
Mode	0.0
Standard Deviation	1581.4

IN8a1. Have you heard of…[GRANTEE_PROGRAM] a program that was funded by the U.S. Department of Energy's Better Buildings Neighborhood Program? (n=593)

RESPONSE	PERCENT
Yes	45%
No	54%
Don't know	1%

IN8b1. Did your company participate in the program(s) between 2010 and 2013? (n=267)

RESPONSE	PERCENT
Yes	60%
No	38%
Don't know	3%

IN8c1. How many [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] did your company install energy efficient equipment or measures into with the help of [GRANTEE_PROGRAM] from 2010 to 2013? (n=132)

STATISTIC	VALUE
Mean	126.5
Median	20.0
Mode	0.0
Standard Deviation	348.7

IN8a2. Have you heard of…Programs funded by Energy Efficiency and Conservation Block Grants (EECBG), State Energy Programs (SEP) or the Weatherization Assistance Program? (n=593)

RESPONSE	PERCENT
Yes	43%
No	55%
Don't know	2%

IN8b2. Did your company participate in the program(s) between 2010 and 2013? (n=256)

RESPONSE	PERCENT
Yes	49%
No	49%
Don't know	2%

IN8a3. Have you heard of…Home efficiency programs sponsored by local utilities or other groups? (n=466)

RESPONSE	PERCENT
Yes	77%
No	21%
Don't know	2%

IN8b3. Did your company participate in the program(s) between 2010 and 2013? (n=359)

RESPONSE	PERCENT
Yes	50%
No	48%
Don't know	3%

IN8a4. Have you heard of…Commercial energy efficiency programs sponsored by local utilities or other groups? (n=127)

RESPONSE	PERCENT
Yes	65%
No	35%
Don't know	1%

IN8b4. Did your company participate in the program(s) between 2010 and 2013? (n=82)

RESPONSE	PERCENT
Yes	70%
No	29%
Don't know	1%

IN8a5. Have you heard of…Benchmarking or labeling programs like LEED or ENERGY STAR Portfolio Manager? (n=127)

RESPONSE	PERCENT
Yes	64%
No	36%
Don't know	-

IN8b5. Did your company participate in the program(s) between 2010 and 2013? (n=81)

RESPONSE	PERCENT
Yes	42%
No	58%
Don't know	-

IN8a6. Have you heard of…Federal or State Tax Credits for energy efficiency improvements? (n=593)

RESPONSE	PERCENT
Yes	85%
No	15%
Don't know	<1%

IN9_NEW. Now, I would like you to consider what impact, if any, [GRANTEE_PROGRAM] has had on the market for energy efficiency upgrades. If the [GRANTEE_PROGRAM] did not exist, would you say that the number of upgrades you completed since 2010 would have been…higher, lower, or about the same? (n=267)

RESPONSE	PERCENT
Higher	7%
Lower	48%
About the same	39%
Don't know	6%

IN9b_NEW. What percent [IF IN9_NEW = HIGHER, READ "more than" / IF IN9_NEW = LOWER, READ "of"] the [Read if SUMIN6>0 "[SUMIN6]"] energy efficiency upgrades you completed from 2010 to 2013 would have been completed without the program? (n=219)

STATISTIC	VALUE
Mean	24.0
Median	0.0
Mode	0.0
Standard Deviation	33.0

COUNT. CALCULATE [COUNT] FOR IN9C_NEW: IF IN9_NEW=1, THEN COUNT= SUMIN6 + (SUMIN6 * IN9b_NEW); IF IN9_NEW=2, THEN COUNT= SUMIN6 * IN9b_NEW]? (n=88)

STATISTIC	VALUE
Mean	1,756.5
Median	108.0
Mode	0.0
Standard Deviation	5,753.9

IN9c_NEW. To confirm, you're saying that you would have completed about [COUNT] upgrades without the program? (n=111)

RESPONSE	PERCENT
Yes	95%
No	4%
Don't know	1%

IN9d_NEW. If the [GRANTEE_PROGRAM] did not exist how many upgrades in [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"] would you have completed from 2010 to 2013? (n=2)

STATISTIC	VALUE
Mean	5
Median	5
Mode	5
Standard Deviation	-

IN10_NEW_a. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Building science training. (n=242)

RESPONSE	PERCENT
0	12%
1	2%
2	6%
3	2%
4	4%
5	11%
6	5%
7	5%
8	14%
9	7%
10	21%
Don't know/Refused	12%

IN10_NEW_b. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Low-interest financing. (n=247)

RESPONSE	PERCENT
0	14%
1	1%
2	4%
3	3%
4	2%
5	9%
6	4%
7	10%
8	11%
9	8%

Continued…

RESPONSE	PERCENT
10	24%
Don't know/Refused	9%

IN10_NEW_c. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Marketing and outreach. (n=252)

RESPONSE	PERCENT
0	6%
1	2%
2	2%
3	4%
4	4%
5	14%
6	5%
7	9%
8	15%
9	8%
10	22%
Don't know/Refused	10%

IN10_NEW_d. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Rebates and other incentives. (n=254)

RESPONSE	PERCENT
0	4%
1	1%
2	2%
3	4%
4	1%
5	7%

Continued…

RESPONSE	PERCENT
6	2%
7	8%
8	11%
9	12%
10	38%
Don't know/Refused	10%

IN10_NEW_e. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Free or reduced cost energy assessments. (n=245)

RESPONSE	PERCENT
0	10%
1	2%
2	3%
3	4%
4	3%
5	9%
6	3%
7	9%
8	14%
9	7%
10	26%
Don't know	10%

IN10_NEW_f. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important"…Sales training. (n=245)

RESPONSE	PERCENT
0	14%
1	3%

Continued…

RESPONSE	PERCENT
2	4%
3	5%
4	4%
5	13%
6	5%
7	8%
8	15%
9	4%
10	15%
Don't know/Refused	11%

IN10_NEW_g. Is there another program component I did not mention that was important? (n=267)

RESPONSE	PERCENT
Yes	12%
No	87%
Don't know	1%

IN10_NEW_ga. What was this element? (n=27)

RESPONSE	PERCENT
Contractor engagement/assistance	41%
Program offering/structure	26%
Program process issues	11%
QA/QC	11%
Integration with other programs	7%
Other	4%

IN10_NEW_gb. Please rate the importance of [IN10_NEW_GA] on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important." (n=27)

RESPONSE	PERCENT
0	-
1	-
2	-
3	4%
4	4%
5	4%
6	4%
7	4%
8	19%
9	15%
10	48%
Don't know	-

IN14a_NEW. Do you track post upgrade energy usage in any of the [IF COMMERCIAL: "commercial buildings" IF RESIDENTIAL: "residential homes"] in which you have installed energy efficiency upgrades? (n=135)

RESPONSE	PERCENT
Yes	27%
No	73%
Don't know	-

IN14b_NEW. Do you track post upgrade energy usage using utility bills or metering? (n=37)

RESPONSE	PERCENT
Utility bills	73%
Metering	5%
Both	16%
Other	5%
Don't know	-

IN14b_NEW2. Do you provide feedback based on tracked usage to customers? (n=37)

RESPONSE	PERCENT
Yes	89%
No	11%
Don't know	-

IN17. What do you think is the one greatest barrier that might prevent [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] customers from implementing, or pursuing to a greater degree, energy efficiency improvements? (n=593)

RESPONSE	PERCENT
Cost/payback/capital	51%
Lack of knowledge or understanding of benefits	12%
Lack of awareness	11%
Lack of financing	9%
Economy in general	6%
Too much work/hassle	2%
Government or other bureaucracy	1%
Lack of tax incentives	1%
Landlord vs. tenant decision making and motivations	<1%
Lack of government intervention	<1%
Uncertainty about performance and reliability of energy efficient equipment	<1%
Other	1%
None	1%
Don't know/Refused	4%

IN18. What other barriers exist? (Multiple Responses) (n=565)

RESPONSE	PERCENT
Lack of knowledge or understanding of benefits	17%
Cost/payback/capital	15%
Lack of financing	12%
Lack of awareness	8%

Continued…

RESPONSE	PERCENT
Too much work/hassle	5%
Economy in general	4%
Government or other bureaucracy	2%
Landlord vs. tenant decision making and motivations	1%
Lack of time	1%
Uncertainty about performance and reliability of energy efficient equipment	1%
Lack of interest	1%
Installation issues	1%
Decisions made elsewhere	<1%
Availability of equipment	<1%
Lack of tax incentives	<1%
Other	1%
None	44%
Don't know/Refused	3%

C.6.4. ENERGY AUDITS

AU1_01.Which of the following types of energy audits does your company perform for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] customers…Comprehensive assessments? (n=58)

RESPONSE	PERCENT
Yes	83%
No	16%
Don't know	2%

AU1_02.Which of the following types of energy audits does your company perform for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] customers…Walk through assessments? (n=58)

RESPONSE	PERCENT
Yes	81%
No	19%
Don't know	-

AU1_03.Which of the following types of energy audits does your company perform for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] customers…Checklist audit? (n=58)

RESPONSE	PERCENT
Yes	57%
No	41%
Don't know	2%

AU2a. Does the audit include providing customers with estimated savings from recommended measures? (n=58)

RESPONSE	PERCENT
Yes	83%
No	17%
Don't know	-

AU2b_01. How do you estimate energy savings, do you…Model savings specific to individual customers based on measurements? (n=48)

RESPONSE	PERCENT
Yes	90%
No	10%
Don't know	-

AU2b_02. How do you estimate energy savings, do you…Estimate savings based on pre-determined values associated with measures? (n=48)

RESPONSE	PERCENT
Yes	65%
No	33%
Don't know	2%

AU2b_03. How do you estimate energy savings, do you…Estimate savings based on customer energy usage from utility bills? (n=48)

RESPONSE	PERCENT
Yes	75%
No	25%
Don't know	-

AU4. Roughly, what is the average cost to your firm to conduct a [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] energy audit for [GRANTEE_PROGRAM]? (n=53)

STATISTIC	VALUE
Mean	435.1
Median	300.0
Mode	400.0
Standard Deviation	694.7

AU5. What is the average amount the program pays for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] energy audits – either paying directly to you or in the form of an incentive to the homeowner? (n=40)

STATISTIC	VALUE
Mean	390.4
Median	300.0
Mode	400.0
Standard Deviation	436.3

AU6. What do you typically charge customers for an energy audit? (n=50)

STATISTIC	VALUE
Mean	274.7
Median	250.0
Mode	0.0
Standard Deviation	231.7

AU7. Do you offer a discount or a refund, not associated with an outside program, if customers complete a retrofit with your company? (n=58)

RESPONSE	PERCENT
Yes	47%
No	53%
Don't know	-

AU8_NEW. Would you say the number of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] energy audits your company conducts has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same since 2010? (n=58)

RESPONSE	PERCENT
Increased a lot	41%
Increased a little	21%
Decreased a lot	5%
Decreased a little	7%
Stayed the same	22%
Don't know	3%

AU9_NEW. How much influence would you say the [GRANTEE_PROGRAM] has had on the increase in the number of energy audits your company conducts? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=36)

RESPONSE	PERCENT
0	8%
1	3%
2	6%
3	3%
4	-
5	6%
6	6%
7	14%
8	17%
9	6%

Continued…

RESPONSE	PERCENT
10	33%
Don't know	-

C.6.5. TRAINING, AVAILABILITY OF LABOR, COMPETITION

TR1. Have you or any of your staff received any training in energy efficient building practices or technologies? (n=593)

RESPONSE	PERCENT
Yes	65%
No	34%
Don't know	2%

TR2a_NEW. Have you or any of your staff received trainings in energy efficient building practices or technologies sponsored by [GRANTEE_PROGRAM]? (n=212)

RESPONSE	PERCENT
Yes	37%
No	53%
Don't know	9%

TR2b_NEW. Have you or any of your staff received any sales and marketing training sponsored by [GRANTEE_PROGRAM]? (n=267)

RESPONSE	PERCENT
Yes	27%
No	70%
Don't know	3%

TR3. Between 2010 and 2013, do you think the number of contractors trained in energy efficient building practices or technologies has increased? (n=593)

RESPONSE	PERCENT
Yes	73%
No	15%
Don't know	13%

TR4. How much influence would you say the [GRANTEE_PROGRAM] has had on the increased number of contractors trained in energy efficient building practices or technologies between 2010 and 2013? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=210)

RESPONSE	PERCENT
0	3%
1	4%
2	2%
3	5%
4	4%
5	15%
6	12%
7	16%
8	15%
9	1%
10	11%
Don't know	11%

TR4b_NEW. Now I would like to ask you a few questions about the effect of training offered by [GRANTEE_PROGRAM] has had on the energy efficiency upgrade market between 2010 and 2013. For each of the following activities please tell me if training has increased it a lot, increased it a little, decreased it a lot, decreased it a little, or stayed the same since 2010…Number of energy efficient upgrades. (n=108)

RESPONSE	PERCENT
Increased a lot	38%
Increased a little	33%
Decreased a lot	2%
Decreased a little	2%
Stayed the same	11%
Don't know/Refused	14%

TR4c_NEW. Now I would like to ask you a few questions about the effect of training offered by [GRANTEE_PROGRAM] has had on the energy efficiency upgrade market between 2010 and 2013. For each of the following activities please tell me if training has increased it a lot, increased it a little, decreased it a lot, decreased it a little, or stayed the same since 2010…Quality of energy efficient upgrades. (n=108)

RESPONSE	PERCENT
Increased a lot	39%
Increased a little	31%
Decreased a lot	1%
Decreased a little	2%
Stayed the same	12%
Don't know/Refused	15%

TR4d_NEW. Now I would like to ask you a few questions about the effect of training offered by [GRANTEE_PROGRAM] has had on the energy efficiency upgrade market between 2010 and 2013. For each of the following activities please tell me if training has increased it a lot, increased it a little, decreased it a lot, decreased it a little, or stayed the same since 2010…The depth or comprehensiveness of energy efficient upgrades. (n=108)

RESPONSE	PERCENT
Increased a lot	38%
Increased a little	31%
Decreased a lot	2%
Decreased a little	2%
Stayed the same	12%
Don't know/Refused	15%

C.6.6. MARKETING

MT0a_NEW_01. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Newspaper? (n=593)

RESPONSE	PERCENT
Yes	12%
No	55%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_02. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Radio? (n=593)

RESPONSE	PERCENT
Yes	10%
No	57%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_03. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Billboards? (n=593)

RESPONSE	PERCENT
Yes	4%
No	63%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_04. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Internet? (n=593)

RESPONSE	PERCENT
Yes	46%
No	22%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_05. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Direct mail? (n=593)

RESPONSE	PERCENT
Yes	18%
No	49%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_06. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Co-branding with [GRANTEE_PROGRAM]? (n=593)

RESPONSE	PERCENT
Yes	6%
No	61%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_07. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades…Co-messaging with [GRANTEE_PROGRAM]?

RESPONSE	PERCENT
Yes	4%
No	63%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0a_NEW_08. What other marketing channels or methods do you actively use to market energy efficiency upgrades? (Multiple Responses) (n=593)

RESPONSE	PERCENT
Word of Mouth/Referrals	17%
Yellow Pages/Phone book	3%
Cold Calling/Direct sales	3%
Television	2%
Community events/Trade shows	2%
Email/Social Media	2%
Brochures/Flyers/Newsletters	2%
Advertising on trucks/building/work site	1%
Networking	1%
Magazines	1%
Other Programs	1%
Other	<1%

Continued…

RESPONSE	PERCENT
No other channels	38%
Don't market energy efficiency	30%
Don't know/Refused	3%

MT0b_NEW. Which marketing channels or methods have you found to be the most effective in driving demand for energy efficiency upgrades? (Multiple Responses) (n=419)

RESPONSE	PERCENT
Internet	41%
Word of mouth/Referrals	22%
Direct mail	9%
Cold calling/Direct sales	5%
Radio	4%
Newspaper	4%
Community events/Trade shows	2%
Other	2%
Television	2%
Other Programs	2%
Co-branding with GRANTEE_PROGRAM	1%
Yellow pages/Phone Book	1%
Networking	1%
Co-messaging with GRANTEE_PROGRAM	1%
Billboards	1%
Advertising on trucks/building/work site	<1%
Brochures/Flyers/Newsletters	<1%
Email/Social Media	<1%
Involvement with BBNP	<1%
Magazines	<1%
Nothing	<1%
Don't market	<1%
Don't know/Refused	12%

MT1. Would you say the amount you market energy efficiency and energy efficient features has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same since 2010? (n=419)

RESPONSE	PERCENT
Increased a lot	33%
Increased a little	26%
Decreased a lot	2%
Decreased a little	3%
Stayed the same	32%
Don't know/Refused	4%

MT2. How much influence would you say the [GRANTEE_PROGRAM] has had on the increase in the amount you market energy efficiency upgrade projects since 2010? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=146)

RESPONSE	PERCENT
0	18%
1	5%
2	3%
3	5%
4	4%
5	13%
6	8%
7	12%
8	11%
9	3%
10	12%
Don't know	6%

MT2a_NEW_a. Do you include any of the following topics in your messaging when you market energy efficiency upgrades…Comfort? (n=419)

RESPONSE	PERCENT
Yes	66%
No	30%
Don't know/Refused	4%

MT2a_NEW_b. Do you include any of the following topics in your messaging when you market energy efficiency upgrades…Safety? (n=419)

RESPONSE	PERCENT
Yes	55%
No	41%
Don't know/Refused	4%

MT2a_NEW_c. Do you include any of the following topics in your messaging when you market energy efficiency upgrades…Health? (n=419)

RESPONSE	PERCENT
Yes	52%
No	44%
Don't know/Refused	4%

MT2a_NEW_d. Do you include any of the following topics in your messaging when you market energy efficiency upgrades…Saving energy or money? (n=419)

RESPONSE	PERCENT
Yes	83%
No	14%
Don't know/Refused	3%

MT2a_NEW_e. Do you include any of the following topics in your messaging when you market energy efficiency upgrades… [IF COMMERCIAL: Comprehensive or whole building] [IF RESIDENTIAL: Whole house upgrade]? (n=419)

RESPONSE	PERCENT
Yes	54%
No	41%
Don't know/Refused	5%

MT2a_NEW_f. Do you include any of the following topics in your messaging when you market energy efficiency upgrades… Something else I didn't mention? (n=419)

RESPONSE	PERCENT
Yes	10%
No	90%
Don't know/Refused	5%

OthMT2a_NEW. What other topics do you include in your messaging when you market energy efficiency upgrades? (Multiple Responses) (n=41)

RESPONSE	PERCENT
Sustainability and reliability	24%
Efficiency programs and rebates	15%
Helping the environment	24%
Specific services and measures	10%
Other	29%
Don't know	-

MT2b. Has the messaging you emphasize changed since 2010? (n=419)

RESPONSE	PERCENT
Yes	28%
No	69%
Don't know	3%

MT2c. What messaging do you emphasize more now compared to 2010? (Multiple Responses) (n=116)

RESPONSE	PERCENT
Saving energy or money	56%
Comfort	20%
Health	11%
Safety	9%
Whole house or whole building or comprehensive upgrade	6%
Additional energy efficiency measures or services	5%
Energy efficiency programs and rebates	4%
Return on investment and low cost	3%
Good for the environment	3%
Less maintenance	2%
Other	3%
Don't know	7%

MT2d. How much influence would you say the [GRANTEE_PROGRAM] has had on the change in energy efficiency messaging between 2010 and 2013? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (N=76)

RESPONSE	PERCENT
0	11%
1	4%
2	9%
3	3%
4	4%
5	8%
6	7%
7	13%
8	21%
9	3%
10	13%
Don't know	5%

MT3. Have the changes you made, if any, to marketing made a difference in the number of energy efficient upgrades you have worked on? (n=268)

RESPONSE	PERCENT
Yes	48%
No	43%
Don't know	10%

MT3a. Would you say the number of projects you have worked on has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same due to the changes you made to marketing? (n=128)

RESPONSE	PERCENT
Increased a lot	38%
Increased a little	43%
Decreased a lot	-
Decreased a little	2%
Stayed the same	13%
Don't know	3%

C.6.7. PROGRAM INFLUENCE

A1_NEW_i. I would like to ask you about the typical [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] energy efficiency upgrades you install with [GRANTEE_PROGRAM]. In 2010, on average, by what percentage did the measures you installed through the program decrease your customers' energy usage? (n=77)

STATISTIC	VALUE
Mean	31.9
Median	20.0
Mode	20.0
Standard Deviation	28.9

A1_NEW_ii. In 2011? (n=81)

STATISTIC	VALUE
Mean	31.6
Median	20.0
Mode	20.0
Standard Deviation	27.6

A1_NEW_iii. In 2012? (n=90)

STATISTIC	VALUE
Mean	32.8
Median	25.0
Mode	20.0
Standard Deviation	26.5

A1_NEW_iv. On average by what percentage do you think the measures you install with the program in 2013 will decrease your customers' energy usage? (n=91)

STATISTIC	VALUE
Mean	34.6
Median	25.0
Mode	20.0
Standard Deviation	27.1

A2_NEW. What changes, if any, have you made to your practices for [GRANTEE_PROGRAM] projects since 2010? (Multiple Responses) (n=131)

RESPONSE	PERCENT
Talk about energy efficiency more with customers	13%
Use more efficient materials	8%
Offer better quality services/equipment	8%
Explain how high efficiency equipment works and why it is...	6%
Offer new services	6%
Conduct services more thoroughly/comprehensively	5%

Continued…

RESPONSE	PERCENT
Encourage/assist with program(s) participation	5%
Compare efficiency levels of different equipment	2%
Explain payback period and savings over time	2%
Increased training	2%
More advertising	2%
Other	2%
Nothing/None	56%
Don't know	3%

A3_NEW_a. How have you changed your [GRANTEE_PROGRAM] upgrade practices for…Building envelope improvements, including insulation, air sealing and window services? (Multiple Responses) (n=56)

RESPONSE	PERCENT
Conduct services more thoroughly/comprehensively	20%
Offer better quality services/equipment	11%
Offer higher efficiency equipment/measures	9%
Offer new services	4%
Offer/conduct energy efficiency services more frequently	4%
No changes to this practice	36%
Do not offer/sell	21%
Don't know/Refused	4%

A3_NEW_b. How have you changed your [GRANTEE_PROGRAM] upgrade practices for…HVAC and water heating system maintenance and installations? (Multiple Responses) (n=56)

RESPONSE	PERCENT
Offer higher efficiency equipment/measures	14%
Conduct services more thoroughly/comprehensively	13%
Offer better quality services/equipment	9%
Offer new services	4%
Encourage/assist with program(s) participation	4%
More staff training	2%

Continued…

RESPONSE	PERCENT
Restructured company/added or decreased jobs	2%
No changes to this practice	36%
Do not offer/sell	21%
Don't know	2%

A3_NEW_c. How have you changed your [GRANTEE_PROGRAM] upgrade practices for…Ductwork services? (Multiple Responses) (n=56)

RESPONSE	PERCENT
Conduct services more thoroughly/comprehensively	16%
Offer higher efficiency equipment/measures	13%
Offer better quality services/equipment	11%
More staff training	4%
Offer new services	2%
Offer/conduct energy efficiency services more frequently	2%
Restructured company/added or decreased jobs	2%
Encourage/assist with program(s) participation	2%
No changes to this practice	38%
Do not offer/sell	21%
Don't know/Refused	5%

A3_NEW_d. How have you changed your [GRANTEE_PROGRAM] upgrade practices for…Lighting equipment installations? (Multiple Responses) (n=56)

RESPONSE	PERCENT
Offer higher efficiency equipment/measures	16%
Offer better quality services/equipment	11%
Conduct services more thoroughly/comprehensively	7%
Offer new services	5%
Offer/conduct energy efficiency services more frequently	2%
More staff training	2%
Encourage/assist with program(s) participation	2%

Continued…

RESPONSE	PERCENT
Other	2%
No changes to this practice	30%
Do not offer/sell	34%

A4_NEW. Why has your typical energy efficiency upgrade completed with [GRANTEE_PROGRAM] changed since 2010? (Multiple Responses) (n=53)

RESPONSE	PERCENT
Consumers see value in energy efficiency upgrades/More awareness	43%
Customer demands changed	25%
Financing is more readily available	15%
Availability of incentives	11%
Increased experience and improved techniques	6%
BBNP grantee program changed	4%
Other	4%
Don't know	4%

AT0_NEW_i. [READ IF IN8c1>0: Now let's discuss your projects that did not participate in the program.] Thinking of the typical [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] energy efficiency upgrades you install [IF IN8c1>0: without [GRANTEE_PROGRAM]. In 2010, on average, by what percentage did the measures you installed [IF IN8c1>0: without the program] decrease your customers' energy usage? (n=254)

STATISTIC	VALUE
Mean	25.0
Median	20.0
Mode	20.0
Standard Deviation	22.2

AT0_NEW_ii. In 2011? (n=261)

STATISTIC	VALUE
Mean	24.9
Median	20.0
Mode	20.0
Standard Deviation	22.0

AT0_NEW_iii. In 2012? (n=272)

STATISTIC	VALUE
Mean	25.5
Median	20.0
Mode	20.0
Standard Deviation	22.1

AT0_NEW_iv. On average by what percentage do you think the measures you install [IF IN8c1>0: without the program] in 2013 will decrease your customers' energy usage? (n=284)

STATISTIC	VALUE
Mean	26.7
Median	20.0
Mode	20.0
Standard Deviation	23.1

AT1 What changes, if any, have you made to your standard practices [IF SUMIN6>0 & IN8c1= blank, 0, -7,-9, READ: "since 2010?" IF IN8c1>0, READ: "for projects outside of the [GRANTEE_PROGRAM] since participating in the program? (Multiple Responses) (n=593)

RESPONSE	PERCENT
Use more efficient materials	15%
Talk about energy efficiency more with customers	10%
Offer better quality services/equipment	9%
Explain how high efficiency equipment works and why	6%
Conduct services more thoroughly/comprehensively	5%

Continued…

RESPONSE	PERCENT
Offer new services	4%
Compare efficiency levels of different equipment	4%
Explain payback period and savings over time	4%
Increased training	3%
More advertising	2%
Restructured company/added or decreased jobs	1%
Encourage/assist with program participation	1%
Changes to meet new codes	1%
Other	1%
Nothing/None	58%
Don't know/Refused	3%

AT1a_NEW_a How have you changed your standard practices for…Building envelope improvements, including insulation, air sealing and window services? (Multiple Responses) (n=234)

RESPONSE	PERCENT
Offer higher efficiency equipment/measures	20%
Offer better quality services/equipment	17%
Conduct services more thoroughly/comprehensively	12%
Offer new services	3%
More staff training	3%
Offer/conduct energy efficiency services more frequently	2%
Changed to meet new codes	<1%
Other	1%
No changes to this practice	25%
Do not offer/sell	26%
Don’t know	4%

AT1a_NEW_b. How have you changed your standard practices for…HVAC and water heating system maintenance and installations? (Multiple Responses) (n=234)

RESPONSE	PERCENT
Offer higher efficiency equipment/measures	29%
Offer better quality services/equipment	20%
Conduct services more thoroughly/comprehensively	12%
Offer new services	7%
Increased/changed advertising	2%
More staff training	1%
Encourage/assist with program participation	1%
Changed to meet new codes	1%
Offer/conduct energy efficiency services more frequently	<1%
Restructured company/added or decreased jobs	<1%
Other	2%
No changes to this practice	21%
Do not offer/sell	21%
Don't know	4%

AT1a_NEW_c. How have you changed your standard practices for…Ductwork services? (Multiple Responses) (n=234)

RESPONSE	PERCENT
Offer better quality services/equipment	17%
Offer higher efficiency equipment/measures	15%
Conduct services more thoroughly/comprehensively	11%
Offer new services	4%
Changed to meet new codes	1%
More staff training	1%
Restructured company/Added or decreased jobs	<1%
Other	<1%
No changes to this practice	26%
Do not offer/sell	32%
Don't know	6%

AT1a_NEW_d. How have you changed your standard practices for…Lighting equipment installations? (Multiple Responses) (n=234)

