

# **Better Buildings, Better Market Effects? Estimating the Market Effects of the Better Buildings Neighborhood Program**

*Greg Clendenning, NMR Group, Inc., Arlington, VA*  
*David Barclay, NMR Group, Inc., Syracuse, NY*  
*Lynn Hoefgen, NMR Group, Inc., Somerville, MA*  
*Jane Peters, Research Into Action, Portland, OR*  
*Marjorie McRae, RIA Research Into Action, Portland, OR*  
*Edward Vine, Lawrence Berkeley National Laboratory, Berkeley, CA*

## **ABSTRACT**

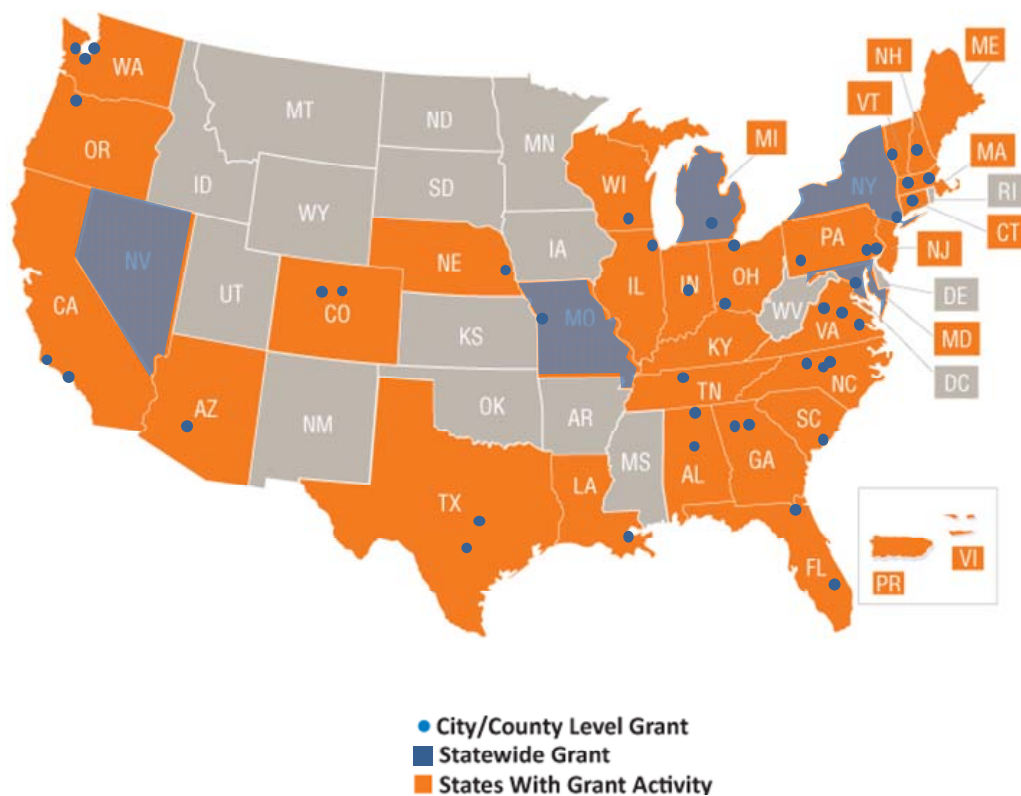
This paper presents the preliminary assessment from an ongoing evaluation of the market effects attributable to a whole-building retrofit program funded by the American Recovery and Reinvestment Act of 2009 (ARRA). Beginning in 2010, the Better Buildings Neighborhood Program (BBNP) funded 41 state and local grantees that implemented individual programs seeking to increase the overall energy efficiency of existing residential and nonresidential facilities.

In order to examine potential market effects, we surveyed 189 participating and 151 non-participating contractors as well as 164 suppliers and distributors of energy-efficient equipment among a subset of 22 BBNP grantees. For most of our preliminary indicators of market effects, such as the adoption of energy-efficient building practices, we first attempted to determine whether a given outcome (market change) has occurred, then examined whether the contractors or distributors attributed the change to BBNP.

We found preliminary evidence of market effects attributable to the BBNP grantee programs. Both participating and nonparticipating contractors reported that BBNP grantee programs are having a positive effect on their businesses and the marketplace in general. Further, participating contractors reported that they have adopted more energy-efficient practices since participating in BBNP. The surveys also found evidence that BBNP has had a positive impact on the marketing of energy efficiency by participating contractors and even on a small percentage of non-participating contractors, and contractors reported increased availability of trained contractors due to BBNP. Finally, suppliers and distributors reported a shift in their own business and stocking practices, with an increased emphasis on energy efficiency.

## **Introduction**

This paper presents the preliminary assessment from an ongoing evaluation of the market effects attributable to a whole-building retrofit program funded by the American Recovery and Reinvestment Act of 2009 (ARRA); (RIA and NMR, 2012). Beginning in 2010, the Better Buildings Neighborhood Program (BBNP) funded 41 state and local grantees that implemented individual programs seeking to increase the overall energy efficiency of existing residential and nonresidential facilities. BBNP awarded \$508,302,786 to the 41 grantees, with individual awards ranging from \$1.2 to \$40 million. Each grantee proposed and is implementing its own program design to deliver energy efficiency within its designated jurisdiction; programs vary on a number of characteristics, including, but not limited to, sector served (single family, multifamily, commercial, agricultural, and industrial), climate, and whether or not a program offers rebates, grants, or financing, and at what levels. More than 41 individual programs are in operation (see Figure 1).



**Figure 1. Grantees by Location<sup>1</sup>**

Among the intended outcomes of BBNP are market effects and progress toward a self-sustaining retrofit industry at the local level. Market effects are changes in the “structure of a market or behavior of participants in a market that is reflective of an increase in the adoption of energy-efficiency products, services, or practices and is causally related to market interventions ((Eto, Pahl, and Schlegel, 1996).

## Methods

In order to examine potential market effects, we surveyed 189 participating and 151 non-participating contractors as well as 164 suppliers and distributors of energy-efficient equipment in 22 communities with the most active BBNP grantees at the time of the preliminary evaluation. Surveys were fielded in July, August and September of 2012. Because a number of grantees did not have fully operating programs at the time of the preliminary evaluation, a key challenge was identifying grantees with active programs that may have been affecting their local retrofit market. Another challenge was defining the local markets from which to draw our sample of non-participating contractors and suppliers. Grantee programs ranged from remote, rural counties, to small towns to major metropolitan regions and states. Finally, the number of participating contractors varied dramatically among the grantees, ranging from 4 (Connecticut) to 365 (Maine). Table 1 lists the grantees included in this study.

<sup>1</sup> Additional information about the BBNP program and individual grantees is available at the BBNP website:

<https://www1.eere.energy.gov/buildings/betterbuildings/neighborhoods/>

**Table 1:** Grantees Included in the Preliminary Market Effects Survey

Austin, TX	New Hampshire <sup>c</sup>
Bainbridge Island, WA	NYSERDA <sup>f</sup>
Boulder County, CO <sup>a</sup>	Philadelphia, PA
Connecticut <sup>b</sup>	Phoenix, AZ
Eagle County, CO <sup>c</sup>	Portland, OR
Fayette County, PA	Rutland County, VT
Greensboro, NC	San Antonio, TX
Kansas City, MO	Seattle, WA
Lowell, MA	St. Lucie County, FL
Maine	Toledo-Lucas Co. Port Authority (OH)
Michigan <sup>d</sup>	University Park, MD

<sup>a</sup> Boulder County comprises the counties of Boulder, Garfield, and Denver.

<sup>b</sup> Connecticut comprises the cities in the southwest portion of the state of Westport, Ridgefield, Wilton, and Weston, where over 50% of the residential retrofits had occurred at the time of the study.

<sup>c</sup> Eagle County comprises the counties of Eagle, Pitkin, and Gunnison.

<sup>d</sup> Michigan comprises Wayne County and the city of Grand Rapids.

<sup>e</sup> New Hampshire comprises the towns of Berlin, Nashua, and Plymouth.

<sup>f</sup> NYSERDA comprises the cities of Syracuse, Rochester, and Buffalo, where over 60% of the 2011 NYSERDA Home Performance w ENERGY STAR<sup>®</sup> (HPwES) residential retrofits had occurred.

We identified a geographic region for each grantee from which we drew our sample of nonparticipating contractors and equipment vendors. We sought to systematically identify grantee geographic regions that captured an adequate population of contractors and vendors working in the grantee locations without defining a region that was so large that we would be unable to detect potential market effects.

Grantees selected were located in a wide range of areas, 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.<sup>2</sup> The NCHS report classifies counties into one of six categories—four urban and two rural—as shown in Table 2.