RESPONSE	PERCENT
Offer higher efficiency equipment/measures	21%
Offer better quality services/equipment	18%
Conduct services more thoroughly/comprehensively	10%
Offer new services	4%
Increased/changed advertising	2%
More staff training	1%
Offer/conduct energy efficiency services more frequently	<1%
Encourage/assist with program participation	<1%
Changed to meet new codes	<1%
Other	<1%
No changes to this practice	21%
Do not offer/sell	36%
Don't know	3%

AT1b_NEW. Why has your typical energy efficiency upgrade [IN8c1=blank, 0, -7,-9, READ: "changed since 2010?" IF IN8c1>0, READ: completed without [GRANTEE_PROGRAM] changed since 2010? (Multiple Responses) (n=177)

RESPONSE	PERCENT
Consumers see value in energy efficiency upgrades	55%
Customer demands changed	28%
Financing is more readily available	11%
Change in codes/industry standards	5%
Keeping up with new technology/new equipment	4%
BBNP grantee program changed	2%
Increased experience and improved techniques	2%
Increased advertising	2%
Program training/requirements	2%
Availability of incentives	1%

Continued…

RESPONSE	PERCENT
Other	2%
Don't know/Refused	8%

AT2. How much influence would you say the [GRANTEE_PROGRAM] has had on the changes you have made to your standard practices for projects completed outside of the [GRANTEE_PROGRAM]? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=109)

RESPONSE	PERCENT
0	21%
1	6%
2	5%
3	3%
4	5%
5	18%
6	4%
7	10%
8	10%
9	1%
10	9%
Don't know	9%

AT2a_NEW. What other factors explain changes you have made to your standard practices? (Multiple Responses) (n=233)

RESPONSE	PERCENT
Change in codes/industry standards	5%
Keeping up with new technology/new equipment	5%
Customer demands changed	5%
Consumers see value in energy efficiency upgrades	4%
Increased experience and improved techniques	3%
To increase customer satisfaction	3%
Program or other training	3%

Continued…

RESPONSE	PERCENT
Increased advertising or promotion	3%
Availability of incentives	3%
BBNP grantee program changed	<1%
Other	5%
None	64%
Don't know	2%

AT2b_NEW. How does your typical energy efficiency upgrade completed with [GRANTEE_PROGRAM] differ from a typical upgrade completed without the program? (n=132)

RESPONSE	PERCENT
Take whole house or whole building approach with program	13%
Customers receive incentives/financing	9%
More paperwork/hassles	5%
More measures are installed/conducted	4%
More QA/QC and procedures	4%
Customers are more engaged/motivated	3%
Less measures are installed/conducted	2%
More attention to safety	2%
Other	4%
No difference	51%
Don't know	7%

AT3_1. To date, what effect, if any, do you think the [GRANTEE_PROGRAM] has had on the market for energy efficiency services? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There is more business for your company than there would have been without the program. (n=267)

RESPONSE	PERCENT
0	18%
1	3%
2	4%

Continued…

RESPONSE	PERCENT
3	4%
4	2%
5	17%
6	6%
7	5%
8	9%
9	3%
10	22%
Don't know	6%

AT3_2. To date, what effect, if any, do you think the [GRANTEE_PROGRAM] has had on the market for energy efficiency services? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There is more business in general in the marketplace than there would have been without the program. (n=267)

RESPONSE	PERCENT
0	13%
1	1%
2	1%
3	6%
4	3%
5	17%
6	7%
7	7%
8	12%
9	4%
10	21%
Don't know	7%

AT4_1. What affect, if any, do you think the [GRANTEE_PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There will be more business for your company than there would have been without the program. (n=267)

RESPONSE	PERCENT
0	15%
1	4%
2	4%
3	6%
4	3%
5	13%
6	7%
7	9%
8	10%
9	2%
10	15%
Don't know	10%

AT4_2. What affect, if any, do you think the [GRANTEE_PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There will be more business in general in the marketplace than there would have been without the program. (n=267)

RESPONSE	PERCENT
0	9%
1	3%
2	4%
3	3%
4	5%
5	15%
6	9%
7	10%
8	12%

Continued…

RESPONSE	PERCENT
9	3%
10	17%
Don't know	9%

C.6.8. JOBS AND BUSINESS PRACTICES

JA1. Since the introduction of [GRANTEE_PROGRAM] has your company needed to hire additional full-time or part-time staff for any positions as a result of the program? (n=135)

RESPONSE	PERCENT
Yes	43%
No	53%
Don't know/Refused	4%

JA3. How many full-time employees did your company add? (n=57)

STATISTIC	VALUE
Mean	3.8
Median	2.0
Mode	2.0
Standard Deviation	5.1

JA4. How many part-time employees did your company add? (n=56)

STATISTIC	VALUE
Mean	1.3
Median	1.0
Mode	0.0
Standard Deviation	1.8

JA5. Has your company been able to retain any staff because of [GRANTEE_PROGRAM] that would otherwise have been let go? (n=135)

RESPONSE	PERCENT
Yes	31%
No	65%
Don't know/Refused	4%

JA6. How many employees did your company retain because of [GRANTEE_PROGRAM]? (n=41)

STATISTIC	VALUE
Mean	4.9
Median	2.0
Mode	2.0
Standard Deviation	6.9

JA8. Did your business practices change to focus more on energy efficiency to adapt to the program offered by [GRANTEE_PROGRAM]? (n=115)

RESPONSE	PERCENT
Yes	45%
No	53%
Don't know/Refused	2%

JA9. Have your services become more comprehensive to adapt to the program? (n=135)

RESPONSE	PERCENT
Yes	60%
No	38%
Don't know/Refused	1%

JA9b. Has your business begun to partner with other firms or other contractors to adapt to the program? (n=135)

RESPONSE	PERCENT
Yes	50%
No	47%
Don't know/Refused	3%

C.6.9. PROGRAM PARTICIPATION AND SATISFACTION

IN7a. Which of the following best describes how long your firm has participated in [GRANTEE_PROGRAM]? (n=115)

RESPONSE	PERCENT
Actively from the beginning of the program	47%
Actively but only after the program was underway	26%
From the beginning of the program but not actively	8%
After the program was underway but not actively	10%
Don't know	9%

IN7b. Using a scale of 0 to 10, where 0 is "not at all satisfied" and 10 is "very satisfied," how satisfied are you with your experience in the program so far? (n=115)

RESPONSE	PERCENT
0	5%
1	2%
2	1%
3	7%
4	2%
5	13%
6	3%
7	9%
8	20%
9	10%

Continued…

RESPONSE	PERCENT
10	23%
Don't know	5%

IN7c. What is your reason for your rating (of 0 to 5)? (n=34)

RESPONSE	PERCENT
Not profitable, too few leads	29%
Too few jobs, not enough work, not worth the effort	24%
Complex, difficult, and too selective with qualifications	21%
Issues with payment	15%
Too much paperwork or reporting	12%
Program does not offset costs	9%
Other	6%
Not applicable	9%
Don't know	15%

IN7d. What made your experience satisfying? (n=75)

RESPONSE	PERCENT
Staff very helpful	51%
Good leads	47%
Easy to do work through the program	43%
Expanded my business	40%
New line of work	24%
Rebates and incentives	7%
Other	5%
Don't know	4%

NEW_7f. Overall, would you say that your participation with [GRANTEE_PROGRAM] was a positive or a negative experience? (n=115)

RESPONSE	PERCENT
Positive	83%
Negative	10%
Don't know	7%

IN7g_NEW. Why do you say it was a negative experience? (n=11)

RESPONSE	PERCENT
Not profitable/limits jobs	45%
Hassle/too much paperwork	36%
Poorly run/problems with staff	27%
Problems with other contractor participants	18%
Other	9%
Don't know	9%

APPENDIX D. DISTRIBUTOR SURVEY METHODS AND RESULTS

This appendix provides additional details of the methodology used to develop samples and population estimates for energy efficiency equipment distributors.

In designing the sample for distributors, we first identified the geographic region for each grantee. The goal was to systematically identify a geographic region for each grantee that captured an adequate population of distributors working in the grantee locations without defining a region that was so large that it would be impossible to detect potential market effects. Grantees areas included major metropolitan regions, small cities or towns within major metropolitan regions, medium-sized cities, rural counties, and small towns.

D.1. OVERVIEW OF APPROACH

We conducted surveys between October and November 2013 with distributors in several strata of grantees: grantees with residential programs from each of three success groupings (most, average, and least) and the top five commercial grantee programs (based on BTUs of savings).[68] Table D-1 reports the number of grantees and survey respondents in each stratum.

Table D-1: Distributor Survey Sample by Stratum

STRATA	NUMBER OF GRANTEES	DISTRIBUTORS
Most Successful	6	78
Average	13	139
Least Successful	1	8
Top 5 Commercial	5	66
Total Grantee Programs	25*	291

* Twenty-two grantees were included in the sample. Three of the grantees were included for both their residential and commercial programs.

Because of the small number of grantees and survey respondents in the low success strata, we have not reported results from this stratum individually.

We initially selected grantees by choosing from five strata of grantees based on program data through the fourth quarter of 2012 and drawing a stratified random sample of distributors designed to achieve a 90/10 precision level for

[68] We defined 12 numerical success metrics corresponding to the program's multi-faceted objectives and estimated their values for each local BBNP program. We conducted latent profile analysis (LPA) to cluster programs into groups with similar performance on the 12 indicators. LPA revealed programs clustered into three groups; their average group values on the 12 metrics were consistent with an interpretation of a most successful group, an average group, and a least successful group. For more detail, see *Drivers of Success in Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3).

each population in each stratum. The original five strata were the top five residential grantee programs (based on the number of residential upgrades), the top five commercial grantee programs (based on BTUs of savings), and five grantees with residential programs from each of the three success groupings – most, average, and least – based on the success metric developed in the preliminary evaluation.[69] However, we developed a revised success metric after the grantees were selected and surveys were completed. The revised success rankings for 11 of the 15 selected grantees were different from the preliminary success metric. Further, three of the top five residential programs (based on data through the fourth quarter of 2012) were no longer among the top five residential programs as of the third quarter of 2013. As a result, we used the revised success categorizations and grouped the grantees from the "top five residential" stratum with their corresponding "success" stratum.

The sample was focused on those grantees with community-based programs (that is, programs administered at the community, city, or county level) and excluded statewide programs (such as New York [NYSERDA] or Maine). It also excluded grantees with large numbers of subgrantees operating multiple unique programs (such as Los Angeles County and SEEA). Statewide programs were excluded because of the difficulty in separating out indicators of market effects associated with BBNP from the market effects generated by larger, previously existing programs, while data for individual subgrantees are not available and preclude the selection of subgrantees.

D.2. SAMPLING

Table D-2 presents the 22 grantees we included in the distributor survey samples.

Table D-2: Grantees Included in the Final Market Effects Survey

- Austin, TX
- Chicago Metro Agency for Planning
- CSG, Bainbridge Island, WA
- Fayette County, PA
- Greensboro, NC
- Kansas City, MO
- Philadelphia, PA
- Portland, OR
- San Antonio, TX
- State of Michigan*
- Toledo-Lucas Co. Port Authority (OH)
- Boulder County, CO*
- Connecticut Innovations, Inc.
- Eagle County, CO
- Greater Cincinnati Energy Alliance
- Indianapolis, IN
- Omaha, NE
- Phoenix, AZ
- Rutland, VT
- Seattle, WA*
- State of New Hampshire
- Wisconsin Energy Efficiency Project

* Grantees that were selected for both their residential and commercial programs

[69] The preliminary evaluation included a composite success metric based on four metrics: (1) progress rate (the number of retrofits completed relative to the number of retrofits targeted); (2) conversion rate (the number of retrofits completed as compared to the number of energy audits conducted); (3) spending-to-retrofits ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the number of retrofits completed); (4) spending-to-savings ratio (the ratio of the percentage of grant spending on marketing, outreach, and other expenses to the amount of energy saved [MMBtu]). Research into Action & NMR. (2012). *Final Report: Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program.* Berkeley, CA: Lawrence Berkeley National Labs.

We identified a geographic region for each grantee from which the sample of distributors was drawn (detailed below). For each grantee, we developed an initial population of distributors with data from a purchased list (InfoUSA).[70] Using Standard Industrial Classification (SIC) codes, we identified commercial and residential distributors. Appendix C provides the SIC codes used, while the following section provides more details on the identification of the geographic region of each grantee and our process in preparing the sample lists.

D.3. IDENTIFYING GRANTEE SERVICE TERRITORY AND PREPARING THE SAMPLE

We identified a geographic region for each grantee from which it drew the sample of nonparticipating distributors. We sought to systematically identify grantee geographic regions that captured an adequate population of distributors working in the grantee locations without defining a region that was so large we would be unable to detect potential market effects.

Grantees are located in a range of locations, including major metropolitan regions, small cities or towns within major metropolitan regions, medium-sized cities, rural counties, and small towns. We categorized grantees' locations according to the Center for Disease Control's National Center for Health Statistics (NCHS) – 2006 Urban-Rural Classification Scheme for Counties.[71] The NCHS report classifies counties into one of six categories, four urban and two rural, as shown in Table D-3.

Table D-3: NCHS – 2006 Urban-Rural Classification Scheme for Counties

NCHS URBAN-RURAL COUNTY CODE	DEFINITION
Large metro, central	Counties in a Metropolitan Statistical Area (MSA) of 1 million or more population that: 1) contain the entire population of the largest principal city of the MSA; or 2) are completely contained within the largest principal city of the MSA; or 3) contain at least 250,000 residents of any principal city in the MSA
Large fringe metro	Counties in a MSA of 1 million or more population that do not qualify as large central
Medium metro	Counties in a MSA of 250,000 to 999,999 population
Small metro	Counties in a MSA of 50,000 to 249,999 population
Nonmetro, micropolitan	Counties in a micropolitan statistical area
Nonmetro, noncore	Counties not in a micropolitan statistical area

70 InfoUSA, a product of the Infogroup, provides business and consumer data, including contact information, for marketing and research purposes. See: *http://www.infousa.com/*.

71 See: *http://www.cdc.gov/nchs/data_access/urban_rural.htm*.

Next, we distinguished between grantees working in a specific city, town, or neighborhood within the county or MSA, and grantees working in an entire county or entire metro region. Based on this distinction, we defined the geographic region from which it drew the sample of distributors according to the rules described in Table D-4. Table D-8 provides more detail on the grantee classification.

Table D-4: Geographic Area for Sampling Nonparticipating Distributors

NCHS URBAN-RURAL COUNTY CODE	LOCATION WITHIN COUNTY	SAMPLING REGION
Large metro (central or fringe)	Primary city or entire county	County
Large metro (central or fringe)	Neighborhood, town, or city, but not the primary city	Geographic region encompassing 10 mile radius from the edge of grantee location
Medium or small metro	Entire county	County
Medium or small metro	City or town within the county	Geographic region encompassing 10 mile radius from the edge of grantee location
Nonmetro (micropolitan or noncore)	County, city, or town	County

For each grantee, we developed an initial population of distributors with data from a purchased list (InfoUSA). Using Standard Industrial Classification (SIC) codes, we identified commercial and residential distributors.

D.3.1. SAMPLE CLEANING

Based on the prepared search criteria, InfoUSA provided 5,292 distributor contacts. We reviewed each list and undertook the following steps to prepare the samples for fielding:

- We removed distributors who, based on the description of their primary SIC code, did not work in trades and activities that are commonly associated with energy upgrades. [72]
- If contacts appeared in both the nonparticipating contractor and distributor lists, we chose to include them in the distributor survey sample given that the distributor sample was much smaller than the contractor sample.

After these steps, there were 4,334 distributor contacts.

D.3.2. POPULATION ESTIMATES AND SURVEY TARGETS

Using the dispositions (call records) from the preliminary evaluation effort in which we conducted similar surveys with distributors,[73] we estimated 36% of the distributor contacts would be eligible to complete the survey; these were used as the original population estimates.

[72] For example, contractors with the following SIC code descriptions were removed: convenience stores, janitor service, and printers.

[73] This survey effort was conducted in August and September 2012 as part of the preliminary market effects evaluation.

Based on the original population estimates, we derived grantee-specific survey targets by attempting to achieve a sampling error of 10% or less at the 90% confidence level for each stratum (with associated error margins assuming a 50/50 proportion of responses). We developed target numbers of completed surveys for each individual grantee based on three factors: the percent of the stratum population represented by the grantee, the percent of retrofits (residential programs) or savings (commercial programs) represented by the grantee, and the sample size for each grantee.

We completed surveys with 93% of the target for distributor surveys (Table D-5).

Table D-5: Final Evaluation Targeted and Completed Surveys

SURVEY GROUP	FINAL EVALUATION (2013)		
	Survey Targets	Surveys Completed	Percent of Targets Completed
Distributors	314	291	93%

After fielding the survey, we used the survey dispositions and the original population estimates from InfoUSA to estimate populations of distributors for each grantee. Based on the population estimates and sample sizes, we estimated overall sampling errors at 90% confidence level of 5.7% for distributors.[74] Table D-6 presents the population estimates, survey completes, and the resulting sampling errors for each stratum.

Table D-6: Estimated Population, Number of Completed Surveys, and Sampling Error by Stratum

STRATUM	FINAL ESTIMATED POPULATION		NUMBER OF COMPLETES		SAMPLING ERROR
	Count	Percent	Count	Percent	
Distributors					
Most Successful	630	44%	78	27%	10.8%
Average	469	33%	139	48%	6.5%
Least Successful	40	3%	8	3%	NA
Top 5 Commercial	288	20%	66	23%	9.9%
Total	1,427		291		5.7%

[74] Sampling errors were estimated assuming a 50/50 proportion of responses.

D.4. GRANTEE RURAL-URBAN CODING AND SAMPLING GEOGRAPHY

Table D-7 provides the number of grantee counties associated with each NCHS code. In some cases, grantees' programs are active in multiple counties. As a result, individual grantees may have had more than one sampling rule applied to them.

Table D-7: Grantees and Counties in Survey Sample Associated with NCHS – 2006 Urban-Rural Classification County Codes

NCHS URBAN-RURAL COUNTY CODE	NUMBER OF GRANTEES*	NUMBER OF COUNTIES
Large metro, central	14	15
Large fringe metro	7	22
Medium metro	10	20
Small metro	5	9
Nonmetro, micropolitan	7	26
Nonmetro, noncore	4	14
Total	22	106

* Twelve grantee territories were in multiple counties that were associated with different county codes. For example, Michigan's territory was in ten counties with four different county codes (large metro, central; large fringe, metro; medium metro; and nonmetro, micropolitan).

Table D-8 presents the counties used for sampling for each grantee and the county codes assigned to them.

Table D-8: Grantees Sampling Locations, Counties, and NCHS – 2006 Urban-Rural Classification County Codes

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Austin, TX	Primary City	Travis	Large metro, central
Boulder County, CO	Entire County	Denver	Large metro, central
	Entire County	Boulder	Medium metro
	Entire County	Garfield	Nonmetro, noncore
Chicago Metro Agency for Planning	Entire County	Dupage, Kane, Kendall, Lake, McHenry, and Will	Large fringe metro
	Primary City	Cook	Large metro, central
	Primary City	Winnebago	Medium metro

Continued…

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Connecticut	City/Town	Hartford	Large metro, central
	City/Town	Middlesex and Tolland	Large fringe metro
	City/Town	Fairfield, New Haven, and New London	Medium metro
	City/Town	Windham	Nonmetro, micropolitan
CSG, Bainbridge Island, WA	City/Town	Kitsap	Small metro
	Primary City	Kitsap	Small metro
Eagle County, CO	Entire County	Eagle	Nonmetro, micropolitan
	Entire County	Gunnison and Pitkin	Nonmetro, noncore
Fayette County, PA	Entire County	Fayette	Large fringe metro
GCEA	City/Town	Boone and Kenton	Large fringe metro
	Entire County	Campbell and Hamilton	Large metro, central
	Entire County	Boone and Kenton	Large fringe metro
	Primary City	Hamilton	Large metro, central
Greensboro, NC	Primary City	Guilford	Medium metro
Indianapolis, IN	Primary City	Marion	Large metro, central
	Primary City	Tippecanoe	Small metro
Kansas City, MO	Primary City	Jackson	Large metro, central
Michigan	City/Town	Wayne	Large metro, central
	City/Town	Macomb, Oakland, and St. Clair	Large fringe metro
	City/Town	Clinton, Kent, and Washtenaw	Medium metro
	Entire County	St Joseph	Nonmetro, micropolitan
	Primary City	Wayne	Large metro, central
	Primary City	Macomb and Washtenaw	Large fringe metro
	Primary City	Grand Traverse and Marquette	Nonmetro, micropolitan
New Hampshire	City/Town	Hillsborough	Medium metro
	City/Town	Grafton	Nonmetro, micropolitan
	Primary City	Coos	Nonmetro, micropolitan
Omaha, NE	Primary City	Douglas and Lancaster	Medium metro

Continued…

GRANTEE	LOCATION WITHIN COUNTY	COUNTY	NCHS URBAN-RURAL COUNTY CODE
Philadelphia, PA	Entire County	Philadelphia	Large metro, central
	Entire County	Bucks, Chester, Delaware, and Montgomery	Large fringe metro
Phoenix, AZ	City/Town	Maricopa	Large metro, central
Portland, OR	Entire County	Multnomah	Large metro, central
	Entire County	Clackamas, Columbia, Washington, and Yamhill	Large fringe metro
	Entire County	Lane, Marion, and Polk	Medium metro
	Entire County	Clatsop, Crook, Hood, Josephine, and Klamath	Nonmetro, micropolitan
	Entire County	Jefferson, Lake, and Tillamook	Nonmetro, noncore
	Entire County	Benton, Deschutes, and Jackson	Small metro
Rutland County, VT	Entire County	Rutland	Nonmetro, micropolitan
San Antonio, TX	Primary City	Bexar	Large metro, central
Seattle, WA	Primary City	King	Large metro, central
Toledo-Lucas Co. Port Authority (OH)	Entire County	Fulton, Lucas, Ottawa, and Wood	Medium metro
	Entire County	Ashland, Auglaize, Crawford, Defiance, Hancock, Huron, Marion, Mercer, Sandusky, Seneca, Tuskarawas, Van Wert, and Wayne	Nonmetro, micropolitan
	Entire County	Hardin, Henry, Holmes, Jackson, Paulding, Putnam, Williams, and Wyandot	Nonmetro, noncore
	Entire County	Allen, Erie, and Richland	Small metro
Wisconsin Energy Efficiency Project	Primary City	Milwaukee	Large metro, central
	Primary City	Dane	Medium metro
	Primary City	Racine	Small metro

D.5. SIC CODES USED TO IDENTIFY DISTRIBUTORS

The following SIC codes were used to identify energy efficient equipment distributors:

- 3430 Heating Equipment
- 3698 Other Electric Equipment
- 5033 Roofing, Siding and Insulation

- 5074 Plumbing and Hydronic Heating Supplies
- 5075 Warm Air Heating and Air Conditioning

D.6. FREQUENCY OUTPUTS, DISTRIBUTOR SURVEYS

D.6.1. SAMPLE VARIABLES

GRANTEE. Grantee Assignment (n=291)

CATEGORY	PERCENT
Austin	3%
Bainbridge	2%
Boulder	5%
Chicago	9%
Connecticut	4%
Eagle County	2%
Fayette	1%
GCEA	3%
Greensboro	3%
Indiana	3%
Kansas City	7%
Michigan	12%
NH	2%
Omaha	5%
Philadelphia	9%
Phoenix	7%
Portland	7%
Rutland	1%
San Antonio	2%
Seattle	4%
Toledo	5%
Wisconsin	4%

GRANTEE AREA. (n=291)

CATEGORY	PERCENT
Bainbridge Island and Bremerton	2%
Bexar County	2%
Boulder, Garfield, and Denver Counties	5%
Chicago metropolitan area and Rockford	9%
Coos, Grafton and Hillsborough Counties	2%
Eagle, Pitkin, and Gunnison Counties	2%
Eastern and Central Oregon	7%
Fayette County	1%
Hamilton, Kenton, Boone, and Campbell Counties	3%
Jackson, Platt, and Clay Counties	7%
King County	4%
Marion and Tippecanoe Counties	3%
Milwaukee, Madison, and Racine	4%
Northeast, Southeast, and Central Connecticut	4%
Northwest Ohio	5%
Omaha and Lincoln	5%
Rutland County	1%
Southeast Michigan and Kent, Clinton, Marquette, and Grand Traverse Counties	12%
the city of Greensboro	3%
the city of Phoenix	7%
the Greater Philadelphia region	9%
Travis County	3%

GRANTEE PROGRAM NAME (n=291)

CATEGORY	PERCENT
Austin Energy's Clean Energy Accelerator Program	3%
Better Buildings New Hampshire	2%
Better Buildings for Michigan	12%

Continued…

CATEGORY	PERCENT
Better Buildings Greensboro Program	3%
Better Buildings Northwest Ohio Program	5%
Clean Energy Works Oregon Program	7%
Community Power Works Program of Seattle	4%
CPS Energy Savers Program of San Antonio	2%
Denver Energy Challenge, Boulder EnergySmart & Garfield Clean Energy Programs	5%
EcoHouse Project and Near Eastside Sweeps Programs	3%
Energize Phoenix Program	7%
Energy Impact Illinois	9%
Energy Smart Colorado Program	2%
EnergyWorks KC Program of Kansas City	7%
EnergyWorks Program of Philadelphia	9%
Fayette County Better Buildings Initiative	1%
Greater Cincinnati Energy Alliance Program	3%
Neighbor to Neighbor Energy Challenge	4%
NeighborWorks of Western Vermont Program	1%
Omaha and Lincoln's reEnergize Program	5%
RePower Bainbridge and RePower Bremerton Programs	2%
Wisconsin Energy Efficiency Program	4%

COMM_FLAG. Sector flag in sample (n=291)

CATEGORY	PERCENT
Residential	68%
Commercial	14%
Either Residential or Commercial	18%

PREV_SURVEY. Interviewed previous year flag in sample (n=291)

CATEGORY	PERCENT
Not interviewed in 2012	88%
Interviewed in 2012	12%

D.6.2. SCREENING

SC1a_a. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell…Building envelope products including: insulation, windows, and air sealing and duct sealing supplies? (n=291)

RESPONSE	PERCENT
Yes	27%
No	72%
Don't know	-

SC1a_b. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell…HVAC and water heating systems? (n=291)

RESPONSE	PERCENT
Yes	91%
No	9%
Don't know	-

SC1a_c. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell…Lighting and/or lighting controls? (n=291)

RESPONSE	PERCENT
Yes	10%
No	90%
Don't know	-

SC1a_f. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell…Commercial and residential refrigeration equipment? (n=291)

RESPONSE	PERCENT
Yes	33%
No	67%
Don't know	-

SC1a_g. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell…Other energy related equipment? (n=291)

RESPONSE	PERCENT
Yes	25%
No	75%
Don't know	-

SC4_1. Approximately what percentage of your company's business comes from…Residential equipment sales? (n=291)

STATISTIC	VALUE
Mean	57.8
Median	65.0
Mode	50.0
Standard Deviation	33.6

SC4_2. Approximately what percentage of your company's business comes from…Commercial equipment sales? (n=291)

STATISTIC	VALUE
Mean	37.9
Median	30.0
Mode	50.0
Standard Deviation	32.3

SC4_3. [DO NOT READ] Approximately what percentage of your company's business comes from…Other sales? (n=…)

STATISTIC	VALUE
Mean	4.1
Median	0.0
Mode	0.0
Standard Deviation	15.9

SC5. Approximately what percentage of your company's business is in [GRANTEE AREA]? (n=291)

STATISTIC	VALUE
Mean	72.3
Median	90.0
Mode	100
Standard Deviation	32.4

QGROUP. Develop residential and commercial variables. (n=291)

CATEGORY	PERCENT
Residential	77%
Commercial	33%

D.6.3. RESPONDENT CHARACTERIZATION

IN3_a. Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] building envelope products including: insulation, windows, and air sealing equipment in [GRANTEE AREA]? (n=211)

RESPONSE	PERCENT
Yes	76%
No	24%
Don't know	-

IN3_b. Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] building envelope products including: HVAC and water heating systems in [GRANTEE AREA]? (n=266)

RESPONSE	PERCENT
Yes	98%
No	2%
Don't know	-

IN3_c. Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] lighting equipment and/or lighting controls in [GRANTEE AREA]? (n=262)

RESPONSE	PERCENT
Yes	93%
No	7%
Don't know	-

IN3_f. Does your company sell commercial and residential refrigeration equipment in [GRANTEE AREA]? (n=95)

RESPONSE	PERCENT
Yes	68%
No	32%
Don't know	-

IN3_g. Does your company sell [SC1a_g RESPONSE] in [GRANTEE AREA]? (n=72)

RESPONSE	PERCENT
Yes	99%
No	1%
Don't know	-

D.6.4. BUILDING ENVELOPE SALES

BE1_01. Does your company sell…Insulation? (n=230)

RESPONSE	PERCENT
Yes	66%
No	44%
Don't know	-

BE1_02. Does your company sell…Windows? (n=230)

RESPONSE	PERCENT
Yes	8%
No	90%
Don't know	2%

BE1_03. Does your company sell…Air sealing supplies? (n=61)

RESPONSE	PERCENT
Yes	30%
No	69%
Don't know	2%

BE1_04. Does your company sell…Duct sealing supplies? (n=230)

RESPONSE	PERCENT
Yes	52%
No	48%
Don't know	-

BE2a_NEW. Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] insulation materials increased, decreased, or stayed the same? (n=40)

RESPONSE	PERCENT
Increased	53%
Decreased	15%
Stayed the same	30%
Don't know	3%

BE3. By what percent did insulation material sales change between 2010 and 2013? (n=25)

STATISTIC	VALUE
Mean	21.6
Median	10.0
Mode	5.0
Standard Deviation	23.0

BE4_NEW. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] windows did your company sell in 2010? (n=3)

STATISTIC	VALUE
Mean	2.3
Median	2.0
Mode	0.0
Standard Deviation	2.5

BE5_NEW. What percent of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] windows you sold in 2010 were ENERGY STAR? (n=2)

STATISTIC	VALUE
Mean	97.5
Median	97.5
Mode	95.0
Standard Deviation	3.5

BE6_NEW. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] windows do you expect to sell in 2013? (n=3)

STATISTIC	VALUE
Mean	10.3
Median	8.0
Mode	3.0
Standard Deviation	8.7

BE7_NEW. What percent of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] windows you will have sold in 2013 will be ENERGY STAR? (n=3)

STATISTIC	VALUE
Mean	98.3
Median	100.0
Mode	100.0
Standard Deviation	2.9

BE8_NEW. Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] air sealing supplies increased, decreased, or stayed the same? (n=18)

RESPONSE	PERCENT
Increased	44%
Decreased	11%
Stayed the same	33%
Don't know/Refused	11%

BE9_NEW. By what percent did air sealing sales change between 2010 and 2013? (n=9)

STATISTIC	VALUE
Mean	36.9
Median	20.0
Mode	20.0
Standard Deviation	31.8

BE10_NEW. Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] duct sealing supplies increased, decreased, or stayed the same? (n=32)

RESPONSE	PERCENT
Increased	50%
Decreased	9%
Stayed the same	34%
Don't know/Refused	6%

BE11_NEW. By what percent did duct sealing sales change between 2010 and 2013? (n=17)

STATISTIC	VALUE
Mean	35.6
Median	20.0
Mode	10.0
Standard Deviation	32.1

D.6.5. HVAC SALES

H101. Does your company sell…Residential HVAC equipment? (n=262)

RESPONSE	PERCENT
Yes	66%
No	34%
Don't know	1%

H102. Does your company sell…Commercial HVAC equipment? (n=262)

RESPONSE	PERCENT
Yes	16%
No	83%
Don't know	1%

H103. Does your company sell…Residential water heating equipment? (n=262)

RESPONSE	PERCENT
Yes	53%
No	46%
Don't know	1%

H104. Does your company sell…Commercial water heating equipment? (n=262)

RESPONSE	PERCENT
Yes	16%
No	83%
Don't know	1%

H2a_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] natural gas furnaces did your company sell in 2010? (n=162)

STATISTIC	VALUE
Mean	304.4
Median	30.0
Mode	0.0
Standard Deviation	1,662.2

H2a_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] natural gas furnaces did your company sell in 2013? (n=180)

STATISTIC	VALUE
Mean	337.0
Median	40.0
Mode	0.0
Standard Deviation	1206.7

H2b_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] natural gas boilers did your company sell in 2010? (n=177)

STATISTIC	VALUE
Mean	109.0
Median	3.0
Mode	.00
Standard Deviation	790.8

H2b_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] natural gas boilers did your company sell in 2013? (n=187)

STATISTIC	VALUE
Mean	61.7
Median	2.0
Mode	0.0
Standard Deviation	308.7

H2c_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] oil furnaces did your company sell in 2010? (n=186)

STATISTIC	VALUE
Mean	10.1
Median	0.0
Mode	0.0
Standard Deviation	50.3

H2c_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] oil furnaces did your company sell in 2013? (n=189)

STATISTIC	VALUE
Mean	189.0
Median	102.0
Mode	8.8
Standard Deviation	0.0

H2d_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] oil boilers did your company sell in 2010? (n=190)

STATISTIC	VALUE
Mean	9.7
Median	.00
Mode	.00
Standard Deviation	52.8

H2d_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] natural oil boilers did your company sell in 2013? (n=190)

STATISTIC	VALUE
Mean	8.2
Median	0.0
Mode	0.0
Standard Deviation	48.0

H2e_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] central air conditioners did your company sell in 2010? (n=170)

STATISTIC	VALUE
Mean	256.9
Median	30.0
Mode	0.0
Standard Deviation	916.2

H2e_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] central air conditioners did your company sell in 2013? (n=182)

STATISTIC	VALUE
Mean	498.5
Median	35.0
Mode	0.0
Standard Deviation	2,141.1

H2f_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] gas tankless or gas on-demand hot water heaters did your company sell in 2010? (n=151)

STATISTIC	VALUE
Mean	26.4
Median	3.0
Mode	0.0
Standard Deviation	63.6

H2f_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] gas tankless or gas on-demand hot water heaters did your company sell in 2013? (n=158)

STATISTIC	VALUE
Mean	113.4
Median	6.0
Mode	0.0
Standard Deviation	954.3

H2g_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] gas storage water heaters did your company sell in 2010? (n=144)

STATISTIC	VALUE
Mean	848.3
Median	10.0
Mode	0.0
Standard Deviation	4,832.0

H2g_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] gas storage water heaters did your company sell in 2013? (n=150)

STATISTIC	VALUE
Mean	1,073.9
Median	10.0
Mode	0.0
Standard Deviation	5,683.0

H2h_2010. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] heat pump water heaters did your company sell in 2010? (n=153)

STATISTIC	VALUE
Mean	9.5
Median	0.0
Mode	0.0
Standard Deviation	54.6

H2h_2013. Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] heat pump water heaters did your company sell in 2013? (n=157)

STATISTIC	VALUE
Mean	203.3
Median	0.0
Mode	0.0
Standard Deviation	1,779.4

H3a_2010. Approximately what percent of the residential natural gas furnaces your company sold in 2010 were AFUE of 94% or greater? (n=112)

STATISTIC	VALUE
Mean	55.8
Median	50.0
Mode	50.0
Standard Deviation	34.6

H3a_2013? What percent do you expect it will be in 2013? (n=119)

STATISTIC	VALUE
Mean	62.9
Median	75.0
Mode	95.0
Standard Deviation	34.4

H3b_2010. Approximately what percent of the residential natural gas boilers your company sold in 2010 were AFUE of 90% or greater? (n=91)

STATISTIC	VALUE
Mean	48.5
Median	50.0
Mode	50.0
Standard Deviation	37.1

H3b_2013? What percent do you expect it will be in 2013? (n=88)

STATISTIC	VALUE
Mean	51.6
Median	50.0
Mode	50.0
Standard Deviation	36.6

H3c_2010. Approximately what percent of the residential oil furnaces your company sold in 2010 were AFUE of 85% or greater? (n=45)

STATISTIC	VALUE
Mean	41.0
Median	20.0
Mode	0.0
Standard Deviation	45.6

H3c_2013? What percent do you expect it will be in 2013? (n=44)

STATISTIC	VALUE
Mean	46.6
Median	35.0
Mode	0.0
Standard Deviation	44.7

H3d_2010. Approximately what percent of the residential oil boilers your company sold in 2010 were AFUE of 85% or greater? (n=38)

STATISTIC	VALUE
Mean	49.2
Median	45.0
Mode	100.0
Standard Deviation	45.1

H3d_2013? What percent do you expect it will be in 2013? (n=35)

STATISTIC	VALUE
Mean	53.5
Median	70.0
Mode	100.0
Standard Deviation	43.9

H3e_2010. Approximately what percent of the residential central air conditioners your company sold in 2010 were 15 SEER or greater? (n=122)

STATISTIC	VALUE
Mean	35.4
Median	25.0
Mode	.0
Standard Deviation	34.6

H3e_2013? What percent do you expect it will be in 2013? (n=133)

STATISTIC	VALUE
Mean	41.0
Median	30.0
Mode	100.0
Standard Deviation	34.9

H3f_2010. Approximately what percent of the commercial natural gas furnaces your company sold in 2010 were AFUE of 94% or greater? (n=23)

STATISTIC	VALUE
Mean	51.1
Median	50.0
Mode	0.0
Standard Deviation	41.4

H3f_2013? What percent do you expect it will be in 2013? (n=27)

STATISTIC	VALUE
Mean	61.9
Median	80.0
Mode	100.0
Standard Deviation	39.0

H3g_2010. Approximately what percent of the commercial natural gas boilers your company sold in 2010 were AFUE of 90% or greater? (n=17)

STATISTIC	VALUE
Mean	64.4
Median	90.0
Mode	100.0
Standard Deviation	44.2

H3g_2013? What percent do you expect it will be in 2013? (n=17)

STATISTIC	VALUE
Mean	80.9
Median	100.0
Mode	100.0
Standard Deviation	30.4

H3h_2010. Approximately what percent of the commercial oil furnaces your company sold in 2010 were AFUE of 85% or greater? (n=5)

STATISTIC	VALUE
Mean	61.0
Median	100.0
Mode	100.0
Standard Deviation	53.4

H3h_2013? What percent do you expect it will be in 2013? (n=7)

STATISTIC	VALUE
Mean	50.0
Median	30.0
Mode	100.0
Standard Deviation	47.7

H3i_2010. Approximately what percent of the commercial oil boilers your company sold in 2010 were AFUE of 85% or greater? (n=6)

STATISTIC	VALUE
Mean	83.3
Median	100.0
Mode	100.0
Standard Deviation	40.8

H3i_2013? What percent do you expect it will be in 2013? (n=6)

STATISTIC	VALUE
Mean	71.7
Median	100.0
Mode	100.0
Standard Deviation	44.9

H3j_2010. Approximately what percent of the air-cooled unitary or split systems less than 5.4 tons your company sold in 2010 were 12.0 EER or greater? (n=19)

STATISTIC	VALUE
Mean	44.7
Median	10.0
Mode	100.0
Standard Deviation	47.3

H3j_2013? What percent do you expect it will be in 2013? (n=19)

STATISTIC	VALUE
Mean	61.5
Median	100.0
Mode	100.0
Standard Deviation	46.3

H3k_2010. Approximately what percent of the air-cooled unitary or split systems greater or equal to 5.4 tons to less than 20 tons your company sold in 2010 were 11.5 EER or greater? (n=19)

STATISTIC	VALUE
Mean	39.0
Median	20.0
Mode	0.0
Standard Deviation	43.0

H3k_2013? What percent do you expect it will be in 2013? (n=18)

STATISTIC	VALUE
Mean	60.3
Median	77.5
Mode	100.0
Standard Deviation	41.4

H3l_2010. Approximately what percent of the air-cooled unitary or split systems greater than or equal to 20 tons your company sold in 2010 were 10.5 EER or greater? (n=18)

STATISTIC	VALUE
Mean	36.4
Median	12.5
Mode	0.0
Standard Deviation	44.6

H3l_2013? What percent do you expect it will be in 2013? (n=18)

STATISTIC	VALUE
Mean	46.4
Median	35.0
Mode	0.0
Standard Deviation	46.7

H3m_2010. Approximately what percent of the gas tankless or gas on-demand hot water heaters your company sold in 2010 were Energy Factor 0.82 or greater? (n=81)

STATISTIC	VALUE
Mean	66.7
Median	100.0
Mode	100.0
Standard Deviation	42.0

H3m_2013? What percent do you expect it will be in 2013? (n=95)

STATISTIC	VALUE
Mean	70.3
Median	100.0
Mode	100.0
Standard Deviation	40.4

H3n_2010. Approximately what percent of the gas storage water heaters your company sold in 2010 were Energy Factor 0.67 or greater? (n=85)

STATISTIC	VALUE
Mean	44.0
Median	30.0
Mode	100.0
Standard Deviation	41.0

H3n_2013? What percent do you expect it will be in 2013? (n=87)

STATISTIC	VALUE
Mean	51.3
Median	50.0
Mode	100.0
Standard Deviation	39.6

H3o_2010. Approximately what percent of the heat pump water heaters your company sold in 2010 were Energy Factor 2.0 or greater? (n=31)

STATISTIC	VALUE
Mean	51.7
Median	45.0
Mode	100.0
Standard Deviation	48.0

H3o_2013? What percent do you expect it will be in 2013? (n=33)

STATISTIC	VALUE
Mean	60.8
Median	100.0
Mode	100.0
Standard Deviation	45.5

D.6.6. LIGHTING SALES

L101. Since 2010, which of the following types of lighting fixtures and technologies have you sold for residential use…Pin-based CFL fixtures? (n=27)

RESPONSE	PERCENT
Yes	22%
No	56%
Don't know	22%

L102. Since 2010, which of the following types of lighting fixtures and technologies have you sold for residential use…Fluorescent tube fixtures? (n=27)

RESPONSE	PERCENT
Yes	22%
No	56%
Don't know	22%

L103. Since 2010, which of the following types of lighting fixtures and technologies have you sold for residential use…screw-based CFL fixtures? (n=27)

RESPONSE	PERCENT
Yes	30%
No	48%
Don't know	22%

L104. Since 2010, which of the following types of lighting fixtures and technologies have you sold for residential use…LED fixtures? (n=27)

RESPONSE	PERCENT
Yes	33%
No	44%
Don't know	22%

L105. Since 2010, which of the following types of lighting fixtures and technologies have you sold for residential use…Other high efficiency fixtures? (n=27)

RESPONSE	PERCENT
Yes	7%
No	70%
Don't know	22%

L106. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…T5 lamps and ballasts? (n=27)

RESPONSE	PERCENT
Yes	15%
No	63%
Don't know	22%

L107. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…T8 lamps and ballasts? (n=27)

RESPONSE	PERCENT
Yes	11%
No	67%
Don't know	22%

L117. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…Super T8 lamps and ballasts? (n=27)

RESPONSE	PERCENT
Yes	-
No	78%
Don't know	22%

L108. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…T12 lamps and ballasts? (n=27)

RESPONSE	PERCENT
Yes	7%
No	70%
Don't know	22%

L109. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…High-bay fluorescent fixtures? (n=27)

RESPONSE	PERCENT
Yes	11%
No	67%
Don't know	22%

L110. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…Hardwired CFL fixtures? (n=27)

RESPONSE	PERCENT
Yes	7%
No	70%
Don't know	22%

L111. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…Metal halide fixtures? (n=27)

RESPONSE	PERCENT
Yes	4%
No	74%
Don't know	22%

L112. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…LED exit signs? (n=27)

RESPONSE	PERCENT
Yes	4%
No	74%
Don't know	22%

L114. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…LED lamps or luminaries? (n=27)

RESPONSE	PERCENT
Yes	11%
No	67%
Don't know	22%

L115. Since 2010, which of the following types of lighting fixtures and technologies have you sold for commercial use…Refrigerated LED case lights? (n=27)

RESPONSE	PERCENT
Yes	-
No	78%
Don't know	22%

L2_2010_01. Approximately what percent of your company's residential lighting sales were pin-based CFL fixtures in 2010? (n=2)

STATISTIC	VALUE
Mean	5.5
Median	5.5
Mode	1.0
Standard Deviation	6.4

L2_2013_01? What percent do you expect it will be in 2013? (n=3)

STATISTIC	VALUE
Mean	13.7
Median	20.0
Mode	20.0
Standard Deviation	11.0

L2_2010_02. Approximately what percent of your company's residential lighting sales were fluorescent tube fixtures in 2010? (n=4)

STATISTIC	VALUE
Mean	23.8
Median	22.5
Mode	10.0
Standard Deviation	12.5

L2_2013_02? What percent do you expect it will be in 2013? (n=5)

STATISTIC	VALUE
Mean	25.0
Median	25.0
Mode	10.0
Standard Deviation	11.2

L2_2010_03. Approximately what percent of your company's residential lighting sales were screw-based CFL fixtures in 2010? (n=5)

STATISTIC	VALUE
Mean	69.8
Median	59.0
Mode	50.0
Standard Deviation	23.6

L2_2013_03? What percent do you expect it will be in 2013? (n=6)

STATISTIC	VALUE
Mean	54.0
Median	47.0
Mode	20.0
Standard Deviation	35.0

L2_2010_04. Approximately what percent of your company's residential lighting sales were LED fixtures in 2010? (n=4)

STATISTIC	VALUE
Mean	61.3
Median	62.5
Mode	100.0
Standard Deviation	44.8

L2_2013_04? What percent do you expect it will be in 2013? (n=5)

STATISTIC	VALUE
Mean	58.0
Median	40.0
Mode	100.0
Standard Deviation	39.0

L2_2010_05. Approximately what percent of your company's residential lighting sales were other high efficiency fixtures in 2010? (n=1)

STATISTIC	VALUE
Mean	100.0
Median	100.0
Mode	100.0
Standard Deviation	0.0

L2_2013_05? What percent do you expect it will be in 2013? (n=2)

STATISTIC	VALUE
Mean	60.0
Median	60.0
Mode	20.0
Standard Deviation	56.6

L2_2010_06. Approximately what percent of your company's commercial lighting sales were T5 lamps and ballasts in 2010? (n=4)

STATISTIC	VALUE
Mean	22.0
Median	15.0
Mode	8.0
Standard Deviation	19.4

L2_2013_06? What percent do you expect it will be in 2013? (n=4)

STATISTIC	VALUE
Mean	22.0
Median	15.0
Mode	8.0
Standard Deviation	19.4

L2_2010_07. Approximately what percent of your company's commercial lighting sales were T8 lamps and ballasts in 2010? (n=3)

STATISTIC	VALUE
Mean	12.7
Median	10.0
Mode	8.0
Standard Deviation	6.4

L2_2013_07? What percent do you expect it will be in 2013? (n=3)

STATISTIC	VALUE
Mean	12.7
Median	10.0
Mode	8.0
Standard Deviation	6.4

L2_2010_08. Approximately what percent of your company's commercial lighting sales were T12 lamps and ballasts in 2010? (n=2)

STATISTIC	VALUE
Mean	44.0
Median	44.0
Mode	8.0
Standard Deviation	50.9

L2_2013_08? What percent do you expect it will be in 2013? (n=2)

STATISTIC	VALUE
Mean	44.0
Median	44.0
Mode	8.0
Standard Deviation	50.9

L2_2010_09. Approximately what percent of your company's commercial lighting sales were high-bay fluorescent fixtures in 2010? (n=3)

STATISTIC	VALUE
Mean	23.3
Median	20.0
Mode	0.0
Standard Deviation	25.2

L2_2013_09? What percent do you expect it will be in 2013? (n=3)

STATISTIC	VALUE
Mean	23.3
Median	20.0
Mode	0.0
Standard Deviation	25.2

L2_2010_10. Approximately what percent of your company's commercial lighting sales were hardwired CFL fixtures in 2010? (n=2)

STATISTIC	VALUE
Mean	4.0
Median	4.0
Mode	0.0
Standard Deviation	5.7

L2_2013_10? What percent do you expect it will be in 2013? (n=2)

STATISTIC	VALUE
Mean	4.0
Median	4.0
Mode	.0
Standard Deviation	5.7

L2_2010_11. Approximately what percent of your company's commercial lighting sales were metal halide fixtures in 2010? (n=1)

STATISTIC	VALUE
Mean	0.0
Median	0.0
Mode	0.0
Standard Deviation	-

L2_2013_11? What percent do you expect it will be in 2013? (n=1)

STATISTIC	VALUE
Mean	0.0
Median	0.0
Mode	0.0
Standard Deviation	-

L2_2010_12. Approximately what percent of your company's commercial lighting sales were LED exit signs in 2010? (n=1)

STATISTIC	VALUE
Mean	50.0
Median	50.0
Mode	50.0
Standard Deviation	-

L2_2013_12? What percent do you expect it will be in 2013? (n=1)

STATISTIC	VALUE
Mean	50.0
Median	50.0
Mode	50.0
Standard Deviation	-

L2_2010_13. Approximately what percent of your company's commercial lighting sales were LEC exit signs in 2010? (n=1)

STATISTIC	VALUE
Mean	8.0
Median	8.0
Mode	8.0
Standard Deviation	-

L2_2013_13? What percent do you expect it will be in 2013? (n=1)

STATISTIC	VALUE
Mean	8.0
Median	8.0
Mode	8.0
Standard Deviation	-

L2_2010_14. Approximately what percent of your company's commercial lighting sales were LED lamps or luminaries in 2010? (n=3)

STATISTIC	VALUE
Mean	16.7
Median	10.0
Mode	0.0
Standard Deviation	20.8

L2_2013_14? What percent do you expect it will be in 2013? (n=3)

STATISTIC	VALUE
Mean	16.7
Median	10.0
Mode	0.0
Standard Deviation	20.8

L401. Since 2010, which of the following types of lighting controls have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use…Dimmers? (n=27)

RESPONSE	PERCENT
Yes	48%
No	44%
Don't know	7%

L402. Since 2010, which of the following types of lighting controls have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use…Occupant sensors? (n=27)

RESPONSE	PERCENT
Yes	44%
No	48%
Don't know	7%

L403. Since 2010, which of the following types of lighting controls have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use…Photo controls? (n=27)

RESPONSE	PERCENT
Yes	52%
No	41%
Don't know	7%

L404. Since 2010, which of the following types of lighting controls have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use…Motion sensors? (n=27)

RESPONSE	PERCENT
Yes	44%
No	48%
Don't know	7%

L405. Since 2010, which of the following types of lighting controls have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use…Others? (n=27)

RESPONSE	PERCENT
Yes	-
No	93%
Don't know	7%

L5_01. Since 2010 have your sales of dimmers increased, decreased, or stayed the same? (n=13)

RESPONSE	PERCENT
Increased	31%
Decreased	-
Stayed the same	62%
Don't know	8%

L5_02. Since 2010 have your sales of occupant sensors increased, decreased, or stayed the same? (n=12)

RESPONSE	PERCENT
Increased	67%
Decreased	-
Stayed the same	17%
Don't know	17%

L5_03. Since 2010 have your sales of photo controls increased, decreased, or stayed the same? (n=14)

RESPONSE	PERCENT
Increased	36%
Decreased	-
Stayed the same	57%
Don't know	7%

L6_01. By what percent did sales of Dimmers change between 2010 and 2013? (n=1)

STATISTIC	VALUE
Mean	75.0
Median	75.0
Mode	75.0
Standard Deviation	-

L6_02. By what percent did sales of Occupant Sensors change between 2010 and 2013? (n=5)

STATISTIC	VALUE
Mean	42.0
Median	20.0
Mode	5.0
Standard Deviation	42.8

L6_03. By what percent did sales of Photo Controls change between 2010 and 2013? (n=2)

STATISTIC	VALUE
Mean	47.5
Median	47.5
Mode	20.0
Standard Deviation	38.9

L6_04. By what percent did sales of Motion Sensors change between 2010 and 2013? (n=3)

STATISTIC	VALUE
Mean	38.3
Median	20.0
Mode	20.0
Standard Deviation	31.8

D.6.7. REFRIGERATION SALES

R0_NEW01. Since 2010, which of the following types of refrigeration equipment have you sold…Commercial refrigerators and freezers? (n=65)

RESPONSE	PERCENT
Yes	63%
No	37%
Don't know	-

R0_NEW02. Since 2010, which of the following types of refrigeration equipment have you sold…Residential refrigerators and freezers? (n=65)

RESPONSE	PERCENT
Yes	68%
No	32%
Don't know	-

R1_NEW. Approximately how many commercial refrigerators and freezers did your company sell in 2010? (n=29)

STATISTIC	VALUE
Mean	695.3
Median	3.0
Mode	0.0
Standard Deviation	3,712.8

R2_NEW. What percent of the commercial refrigerators and freezers you sold in 2010 were ENERGY STAR? (n=13)

STATISTIC	VALUE
Mean	37.5
Median	5.0
Mode	0.0
Standard Deviation	45.0

R3_NEW. Approximately, how many commercial refrigerators and freezers do you expect to sell in 2013? (n=30)

STATISTIC	VALUE
Mean	74.5
Median	5.0
Mode	0.0
Standard Deviation	364.2

R4_NEW. What percent of the commercial refrigerators and freezers your company will have sold in 2013 will be ENERGY STAR? (n=15)

STATISTIC	VALUE
Mean	58.1
Median	100.0
Mode	100.0
Standard Deviation	46.9

R5_NEW. Approximately how many residential refrigerators and freezers did your company sell in 2010? (n=34)

STATISTIC	VALUE
Mean	14.5
Median	0.0
Mode	0.0
Standard Deviation	38.9

R6_NEW. What percent of the residential refrigerators and freezers you sold in 2010 were ENERGY STAR? (n=7)

STATISTIC	VALUE
Mean	39.3
Median	25.0
Mode	0.0
Standard Deviation	40.1

R7_NEW. Approximately, how many residential refrigerators and freezers do you expect to sell in 2013? (n=36)

STATISTIC	VALUE
Mean	13.4
Median	0.0
Mode	0.0
Standard Deviation	37.5

R8_NEW. What percent of the residential refrigerators and freezers your company will have sold in 2013 will be ENERGY STAR? (n=10)

STATISTIC	VALUE
Mean	59.5
Median	62.5
Mode	100.0
Standard Deviation	42.4

D.6.8. BARRIERS TO ENERGY EFFICIENCY

IN17. What do you think is the one greatest barrier that might prevent [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] customers from implementing, or pursuing to a greater degree, energy efficiency improvements? (n=291)

RESPONSE	PERCENT
Cost/payback/capital	74%
Lack of financing	7%

Continued…

RESPONSE	PERCENT
Lack of awareness	3%
Economy in general	1%
Lack of government regulation	1%
Lack of interest	1%
Lack of tax incentives	1%
Too much work/hassle	1%
Availability of equipment	1%
Other	2%
None	3%
Don't know/Refused	5%

IN18. What other barriers exist? (Multiple Responses) (n=265)

RESPONSE	PERCENT
Cost/payback/capital	7%
Lack of financing	7%
Lack of awareness	11%
Lack of interest	1%
Lack of tax incentives	1%
Lack of knowledge	3%
Issues with installation process	2%
Uncertainty about reliability/performance	1%
Other	3%
None	57%
Don't know/Refused	5%

D.6.9. PROGRAM AWARENESS AND MARKET CHANGE

PA1_1. Have you heard of [GRANTEE_PROGRAM], a program funded by the U.S. Department of Energy's Better Buildings Neighborhood Program? (n=291)

RESPONSE	PERCENT
Yes	34%
No	65%
Don't know	1%

PA1_2. Have you heard of programs funded by Energy Efficiency and Conservation Block Grants (EECBG), State Energy Programs (SEP) or the Weatherization Assistance Program? (n=291)