**Table 2.** 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 our sample of nonparticipating contractors and vendors of energy-efficient equipment according to the rules described in Table 3.<sup>3</sup>

<sup>2</sup> See: [http://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](http://www.cdc.gov/nchs/data_access/urban_rural.htm). The NCHS – 2006 Urban-Rural Classification Scheme provides a framework to systematically and consistently define the grantee regions and in turn systematically define the geographic scope of the grantee programs.

<sup>3</sup> The Maine grantee program is offered statewide, so contractors and vendors were sampled from the entire state of Maine.

**Table 3. Geographic Area for Sampling Nonparticipating Contractors and Vendors**

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 and vendors with data from a purchased list (InfoUSA<sup>4</sup>).<sup>5</sup> We classified grantees as offering either a residential or a commercial program, and identified contractors by Standard Industrial Classification (SIC) codes.<sup>6</sup> Contractor and vendor samples were drawn proportionally to the value of the BBNP grant received.<sup>7</sup> Based on the population estimates and sample sizes, we estimated a sampling error at 90% confidence level of 7.3% for participating contractors, 8.6% for nonparticipating contractors, and 6.1% for vendors. We estimated the associated error margins assuming a 50/50 proportion of responses. We note that our sampling strategy represents all sampled grantees, *but does not provide statistical precision at the grantee level*, and hence, does not allow us to draw any grantee-specific conclusions or inferences (Table 4).

**Table 4. Population, Sample Size and Estimated Sampling Error for Contractor and Vendor Surveys**

Group	Population	Sample Size	Sampling Error, 90% Confidence Level
Participating Contractors	1,159	189	7.3%
Nonparticipating Contractors	7,281	151	7.3%
Vendors	585	164	6.1%

## Metrics of Preliminary Indicators of Market Effects

Our study focused on five key indicators of the potential market effects of BBNP:

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

For most of these indicators, such as increased availability of trained contractors or adoption of energy-efficient building practices, we first attempted to determine whether a given outcome (preliminary indicator of a market change) had occurred, then examined whether the contractors or distributors attributed the change to BBNP. In other words, we examined the links to the program to see whether the indicators

<sup>4</sup> InfoUSA, a product of the Infogroup, provides business and consumer data, including contact information, for marketing and research purposes. See: <http://www.infousa.com/>.

<sup>5</sup> The original sample of nonparticipating contractors and vendors included firms that we excluded from the final population estimates. We excluded firms based on several criteria: disconnected phone numbers, wrong numbers or otherwise unusable phone numbers, the firm did not perform or sell energy-efficiency upgrade services or products, or the firm did not serve the sector (residential or commercial) of interest for the respective grantee.

<sup>6</sup> The following grantees were classified as commercial programs: Lowell, MA; Phoenix, AZ; Boulder County, CO; and Toledo-Lucas Co. Port Authority (OH).

<sup>7</sup> BBNP grants among the 22 grantees ranged in value from \$1.425 million to \$40 million.

associated with those links point to program influence on the preliminary indicator of a market change – that is, a preliminary indicator of a market effect.

Participants and nonparticipating contractors were asked to recount the number of energy efficiency upgrades that they performed in 2010 and 2011 and to provide an estimate of how many upgrades that they expected to complete in 2012.<sup>8</sup> Participating contractors reported performing more energy upgrades between 2010 and 2012 compared to nonparticipating contractors (Table 5). Almost all (98% of all upgrades, with 82% completed by participating contractors and 16% by nonparticipating contractors) were completed for existing homes while 2% were for commercial buildings. Among participating contractors, the average number of upgrades increased slightly each year; nonparticipating contractor upgrades rose from 2010 to 2011, but fell in 2012 according to respondent expectations.

**Table 5.** Total and Average Number of Energy-Efficiency Upgrades Completed in Existing Buildings, 2010 to 2012

Year	Participants (n = 183)		Nonparticipants (n = 144)	
	Average Number of Upgrades	Total Number of Upgrades*	Average Number of Upgrades	Total Number of Upgrades
2010	157	28,273	49	6,860
2011	186	33,406	50	7,139
2012 (Prediction)	195	35,746	46	6,575
2010-2012	524	97,425	152	20,574

\*We removed one outlier's response from the total number of upgrades based on the response being three standard deviations above the mean number of completed upgrades per employee. We replaced the respondent's estimate with a value equal to the average number of upgrades per employee multiplied by the number of employees.