RESPONSE	PERCENT
Yes	40%
No	58%
Don't know	2%

PA1_3. Have you heard of home efficiency programs sponsored by local utilities or other groups? [IF NEEDED: "Home Performance with ENERGY STAR programs"] (n=225)

RESPONSE	PERCENT
Yes	72%
No	25%
Don't know	2%

PA1_5. Have you heard of commercial energy efficiency programs sponsored by local utilities or other groups? (n=66)

RESPONSE	PERCENT
Yes	62%
No	36%
Don't know	2%

PA1_6. Have you heard of benchmarking or labeling programs like LEED or ENERGY STAR Portfolio Manager? (n=66)

RESPONSE	PERCENT
Yes	74%
No	26%
Don't know	-

PA1_7. Have you heard of federal or state tax credits for energy efficiency improvements? (n=291)

RESPONSE	PERCENT
Yes	91%
No	9%
Don't know	-

PA2a_a. Thinking about the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] insulation, windows, and air sealing and duct sealing supplies your company offers, would you say [GRANTEE_PROGRAM] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? (n=18)

RESPONSE	PERCENT
Positive	61%
Negative	-
No impact	33%
Don't know	6%

PA2a_b. Thinking about the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] HVAC and water heating systems your company offers, would you say [GRANTEE_PROGRAM] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? (n=85)

RESPONSE	PERCENT
Positive	54%
Negative	-
No impact	41%
Don't know	5%

PA2a_c. Thinking about the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] lighting and/or lighting controls your company offers, would you say [GRANTEE_PROGRAM] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? (n=284)

RESPONSE	PERCENT
Positive	43%
Negative	-
No impact	46%
Don't know	8%

PA2a_f. Thinking about the commercial and residential refrigeration equipment your company offers, would you say [GRANTEE_PROGRAM] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? (n=26)

RESPONSE	PERCENT
Positive	46%
Negative	-
No impact	46%
Don't know	8%

PA2a_g. Thinking about the [S1a_g RESPONSE] your company offers, would you say [GRANTEE_PROGRAM] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? (n=13)

RESPONSE	PERCENT
Positive	46%
Negative	-
No impact	46%
Don't know	8%

PA2b_a.How much influence would you say [GRANTEE_PROGRAM] has had on your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] insulation, windows, and air sealing and duct sealing supplies? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=11)

RESPONSE	PERCENT
0	-
1	18%
2	9%
3	-
4	27%
5	9%
6	-
7	9%
8	9%
9	9%
10	-
Don't know	9%

PA2b_b. How much influence would you say [GRANTEE_PROGRAM] has had on your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] HVAC and water heating systems? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=46)

RESPONSE	PERCENT
0	4%
1	7%
2	7%
3	17%
4	11%
5	13%
6	9%
7	15%
8	15%
9	-

Continued…

RESPONSE	PERCENT
10	-
Don't know	2%

PA2b_c.How much influence would you say [GRANTEE_PROGRAM] has had on your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] lighting and/or lighting controls? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=3)

RESPONSE	PERCENT
0	-
1	-
2	-
3	-
4	33%
5	-
6	33%
7	33%
8	-
9	-
10	-
Don't know	-

PA2b_F. How much influence would you say [GRANTEE_PROGRAM] has had on your sales of residential and commercial refrigeration equipment? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=12)

RESPONSE	PERCENT
0	8%
1	8%
2	17%
3	25%
4	-
5	33%

Continued…

RESPONSE	PERCENT
6	-
7	-
8	-
9	-
10	-
Don't know	8%

PA2b_G. How much influence would you say [GRANTEE_PROGRAM] has had on your sales of [SC1a_g RESPONSE]? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=6)

RESPONSE	PERCENT
0	-
1	-
2	17%
3	17%
4	17%
5	-
6	-
7	50%
8	-
9	-
10	-
Don't know	-

D.6.10. SUSTAINABILITY AND PROGRAM INFLUENCE

AT1. What changes, if any, have you made to your business and stocking practices since [GRANTEE_PROGRAM] began? (n=99)

RESPONSE	PERCENT
Explain to customers how the high efficiency equipment/materials work and why it is more efficient that standard equipment	40%
In general, talk about energy efficiency more with customers	39%
Compare efficiency levels of different equipment	35%
Talk to customers about payback periods and savings over time	35%
Stock more efficient materials	27%
Nothing/None	45%
Don't know/Refused	3%

AT2. How much influence would you say the [GRANTEE_PROGRAM] has had on the changes you have you made to your business and stocking practices? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence." (n=52)

RESPONSE	PERCENT
0	23%
1	6%
2	4%
3	8%
4	4%
5	12%
6	19%
7	8%
8	13%
9	-
10	2%
Don't know	2%

AT2a. What other factors explain changes you have made to your business practices? (n=52)

RESPONSE	PERCENT
Customer desire/awareness	6%
Economy	4%
Labor availability/changes	4%
Training	4%
Government involvement/mandates	4%
Utility and other incentive programs	4%
The general market	4%
Changes in products (in the market)	2%
Tax credits	2%
No other factors	65%
Don't know/Refused	12%

AT3_1. To date, what affect, if any, do you think the [GRANTEE_PROGRAM] has had on the market for energy efficient equipment? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree." There is more business for your company than there would have been without the program. (n=99)

RESPONSE	PERCENT
0	23%
1	6%
2	6%
3	4%
4	8%
5	18%
6	2%
7	13%
8	4%
9	-
10	7%
Don't know	8%

AT3_2. To date, what affect, if any, do you think the [GRANTEE_PROGRAM] has had on the market for energy efficient equipment? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree." There is more business in general in the marketplace than there would have been without the program. (n=99)

RESPONSE	PERCENT
0	16%
1	8%
2	4%
3	5%
4	3%
5	22%
6	6%
7	14%
8	6%
9	1%
10	4%
Don't know	10%

AT4_1. What affect, if any, do you think the [GRANTEE_PROGRAM] will have on the market for energy efficient equipment in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree." There will be more business for your company than there would have been without the program. (n=99)

RESPONSE	PERCENT
0	18%
1	8%
2	3%
3	6%
4	3%
5	20%
6	4%
7	13%
8	7%

Continued…

RESPONSE	PERCENT
9	1%
10	5%
Don't know	11%

AT4_2. What affect, if any, do you think the [GRANTEE_PROGRAM] will have on the market for energy efficient equipment in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree." There will be more business in general in the marketplace than there would have been without the program. (n=99)

RESPONSE	PERCENT
0	16%
1	7%
2	2%
3	10%
4	4%
5	18%
6	5%
7	12%
8	7%
9	1%
10	4%
Don't know	13%

D.6.11. JOBS AND BUSINESS PRACTICES

IN4. About how many full-time equivalent employees work for your company? (n=279)

STATISTIC	VALUE
Mean	61.5
Median	10.0
Mode	1.0
Standard Deviation	600.0

JA1. Since the introduction of [GRANTEE_PROGRAM] has your company needed to hire additional full-time or part-time staff for any positions as a result of the program? (n=99)

RESPONSE	PERCENT
Yes	10%
No	85%
Don't know/Refused	5%

JA3. How many full-time employees did your company add? (n=10)

STATISTIC	VALUE
Mean	6.4
Median	4.5
Mode	2.0
Standard Deviation	6.5

JA4. How many part-time employees did your company add? (n=10)

STATISTIC	VALUE
Mean	0.1
Median	0.0
Mode	0.0
Standard Deviation	0.3

JA5. Has your company been able to retain any staff because of [GRANTEE_PROGRAM] that would otherwise have been let go? (n=99)

RESPONSE	PERCENT
Yes	8%
No	84%
Don't know/Refused	8%

JA6. How many employees did your company retain because of [GRANTEE_PROGRAM]? (n=8)

STATISTIC	VALUE
Mean	6.8
Median	5.5
Mode	1.0
Standard Deviation	5.5

JA8. Did your business practices change to focus more on energy efficiency to adapt to the program offered by [GRANTEE_PROGRAM]? (n=99)

RESPONSE	PERCENT
Yes	22%
No	74%
Don't know/Refused	4%

JA9. Have your services become more comprehensive to adapt to the program? (n=99)

RESPONSE	PERCENT
Yes	34%
No	62%
Don't know/Refused	4%

JA9b. Has your business begun to partner with other firms to adapt to the program? (n=99)

RESPONSE	PERCENT
Yes	30%
No	68%
Don't know/Refused	2%

APPENDIX E. CONTRACTOR IN-DEPTH INTERVIEWS

E.1. METHODOLOGY: PRIORITIZING CONTRACTORS FOR INTERVIEWS

Following the contractor CATI surveys, we conducted in-depth interviews between March and April 2014 with 10 of the 47 survey respondents who were participating contractors and had identified either positive or negative market effects resulting from BBNP.[75]

Using the CATI survey results, we identified four of the 47 survey respondents as having indicated negative market effects because they reported that they would have completed more upgrades in absence of the program. We placed the highest priority on conducting in-depth interviews with these four respondents and other respondents from the same grantees who had reported positive market effects.[76]

For the respondents who indicated positive market effects, we prioritized survey respondents by their assessment of market effects to BBNP according to the questions shown in Table E-1. We determined priority using the following criteria:

- Respondents who strongly agreed (ratings of 7 to 10) with any of the market effects questions (AT3-AT4), *and* the program strongly influenced (ratings of 7 to 10) their changes in standard practices (AT2), *and* it strongly influenced (ratings of 7 to 10) their increase in marketing (MT2), *and* they had changed their business practices ("yes" to any JA8-JA9b).
- Respondents who strongly agreed (ratings of 7-10) with any of the market effects questions, but only gave positive responses to some – not all – of the other topics.

75 Our sampling methodology is in Section 2.1.2. For one contractor, we had to interview a different contact within the same company; the contact who had completed the CATI survey had left the company.

76 Ultimately, we were able to interview three of the four survey respondents who had reported negative market effects. One of the three respondents clarified during the in-depth interview that he would have actually completed fewer upgrades in absence of the program. For our quantitative survey analysis, we adjusted this respondent's survey response to match the new value he provided during the in-depth interview.

Table E-1: Contractor In-Depth Interview Sampling-Based Survey Questions

QUESTION	QUESTION WORDING	POSITIVE RESPONSES
	Market Effects	
AT3_1	What effect, if any, do you think the [PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There is more business for your company than there would have been without the program.	7-10
AT3_2	What effect, if any, do you think the [PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." There is more business in general in the marketplace than there would have been without the program.	
AT4_1	What effect, if any, do you think the [PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." In the next two years, there will be more business for your company than there would have been without the program.	
AT4_2	What effect, if any, do you think the [PROGRAM] will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree." In the next two years, there will be more business in general in the marketplace than there would have been without the program.	
	Standard Practices	
AT2	How much influence would you say the [PROGRAM] has had on the changes you have made to your standard practices for projects completed outside of the [PROGRAM]? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."	7-10
	Marketing	
MT2	How much influence would you say the [PROGRAM] has had on the increase in the amount you market energy efficiency upgrade projects since 2010? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."	7-10
	Business Practices	
JA8	Did your business practices change to focus more on energy efficiency to adapt to the program offered by [PROGRAM]?	Yes
JA9	Have your services become more comprehensive to adapt to the program?	
JA9b	Has your business begun to partner with other firms or other contractors to adapt to the program?	

The purpose of the interviews was to better understand the mechanisms of the market effects – how the market effects happened and what the role of the grantee program was. In addition, the interviews helped us understand contractor business models and any potential negative market effects. The interviews included the following topics and objectives:

- Identify the primary mechanisms of BBNP market effects
- Pinpoint the aspects or components of BBNP, such as training or incentives, which were most important in increasing or decreasing the number of energy efficiency upgrades
- Gain insight into ways that BBNP changed interviewees' energy efficiency-related building and business practices
- Discover ways that BBNP changed interviewees' marketing and training, and identify the level of effectiveness of those changes
- Learn of interviewees' plans, in terms of business practices, to adjust to the sunset of BBNP
- Explore the ways that BBNP processes or requirements may have caused negative impacts on the interviewees' businesses or in the market in general

In some cases, contractors provided feedback on program processes during the interviews. The process-related findings are reported in *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4).

According to their survey responses, in-depth interviewees had completed 23,942 upgrades from 2010 to 2013, and 1,614 of those (7%) were completed through BBNP. In addition, when asked to estimate the change in the number of upgrades they would have completed in the absence of BBNP, on average, they estimated that they would have experienced a 39% decrease in the total number of upgrades that they completed from 2010 to 2013 if BBNP had not existed. Table shows the interviewees' individual responses. Of the ten contractors interviewed, two indicated negative effects of BBNP on their business (they would have completed more upgrades without BBNP).[77]

[77] We had initially identified three interviewees as indicating negative effects of BBNP (based on their survey responses). However, one of the three contractors clarified that the program actually had positive market effects (interviewee three). We used this interviewee's revised response to estimate net impacts.

Table E-2: In-Depth Contractor Interviewee Estimated Percentage Change in Total Upgrades in Absence of BBNP, 2010 to 2013

INTERVIEWEE	TOTAL UPGRADES	PROGRAM UPGRADES	ESTIMATED PERCENT CHANGE
1	10,200	7	10%
2	52	52	-90%
3	65	50	-92%*
4	1,400	45**	30%
5	10,000	1,000	-40%
6	560	200	-80%
7	430	100	-33%
8	55	30	-65%
9	370	80	-15%
10	810	50	-10%
Total	23,942	1,614	-39% (Mean)

Note: Interviewees four and ten were not the original CATI survey respondent contacts, but they represented the same companies as the CATI survey respondent contacts. The figures above are those reported by the original survey respondent contacts during the CATI survey.

* Interviewee three had reported during the CATI survey that he would have been better off in absence of the program. During the in-depth interview, he clarified that he would have completed fewer upgrades in absence of the program. The data above show his revised response from the in-depth interview.

** Interviewee four had been unable to estimate the number of BBNP upgrades she had completed through the program. We imputed this value for the purposes of analysis.

E.2. DETAILED INTERVIEW FINDINGS AND RESPONSES

E.2.1. GENERAL IMPACTS ON THE UPGRADE MARKET

We asked contractor interviewees a range of questions to gauge BBNP's overall impacts on the upgrade market. This section reports their responses about the market outcomes of BBNP activities, the most influential BBNP components, and explanations or descriptions of ways that BBNP affected contractors' businesses. We discussed their reports about BBNP's impacts on contractor training, marketing, and building and business practices in following sections (Sections 0 through E.2.5).

Increased Consumer Awareness and Confidence

Contractors indicated that BBNP resulted in increased consumer awareness of, demand for, and confidence in energy efficiency. Six contractors commented that one of BBNP's primary impacts was raising consumer awareness

of and/or demand for energy efficiency measures. One contractor summarized the impacts on consumer awareness as follows:

> *"The program helps spread the word of energy measures to people who weren't aware of, or savvy about, energy efficiency. [The program] created the desire [for customers] to call and make appointments to have home audits—drummed up business for us."*

Another contractor praised the grantees' targeted marketing:

> *"I think [BBNP's] approach of doing extensive marketing on a good target area rolled a lot of participation in the short run. Doing that kind of targeted marketing and outreach, it made sure that everyone in that area was kind of talking about it and thinking about it. And I think that had one of the largest impacts."*

Two other contractors added that the program increased consumer confidence in energy efficient technologies. One contractor described the effects as follows:

> *"The energy advisors get to do an audit and look at what can be upgraded. One thing that is nice about [BBNP] is that they do provide a little bit of expertise and kind of help [customers] to understand that this is real. I don't run into it too much, but a lot of people have a problem that this is smoke and mirrors with energy efficiency, and I think the program has helped [overcome that]. "*

Most Important BBNP Components

When we asked interviewees to identify the components of BBNP that were most important in eliciting the upgrades that they completed outside of the program, half of the contractors identified the program rebates and incentives (five of ten contractors). For example, one interviewee found that because customers pursued program incentives, and the program required air leakage testing, the program-required testing activity highlighted issues that needed to be addressed in customers' homes but were not necessarily covered by program rebates and otherwise would not have been found:

> *"I can't guarantee everybody that they're going to get a rebate through [the program], but it requires a test-in or a test-out… We're bringing in air hoods and testing equipment, and we might say, 'The best thing for you to do is not to invest in this $7,000 duct job, but really if we enhance this return air on this side and seal your ducts up in the attic, you'd be a lot better off.' And so [even if those measures] didn't qualify for [BBNP rebates], [customers] were educated and we provided a good service to increase the [energy] efficiency."*

Negative Impacts of BBNP

We asked all ten of the interviewees if there had been any negative impacts on their business or local market because of BBNP. Five of the ten contractors reported that the program had a negative impact on their non-BBNP-supported jobs because of its impact on competing contractors. They identified a number of factors, such as new competition from contractors drawn to the region by BBNP, BBNP unevenly promoting certain contractors over others, competing contractors utilizing subcontractors to get around BBNP rules, and nonparticipating contractors leveraging program opportunities.

- **New competitors:** One contractor pointed to an increase in the number of competing contractors who came from other geographic areas to take advantage of program opportunities.

- **Contractor promotion:** Two contractors were concerned that BBNP had promoted other contractors over them and, as a result, the other contractors got customer leads that they otherwise may have gotten.
- **Use of subcontractors:** Two contractors commented on competing companies' use of subcontractors. One of them said that this practice enabled competing companies to sidestep BBNP's employment rules, such as prevailing wages. The competing companies were, therefore, able to charge lower rates to their customers, while contractors like the interviewee, who observed program rules, needed to charge higher prices to cover the costs involved in following program regulations.
- **Nonparticipating contractors:** One contractor observed that some nonparticipating contractors were capitalizing on the program:

  "There were some 'vultures' who weren't approved contractors that were saying they were part of the program and really pushing audits on people. That was a communication and marketing issue. I think overall, the [participating] contractors did really well. I think some of them got kicked out of the program and replaced by new [contractors]. Mostly, if there is any miscommunication or people from outside of the program trying to use it for their own purposes – that was really the biggest danger."
- **Program requirements:** One of the contractors, who had reported that he would have completed more upgrades in absence of the program, indicated that the negative effects of the program were largely due to grantee program requirements. The contractor reported that the grantee's program required customers to receive a home energy audit from an approved contractor before they were eligible to receive incentives for program measures. The program also required approved contractors to provide the audits to customers for free, without any subsidy from the program. The contractor found that his company lost money when customers did not hire his company to install or perform any recommended measures after the audit:

  It would cost us $400 to $500 to do somebody's test-in. The customer might not be interested in doing any work, but they just want to get this free evaluation of their home. Outside of [BBNP], customers have to pay $400 for that. So why would they pay $400 for it… when they can get it for free?

BBNP-Supported Upgrades

During in-depth interviews, contractors commented on their involvement with BBNP-supported upgrades. Contractors often said that their program-supported upgrades earned them more sales than they would have seen in absence of the program (four of ten) and that their program-supported upgrades achieved more energy savings than what would have been saved in absence of the program (three of ten). The following are some of their explanations:

- *"The first year [the program-supported upgrades] tripled our sales, and the second year it doubled them again… The marketing provided the leads, which was a substantial cost savings for us. And then the rebates incentivized people to actually buy, which was a huge boon, and the rebates were substantial."*
- *"Some of our existing customers that we had, that might call us because the furnace was out, we were able to upgrade them to more efficient [units], because there were incentives to do it."*
- *"I definitely think we saved a lot more with the program than without the program because it drove a lot of audits in a short period of time and people saved a lot of energy from that point forward. I definitely think the program made a huge impact on energy consumption."*

BBNP incentives also prompted contractors' to focus their work in program geographic areas and widened the spectrum of customers that they targeted. The following sections discuss how these and other changes that they described impacted their non-BBNP upgrades.

E.2.2. IMPACTS OF BBNP TRAINING ON MARKET

We asked interviewees to identify the aspects of BBNP training that had positively affected their local energy efficiency upgrade market.[78] Four contractors reported that BBNP training had enhanced their ability to increase sales, specifically through teaching them marketing and sales techniques. For example, one interviewee noted that the program taught him how to identify and approach a targeted geographic market. The three other contractors described how the program refined their ability to communicate with customers about upgrade opportunities. In the words of one contractor:

> *"There was training to help [contractors] understand how to make the sell on energy efficiency – 'What is important to the homeowners?'— [answering questions] like that. All of the contractors had to do that [training], and I think that was really helpful for them. The result was for [the contractors] to share stories and techniques."*

Four contractors indicated that the program's technical training provided them with the ability to perform more comprehensive audits and identify additional upgrade opportunities that they might not have done prior to program training. One interviewee hypothesized:

> *"[BBNP] probably gives [contractors like us] a wider or broader perspective of the different options in the house. [HVAC contractors are] typically inclined to look at the mechanical equipment. Where, I think, that the program opened your eyes to the other areas alongside of the box upgrades that you can have in a house."*

In addition, some contractors identified training topics that would benefit the contractors in their geographic area. They suggested technical training on whole house approaches (three), sales techniques (two), and policy awareness (one).

E.2.3. IMPACTS ON CONTRACTOR MARKETING

Few of the contractors interviewed reported any changes to their marketing practices. Contractors who had made changes to their marketing practices since 2010 described renovating their company websites, ramping up their social networking presences, and increasing the number of cold calls they made. None of them associated an increase in the number of upgrades that they had completed with those changes. Nonetheless, as noted previously, four contractors indicated that BBNP training enhanced their ability to increase sales through teaching marketing and sales techniques.

One contractor reported that increases in his company's marketing budget, made possible by BBNP sales, influenced his company's revenues even after the program ended. In addition to a host of other changes the company made to

[78] This set of questions was limited to the seven contractors who had indicated in the CATI survey that BBNP training had increased the number of upgrades, the quality of upgrades, or the comprehensiveness of upgrades in their local market.

its business structure, the company had increased its marketing. The contractor explained how, together, those changes generated non-BBNP sales in the aftermath of the program:

> *"There was some [increase in business outside of the program] because we were able to increase our sales budgets, and our advertising, and our equipment, and crew sizes, and all of that kind of stuff which we were able to leverage into new business… Just to give you an idea, the year before [the program] we did $350,000 in business and the [first year of the program] we did $1 million and the next year $2 million… Now that the program is gone we're down to about $1 million. Anything above that $350,000 this year is essentially residual business that we wouldn't have had if it wasn't for the program helping us build our infrastructure."*

E.2.4. IMPACTS ON CONTRACTOR BUILDING PRACTICES

We asked contractor in-depth interviewees about the influence that BBNP had on their building practices for upgrades not supported by the program. When asked about changes that they made to their building practices because of BBNP, contractors were most likely to say that the program increased the comprehensiveness of their practices (five of ten) and/or encouraged them to offer new services or measures (four of ten). Interestingly, one of the two contractors who had indicated negative market effects from BBNP reported that he/she had begun installing ductless heat pumps and heat pump water heaters as a result of the program. A number of interviewees reported increases in upgrade comprehensiveness and expansion of efficiency service offerings to program training (E.2.2) as well as program rebates and incentives.

Table E-3 presents a number of changes contractors made to their standard building practices in response to BBNP. They described changes such as purchasing new equipment, enabling customers to access financing opportunities, and improving the quality of their services in the field. For example, one contractor described how the practices he began using in his BBNP upgrades caused him to focus on high quality and consistent upgrades for his non-BBNP upgrades as well:

> *"Even though I mentioned I'm my own boss. I'm accountable. We [contractors] need to be kept in check just the same to make sure we're doing a consistent job across the board across the industry... As far as the accountability, it is huge – I love it! It's made us a better company… I have one of the checklists right now that we follow… No matter what, this is our standard. This checklist right here, straight from the [program], this is what we're accountable to, whether it is a [BBNP] job or not."*

Table E-3: In-Depth Contractor Interviewee Changes to Standard Building Practices in Response to BBNP (Multiple Responses)

CHANGES TO STANDARD PRACTICES	NUMBER OF MENTIONS (N=10)*
Increased comprehensiveness or began a whole building approach	5
Offer new services or measures	4
Purchased new equipment	3

Continued…

CHANGES TO STANDARD PRACTICES	NUMBER OF MENTIONS (N=10)*
Expanded the services of other contractors	2
Improved service quality	2
Did not change company practices	1

* Because some contractors gave more than one response, the total number of mentions is greater than the sample size.

Two contractors reported that BBNP increased the energy savings of the upgrades that they completed outside of the program. One contractor explained that the type of work he does now is more comprehensive than it was prior to the program. The other added that BBNP increased energy savings by encouraging contractors to more commonly integrate ductwork into their projects; he perceived that the program had a "global effect" on energy saving practices in the city.

E.2.5. IMPACTS ON JOBS AND BUSINESS PRACTICES

During in-depth interviews, we asked contractors about the effects of BBNP on their companies' employment and business practices.

Jobs

Three contractors reported adding a total of 38 employees as a result of the program, though 31 of the 38 had been let go after the program ended. A fourth contractor added employees but was unable to estimate the number added. This contractor reported hiring hourly employees, all of whom were laid off. Despite the job creation at her company, she thought that BBNP had not had an impact on the general job market. A fifth contractor did not add employees, but his existing staff members were able to work overtime because of the program.

One of the contractors reported that the hiring provided an influx of talent to his firm, even though there was no net change in the number of employees by the end of BBNP:

> *"We had some high-level employees that we brought on to help with the overall operations management. We found some good support staff and some good auditors that are still with us; some of them are part-time now. Overall, [the hiring] brought on a lot of good staff that have stayed even though other staff from other programs may have moved on. [It created] an influx of talent that was positive."*

Another contractor noted that adding employees presented risks to organizations that did not downsize as BBNP reached the end of the program cycle:

> *"Everyone wanted [the program] to continue... And we saw, in some ways, negative impacts on organizations because they didn't pull back [on staffing] soon enough. They were really hoping for that continuation. They were overstaffed and underfunded. Then they had to do drastic reductions in staff. One of our community action agencies had to close up for a while."*

The same contractor described how keeping new auditors on staff at HVAC and insulation contracting companies could contribute to advancing energy efficiency:

> *"If [the program] could sustain [auditor jobs], you might more commonly find [HVAC and insulation] contractors in that type of business as opposed to as a sole proprietor or group of auditors. I think that would be good if it were sustainable because if you have an auditor on [HVAC or insulation contracting companies'] staff, [then the companies would] try to integrate energy efficiency into the work that [they] do."*

Business Practices

When asked about changes to their business practices influenced by BBNP, contractors most often reported that BBNP shifted their companies to focus on energy efficiency and energy savings (Table E-4).[79] For example, one contractor described how BBNP influenced his company to focus on energy efficiency to prevent missing out on project opportunities:

> *"I think from the company standpoint it was something that we were either in or we were out, and if we were out we were missing opportunities, so it forced the sales representative or it forced the company as a whole to pay more attention to those types of things – understanding that if we weren't offering it, we were probably losing opportunities."*

Another contractor reported that BBNP influenced his decision to include a varied portfolio of energy efficiency offerings, including customer financing. He indicated that these changes, along with his BBNP certification, contributed to increasing sales. He provided one example:

> *"We're doing a job this week that [is valued at] $33,000. It's all new windows for the house, we're taking out the [homeowner's] chimney; we're doing the whole nine yards. [The homeowner] is incentivized by three things: 1) our vertical integration, which came about because of the program, 2) the available cheap capital, the loan to do the job – our knowledge of that came about through the program, and 3) the certification that we have within the program."*

One contractor[80] explained that, because of BBNP, her company was more focused on energy efficiency and provided customers with more comprehensive assistance than they had provided prior to BBNP:

> *"If we get a call from someone who says 'We want insulation,' and we start to talk to them about the home's existing construction – home as a system, etc. – we can bring them along to understand the air sealing part and then have them understand why we want to address it fully."*

---

79 One contractor clarified that, while BBNP had changed his company's business practices, advancing federal and local efficiency standards also had contributed to those changes.

80 Interestingly, this same contractor reported that BBNP had negative effects by hurting sales.

Table E-4: In-Depth Contractor Interviewee Changes to Standard Business Practices in Response to BBNP (Multiple Responses)

CHANGES TO RESPONDENTS' STANDARD BUSINESS PRACTICES RESULTING FROM BBNP	NUMBER OF MENTIONS (N=10)*
Increased respondent focus and awareness of savings opportunities	4
Began connecting customers with lending opportunities	2
Developed vertical integration	1
Initiated a community-oriented approach	1
Developed company infrastructure	1
Did not change company practices	1

* Because some contractors gave more than one response, the total number of mentions is greater than the sample size.

Sustainability After BBNP

When asked how they would adjust to the end of BBNP, four contractors reported that the end of BBNP would not affect their practices, while others listed a number of ways that their companies planned to adjust:

- Lay off employees hired as a result of BBNP
- Scale back on advertising budgets
- Change geographic focus away from BBNP area
- Develop vertical integration by bringing auditors "in house"
- Facilitate low-interest financing opportunities in place of BBNP incentives
- Leverage other incentive programs to replace BBNP incentives

APPENDIX F. CONTRACTOR MEMBERSHIP AND CERTIFICATION ORGANIZATION ANALYSIS

A key element of many BBNP grantee programs was training and workforce development. Therefore, an early indicator of market effects is an increased availability of trained contractors in grantee areas. In an effort to detect early indications of market effects resulting from BBNP, we requested membership and certification data from six contractor associations and credentialing organizations, including Home Energy Pros (HEP),[81] the National Association of Home Builders (NAHB),[82] North American Technician Excellence (NATE),[83] the Building Performance Institute (BPI),[84] Efficiency First,[85] and the Residential Energy Services Network (RESNET).[86]

Of the six organizations from which we requested data, HEP, NAHB, NATE, Efficiency First, and BPI provided data on new members or certifications issued, including the location and date of membership or certification, through June of 2013.[87] The HEP, NAHB, NATE, and Efficiency First data sets included city, state, and ZIP code data, thus allowing for the assignment of memberships and certifications to grantee and non-grantee locations. The BPI data set did not include city or ZIP code data, but instead included aggregated counts of certified professionals by state. Therefore, we could not link BPI certifications to grantees comprising areas smaller than an entire state, thereby limiting the analysis.

We investigated changes in contractor association memberships and certifications issued by credentialing organizations during the period from 2011 to 2013, while the grantee programs were in effect.[88] To the extent possible, we isolated growth in certifications and memberships in grantee locations in order to compare it with overall growth. All five organizations experienced growth in memberships and certifications between January of 2011 and June of 2013. A higher growth rate in grantee areas than in non-grantee areas would be an early indication of market effects. However, within each of the five organizations, growth in grantee locations was lower than growth in non-grantee locations over this period.

---

81 Home Energy Pros is a social network and community dedicated to home energy professionals (*http://homeenergypros.lbl.gov/*).

82 NAHB provided data for its Certified Green Professionals (CGP), a certification earned following classroom instruction in energy, water, and resource efficiency in residential building and remodeling. http://www.nahb.org/category.aspx?sectionID=1174.

83 North American Technician Excellence, Inc. (NATE) is a certification program for technicians in the heating, ventilation, air-conditioning and refrigeration (HVAC/R) industry (*http://www.natex.org/*).

84 BPI is a standards development and credentialing organization for residential energy efficiency retrofit work (*http://www.bpi.org/*).

85 Efficiency First is a national nonprofit trade association for the home performance workforce that includes contractors, building product manufacturers and related businesses and organizations (*http://www.efficiencyfirst.org/about/*).

86 RESNET is the overarching organization that creates the requirements for HERS rater certification, including setting the quality control provisions governing HERS raters, with more information available at http://www.resnet.us/professional/about.

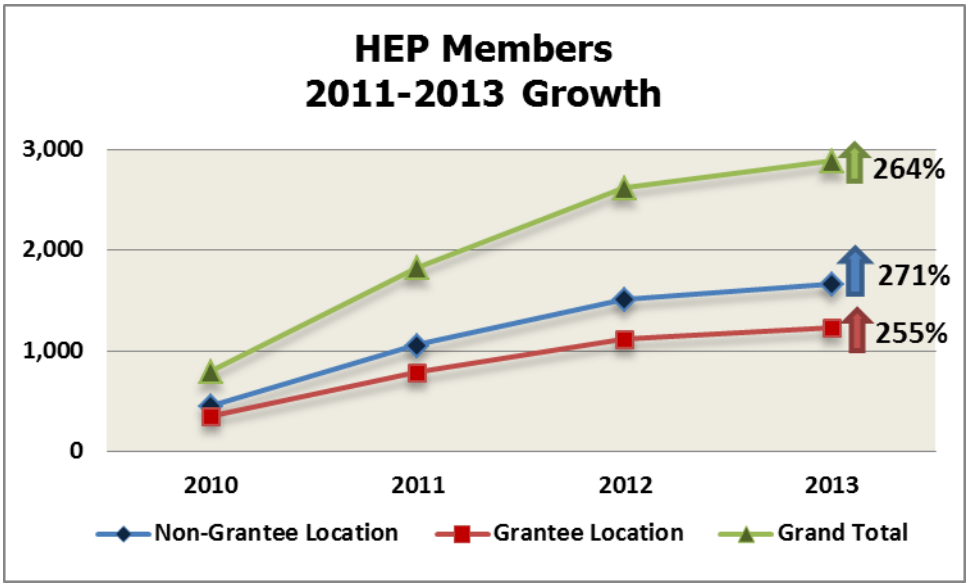
87 All organizations provided data through June of 2013. In addition, NAHB provided data through July of 2013.

88 BBNP grantees started their programs as early as late 2010, while some started in 2011.

F.1. HOME ENERGY PROS

Home Energy Pros (HEP) is a social network and online community for home energy professionals. Sponsored by the U.S. Department of Energy and founded in 2010, HEP facilitates the sharing of knowledge and resources among members. From January of 2011 through June of 2013, total HEP membership grew by 264%. HEP members based in grantee locations grew by 255%, while members based outside of grantee locations grew by 271%.

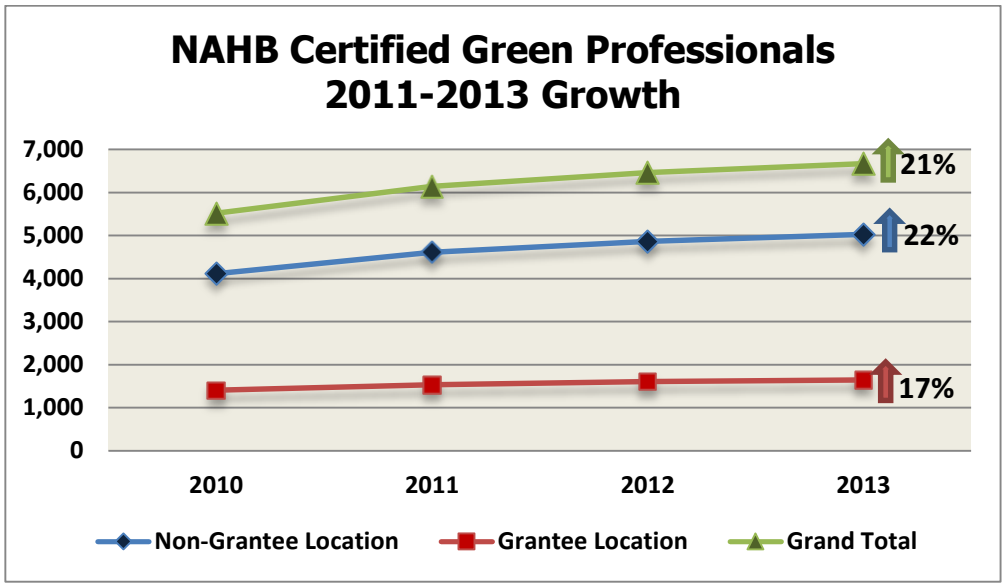
Figure F-1: Growth in HEP Membership 2011-2013



F.2. NATIONAL ASSOCIATION OF HOME BUILDERS

The National Association of Home Builders (NAHB) is a trade association for home builders, remodelers, and other professionals in the residential building industry. Among NAHB's educational offerings is the Certified Green Professional (CGP) designation, a certification earned following classroom instruction in energy, water, and resource efficiency in residential building and remodeling. From January of 2011 through June of 2013, total CGP graduates rose by 21%. CGP graduates based in grantee locations grew by 17%, while CGP graduates based outside of grantee locations grew by 22%.

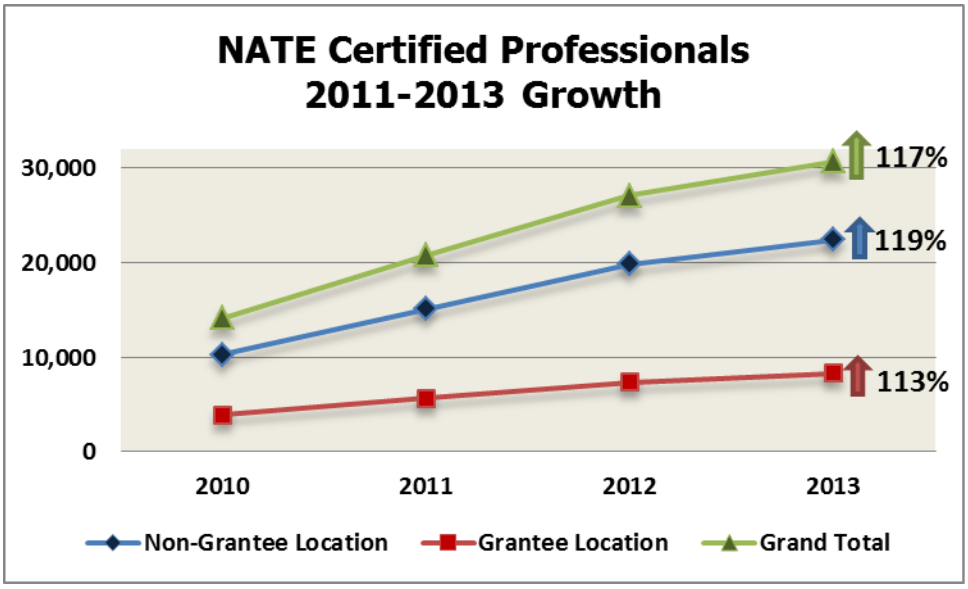
Figure F-2: Growth in NAHB-Certified Green Professional Graduates 2011-2013



F.3. NORTH AMERICAN TECHNICIAN EXCELLENCE

North American Technician Excellence (NATE) is a certification organization for heating, ventilation, air conditioning, and refrigeration technicians. NATE offers certification tests for installation and/or service in one or more specialty areas, including air conditioning, air distribution, heat pumps, gas heating, and oil heating. NATE-certified professionals with certifications in residential specialty areas grew by 117% between January of 2011 and June of 2013. NATE-certified professionals based in grantee locations grew by 113%, while those based outside grantee locations grew by 119%.

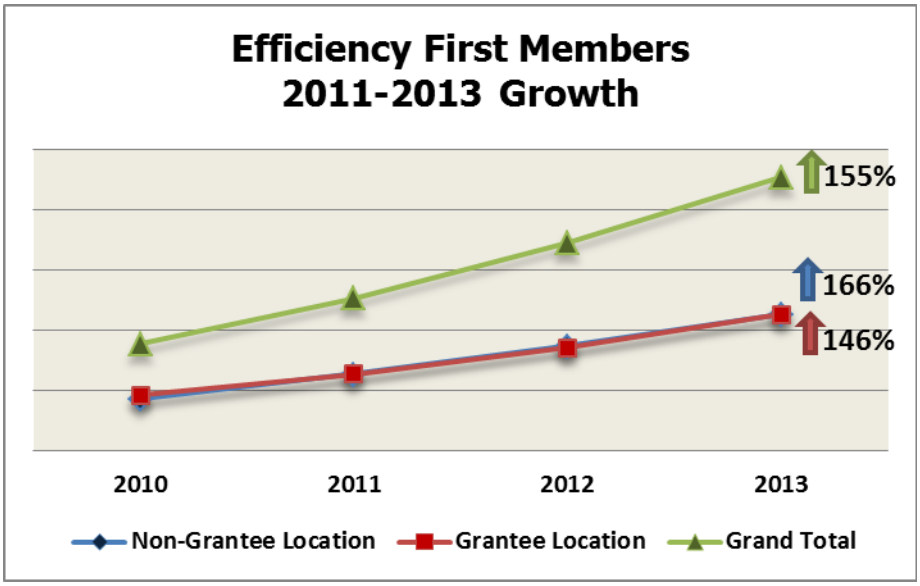
Figure F-3: Growth in NATE-Certified Professionals 2011-2013



F.4. EFFICIENCY FIRST

Efficiency First is a national trade association for the home performance industry. From January of 2011 through June of 2013, total Efficiency First membership grew by 155%. Efficiency First members based in grantee locations grew by 146%, while members based outside grantee locations grew by 166%.

Figure F-4: Growth in Efficiency First Membership 2011-2013*

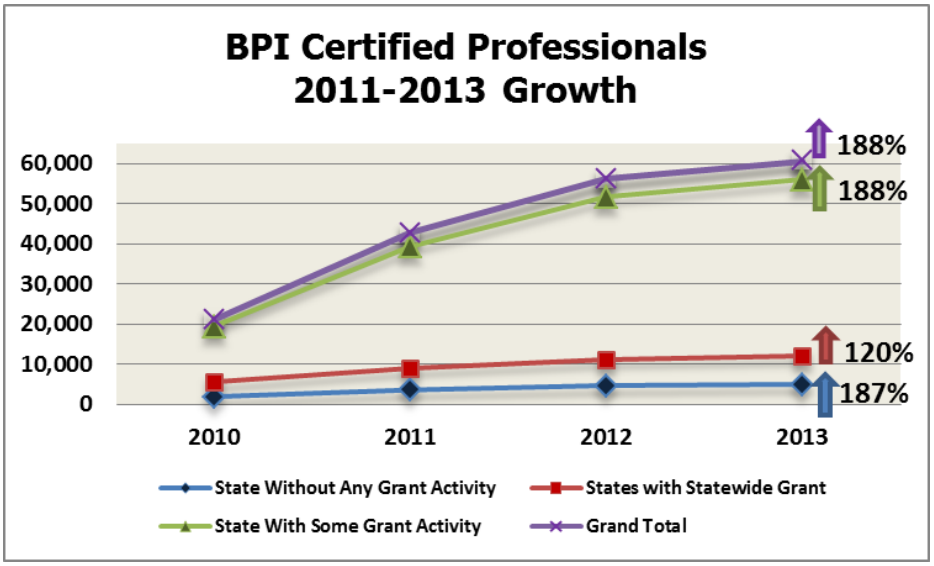


* Efficiency First requested that we not report its membership counts

F.5. BUILDING PERFORMANCE INSTITUTE

The Building Performance Institute (BPI) is a standards and credentialing organization for residential energy efficiency retrofit work. BPI offers a variety of certifications based on house-as-a-system building science. BPI sent us aggregated counts of certified professionals by state; therefore, we were unable to assign BPI certifications to grantee areas at the city and county levels – only at the state level. Thirty-two states had some grant activity, including six states with statewide grants (Maryland, Maine, Michigan, Missouri, Nevada, and New York). Eighteen states plus the District of Columbia had no grant activity. From January of 2011 through June of 2013, total BPI-certified professionals grew by 188%. BPI-certified professionals based in states with some grant activity also grew by 188%, and BPI-certified professionals based in states with statewide grants grew by 120%. BPI-certified professionals based in states without any grant activity grew by 187%.

Figure F-5: Growth in BPI Certified Professionals 2011-2013



F.6. GROWTH BY GRANTEE CHARACTERISTICS

For each organization, except BPI for which only aggregated state-level data were available, we further investigated the membership and certification data by examining the effects of several variables on changes in memberships or certifications, including (1) whether the grantee provided training and (2) whether there had been a pre-existing energy efficiency program in the grantee area. Data on grantee-provided training and pre-existing programs were collected in surveys and interviews of grantees. As shown in Table F-1, there was only one organization – NATE – for which growth in grantee areas that provided training (121%) exceeded growth in grantee areas that did not provide training (103%). Similarly, there is only one organization – Efficiency First – for which growth in grantee areas with pre-existing programs (154%) exceeded growth in grantee areas that did not provide training (106%).

Table F-1: Growth in Contractor Associations and Credentialing Organizations by Grantee Training, Pre-Existing Energy Efficiency Program

NEW MEMBERSHIPS/ CERTIFICATIONS	2011-2013			
	Home Energy Pros Membership	NAHB Certified Green Professionals	NATE Certifications	Efficiency First Membership
Total Growth	264%	21%	117%	155%
Non-Grantee Growth	271%	22%	119%	166%
Grantee Growth	255%	17%	113%	146%
Grantee Training	227%	15%	121%	135%
Grantee No Training	293%	20%	103%	160%
Grantee Pre-Existing Program	255%	17%	113%	154%
Grantee No Pre-Existing Program	257%	20%	115%	106%

APPENDIX G. DATA COLLECTION INSTRUMENTS

G.1. CONTACTOR SURVEY

SAMPLE VARIABLE: IF PREV_SURVEY=1, THEN CONTACT WAS INTERVIEWED LAST YEAR

SC1. **IF NAME PROVIDED IN SAMPLE:** May I speak with [INSERT CONTACT FROM SAMPLE] or anyone else that is knowledgeable about the types of services your company offers?

IF NAME NOT PROVIDED IN SAMPLE/NO LONGER AT COMPANY IN SC1: I would like to talk to the person who is knowledgeable about the type services and equipment sold or installed by **[COMPANY NAME].** Who would I need to speak with? May I please have that person's name?

Name: _____

(NOTE: THANK; TRY TO SPEAK WITH CONTACT SUGGESTED. SCHEDULE INTERVIEW WITH BEST CONTACT IF NECESSARY.)

Hello, I'm calling on behalf of the U.S. Department of Energy and Lawrence Berkeley National Laboratory (LBNL). This is not a sales call. We are conducting research to better understand the market for upgrades for homes and commercial buildings. As part of this research, we are interviewing contractors.

[IF PREV_SURVEY=1, READ] We spoke to you or someone else in your company last year, and now we're calling back to see how your company's experiences and practices might have changed since then.

Knowing that this is voluntary, we appreciate that you are willing to be interviewed.

[IF NEEDED] We are speaking with people that provide many different types of services including those making building envelope improvements; those selling, installing, or servicing HVAC, water heating or lighting equipment; those performing energy audits; AND/OR those conducting building remodeling or general contracting.

[**IF ASKED]** The primary contact person at LBNL is Dr. Edward Vine; he can be reached at 510-486-6047 or *elvine@lbl.gov* if you have any questions. We have been contracted to conduct the interviews for this research.

[IF ASKED] We anticipate this interview will last about **[TIME ESTIMATE]** minutes. Any information you provide will be treated as confidential.

[IF ASKED] The Better Buildings Neighborhood Program, or BBNP, provided $508 million in one-time grants to 41 localities and states in 2010. The grantees are working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

[**IF ASKED**] **For participating contractors**: you were selected randomly from a list of contractors provided by **<"GRANTEE PROGRAM NAME">** in your area. **[IF PREV_SURVEY=1]** We're calling you back to ask you about your company's experiences and practices since that time.

[IF ASKED] For non-participating contractors: You were selected randomly by InfoUSA from a list of contractors in your area. **[IF PREV_SURVEY=1]** We're calling you back to ask you about your company's experiences and practices since that time.

[Note to programmer: INCLUDE DON'T KNOW AND REFUSED AS A RESPONSE FOR EACH QUESTION. CODE DON'T KNOW AS (-7) AND REFUSED AS (-9)]

[Note to programmer: THE SAMPLE FILE WILL INCLUDE INFORMATION SPECIFIC TO GRANTEES AND CONTRACTORS THAT WILL NEED TO BE PULLED INTO THE SURVEY. THIS IS IDENTIFIED THROUGHOUT THE SURVEY INSTRUMENT. WE WILL PROVIDE A FILE AND IDENTIFY VARIABLES THAT ARE PULLED IN.]

[IF RECORDING] We also will be taping the interview as it provides an opportunity to revisit the interviews to make sure that the interview reports are accurate. The interview reports are confidential and will only be used by the evaluation team. The tapes and interview reports are destroyed when the project is completed,

Is it ok with you if we tape the interview?

If the respondent refuses, no recording is made.

If ok: Then let us jump right in.

[Note to Reviewer] Respondents also are reminded of the recording at the beginning of the interview and are told that if they wish to convey information that they do not want recorded, the recorder will be stopped until the subject changes or the information can be conveyed at the end of the session after the recording is completed.

G.1.1. SCREENING

[SKIP TO IN5a IF PREV_SURVEY=1 and read the following before asking IN5a: "*Thank you for agreeing to participate in our study. There is no payment for participating in this study. You can decline to be interviewed or stop at any time. Your input is extremely valuable, as your input will help to improve energy efficiency programs designed for saving energy.*"

SC1a. Are you knowledgeable about the type of services and equipment installed by **[COMPANY NAME]?**

01 YES
02 NO
-7 DON'T KNOW
-9 REFUSED

SC2. **[ASK IF SC1a=02, -7 OR -9]** I would like to talk to someone who is knowledgeable about the type of services and equipment sold or installed by **[COMPANY NAME].** Can you provide me with this person's name?

Name: _____

(NOTE: THANK; TRY TO SPEAK WITH CONTACT SUGGESTED IN SC2. SCHEDULE INTERVIEW WITH BEST CONTACT IF NECESSARY.)

Thank you for agreeing to participate in our study. There is no payment for participating in this study. You can decline to be interviewed or stop at any time. Your input is extremely valuable, as your input will help to improve energy efficiency programs designed for saving energy.

SC2b. Does your company provide **ANY** of the following equipment or services in new or existing homes or commercial buildings? Does it perform energy audits, equipment installations, general contracting, or energy efficiency improvements?

01 YES
02 NO

-7 DON'T KNOW
-9 REFUSED

[IF SC2b= 2, -7, OR -9, THANK AND TERMINATE]

SC2c. Does your company offer these services in [**GRANTEE_AREA**]? [IF NECESSARY: IF GRANTEE AREA INCLUDES MULTIPLE CITIES, TOWNS OR COUNTIES, EXPLAIN THAT WE ARE ASKING FOR THE TOTAL ACROSS ALL OF THE AREAS COMBINED]

01 YES
02 NO
-7 DON'T KNOW
-9 REFUSED

[IF SC2c= 2, -7, OR -9, THANK AND TERMINATE]

SC3. Approximately what percentage of your company's business comes from projects that involve: **[NOTE: MAKE SURE THE TOTAL % = 100%]**

a. New or existing homes _____ [-7 DK; -9F RF]

b. New or existing commercial buildings _____ [-7 DK; -9F RF]

c. Other [SPECIFY: _____][-7 DK; -9F RF]

SC3Res. **[ASK OF SC3a (RESIDENTIAL) >0%]** Approximately what percentage of your company's residential business comes from projects that involve: **[NOTE: MAKE SURE THE TOTAL % = 100%]**

a. Existing homes _____ [-7 DK; -9F RF]

b. New homes _____ [-7 DK; -9F RF]

SC3Comm. **[ASK OF SC3b (COMMERCIAL) >0%]** Approximately what percentage of your company's commercial business comes from projects that involve: **[NOTE: MAKE SURE THE TOTAL % = 100%]**

a. Existing buildings _____ [-7 DK; -9F RF]

b. New buildings _____[-7 DK; -9F RF]

DEVELOP RESIDENTIAL AND COMMERCIAL VARIABLES [COMMFLAG VARIABLE VALUES: 0 = RESIDENTIAL PROGRAM; 1 = COMMERCIAL PROGRAM; 3 = BOTH RESIDENTIAL AND COMMERCIAL PROGRAMS]

IF	AND	THEN
COMMFLAG= 0	PREV_SURVEY=1	LABEL AS RESIDENTIAL
COMMFLAG= 1	PREV_SURVEY=1	LABEL AS COMMERCIAL
COMMFLAG= 0	SC3Res_a=0, DK OR RF	THANK AND TERMINATE

Continued…

IF	AND	THEN
COMMFLAG= 0	SC3Res_a > 0	LABEL AS RESIDENTIAL
COMMFLAG= 1	SC3Comm_a =0, DK OR RF	THANK AND TERMINATE
COMMFLAG= 1	SC3Comm_a > 0	LABEL AS COMMERCIAL
COMMFLAG= ANY	COMMFLAG SC3Res_a AND SC3Comm_a =0, DK OR RF	THANK AND TERMINATE
COMMFLAG= 3	SC3Res_a=0, DK OR RF AND SC3Comm_a > 0	LABEL AS COMMERCIAL
COMMFLAG= 3	SC3Comm_a =0, DK OR RF AND SC3Res_a > 0	LABEL AS RESIDENTIAL
COMMFLAG= 3	SC3Res_a = SC3Comm_a AND SC3Res_a > 0	RANDOMLY ASSIGN RESIDENTIAL OR COMMERCIAL
COMMFLAG= 3	SC3Res_a > SC3Comm_a	LABEL AS RESIDENTIAL
COMMFLAG= 3	SC3Comm_a > SC3Res_a	LABEL AS COMMERCIAL

IN5a. Which of the following equipment or services does your company offer for **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]** [RANDOMIZE AND READ] **[1 = YES, 2 = NO, -7 = DON'T KNOW; -9 = REFUSED]**

01 Building envelope improvements (including insulation, air sealing and windows)

02 HVAC and water heating systems

03 Lighting equipment

04 Energy assessments / energy audits

05 Remodeling

11 General contracting

08 **[ANCHOR]** Other (specify: _____)

[IF IN5A IS NOT YES FOR ANY 01, 02, 03, 05, OR 11, THANK AND TERMINATE]

G.1.2. RESPONDENT CHARACTERIZATION AND ENERGY EFFICIENCY UPGRADES [ASK ALL RESPONDENTS]

[IF PREV_SURVEY=1, SKIP IN3]

IN3. About how many full-time equivalent employees work for your company?

[PROBE FOR BEST ESTIMATE] [ACCEPT A WHOLE NUMBER.]

_____-7 DON'T KNOW -9 REFUSED

[IF RESIDENTIAL: For the rest of the interview, I would like you to only consider projects with existing homes that have resulted in homes that are more energy efficient, or an energy efficiency upgrade—for example, projects that included installing insulation, air sealing, energy efficient windows or doors, energy efficient heating, cooling or hot water equipment, or energy efficient lighting.**]**

[IF COMMERCIAL: For the rest of the interview, I would like you to only consider projects with existing commercial buildings that have resulted in buildings that are more energy efficient, or an energy efficiency upgrade—for example, projects that included installing energy efficient equipment, building shell measures, or energy efficient lighting.**]**

IN6_NEW. **[IF PREV_SURVEY=1 AND UPGRADES_10 AND UPGRADES_11>0]** When we spoke last you had indicated that you had performed **[UPGRADES_10]** upgrades in 2010 and **[UPGRADES_11]** upgrades in 2011 in **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]**. Are those figures correct?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

IN6. **[Show on each screen i-iii]** In how many **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]** did you perform energy efficiency upgrades in…

[ASK FOR BEST ESTIMATE IF INITIAL RESPONSE IS 'DON'T KNOW']

i. **[IF PREV_SURVEY=0 OR IN6_NEW NOT 1, -7, OR -9]** 2010?
[RECORD NUMBER; -7 DK; -9F RF]

ii. **[IF PREV_SURVEY=0 OR IN6_NEW NOT 1, -7, OR -9]** 2011?
[RECORD NUMBER; -7 DK; -9F RF]

iii. **[ALL]** 2012?
[RECORD NUMBER; -7 DK; -9F RF]

iv. **[ALL]** How many do you expect to work on in 2013?
[RECORD NUMBER; -7 DK; -9F RF]

[CALCULATE SUM OF IN6. EXCLUDE ANY RESPONSES THAT ARE -7 OR -9, UNLESS ALL ARE -7 OR -9 (For example, if IN6_i-iii are all greater than -7 and IN6_iv is -7, then only use i-iii to calculate the sum)]

DETAILS FOR CALCULATING SUM OF IN6

INPUTS	DEFAULT
2010 Upgrades	IN6_i
2011 Upgrades	IN6_ii
2012 Upgrades	IN6_iii
2013 Upgrades	IN6_iv

SUM OF IN6= 2010 Upgrades + 2011 Upgrades + 2012 Upgrades + 2013 Upgrades

*For respondents with previous data confirmed.

[IF IN6_NEW=1, THEN 2010 Upgrades=UPGRADES_10 AND 2011 Upgrades=UPGRADES_11]

*For respondents unable to provide data for *ALL* years.

IF (2010 Upgrades= -7 OR -9) AND (2011 Upgrades = -7 OR -9) AND (2012 Upgrades = -7 OR -9) AND (2013 Upgrades = -7 OR -9) THEN SUM OF IN6=-88

*For respondents unable to provide data for *CERTAIN* years.

IF ANY *BUT NOT ALL* (2010 Upgrades= -7 OR -9) OR (2011 Upgrades = -7 OR -9) OR (2012 Upgrades = -7 OR -9) OR (2013 Upgrades = -7 OR -9), THEN REPLACE -7 OR -9 FOR RESPECTIVE -7 OR -9 VALUES WITH 0 WHEN CALCULATING SUM OF IN6.

IN6_TOT. **[ASK IF SUM OF IN6>-88]** So, in total, between 2010 and the end of 2013, you will have performed [**SUM OF IN6**] energy efficiency upgrades in **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"**]. Does that sound right to you?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[IF IN6_TOT = 2, -7 OR -9, ASK IN7]

IN7. How many energy efficiency upgrades will you have performed in **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"**] between 2010 and the end of 2013? [If needed: Please do your best to estimate]

[RECORD NUMBER; -7 = DON'T KNOW; -9 = REFUSED]

[RECODE SUM OF IN6 IF ASKED IN7; SUM OF IN6 = IN7]

Next, I'm going to read you the names of some programs and policies that encourage the installation of energy efficient equipment in **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"**], and I'm going to ask you if you have heard of these programs, and if you have installed energy efficient measures for **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]** participating in them.

[IF NEEDED: "This can include instances where YOU received an incentive or the END-USER received an incentive or free service from the program."]

IN8. **[RANDOMIZE 1-5; ASK Q# A, B & C FOR 1; ASK A & B FOR 2-5; ASK A ONLY FOR 6]**

1. **[INSERT GRANTEE PROGRAM NAME** + "a program that was funded by the U.S. Department of Energy's Better Buildings Neighborhood Program"**]**
2. **[**Programs funded by Energy Efficiency and Conservation Block Grants (EECBG), State Energy Programs (SEP) or the Weatherization Assistance Program **]**
3. [**ASK IF RESIDENTIAL:** Home efficiency programs sponsored by local utilities or other groups **[IF NEEDED;** "such as, Home Performance with ENERGY STAR programs"]
4. [**ASK IF COMMERCIAL:** Commercial energy efficiency programs sponsored by local utilities or other groups]
5. [**ASK IF COMMERCIAL:** Benchmarking or labeling programs like: LEED or ENERGY STAR Portfolio Manager]
6. Federal or State Tax Credits for energy efficiency improvements

a. Have you heard of [READ PROGRAM NAME FROM 1 – 6 OF IN8]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

b. **[ASK IF YES TO A]** Did your company participate in the program(s) between 2010 and 2013?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

c. **[ASK IF YES TO B]** How many **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"]** did your company install energy efficient equipment or measures into with the help of **[PROGRAM NAME]** from 2010 to 2013?

_____ -7 DON'T KNOW -9 REFUSED

IN8_CHECK. **[ASK IF IN81C>SUM OF IN6 AND SUM OF IN6 IS >-7]** This number is greater than the **[SUM OF IN6]** upgrades you had said you completed in total. Which response would you like to revise? **[CORRECT EITHER IN7 OR IN81C]**

IN9_NEW. **[ASK IF AWARE OF GRANTEE PROGRAM (IN8.1.A)]** Now, I would like you to consider what impact, if any, **[INSERT GRANTEE PROGRAM NAME]** has had on the market for energy efficiency upgrades. If the [BBNP grantee program name] **did not** exist, would you say that the number of upgrades you completed since 2010 would have been:

01 HIGHER [If chosen: To confirm, you would have completed **more** energy efficiency upgrades between 2010 and 2013 if the [BBNP grantee program name] did not exist?]

02 LOWER [If chosen: To confirm, you would have completed **fewer** energy efficiency upgrades between 2010 and 2013 if the [BBNP grantee program name] did not exist?]

03 ABOUT THE SAME

-7 (DON'T KNOW)

-9 (REFUSED)

IN9b_NEW**.** **[ASK IF SUM OF IN6<>0 & IF IN9_NEW = 01 (HIGHER) OR 02 (LOWER)) AND AWARE OF GRANTEE PROGRAM (IN8.1.A)]** What percent **[IF IN9_NEW = HIGHER, READ "more than" / IF IN9_NEW = LOWER, READ "of"]** the **[Read if SUM of IN6>0 "[SUM OF IN6]"]** energy efficiency upgrades you completed from 2010 to 2013 would have been completed without the program? **[PROBE for a single%]**

[0-99%; -7 DON'T KNOW; -9 REFUSED]

[CALCULATE [COUNT] FOR IN9C_NEW:

IF IN9_NEW=1, THEN COUNT= SUM OF IN6 + (SUM OF IN6 * IN9b_NEW)

IF IN9_NEW=2, THEN COUNT= SUM OF IN6 * IN9b_NEW]

IN9C_NEW. **[ASK IF SUM OF IN6>0 & SKIP IF IN9b_NEW=-7,-9 or (IF IN9_NEW = 3,-7,-9) or UNAWARE OF GRANTEE PROGRAM (IN8.1.A)]** To confirm, you're saying that you would have completed about **[COUNT]** upgrades without the program?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

IN9D_NEW. **[ASK IF IN9C_NEW=2]** If the [BBNP grantee program name] **did not** exist how many upgrades in **[IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"**] would you have completed from 2010 to 2013?[RECORD NUMBER; -7 DON'T KNOW; -9 REFUSED]

IN10_NEW. **[ASK IF AWARE OF GRANTEE PROGRAM (IN8.1.A)]**. Next I would like to ask you about the importance of individual elements of the **[GRANTEE PROGRAM NAME]** program. I am going to read you a list of possible program components. Please rate the importance of each program component on the number of upgrades or audits your company has completed from 2010-2013, using a scale from 0 to 10, where 0 is "not at all important" and 10 is "extremely important" If a particular element is not applicable, please say so. **[RANDOMIZE a-f] [RECORD 0-10; -6=NOT APPLICABLE; -7=DK; -9=RF]**

a. Building science training ___

b. Low-interest financing ___

c. Marketing and outreach ___

d. Rebates and other incentives ___

e. Free or reduced cost energy assessments ___

f. Sales training ___

g. Is there another program component I did not mention that was important? [1=YES; 2=NO; -7=DK; -9=DK]

   a. **[IF IN10_NEWg=1]** What was this element? [RECORD]

   b. Please rate the importance of [OTHER], using a scale from 0 to 10

IN14a_NEW. **[ASK IF IN8.1.C> 0 (INSTALLED UPGRADES WITH GRANTEE PROGRAM)]** Do you track post upgrade energy usage in any of the **[IF COMMERCIAL: "commercial buildings" IF RESIDENTIAL: "residential homes"]** in which you have installed energy efficiency upgrades?

01 Yes

02 No

-7 DON'T KNOW

-9 REFUSED

IN14b_NEW. **[IF 14a_NEW = YES]** Do you track post upgrade energy usage using…

01 Utility bills or

02 Metering?

03 (Both)

04 (Other: [Specify])

-7 DON'T KNOW

-9 REFUSED

IN14b_NEW2. **[IF 14a_NEW = YES]** Do you provide feedback based on tracked usage to customers? (IF NEEDED: either through telephone, mail, or email)

01 Yes

02 No

-7 DON'T KNOW

-9 REFUSED

IN17. What do you think is the **one** greatest barrier that might prevent **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** customers from implementing, or pursuing to a greater degree, energy efficiency improvements? **[DO NOT READ] [PLEASE INCLUDE HIDDEN RESPONSE CATEGORIES IN SPSS FILE, BUT DO NOT SHOW ON SURVEY SCREEN]**

01 **[HIDE]** DO NOT OWN BUILDING / LANDLORD MAKES DECISION

02 LACK OF AWARENESS

03 **[HIDE]** LACK OF INTEREST

04 LACK OF FINANCING

05 COST / PAYBACK / CAPITAL

06 LACK OF KNOWLEDGE / UNDERSTANDING OF BENEFITS

07 **[HIDE]** LACK OF TIME

08 TOO MUCH WORK / HASSLE

09 **[HIDE]** DECISIONS [ABOUT IMPROVEMENTS] MADE ELSEWHERE IN THE COMPANY

10 ECONOMY IN GENERAL

11 **[HIDE]** LACK OF EXAMPLES OF PEER BUSINESSES OR ORGANIZATIONS

12 **[HIDE]** UNCERTAINTY ABOUT PERFORMANCE OF ENERGY EFFICIENT EQUIPMENT (INCLUDING POTENTIAL COSTS OF SERVICE AND REPAIRS; LACK OF TECHNICAL SKILLS ON-SITE)

51 OTHER1 (SPECIFY: _____)

66 NONE → SKIP TO LOGIC AFTER IN18

-7 DON'T KNOW → SKIP TO LOGIC AFTER IN18

-9 REFUSED → SKIP TO LOGIC AFTER IN18

IN18. What are the other barriers? **[EXCLUDE RESPONSES PROVIDED FOR IN17; MULTIPLE RESPONSE; ACCEPT UP TO 5 RESPONSES] [DO NOT READ]**

01 **[HIDE]** DO NOT OWN BUILDING / LANDLORD MAKES DECISION

02 LACK OF AWARENESS

03 **[HIDE]** LACK OF INTEREST

04 LACK OF FINANCING

05 COST / PAYBACK / CAPITAL

06 LACK OF KNOWLEDGE / UNDERSTANDING OF OPTIONS AND BENEFITS

07 **[HIDE]** LACK OF TIME

08 TOO MUCH WORK / HASSLE

09 **[HIDE]** DECISIONS [ABOUT IMPROVEMENTS] MADE ELSEWHERE IN THE COMPANY

10 ECONOMY IN GENERAL

11 **[HIDE]** LACK OF EXAMPLES OF PEER BUSINESSES OR ORGANIZATIONS

12 **[HIDE]** UNCERTAINTY ABOUT PERFORMANCE OF ENERGY EFFICIENT EQUIPMENT (INCLUDING POTENTIAL COSTS OF SERVICE AND REPAIRS; LACK OF TECHNICAL SKILLS ON-SITE)

51 OTHER1 (SPECIFY: _____)

52 OTHER2 (SPECIFY: _____)

53 OTHER3 (SPECIFY: _____)

54 OTHER4 (SPECIFY: _____)

55 OTHER5 (SPECIFY: _____)

66 NONE

-7 DON'T KNOW

-9 REFUSED

G.1.3. ENERGY AUDITS

[ASK THIS SECTION IF (IN5A_04 (Energy Audit) = YES & IF COMPLETED UPGRADES THROUGH GRANTEE PROGRAM (IN8.1.C); OTHERWISE, SKIP TO INTRO BEFORE TR1]

Next, I have some questions about energy efficiency audits.

AU1. Which of the following types of energy audits does your company perform for **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** customers? **[RANDOMIZE AND READ] [1 = YES, 2 = NO RESPONSE, -7 = DK, -9 = Refused]**

01 COMPREHENSIVE ASSESSMENTS, (IF NEEDED: A comprehensive assessment is when THE AUDIT INCLUDES DIAGNOSTIC TOOLS and identifies specific areas for improvement)

02 WALK THROUGH ASSESSMENTS (IF NEEDED: a screening audit is a simple and quick audit. It involves a brief review of the major systems in a building.)

03 CHECKLIST AUDIT (IF NEEDED: a checklist audit is when the auditor fills out a checklist of questions)

AU2a. Does the audit include providing customers with estimated savings from recommended measures?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

AU2b. [ASK IF AU2A = 01 (YES)] How do you estimate energy savings, do you… [RANDOMIZE AND READ]

01 Model savings specific to individual customers based on measurements

[1=YES; 2=NO; -7=DK; -9=RF]

02 Estimate savings based on pre-determined values associated with measures

[1=YES; 2=NO; -7=DK; -9=RF]

03 Estimate savings based on customer energy usage from utility bills

[1=YES; 2=NO; -7=DK; -9=RF]

AU4. Roughly, what is the average cost to your firm to conduct a **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** energy audit for [**INSERT GRANTEE PROGRAM NAME**]?

[RECORD COST; **-**7=DK; -9=RF]

AU5. What is the average amount the program pays for **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** energy audits – either paying directly to you or in the form of an incentive to the homeowner?

[RECORD COST; -7=DK; -9=RF]

AU6. What do you typically charge customers for an energy audit?

[RECORD COST; -7=DK; -9=RF]

AU7. Do you offer a discount or a refund, not associated with an outside program, if customers complete a retrofit with your company?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

AU8_NEW. Would you say the number of **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** energy audits your company conducts has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same since 2010?

01 Increased a lot

02 Increased a little

03 Decreased a lot

04 Decreased a little

05 Stayed the same

-7 DON'T KNOW

-9 REFUSED

AU9_NEW. **[ASK IF AWARE OF BB GRANTEE PROGRAM (IN8.1) AND AU8_NEW=1 OR 2]** How much influence would you say **the [INSERT BB GRANTEE PROGRAM]** has had on the increase in the number of energy audits your company conducts? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

[0-10; -7 DON'T KNOW; -9 REFUSED]

G.1.4. TRAINING, AVAILABILITY OF LABOR, COMPETITION

Next I have some questions about training and energy efficiency.

TR1. Have you or any of your staff received any training in energy efficient building practices or technologies?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

TR2a_NEW. **[SKIP IF TR1<>1][ASK IF AWARE OF BB GRANTEE PROGRAM (IN8a.1)]** Have you or any of your staff received trainings in energy efficient building practices or technologies sponsored by **[INSERT BB GRANTEE PROGRAM]**?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

TR2b_NEW. **[ASK IF AWARE OF BB GRANTEE PROGRAM (IN8a.1)]** Have you or any of your staff received any sales and marketing training sponsored by **[INSERT BB GRANTEE PROGRAM]**?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

TR3. Between 2010 and 2013, do you think the number of contractors trained in energy efficient building practices or technologies has increased?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

TR4. **[ASK IF TR3=01 AND IF AWARE OF BB GRANTEE PROGRAM (IN8a.1)]** How much influence would you say the **[INSERT BB GRANTEE PROGRAM]** has had on the increased number of contractors trained in energy efficient building practices or technologies between 2010 and 2013? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

[0-10; -7 DON'T KNOW; -9 REFUSED]

[ASK IF AWARE OF BB GRANTEE PROGRAM (IN8a.1) & TR2a_NEW or TR2b_NEW = 1] Now I would like to ask you a few questions about the effect of training offered by **[INSERT BB GRANTEE PROGRAM]** has had on the energy efficiency upgrade market between 2010 and 2013. For each of the following activities please tell me if training has increased it a lot, increased it a little, decreased it a lot, decreased it a little, or stayed the same since 2010?

TR4b_NEW. Number of energy efficient upgrades

TR4c_NEW. Quality of energy efficient upgrades

TR4d_NEW. The depth or comprehensiveness of energy efficient upgrades

01 Increased a lot

02 Increased a little

03 Decreased a lot

04 Decreased a little

05 Stayed the same

-7 DON'T KNOW

-9 REFUSED

G.1.5. MARKETING

Next I would like to ask you a few questions about marketing **[IF COMMERCIAL**: commercial **[IF RESIDENTIAL: residential]** energy efficiency upgrades.

MT0a_NEW. Which of the following marketing channels or methods do you actively use to market energy efficiency upgrades? [RANDOMIZE 1-7]

01 Newspaper

02 Radio

03 Billboards

04 Internet

05 Direct mail

06 **[READ IF IN81B=1]** Co-branding with [INSERT BB GRANTEE PROGRAM]

07 **[READ IF IN81B=1]** Co-messaging with [INSERT BB GRANTEE PROGRAM]

08 Something else I did not mention [SPECIFY]

-6 (DON'T MARKET ENERGY EFFICIENCY) -> [SKIP TO INSTRUCTIONS BEFORE A1_NEW]

-7 (DON'T KNOW)

-9 (REFUSED)

MT0b_NEW. Which marketing channels or methods have you found to be the most effective in driving demand for energy efficiency upgrades? [DO NOT READ; ACCEPT MULTIPLE RESPONSES]

01 Newspaper

02 Radio

03 Billboards

04 Internet

05 Direct mail

06 Co-branding with [INSERT BB GRANTEE PROGRAM]

07 Co-messaging with [INSERT BB GRANTEE PROGRAM]

08 Something else I did not mention [SPECIFY]

-7 DON'T KNOW

-9 REFUSED

MT1. Would you say the amount you market energy efficiency and energy efficient features has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same since 2010?

01 Increased a lot

02 Increased a little

03 Decreased a lot

04 Decreased a little

05 Stayed the same

-7 DON'T KNOW

-9 REFUSED

MT2. **[ASK IF AWARE OF BB GRANTEE PROGRAM (IN8.1) AND MT1=1 OR 2]** How much influence would you say the [INSERT BB GRANTEE PROGRAM] has had on the increase in the amount you market energy efficiency upgrade projects since 2010? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

[0-10; -7 DON'T KNOW; -9 REFUSED]

MT2a_NEW. Do you include any of the following topics in your messaging when you market energy efficiency upgrades? [RANDOMIZE a-e; 1 = YES, 2 = NO, -7 = DK, -9 = Refused]

a. Comfort

b. Safety

c. Health

d. Saving energy or money

e. [**IF COMMERCIAL:** Comprehensive or whole building.**] [IF RESIDENTIAL:** Whole house upgrade]

f. Or something else I didn't mention (Other Specify: _____)

MT2b. Has the messaging you emphasize changed since 2010?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

MT2c. **[IF YES TO MT2B]** What messaging do you emphasize more now compared to 2010? [MULTIPLE RESPONSE; DO NOT READ RESPONSES]

01 (Comfort)

02 (Safety)

03 (Health)

04 (Saving energy or money)

05 (Whole house upgrade; Whole building or comprehensive upgrade)

66 (None; no changes)

97 (other [RECORD VERBATIM])

-7 (DON'T KNOW)

-9 (REFUSED)

MT2d. **[ASK IF AWARE OF BB GRANTEE PROGRAM (IN8.1) AND MT2b = yes]** How much influence would you say the [INSERT BB GRANTEE PROGRAM] has had on the change in energy efficiency messaging between 2010 and 2013? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

[0-10; -7 DON'T KNOW; -9 REFUSED]

MT3. **[ASK IF MT1=1-4]** Have the changes you made, if any, to marketing made a difference in the number of energy efficient upgrades you have worked on?

01 YES

02 NO → SKIP TO NEXT SECTION

-7 DON'T KNOW → SKIP TO NEXT SECTION

-9 REFUSED → SKIP TO NEXT SECTION

MT3a. **[ASK IF MT1=1-4]** Would you say the number of projects you have worked on has increased a lot, increased a little, decreased a lot, decreased a little, or stayed the same due to the changes you made to marketing?

01 Increased a lot

02 Increased a little

03 Decreased a lot

04 Decreased a little

05 Stayed the same

-7 DON'T KNOW

-9 REFUSED

G.1.6. PROGRAM INFLUENCE

[IF IN8.1.C> 0 (INSTALLED UPGRADES WITH GRANTEE PROGRAM), ASK A1_NEW-A4_NEW; ELSE SKIP TO LOGIC BEFORE AT0]

A1_NEW. I would like to ask you about the typical **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** energy efficiency upgrades you install with [**INSERT GRANTEE PROGRAM NAME**].

[ASK FOR BEST ESTIMATE IF INITIAL RESPONSE IS 'DON'T KNOW']

i. In 2010, on average, by what percentage did the measures you installed through the program decrease your customers' energy usage?

[0-100; -6 NA; -7 DK; -9F RF]

ii. In 2011?

[0-100; -6 NA; -7 DK; -9F RF]

iii. In 2012?

[0-100; -6 NA; -7 DK; -9F RF]

iv. On average by what percentage do you think the measures you install with the program in 2013 will decrease your customers' energy usage?

[0-100; -6 NA; -7 DK; -9F RF]

A2_NEW. What changes, if any, have you made to your practices for [INSERT BB GRANTEE PROGRAM] projects since 2010? **[DO NOT READ]**

01 Use more efficient materials

02 Talk about energy efficiency more with customers

03 Compare efficiency levels of different equipment

04 Explain how high efficiency equipment works and why it is more efficient than standard equipment

05 Explain payback period and savings over time

06 Conduct services more thoroughly/comprehensively

07 Offer better quality services/equipment

08 Offer new services

51 OTHER [RECORD VERBATIM: _____]

66 NOTHING; NONE

-7 DON'T KNOW

-9 REFUSED

A3_NEW. **[ASK IF A2_NEW ≠ NOTHING/NONE, DK, OR RF] [Show on each screen]** How have you changed your [INSERT BB GRANTEE PROGRAM] upgrade practices for…

a. Building envelope improvements, including insulation, air sealing and window services?

b. HVAC and water heating system maintenance and installations?

c. Ductwork services?

d. Lighting equipment installations?

[DO NOT READ] [MULTIPLE RESPONSE]

1. Conduct services more thoroughly/comprehensively
2. Offer better quality services/equipment
3. Offer new services
4. Offer higher efficiency equipment
5. Other [specify]

66 No changes to this practice

-6. Do not offer/sell

-7. Don't know

-9. Refused

A4_NEW. **[ASK IF A2_NEW ≠ NOTHING/NONE, DK, OR RF]** Why has your typical energy efficiency upgrade completed with [**INSERT GRANTEE PROGRAM NAME**] changed since 2010? [DO NOT READ RESPONSES] **[MULTIPLE RESPONSE]**

01 (BBNP Grantee program changed)

02 (Customer demands changed)

03 (Consumer see value in energy efficiency upgrades; more awareness)

04 (Financing is more readily available)

51 (OTHER [RECORD VERBATIM: _____])

-7 (DON'T KNOW)

-9 (REFUSED)

AT0_NEW. **[READ IF IN8.1.C >0:** *Now let's discuss your projects that did* ***not*** *participate in the program*] Thinking of the typical **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** energy efficiency upgrades you install [**IF COMPLETED UPGRADES THROUGH GRANTEE PROGRAM (IN8.1.C)):** *without* [**INSERT GRANTEE PROGRAM NAME**].

[ASK FOR BEST ESTIMATE IF INITIAL RESPONSE IS 'DON'T KNOW']

i. In 2010, on average, by what percentage did the measures you installed [**IF COMPLETED UPGRADES THROUGH GRANTEE PROGRAM (IN8.1.C)):** *without* the program] decrease your customers' energy usage?

[0-100; -6 NA; -7 DK; -9F RF]

ii. In 2011?

[0-100; -6 NA; -7 DK; -9F RF]

iii. In 2012?

[0-100; -6 NA; -7 DK; -9F RF]

iv. On average by what percentage do you think the measures you install [**IF COMPLETED UPGRADES THROUGH GRANTEE PROGRAM (IN8.1.C)):** *without* the program] in 2013 will decrease your customers' energy usage?

[0-100; -6 NA; -7 DK; -9F RF]

AT1. What changes, if any, have you made to your standard practices [IF **SUM OF IN6>0 & IN8.1.C = blank, 0, -7,-9, READ: "**since 2010?" **IF IN8.1.C >0, READ:** "for projects outside of the [INSERT BB GRANTEE PROGRAM] since participating in the program? [DO NOT READ]

01 Use more efficient materials

02 Talk about energy efficiency more with customers

03 Compare efficiency levels of different equipment

04 Explain how high efficiency equipment works and why it is more efficient than standard equipment

05 Explain payback period and savings over time

06 Conduct services more thoroughly/comprehensively

07 Offer better quality services/equipment

08 Offer new services

51 OTHER [RECORD VERBATIM: _____]

66 NOTHING; NONE

-7 DON'T KNOW

-9 REFUSED

[IF AT1=66, -7, OR -9, SKIP TO AT2b_NEW]

AT1a_NEW. **[Show on each screen]** How have you changed your standard practices for…

a. Building envelope improvements, including insulation, air sealing and window services?

b. HVAC and water heating system maintenance and installations?

c. Ductwork services?

d. Lighting equipment installations?

[DO NOT READ]

1. Conduct services more thoroughly/comprehensively
2. Offer better quality services/equipment
3. Offer new services
4. Offer higher efficiency equipment
5. Other [specify]

66 No changes to this practice

-6. Do not offer/sell

-7. Don't know

-9. Refused

AT1b_NEW. **[IF ALL AT1a_NEW_a THROUGH AT1a_NEW_d ARE NOT EQUAL TO 1, 2, 3, 4, OR 5, SKIP]** Why has your typical energy efficiency upgrade [**IN8.1.C = blank, 0, -7,-9, READ: "**changed since 2010***?"* **IF IN8.1.C >0, READ:** completed without [**INSERT GRANTEE PROGRAM NAME**] changed since 2010? [DO NOT READ RESPONSES]

01 (BBNP Grantee program changed)

02 (Customer demands changed)

03 (Consumer see value in energy efficiency upgrades; more awareness)

04 (Financing is more readily available)

51 (OTHER [RECORD VERBATIM: _____])

-7 (DON'T KNOW)

-9 (REFUSED)

AT2. **[ASK IF AT1=01-51 & IN8.1.A = 1 (AWARE OF GRANTEE)]** How much influence would you say the **[INSERT BB GRANTEE PROGRAM]** has had on the changes you have made to your standard practices for projects completed outside of the **[INSERT BB GRANTEE PROGRAM]?** Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

[0-10; -7 DON'T KNOW; -9 REFUSED]

AT2a_NEW. **[ASK IF AT1=01-51]** What other factors explain changes you have made to your standard practices?

[RECORD VERBATIM; -6=No other factors; -7=DK; -9=RF]

AT2b_NEW. **[IF COMPLETED UPGRADES THROUGH GRANTEE PROGRAM (IN8.1.C)]** How does your typical energy efficiency upgrade completed with [**INSERT GRANTEE PROGRAM NAME**] differ from a typical upgrade completed without the program? [DO NOT READ RESPONSES]

01 (Take whole house approach with program)

51 (OTHER [RECORD VERBATIM: _____])

-6 (No difference)

-7 (DON'T KNOW)

-9 (REFUSED)

[IF AWARE OF BB GRANTEE PROGRAM (IN8.1.A = 1 (YES)), CONTINUE OTHERWISE THANK AND END SURVEY: "Thank you, those are all the questions I have for you."

RECORD GENDER: □ MALE

□ FEMALE **]**

AT3. To date, what effect, if any, do you think the **[INSERT BB GRANTEE PROGRAM]** has had on the market for energy efficiency services? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree."

1. There is more business for your company than there would have been without the program

   [0-10; -7 DON'T KNOW; -9 REFUSED]

2. There is more business in general in the marketplace than there would have been without the program

   [0-10; -7 DON'T KNOW; -9 REFUSED]

AT4. What affect, if any, do you think the **[INSERT BB GRANTEE PROGRAM]** will have on the market for energy efficiency services in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 is "strongly disagree" and 10 is "strongly agree."

1. There will be more business for your company than there would have been without the program

   [0-10; -7 DON'T KNOW; -9 REFUSED]

2. There will be more business in general in the marketplace than there would have been without the program

   [0-10; -7 DON'T KNOW; -9 REFUSED]

G.1.7. JOBS AND BUSINESS PRACTICES

IF IN8.1.C >0, CONTINUE. OTHERWISE, THANK AND END SURVEY: "Thank you, those are all the questions I have for you."

RECORD GENDER: □ MALE

□ FEMALE **]**

JA1. Since the introduction of **[INSERT GRANTEE PROGRAM NAME]** has your company needed to hire additional full-time or part-time staff for any positions as a result of the program?

01 YES

02 NO [GO TO JA5]

-7 DON'T KNOW [GO TO JA5]

-9 REFUSED [GO TO JA5]

JA3. How many full-time employees did your company add?

[RECORD A SINGLE NUMBER; -7=DK; -9=RF]

JA4. How many part-time employees did your company add?

[RECORD A SINGLE NUMBER; -7=DK; -9=RF]

JA5. Has your company been able to retain any staff because of **[INSERT NAME OF LOCAL BBNP GRANTEE]** that would otherwise have been let go?

01 YES

02 NO [SKIP JA6]

-7 DON'T KNOW [SKIP JA6]

-9 REFUSED [SKIP JA6]

JA6. How many employees did your company retain because of **[INSERT NAME OF LOCAL BBNP GRANTEE]**?

[RECORD A NUMBER WITH TWO DECIMAL PLACES; -7=DK; -9=RF]

JA8. **[IF PARTICIPANT]** Did your business practices change to focus more on energy efficiency to adapt to the program offered by **[GRANTEE PROGRAM NAME]?**

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

JA9. Have your services become more comprehensive to adapt to the program?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

JA9b. Has your business begun to partner with other firms or other contractors to adapt to the program?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

G.1.8. PROGRAM PARTICIPATION AND SATISFACTION

IN7a. **[IF PARTICIPANT]** Which of the following best describes how long your firm has participated in **[GRANTEE PROGRAM NAME]?**

01 Actively from the beginning of the program

02 Actively but only after the program was underway

03 From the beginning of the program but not actively

04 After the program was underway but not actively

-7 (DON'T KNOW)

-9 (REFUSED)

IN7b. **[IF PARTICIPANT]** Using a scale of 0 to 10, where 0 is "not at all satisfied" and 10 is "very satisfied," how satisfied are you with your experience in the program so far? **[RECORD A NUMBER 0-10, -7 REFUSED, -9 DON'T KNOW]**

IN7c. **[IF PARTICIPANT] [IF IN7b = 0 thru 5]** What is your reason for your rating? **[DO NOT READ]**

01 Too complicated (complex, difficult)

02 Too much paperwork or reporting

03 Too few jobs, not enough work, not worth the effort

04 Not profitable, too few leads

05 OTHER (SPECIFY: _____)

-7 DON'T KNOW

-9 REFUSED

IN7d. **[IF PARTICIPANT] [IF IN7b = 6 thru 10]** What made your experience satisfying?

01 Easy to do work through the program

02 Staff very helpful

03 Expanded my business

04 New line of work

05 Good leads

06 OTHER (SPECIFY: _____)

-7 DON'T KNOW

-9 REFUSED

NEW_7f. **[IF PARTICIPANT]** Overall, would you say that your participation with **[GRANTEE PROGRAM NAME]** was a positive or a negative experience?

01 Positive

02 Negative

-7 DON'T KNOW

-9 REFUSED

IN7g_NEW. **[IF NEW_7F = negative]** Why do you say it was a negative experience? **[RECORD VERBATIM; -7 REFUSED, -9 DON'T KNOW]**

Thank you, those are all the questions I have for you.

RECORD GENDER: □ MALE

□ FEMALE

G.2. DISTRIBUTOR SURVEY

[SAMPLE VARIABLE: IF PREV_SURVEY=1, THEN CONTACT WAS INTERVIEWED LAST YEAR]

SC1. [**IF NAME PROVIDED IN SAMPLE]** May I speak with [INSERT CONTACT FROM SAMPLE]?

[Programmer Note: IN3a – IN3g is used as a screener later in the survey.]

[IF NAME NOT PROVIDED IN SAMPLE/NO LONGER AT COMPANY IN SC1]: I would like to talk to the person who is the most knowledgeable about the type of equipment sold or installed by [COMPANY NAME]. Who would I need to speak with? May I please have that person's name?

Name: _____

(NOTE: THANK; TRY TO SPEAK WITH CONTACT SUGGESTED. SCHEDULE INTERVIEW WITH BEST CONTACT IF NECESSARY.)

Hello, I'm calling on behalf of the U.S. Department of Energy and Lawrence Berkeley National Laboratory (LBNL). This is not a sales call. We are conducting research to better understand the market for retrofits to existing homes as well as existing commercial buildings. As part of this research we are interviewing suppliers and distributors in your sales territory.

[IF PREV_SURVEY=1, READ] We spoke to you or someone else in your company last year, and now we're calling back to see how your company's experiences and practices might have changed since then.

Knowing that this is voluntary, we appreciate that you are willing to be interviewed.

[IF ASKED] The primary contact person at LBNL is Dr. Edward Vine; he can be reached at 510-486-6047 or *elvine@lbl.gov* if you have any questions. We have been contracted to conduct the interviews for this research.

[IF ASKED] Our research is associated with [GRANTEE PROGRAM NAME]. This is a program focused on advancing energy efficiency in [GRANTEE AREA].

[IF ASKED] We anticipate this interview will last about 15 minutes. Any information you provide will be treated as confidential.

[IF NECESSARY] The objective of these interviews is to help estimate market penetration and gauge the level of [GRANTEE PROGRAM NAME] influence on the market penetration of energy efficient technologies.

[IF ASKED]: [GRANTEE PROGRAM NAME] is associated with The Better Buildings Neighborhood Program where the US Department of Energy provided $508 million in one-time grants to 41 localities and states in 2010. The grantees, like [GRANTEE PROGRAM NAME], are working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

[IF ASKED] You were selected randomly from a list of distributors and suppliers in your area. **[IF PREV_SURVEY=1]** We're calling you back to ask you about your company's experiences and practices since that time.

[Notes to programmer: THE SAMPLE FILE WILL INCLUDE INFORMATION SPECIFIC TO GRANTEES AND DISTRIBUTORS THAT WILL NEED TO BE PULLED INTO THE SURVEY. THIS IS IDENTIFIED THROUGHOUT THE SURVEY INSTRUMENT. WE WILL PROVIDE A FILE AND IDENTIFY VARIABLES THAT ARE PULLED IN.]

[Notes to programmer: PLEASE, INCLUDE A DISPOSITION OPTION "contractor not a supplier/distributor"; IF WE ARE HAVING A HARD TIME GETTING COMPLETES FOR THE CONTRACTOR SURVEY, WE MAY NEED TO USE THESE SAMPLE PIECES. IF THIS DISPOSITION OPTION IS SELECTED, ASK]

SC0. Some of my colleagues are conducting a similar study with contractors, would it be alright if they contact you?

01 YES

02 NO

[IF WE REACH THE NUMBER OF DESIRED CONTRACTOR COMPLETES BEFORE THIS, WE CAN SKIP THIS SCREEN]

[IF RECORDING] We also will be taping the interview as it provides an opportunity to revisit the interviews to make sure that the interview reports are accurate. The interview reports are confidential and will only be used by the evaluation team. The tapes and interview reports are destroyed when the project is completed,

Is it ok with you if we tape the interview?

If the respondent refuses, no recording is made.

Then let us jump right in.

[Note to Reviewer] Respondents also are reminded of the recording at the beginning of the interview and are told that if they wish to convey information that they do not want recorded, the recorder will be stopped until the subject changes or the information can be conveyed at the end of the session after the recording is completed.

G.2.1. SCREENING

SC1a. What kind of energy related products is [COMPANY NAME] a supplier of? Does your company sell… [RANDOMIZE AND READ]

		YES-SOLD	NO – NOT SOLD	DON'T KNOW	REFUSED
a.	Building envelope products including: insulation, windows, and air sealing and duct sealing supplies	01	02	-7	-9
b.	HVAC and water heating systems	01	02	-7	-9
c.	Lighting and/or lighting controls	01	02	-7	-9
f.	Commercial and residential refrigeration equipment	01	02	-7	-9
g.	Other energy related equipment? (If yes, Specify: _____)	01	02	-7	-9

[IF ONLY G – THANK AND TERMINATE] [MUST ANSWER YES TO A, B, OR C to continue]

SC2. Are you the person who is most knowledgeable about the type and energy efficiency level of the equipment sold by [COMPANY NAME]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

SC3. **[ASK IF SC2=NO, DON'T KNOW, REFUSED]** I would like to talk to the person who is the most knowledgeable about the type of equipment sold by [COMPANY NAME]. Can you provide me with this person's name?

Name: _____

(NOTE: THANK; TRY TO SPEAK WITH CONTACT SUGGESTED IN SC3. SCHEDULE INTERVIEW WITH BEST CONTACT IF NECESSARY.)

Thank you for agreeing to participate in our study. There is no payment for participating in this study. You can decline to be interviewed or stop at any time. Your input is extremely valuable, as your input will help to improve energy efficiency programs designed for saving energy.

SC4. Approximately what percentage of your company's business comes from:

1. Residential equipment sales ____%

2. Commercial equipment sales ____%

3. (Do not read: Other sales___%)

[0-100] -7 DON'T KNOW -9 REFUSED

SC5. Approximately what percentage of your company's business is in [GRANTEE AREA FROM FILE]? **[IF NECESSARY: IF AREA INCLUDES MULTIPLE CITIES, TOWNS OR COUNTIES, EXPLAIN THAT WE ARE ASKING FOR THE TOTAL ACROSS ALL OF THE AREAS COMBINED]**

_____ -7 DON'T KNOW -9 REFUSED

[IF SC5=0, -7, or -9, THANK AND TERMINATE]

DEVELOP RESIDENTIAL AND COMMERCIAL VARIABLES [COMMFLAG VARIABLE VALUES: 0 = RESIDENTIAL PROGRAM; 1 = COMMERCIAL PROGRAM; 3 = BOTH RESIDENTIAL AND COMMERCIAL PROGRAMS]

IF	AND	THEN
COMMFLAG= 0	PREV_SURVEY=1	LABEL AS RESIDENTIAL
COMMFLAG= 1	PREV_SURVEY=1	LABEL AS COMMERCIAL
COMMFLAG= 0	SC4_1=0, DK OR RF	THANK AND TERMINATE
COMMFLAG= 0	SC4_1 > 0	LABEL AS RESIDENTIAL
COMMFLAG= 1	SC4_2=0, DK OR RF	THANK AND TERMINATE
COMMFLAG= 1	SC4_2 > 0	LABEL AS COMMERCIAL
COMMFLAG= ANY	SC4_1 AND SC4_2=0, DK OR RF	THANK AND TERMINATE
COMMFLAG= 3	SC4_1=0, DK OR RF AND SC4_2> 0	LABEL AS COMMERCIAL
COMMFLAG= 3	SC4_2=0, DK OR RF AND SC4_1> 0	LABEL AS RESIDENTIAL
COMMFLAG= 3	SC4_1 = SC4_2 AND SC4_1 > 0	RANDOMLY ASSIGN RESIDENTIAL OR COMMERCIAL
COMMFLAG= 3	SC4_1> SC4_2	LABEL AS RESIDENTIAL
COMMFLAG= 3	SC4_2> SC4_1	LABEL AS COMMERCIAL

[**NOTE**: We will place a limit on the number of lighting only *commercial* respondents we would like to speak with. If a respondents has SC1a_c=1 and SC1a_a<>1 and SC1a_b<>1 and SC1a_f<>1 and is labeled COMMERCIAL, we consider the respondent a lighting only commercial respondent (The IN3 series also feeds into this, see below). The survey sample will have a <LIGHT_ONLY> flag (these are respondents we think would likely be lighting only respondents that we've projected are commercial). When the limit of lighting only commercial respondents (based on survey responses, not the sample flag) has been met we would like the <LIGHT_ONLY>=1 sample pieces to stop being called. Additionally if a respondent is <LIGHT_ONLY>=0, but survey responses indicate lighting only and the respondent is labeled as COMMERCIAL the surveys should be terminated at this point *when* the limit has been reached]

G.2.2. RESPONDENT CHARACTERIZATION

First I would like to get some background information about your company's sales in [GRANTEE AREA FROM FILE].

IN3_a. **[ASK IF SC1a_a=01]** Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **building envelope products including: insulation, windows, and air sealing** equipment in [GRANTEE AREA FROM FILE]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[ASK IF SC1a_b=01]

IN3_b. Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **HVAC and water heating systems** in [GRANTEE AREA FROM FILE]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[ASK IF SC1a_c=01]

IN3_c. Does your company sell [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **lighting equipment and/or lighting controls** in [GRANTEE AREA FROM FILE]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[ASK IF SC1a_f=01]

IN3_f. Does your company sell **commercial and residential refrigeration equipment** in [GRANTEE AREA FROM FILE]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[ASK IF SC1a_g=01]

IN3_g. Does your company sell **[INSERT OTHER RESPONSE FROM SC1a_g]** in [GRANTEE AREA FROM FILE]?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

[IF IN3_a THROUGH IN3_f ALL= NO, DK OR REFUSED, THANK AND TERMINATE]

[CREATE THE FOLLOWING EQUIPMENT VARIABLES: IF IN3_a=1, **ENVEL**=1; IF IN3_b=1, **HVAC**=1; IF IN3_c=1, **LIGHT**=1; IF IN3_f=1, **REFR**=1]

[**NOTE**: If **ENVEL**=0, **HVAC**=0, AND **REFR**=0 and respondent is labeled COMMERCIAL, we consider the respondent a lighting only commercial respondent.]

G.2.3. BUILDING ENVELOPE

[IF ENVEL = 01 CONTINUE OTHERWISE SKIP TO NEXT SECTION]

BE1. Does your company sell…

01 Insulation? [1=YES; 2=NO; -7=DK; -9=RF]

02 Windows? [1=YES; 2=NO; -7=DK; -9=RF]

03 Air Sealing Supplies? [1=YES; 2=NO; -7=DK; -9=RF]

04 Duct Sealing Supplies? [1=YES; 2=NO; -7=DK; -9=RF]

[IF BE1_01=01 CONTINUE OTHERWISE SKIP TO BE4_NEW]

BE2a_NEW. Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **insulation** materials increased, decreased, or stayed the same?

01 Increased

02 Decreased

03 Stayed the same

-7 DON'T KNOW

-9 REFUSED

BE3. **[IF BE2a_NEW = 01 OR 02]** By what percent did **insulation material** sales change between 2010 and 2013?

[PROBE FOR BEST ESTIMATE, RECORD ONE NUMBER]

[1-100] -7 DON'T KNOW -9 REFUSED

BE4_NEW. **[ASK IF BE1_2=1]** Approximately how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **windows** did your company sell in 2010?

_____-7 DON'T KNOW -9 REFUSED

BE5_NEW. **[ASK IF BE4_NEW <> 0]** What percent of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **windows** you sold in 2010 were ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

BE6_NEW. **[ASK IF BE1_2=1]** Approximately, how many [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **windows** do you expect to sell in 2013?

_____-7 DON'T KNOW -9 REFUSED

BE7_NEW. **[ASK IF BE6_NEW <> 0]** What percent of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **windows** your company will have sold in 2013 will be ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

BE8_NEW. **[ASK IF BE1_3=1]** Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **air sealing** supplies increased, decreased, or stayed the same?

01 Increased

02 Decreased

03 Stayed the same

-7 DON'T KNOW

-9 REFUSED

BE9_NEW. **[IF BE8_NEW = 01 OR 02]** By what percent did **air sealing** sales change between 2010 and 2013?

[PROBE FOR BEST ESTIMATE, RECORD ONE NUMBER]

[1-100] -7 DON'T KNOW -9 REFUSED

BE10_NEW. **[ASK IF BE1_4=1]** Since 2010 have your sales of [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] **duct sealing** supplies increased, decreased, or stayed the same?

01 Increased

02 Decreased

03 Stayed the same

-7 DON'T KNOW

-9 REFUSED

BE11_NEW. **[IF BE10_NEW = 01 OR 02]** By what percent did **duct sealing** sales change between 2010 and 2013?

[PROBE FOR BEST ESTIMATE, RECORD ONE NUMBER]

[1-100] -7 DON'T KNOW -9 REFUSED

G.2.4. HVAC MODULE

[IF HVAC=01 CONTINUE OTHERWISE GO TO NEXT SECTION]

H1. Which of the following types of equipment does your company sell? [ACCEPT MULTIPLE]

01 [IF RESIDENTIAL] Residential HVAC equipment

02 [IF COMMERCIAL] Commercial HVAC equipment

03 [IF RESIDENTIAL] Residential water heating equipment

04 [IF COMMERCIAL] Commercial water heating equipment

05 (Neither HVAC nor water heating equipment)

-7 DON'T KNOW

-9 REFUSED

[IF H1 = 05, -7, OR -9, SKIP TO NEXT SECTION]

I would like to ask you some questions about the types and efficiency levels of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] heating, cooling, and/or water heating equipment that your company sells.

H2. Approximately how many **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] [H2 EQUIPMENT TYPE]** did your company sell in 2010? Your best estimate is fine. How many do you expect to sell in 2013?

EQUIPMENT TYPE	NUMBER OF SYSTEMS	
	2010	2013
[IF H1=1 OR 2] a. Natural Gas Furnaces	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=1 OR 2] b. Natural Gas Boilers	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=1 OR 2] c. Oil Furnaces	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=1 OR 2] d. Oil Boilers	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=1 OR 2] e. Central Air Conditioners	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=3 OR 4] f. Gas Tankless or Gas On-Demand Hot Water Heaters	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=3 OR 4] g. Gas Storage Water Heaters	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H1=3 OR 4] h. Heat Pump Water Heaters	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

[ASK H3 WHERE CORRESPONDING H2 RESPONSE IS NOT 0]

H3. Approximately what percentage of the [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] [EQUIPMENT TYPE] your company sold in 2010 was [EFFICIENCY LEVEL]? Your best estimate is fine. [REPEAT FOR ALL EQUIPMENT TYPES] What percent do you expect it will be in 2013?

	EQUIPMENT TYPE	EFFICIENCY LEVEL	YEAR	
			2010	2013
[IF RESIDENTIAL AND H2.a>0]	Natural Gas Furnaces	AFUE of 94% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF RESIDENTIAL AND H2.b>0]	Natural Gas Boilers	AFUE of 90% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF RESIDENTIAL AND H2.c>0]	Oil Furnaces	AFUE of 85% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF RESIDENTIAL AND H2.d>0]	Oil Boilers	AFUE of 85% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF RESIDENTIAL AND H2.e>0]	Central Air Conditioners	15 SEER or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.a>0]	Natural gas furnaces	AFUE of 94% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.b>0]	Natural gas boilers	AFUE of 90% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.c>0]	Oil furnaces	AFUE of 85% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.d>0]	Oil boilers	AFUE of 85% or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

Continued…

	EQUIPMENT TYPE	EFFICIENCY LEVEL	YEAR	
			2010	2013
[IF COMMERCIAL AND H2.e>0]	Air-cooled unitary or split systems < 5.4 tons	12.0 EER	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.e>0]	Air-cooled unitary or split systems ≥ 5.4 to < 20 tons	11.5 EER	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF COMMERCIAL AND H2.e>0]	Air-cooled unitary or split systems ≥ tons	10.5 EER	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H2.f>0]	Gas Tankless or Gas On-Demand Hot Water Heaters	Energy Factor 0.82 or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H2.g>0]	Gas Storage Water Heaters	Energy Factor 0.67 or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
[IF H2.h>0]	Heat Pump Water Heaters	Energy Factor 2.0 or greater	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

G.2.5. LIGHTING MODULE

[IF LIGHT=01 CONTINUE OTHERWISE SKIP TO NEXT SECTION]

I would like to ask you some questions about the types and efficiency levels of lighting equipment that your company sells for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] purposes.

L1. Since 2010, which of the following types of lighting fixtures and technologies have you sold for [IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"] use?

01 [IF RESIDENTIAL] Pin-Based CFL fixtures

02 [IF RESIDENTIAL] Fluorescent Tube fixtures

03 [IF RESIDENTIAL] Screw-Based CFL fixtures

04 [IF RESIDENTIAL] LED fixtures

05 [IF RESIDENTIAL] Other high efficiency fixtures [specify:]

06 [IF COMMERCIAL] T5 lamps and ballasts

07 [IF COMMERCIAL] T8 lamps and ballasts

17 [IF COMMERCIAL] Super T8 lamps and ballasts

08 [IF COMMERCIAL] T12 lamps and ballasts

09 [IF COMMERCIAL] High bay fluorescent fixtures

10 [IF COMMERCIAL] Hardwired CFL fixtures

11 [IF COMMERCIAL] Metal halide fixtures

12 [IF COMMERCIAL] LED exit signs

13 [IF COMMERCIAL] LEC exit signs

14 [IF COMMERCIAL] LED lamps or luminaries [LOOM-IN-AIR-EES]

15 [IF COMMERCIAL] Refrigerated LED case lights

16 [IF COMMERCIAL] Other high efficiency fixtures (Specify: _____)

-6 DO NOT SELL FIXTURES

-7 DON'T KNOW

-9 REFUSED

[IF L1=-6, -7, OR -9, SKIP TO L4]

L2. **[ASK FOR EACH LIGHTING TECHNOLOGY SOLD IN L1]** Approximately what percentage of your company's **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** lighting sales were **[LIGHTING TYPE]** in 2010? Your best estimate is fine. What percent do you expect it will be in 2013? **[CHECK THAT SUM OF L2_01 TO L2_16 = 100% FOR 2010 AND 2013]**

TYPE OF LIGHTING FIXTURE		YEAR	
		2010	2013
01[IF RESIDENTIAL]	Pin-Based CFL fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
02[IF RESIDENTIAL]	Fluorescent Tube fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

Continued…

TYPE OF LIGHTING FIXTURE		YEAR	
		2010	2013
03[IF RESIDENTIAL]	Screw-Based CFL fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
04[IF RESIDENTIAL]	LED fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
05[IF RESIDENTIAL]	Other high efficiency fixtures [specify:]	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
06[IF COMMERCIAL]	T5 lamps and ballasts	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
07[IF COMMERCIAL]	T8 lamps and ballasts	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
17[IF COMMERCIAL]	Super T8 lamps and ballasts	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
08[IF COMMERCIAL]	T12 lamps and ballasts	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
09[IF COMMERCIAL]	High-bay fluorescent fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
10[IF COMMERCIAL]	Hardwired CFL fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
11[IF COMMERCIAL]	Metal halide fixtures	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

Continued…

TYPE OF LIGHTING FIXTURE		YEAR	
		2010	2013
12[IF COMMERCIAL]	LED exit signs	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
13[IF COMMERCIAL]	LEC exit signs	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
14[IF COMMERCIAL]	LED lamps or luminaries [LOOM-IN-AIR-EES]	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
15[IF COMMERCIAL]	Refrigerated LED case lights	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED
16[IF COMMERCIAL]	Other high efficiency fixtures (Specify: _____)	___ -7 DON'T KNOW -9 REFUSED	___ -7 DON'T KNOW -9 REFUSED

L4. Since 2010, which of the following lighting controls have you sold for **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** use? **[ACCEPT MULTIPLE RESPONSES]**

01 Dimmers

02 Occupant Sensors

03 Photo Controls

04 Motion Sensors

51 Other1 [specify: _____]

52 Other2 [specify: _____]

-6 DO NOT SELL CONTROLS

-7 DON'T KNOW

-9 REFUSED

L5. **[FOR EACH LIGHTING CONTROL, ASK IF L4 = YES]** Since 2010, have your sales of **[INSERT YES RESPONSE FROM L4]** increased, decreased, or stayed the same?

01 Increased

02 Decreased

03 Stayed the same

-7 DON'T KNOW

-9 REFUSED

L6. **[FOR EACH LIGHTING CONTROL WHERE L4=YES AND (L5=1 OR 2)]** By what percent did sales of **[INSERT YES RESPONSE FROM L4]** change between 2010 and 2013?

[PROBE FOR BEST ESTIMATE, RECORD ONE NUMBER]

[1-100] -7 DON'T KNOW -9 REFUSED

TYPE OF CONTROL	YEAR
	Change 2010 - 2013
01 Dimmers	___ -7 DON'T KNOW -9 REFUSED
02 Occupant Sensors	___ -7 DON'T KNOW -9 REFUSED
03 Photo Controls	___ -7 DON'T KNOW -9 REFUSED
04Motion Sensors	___ -7 DON'T KNOW -9 REFUSED
51 Other1 [specify:]	___ -7 DON'T KNOW -9 REFUSED
52 Other2 [specify:]	___ -7 DON'T KNOW -9 REFUSED

G.2.6. REFRIGERATION

[ASK IF REFR=1, ELSE SKIP TO NEXT SECTION]

R0_NEW. Since 2010, which of the following types of refrigeration equipment have you sold? **[ALLOW MULTIPLE]**

01 Commercial refrigerators and freezers

02 Residential refrigerators and freezers

R1_NEW. **[ASK IF R0_NEW = YES FOR COMMERCIAL]** Approximately how many **commercial refrigerators and freezers** did your company sell in 2010?

_____-7 DON'T KNOW -9 REFUSED

R2_NEW. **[ASK IF R1_NEW <> 0]** What percent of the **commercial refrigerators and freezers** you sold in 2010 were ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

R3_NEW. **[ASK IF R0_NEW = YES FOR COMMERCIAL]** Approximately, how many **commercial refrigerators and freezers** do you expect to sell in 2013?

_____-7 DON'T KNOW -9 REFUSED

R4_NEW. **[ASK IF R3_NEW <> 0]** What percent of the **commercial refrigerators and freezers** your company will have sold in 2013 will be ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

R5_NEW. [**ASK IF R0_NEW = YES FOR RESIDENTIAL**] Approximately how many **residential refrigerators and freezers** did your company sell in 2010?

_____-7 DON'T KNOW -9 REFUSED

R6_NEW. **[ASK IF R5_NEW <> 0]** What percent of the **residential refrigerators and freezers** you sold in 2010 were ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

R7_NEW. [**ASK IF R0_NEW = YES FOR RESIDENTIAL**] Approximately, how many **residential refrigerators and freezers** do you expect to sell in 2013?

_____-7 DON'T KNOW -9 REFUSED

R8_NEW. **[ASK IF R7_NEW <> 0]** What percent of the **residential refrigerators and freezers** your company will have sold in 2013 will be ENERGY STAR? [If needed: Your best estimate is fine]

[0-100] -7 DON'T KNOW -9 REFUSED

G.2.7. BARRIERS TO ENERGY EFFICIENCY

I would like to ask you a few questions about the barriers **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** customers face that prevent them from implementing, or pursuing to a greater degree, energy efficiency improvements.

IN17. What do you think is the **one** greatest barrier that might prevent **[IF COMMERCIAL: "commercial"] [IF RESIDENTIAL: "residential"]** customers from implementing, or pursuing to a greater degree, energy efficiency improvements? [DO NOT READ] [HIDE FLAGGED RESPONSE CATEGORIES, BUT INCLUDE RESPONSE CATEGORIES IN SPSS FILE]

01 [HIDE] Do Not Own Building / Landlord Makes Decision

02 Lack of Awareness

03 Lack of Interest

04 Lack of Financing

05 Cost / Payback / Capital

06 [HIDE] Lack of Knowledge / Understanding of Benefits

07 [HIDE] Lack of Time

08 [HIDE] Too Much Work / Hassle

09 [HIDE] Decisions [About Improvements] Made Elsewhere in the Company

10 [HIDE] Economy in General

11 [HIDE] Lack of Examples of Peer Businesses or Organizations

12 [HIDE] Uncertainty about Performance of Energy efficient Equipment (Including Potential Costs of Service and Repairs; Lack of Technical Skills On-Site)

51 Other1 (Specify: _____)

66 None → **SKIP TO NEXT SECTION**

-7 Don't Know → **SKIP TO NEXT SECTION**

-9 Refused → **SKIP TO NEXT SECTION**

IN18. What other barriers exist? [Exclude responses provided for IN17; MULTIPLE RESPONSE; ACCEPT UP TO 5 RESPONSES] [DO NOT READ]

01 [HIDE] Do Not Own Building / Landlord Makes Decision

02 Lack of awareness

03 Lack of interest

04 Lack of financing

05 Cost / payback / capital

06 [HIDE] Lack of knowledge / understanding of benefits

07 [HIDE] Lack of time

08 [HIDE] Too much work / hassle

09 [HIDE] Decisions [about improvements] made elsewhere in the company

10 [HIDE] Economy in general

11 [HIDE] Lack of examples of peer businesses or organizations

12 [HIDE] Uncertainty about performance of energy efficient equipment (including potential costs of service and repairs; lack of technical skills on-site)

51 Other1 (Specify: _____)

52 Other2 (Specify: _____)

53 Other3 (Specify: _____)

54 Other4 (Specify: _____)

55 Other5 (Specify: _____)

66 None

-7 Don't Know

-9 Refused

G.2.8. PROGRAM AWARENESS AND MARKET CHANGE MODULE

I'm going to read you the names of some programs and policies that encourage the installation of energy efficient features in [IF COMMERCIAL: "existing commercial buildings"] [IF RESIDENTIAL: "existing residential homes"], and I'm going to ask you if you have heard of these programs.

PA1. **[RANDOMIZE 1-6, anchor 7 last] [SHOW ON EACH SCREEN]** Have you heard of…

1. [INSERT GRANTEE PROGRAM NAME + "a program that was funded by the U.S. Department of Energy's Better Buildings Neighborhood Program"]

2. [Programs funded by Energy Efficiency and Conservation Block Grants (EECBG)], State Energy Programs (SEP) or the Weatherization Assistance Program

3. [**IF RESIDENTIAL:** home efficiency programs sponsored by local utilities or other groups [IF NEEDED: "Home Performance with ENERGY STAR programs"]

5. [**IF COMMERCIAL:** Commercial energy efficiency programs sponsored by local utilities or other groups]

6. [**IF COMMERCIAL:** Benchmarking or labeling programs like: LEED or ENERGY STAR Portfolio Manager]

7. [Federal or State tax credits for energy efficiency improvements]

   01 YES

   02 NO

   -7 DON'T KNOW

   -9 REFUSED

[ASK IF AWARE OF GRANTEE PROGRAM (PA1.1 = 01) ELSE GO TO] Now, I would like you to consider what impact, if any, [INSERT GRANTEE PROGRAM NAME] has had on the market for energy efficient equipment. I would like you to consider a scenario where everything stays the same but [INSERT GRANTEE PROGRAM NAME] does not exist. All other programs, the economy, energy prices, and everything else would be the same.

PA2a. Thinking about the [PA2a EQUIPMENT TYPE] your company offers, would you say [INSERT GRANTEE PROGRAM NAME] has had a positive impact, a negative impact, or no impact on your company's energy efficient equipment sales since 2010? [PROGRAMMER NOTE: PULL IN EQUIPMENT TYPE FROM TABLES BELOW. *ASK OF UP TO 2 EQUIPMENT TYPES. IF THERE ARE MORE THAN TWO EQUIPMENT TYPES AND ONE OF THEM IS G, PLEASE RANDOMLY SELECT FROM ANY THAT AREN'T G.* IF MORE THAN 2 EQUIPMENT TYPE, THEN RANDOMLY SELECT 2.]

	PA2A EQUIPMENT TYPE
a	[commercial/residential] Insulation, windows, and air sealing and duct sealing supplies [IF ENVEL=01]
b	[commercial/residential] HVAC and water heating systems [IF HVAC=01]
c	[commercial/residential] Lighting and/or lighting controls [IF LIGHT=01]
f.	Commercial and residential refrigeration equipment [IF REFR=1]
g	[INSERT OTHER RESPONSE FROM SC1a_g] [IF IN3_g=01]

   01 Positive

   02 Negative

   03 No impact

   -7 DON'T' KNOW

   -9 REFUSED

PA2a2. **[ASK FOR ALL APPLICABLE EQUIPMENT TYPES LISTED IN PA2a WHERE PA2a= 2]** Why do you say that the **[INSERT GRANTEE PROGRAM NAME]** has had a negative impact on **[PA2a EQUIPMENT TYPE]** sales?

[RECORD VERBATIM, -7 DON'T KNOW, -9 REFUSED]

PA2b. **[ASK FOR ALL APPLICABLE EQUIPMENT TYPES LISTED IN PA2a WHERE PA2a=1 OR 2]** How much influence would you say [INSERT GRANTEE PROGRAM NAME] has had on your sales of [PA2a EQUIPMENT TYPE]? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

_____ -7 DON'T KNOW-9 REFUSED

G.2.9. SUSTAINABILITY / PROGRAM INFLUENCE

I'd like to ask you a few questions about what impact, if any, the [GRANTEE PROGRAM NAME] has had on your business practices.

AT1. What changes, if any, have you made to your business and stocking practices since [INSERT GRANTEE PROGRAM NAME] began? [READ LIST AND RECORD 'OTHER' RESPONSES]

01 STOCK MORE EFFICIENT MATERIALS

02 TALK ABOUT ENERGY EFFICIENCY MORE WITH CUSTOMERS

03 COMPARE EFFICIENCY LEVELS OF DIFFERENT EQUIPMENT

04 EXPLAIN TO CUSTOMERS HOW HIGH EFFICIENCY EQUIPMENT/MATERIALS WORKS AND WHY IT IS MORE EFFICIENT THAN STANDARD EQUIPMENT

05 EXPLAIN PAYBACK PERIOD AND SAVINGS OVER TIME

51 OTHER [RECORD VERBATIM: _____]

7 NOTHING; NONE

-7 DON'T KNOW

-9 REFUSED

AT2. **[ASK IF AT1=01-05, 51]** How much influence would you say the [GRANTEE PROGRAM NAME] has had on the changes you have you made to your business and stocking practices? Use a scale from 0 to 10, where 0 is "no influence at all" and 10 is "a great deal of influence."

_____ -7 DON'T KNOW -9 REFUSED

AT2a. **[ASK IF AT1=01-05,51]** What other factors explain changes you have made to your business practices? [RECORD VERBATIM; -6=No other factors; -7=DK; -9=RF]

AT3. To date, what affect, if any, do you think the **[INSERT GRANTEE PROGRAM NAME]** has had on the market for energy efficient equipment? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree."

1. There is more business for your company than there would have been without the program. ___ -7 DON'T KNOW -9 REFUSED

2. There is more business in general in the marketplace than there would have been without the program. ___ -7 DON'T KNOW -9 REFUSED

AT4. What affect, if any, do you think the **[INSERT GRANTEE PROGRAM NAME]** will have on the market for energy efficient equipment in the next two years? Please tell me if you agree or disagree with each statement, using a scale from 0 to 10, where 0 means "strongly disagree" and 10 means "strongly agree."

1. There will be more business for your company than there would have been without the program. ___ -7 DON'T KNOW -9 REFUSED

2. There will be more business in general in the marketplace than there would have been without the program. ___ -7 DON'T KNOW -9 REFUSED

G.2.10. JOBS AND BUSINESS PRACTICES

IN4. About how many full-time equivalent employees work for your company? **[PROBE FOR BEST ESTIMATE] [ACCEPT ONE WHOLE NUMBER.]**

_____-7 DON'T KNOW -9 REFUSED

[ASK IF AWARE OF GRANTEE PROGRAM (PA1.1 = 01) ELSE GO TO THANK YOU]

JA1. Since the introduction of **[INSERT GRANTEE PROGRAM NAME]** has your company needed to hire additional full-time or part-time staff for any positions as a result of the program?

01 YES

02 NO [GO TO JA5]

-7 DON'T KNOW [GO TO JA5]

-9 REFUSED [GO TO JA5]

JA3. How many full-time employees did your company add?

[RECORD A SINGLE NUMBER; -7=DK; -9=RF]

JA4. How many part-time employees did your company add?

[RECORD A SINGLE NUMBER; -7=DK; -9=RF]

JA5. Has your company been able to retain any staff because of **[INSERT NAME OF LOCAL BBNP GRANTEE]** that would otherwise have been let go?

01 YES

02 NO [SKIP JA6]

-7 DON'T KNOW [SKIP JA6]

-9 REFUSED [SKIP JA6]

JA6. How many employees did your company retain because of **[INSERT NAME OF LOCAL BBNP GRANTEE]**?

[RECORD A NUMBER WITH TWO DECIMAL PLACES; -7=DK; -9=RF]

JA8. Did your business practices change to focus more on energy efficiency to adapt to the program offered by **[GRANTEE PROGRAM NAME]?**

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

JA9. Have your services become more comprehensive to adapt to the program?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

JA9b. Has your business begun to partner with other firms to adapt to the program?

01 YES

02 NO

-7 DON'T KNOW

-9 REFUSED

Thank you, those are all the questions I have for you.

RECORD GENDER: □ MALE

□ FEMALE

G.3. CONTRACTOR IN-DEPTH INTERVIEW GUIDE (IDENTIFIED POSITIVE MARKET EFFECTS IN SURVEY)

G.3.1. INTRODUCTION

May I speak with [INSERT CONTACT FROM SAMPLE]?

Hello, I'm calling on behalf of the U.S. Department of Energy and Lawrence Berkeley National Laboratory (LBNL). This is not a sales call. We are conducting research to better understand the market for energy upgrades for homes and commercial buildings. As part of this research we are interviewing contractors who are involved in building improvement construction. Knowing that this is voluntary, we appreciate that you are willing to be interviewed.

We interviewed you recently about **[INSERT GRANTEE NAME]**, a program that was funded by the U.S. Department of Energy's Better Buildings Neighborhood Program, or BBNP. BBNP is a program that is working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

During the interview, you indicated that **[INSERT NAME OF LOCAL BBNP GRANTEE]** was having a positive effect your business. Today I would like to speak with you in more detail about the effects of **[INSERT NAME OF LOCAL BBNP GRANTEE]** on your business and the local residential energy efficiency marketplace in general. This interview should only take about 15 minutes.

[IF ASKED] The primary contact person at LBNL is Dr. Edward Vine; he can be reached at 510-486-6047 or elvine@lbl.gov if you have any questions. We have been contracted to conduct the interviews for this research.

[IF ASKED] Any information you provide will be treated as confidential.

[IF ASKED] The Better Buildings Neighborhood Program, or BBNP, provided $508 million in one-time grants to 41 localities and states in 2010. The grantees are working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

[IF ASKED] For participating contractors: you were selected randomly from a list of contractors provided by <"GRANTEE PROGRAM NAME"> in your area.

[IF ASKED] For non-participating contractors: You were selected randomly by InfoUSA from a list of contractors in your area.

Notice of confidentiality and permission to record:

INTRO1. For transcription purposes I would like to record our conversation. Is that ok? Please be aware that all the information you provide will be treated as confidential. Do you have any questions before we start? **[IF NECESSARY]** The interview transcripts are confidential and will only be used by the evaluation team. The tapes and interview transcripts are destroyed when the project is completed.

01 Permission to record received

02 Permission to record refused **[DO NOT RECORD. TAKE DETAILED NOTES.]**

[Note to Reviewer] Respondents also are reminded of the recording at the beginning of the interview and are told that if they wish to convey information that they do not want recorded, the recorder will be stopped until the subject changes or the information can be conveyed at the end of the session after the recording is completed.

[IF AGREE TO RECORDING] I will now begin recording. If at any point you would like me to pause the recording to discuss something you do not wish recorded please let me know.

I would like to start by asking you to confirm a few of your responses from the telephone survey.

INTRO2. As I said earlier, we are calling you today to follow up to our earlier survey. In that survey you indicated that without **[INSERT GRANTEE PROGRAM NAME]**, the number of energy efficiency upgrades you would have completed from 2010 to 2013 would have been lower. Is this correct?

01 YES

02 NO

INTRO3. **[IF INTRO2=NO, READ]** You reported that you had completed <TOTAL_UPGRADES> upgrades from 2010 to 2013. How many would you have completed if the program did not exist? **[SWITCH TO NEGATIVE MARKET EFFECTS INSTRUMENT]**

G.3.2. MARKET EFFECTS MECHANISMS

Based on your responses and responses from other contractors in your area, we determined that **[INSERT GRANTEE PROGRAM NAME]** had a positive effect on the number of energy efficiency jobs completed outside of the program in your local area. That is, jobs that did not receive incentives directly from role **[INSERT GRANTEE PROGRAM NAME]**.

Today, we would like to ask you a few questions to help us better understand what role **[INSERT GRANTEE PROGRAM NAME]** played in creating, influencing, or increasing your energy efficiency jobs outside of the program. For these questions, please try to think of just those jobs that did not receive funding from the program but were somehow influenced by the program.

ME1. How did the program influence the number of energy efficiency jobs your company completed outside of the program? **[See probes below if necessary]**

a. Company was created in response to the program; the company did not exist prior to grantee program.

b. Company expanded services offered as a result of the program. (Began offering new services)

c. Company began to partner with other firms or other contractors as a result of the program

d. Company increased number of employees as a result of the program.

e. Program increased consumer demand for energy efficiency services in the area

f. Program increased consumer confidence in the performance of efficiency services

g. Program influenced customers outside of direct program service area.

h. We made changes to our business practices that led to increased business.

i. We increased or changed our marketing OR reallocated marketing budget to other areas.

j. We changed our business model as a result of participation in the program

k. Other factors.

ME2. **[FOR EACH FACTOR MENTIONED PROBE TO FIND OUT HOW/WHY RESPONDENT'S COMPANY ADAPTED, EXPANDED, OR CHANGED AS A RESULT OF THE BBNP PROGRAM]**

ME3. **[IF MENTIONED MULTIPLE FACTORS]** Of the influencing factors you mentioned, which do you think had the greatest impact on the number of jobs completed outside of the program? Why? Which was the second most important factor? Why?

ME4. What aspects or components of **[INSERT GRANTEE PROGRAM NAME]** were the most important in increasing the number of energy efficiency jobs your company worked on outside of those that received program funding? [See probes below if necessary]

a. Training

i. Sales training

ii. Building science training

iii. Other training

b. Financing

c. Marketing and outreach

d. Rebates and other incentives

e. Free or reduced cost energy assessments

f. Something else?

ME5. **[FOR EACH COMPONENT MENTIONED]** How did **[COMPONENT]** influence or increase the number of jobs your company performed outside of the program?

ME6. **[IF MENTIONED MULTIPLE COMPONENTS]** Of the program components you mentioned, which do you think had the greatest impact on the number of jobs completed outside of the program? Why?

ME7. Have there been any negative impacts on your business or the local energy efficiency market because of **[INSERT GRANTEE PROGRAM NAME]**? [SEE PROBES BELOW IF NECESSARY]

a. Difficult to adapt to surge in funding; the program swelled the market with short-term funding that was difficult to accommodate without changing your business model

b. Inconsistent funding; short-term surge in funding, followed by drop in funding

c. QA / QC requirements of program (too time consuming)

d. Other program processes – paperwork, project approval process, delayed payments from program

G.3.3. BUSINESS PRACTICES

BP1. Over the past decade, the landscape of residential and commercial building retrofits has changed. How has the focus on energy efficiency changed how your company does business?

BP2. Has the **[INSERT GRANTEE PROGRAM NAME]** changed how your company does business? **[IF YES]** How so?

BP3. A focus of the Better Buildings Program has been on creating substantial savings from energy efficiency retrofit activities. What influence, if any, has the **[INSERT GRANTEE PROGRAM NAME]** had on the comprehensiveness of your services? Has the program increased the comprehensiveness of your services? **[Probe: deeper retrofits, higher savings, inclusion of additional measures, whole house approach, etc.]**

BP4. Has participating in the **[INSERT GRANTEE PROGRAM NAME]** increased the level of energy savings overall for jobs you completed both inside and outside the program? [IF YES] Why?

BP5. The BBNP support for **[INSERT GRANTEE PROGRAM NAME]** was a one-time grant to the program. Now that nearly all of the grant funds have been spent, how will your company adjust? How will this affect your practices?

G.3.4. MARKETING

MT1. **[SKIP MT1 AND MT2 IF <MARKETING>=0]** In the telephone survey, you indicated that your company has **[Increased/Decreased PULL IN FROM SURVEY RESULTS]** marketing since 2010 and that changes your company has made to marketing since 2010 have **[Increased/Decreased PULL IN FROM SURVEY RESULTS]** the number of energy efficiency projects your company has worked on. What kind of changes have you made to your marketing? [See probes below]

a. Shifted focus to new marketing channels. Which ones?

b. Changed or emphasize more specific marketing messages. Which ones?

i. Comfort

ii. Safety

iii. Health

iv. Savings energy or money

v. Whole house upgrades

c. Shifted from mass media to direct marketing? Or vice-versa?

MT2. Why do you think these marketing changes have been effective?

MT3. In terms of program marketing, what advice or suggestions do you have for programs like the **[INSERT GRANTEE PROGRAM NAME]** that are trying to affect the energy efficiency market?

G.3.5. JOBS

JA1. **[SKIP IF <HIRE> OR <RETAIN>=0]** In the telephone survey, you indicated that your company hired or retained employees because of the **[INSERT GRANTEE PROGRAM NAME]**. What types of employees were you able to add or retain [FIELD STAFF, OFFICE STAFF, ETC]? How has this affected your business?

G.3.6. TRAINING

TR1. **[SKIP IF < TRAIN>=0 OR NONE <TR_EENUM>, <TR_EEQUAL>, AND <TR_EEDEPTH>=1]** In the telephone survey, you indicated that your company received [Energy efficiency training AND / OR sales or marketing training PULL IN FROM SURVEY RESULTS] from [INSERT GRANTEE PROGRAM NAME] and that the training [Increased the # of EE upgrades; Quality of EE upgrades ; Comprehensiveness of the EE upgrades PULL IN FROM SURVEY RESULTS] in your local market. Why do think the [INSERT GRANTEE PROGRAM NAME] had this/these effect[s]?

a. In general, what made the training so effective?

b. What elements of the training were most effective and useful?

TR2. What kind of training is most needed for contractors in your area? What kind of training do the contractors in your area most want?

G.3.7. WRAP UP

Are there any other ways that the **[INSERT GRANTEE PROGRAM NAME]** has affected your business or the local energy efficiency market that we have not discussed?

Thank you for your time. Those are all of my questions.

G.4. CONTRACTOR IN-DEPTH INTERVIEW GUIDE (IDENTIFIED NEGATIVE MARKET EFFECTS IN SURVEY)

G.4.1. INTRODUCTION

May I speak with [INSERT CONTACT FROM SAMPLE]?

Hello, I'm calling on behalf of the U.S. Department of Energy and Lawrence Berkeley National Laboratory (LBNL). This is not a sales call. We are conducting research to better understand the market for energy upgrades for homes and commercial buildings. As part of this research we are interviewing contractors who are involved in building improvement construction. Knowing that this is voluntary, we appreciate that you are willing to be interviewed.

We interviewed you recently about **[INSERT GRANTEE NAME]**, a program that was funded by the U.S. Department of Energy's Better Buildings Neighborhood Program, or BBNP. BBNP is a program that is working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

During the interview, you indicated that your company would have completed more energy upgrades from 2010 to 2013 if the **[INSERT NAME OF LOCAL BBNP GRANTEE]** had not offered a program. Today I would like to speak with you in more detail about the effects of **[INSERT NAME OF LOCAL BBNP GRANTEE]** on your business and the local residential energy efficiency marketplace in general. This interview should only take about 15 minutes.

[IF ASKED] The primary contact person at LBNL is Dr. Edward Vine; he can be reached at 510-486-6047 or elvine@lbl.gov if you have any questions. We have been contracted to conduct the interviews for this research.

[IF ASKED] Any information you provide will be treated as confidential.

[IF ASKED] The Better Buildings Neighborhood Program, or BBNP, provided $508 million in one-time grants to 41 localities and states in 2010. The grantees are working to develop and incubate community-based programs and incentives to spur demand for residential and commercial building energy upgrades.

[IF ASKED] For participating contractors: you were selected randomly from a list of contractors provided by <"GRANTEE PROGRAM NAME"> in your area.

[IF ASKED] For non-participating contractors: You were selected randomly by InfoUSA from a list of contractors in your area.

Notice of confidentiality and permission to record:

INTRO1. For transcription purposes I would like to record our conversation. Is that ok? Please be aware that all the information you provide will be treated as confidential. Do you have any questions before we start? **[IF NECESSARY]** The interview transcripts are confidential and will only be used by the evaluation team. The tapes and interview transcripts are destroyed when the project is completed.

01 Permission to record received

02 Permission to record refused **[DO NOT RECORD. TAKE DETAILED NOTES.]**

[Note to Reviewer] Respondents also are reminded of the recording at the beginning of the interview and are told that if they wish to convey information that they do not want recorded, the recorder will be stopped until the subject changes or the information can be conveyed at the end of the session after the recording is completed.

[IF AGREE TO RECORDING] I will now begin recording. If at any point you would like me to pause the recording to discuss something you do not wish recorded please let me know.

I would like to start by asking you to confirm a few of your responses from the telephone survey.

INTRO2. As I said earlier, we are calling you today to follow up to our earlier survey. In that survey you indicated that without **[INSERT GRANTEE PROGRAM NAME],** the number of energy efficiency upgrades you would have completed from 2010 to 2013 would have been higher. Is this correct?

01 YES

02 NO

INTRO3. **[IF INTRO2=NO, READ]** You reported that you had completed <TOTAL_UPGRADES> upgrades from 2010 to 2013. How many would you have completed if the program did not exist? **[SWITCH TO POSITIVE MARKET EFFECTS INSTRUMENT]**

G.4.2. MARKET EFFECTS MECHANISMS

Based on your responses and responses from other contractors in your area, we determined that **[INSERT GRANTEE PROGRAM NAME]** had some positive and some negative effect on the number of energy efficiency jobs completed outside of the program in your local area. That is, jobs that did not receive incentives directly from role **[INSERT GRANTEE PROGRAM NAME]**.

Today, we would like to ask you a few questions to help us better understand what role **[INSERT GRANTEE PROGRAM NAME]** played in affecting your energy efficiency jobs outside of the program. For these questions, please try to think of just those jobs that did not receive funding from the program but were somehow influenced by the program.

ME1. How did the program influence the number of energy efficiency jobs your company completed outside of the program? **[See probes below if necessary]**

a. The program expanded the services of competing contractors in the area.

b. The program increased the number of trained contractors in the area, resulting in more competing businesses.

c. Company expanded services offered as a result of the program. (Began offering new services)

d. Company began to partner with other firms or other contractors as a result of the program

e. Company reduced the number of employees as a result of the program.

f. Program decreased consumer demand for energy efficiency services in the area.

g. Program decreased consumer confidence in the performance of efficiency services.

h. Program influenced customers outside of direct program service area.

i. We made changes to our business practices that led to decreased business.

g. We changed our marketing OR reallocated marketing budget to other areas.

k. We changed our business model as a result of participation in the program.

l. Other factors

ME2. **[FOR EACH FACTOR MENTIONED PROBE TO FIND OUT HOW/WHY RESPONDENT'S COMPANY ADAPTED, EXPANDED, OR CHANGED AS A RESULT OF THE BBNP PROGRAM]**

ME3. **[IF MENTIONED MULTIPLE FACTORS]** Of the influencing factors you mentioned, which do you think had the greatest impact on the number of jobs completed outside of the program? Why? Which was the second most important factor? Why?

ME4. What aspects or components of **[INSERT GRANTEE PROGRAM NAME]** were the most important in limiting the number of energy efficiency jobs your company worked on outside of those that received program funding? [See probes below if necessary]

a. Training

i. Sales training

ii. Building science training

iii. Other training

b. Financing

c. Marketing and outreach

d. Rebates and other incentives

e. Free or reduced cost energy assessments

f. Something else?

ME5. **[FOR EACH COMPONENT MENTIONED]** How did **[COMPONENT]** negatively influence or limit the number of jobs your company performed outside of the program?

ME6. **[IF MENTIONED MULTIPLE COMPONENTS]** Of the program components you mentioned, which do you think had the greatest impact on the number of jobs completed outside of the program? Why?

ME7. What have been the negative impacts on your business or the local energy efficiency market because of **[INSERT GRANTEE PROGRAM NAME]**? [SEE PROBES BELOW IF NECESSARY]

a. Difficult to adapt to surge in funding; the program swelled the market with short-term funding that was difficult to accommodate without changing your business model

b. Inconsistent funding; short-term surge in funding, followed by drop in funding

c. QA / QC requirements of program (too time consuming)

d. Other program processes – paperwork, project approval process, delayed payments from program

G.4.3. BUSINESS PRACTICES

BP1. Over the past decade, the landscape of residential and commercial building retrofits has changed. How has the focus on energy efficiency changed how your company does business?

BP2. Has the **[INSERT GRANTEE PROGRAM NAME]** changed how your company does business? **[IF YES]** How so?

BP3. A focus of the Better Buildings Program has been on creating substantial savings from energy efficiency retrofit activities. What influence, if any, has the **[INSERT GRANTEE PROGRAM NAME]** had on the comprehensiveness of your services? Has the program increased the comprehensiveness of your services? **[Probe: deeper retrofits, higher savings, inclusion of additional measures, whole house approach, etc.]**

BP4. Has participating in the **[INSERT GRANTEE PROGRAM NAME]** increased the level of energy savings overall for jobs you completed both inside and outside the program? [IF YES] Why?

BP5. The BBNP support for **[INSERT GRANTEE PROGRAM NAME]** was a one-time grant to the program. Now that nearly all of the grant funds have been spent, how will your company adjust? How will this affect your practices?

G.4.4. MARKETING

MT1. **[SKIP MT1 AND MT2 IF <MARKETING>=0]** In the telephone survey, you indicated that your company has **[Increased/Decreased PULL IN FROM SURVEY RESULTS]** marketing since 2010 and that changes your company has made to marketing since 2010 have **[Increased/Decreased PULL IN FROM SURVEY RESULTS]** the number of energy efficiency projects your company has worked on. What kind of changes have you made to your marketing? [See probes below]

a. Shifted focus to new marketing channels. Which ones?

b. Changed or emphasize more specific marketing messages. Which ones?

i. Comfort

ii. Safety

iii. Health

iv. Savings energy or money

v. Whole home upgrades

c. Shifted from mass media to direct marketing? Or vice-versa?

MT2. Why do you think these marketing changes have been effective? How have the effects of the [INSERT GRANTEE PROGRAM NAME] on your business influenced your marketing changes?

MT3. In terms of program marketing, what advice or suggestions do you have for programs like the **[INSERT GRANTEE PROGRAM NAME]** that are trying to affect the energy efficiency market?

G.4.5. JOBS

JA1. **[SKIP IF <HIRE> OR <RETAIN>=0]** In the telephone survey, you indicated that your company hired or retained employees because of the **[INSERT GRANTEE PROGRAM NAME]**. What types of employees were you able to add or retain [FIELD STAFF, OFFICE STAFF, ETC]? How has this affected your business?

G.4.6. TRAINING

TR1. **[SKIP IF < TRAIN>=0 OR NONE <TR_EENUM>, <TR_EEQUAL>, AND <TR_EEDEPTH>=1]** In the telephone survey, you indicated that your company received [Energy efficiency training AND / OR sales or marketing training PULL IN FROM SURVEY RESULTS] from [INSERT GRANTEE PROGRAM NAME] and that the training [Increased the # of EE upgrades; Quality of EE upgrades ; Comprehensiveness of the EE upgrades PULL IN FROM SURVEY RESULTS] in your local market. Why do think the [INSERT GRANTEE PROGRAM NAME] had this/these effect[s]?

a. In general, what made the training so effective?

b. What elements of the training were most effective and useful?

TR2. What kind of training is most needed for contractors in your area? What kind of training do the contractors in your area most want?

G.4.7. WRAP UP

Are there any other ways that the **[INSERT GRANTEE PROGRAM NAME]** has affected your business or the local energy efficiency market that we have not discussed?

Thank you for your time. Those are all of my questions.