Overall, the 22 BBNP grantees included in our surveys reported that they had completed 20,511 upgrades through the second quarter of 2012; participating contractors from the survey reported completing 8,388 upgrades with the BBNP grantees, or 41% of the total upgrades reported by the 22 BBNP grantees.

### Impacts on the Upgrade Market

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 the BBNP grantee on their business and the marketplace. In addition, we asked contractors to quantify the number of upgrades that they attributed to BBNP.

We asked contractors to assess if the BBNP grantee had an effect on their business and the market for energy-efficiency upgrades and if 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

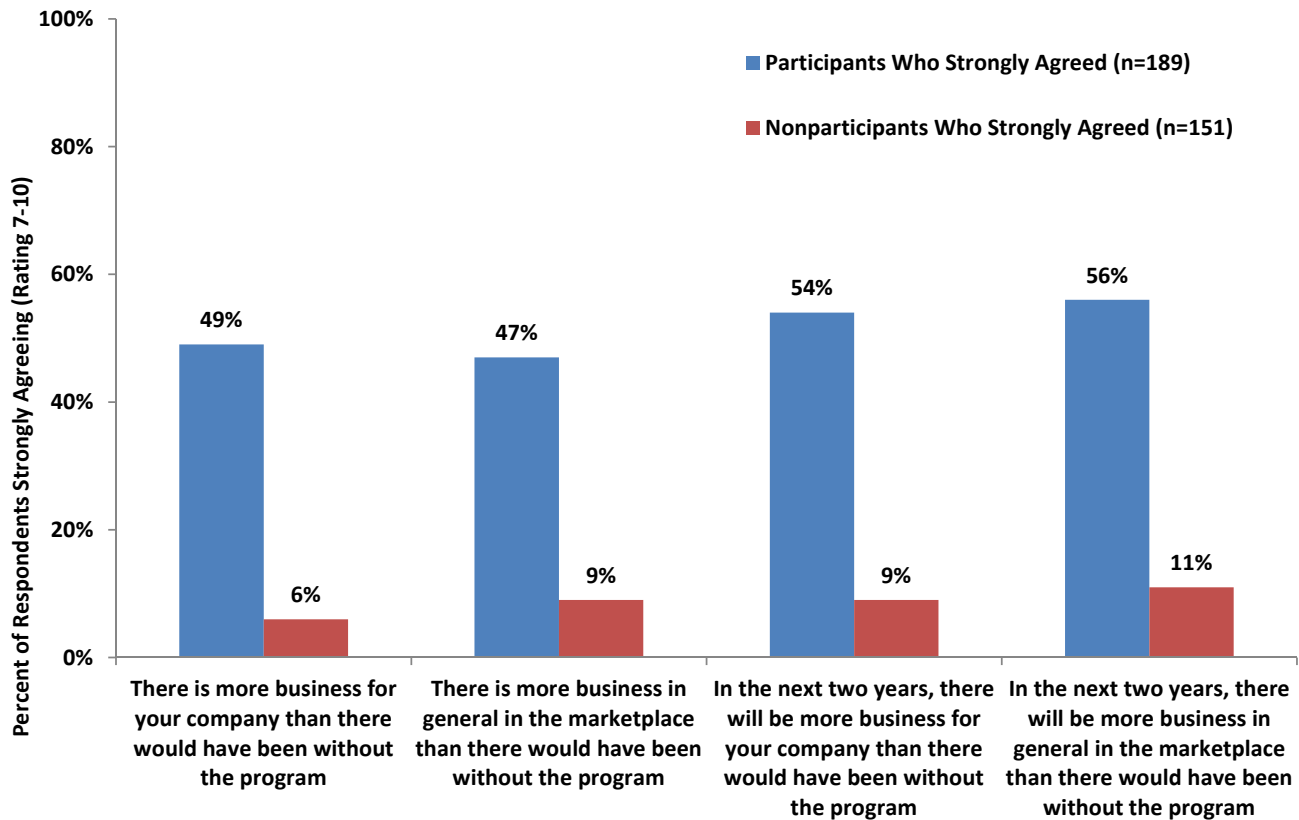
**Figure 2** reports the percentage of respondents who strongly agreed (a rating of 7 or higher) with a specific statement.<sup>9</sup> BBNP appears to have had a positive impact on participating contractors and there is

<sup>8</sup> Surveys were fielded in July, August and September of 2012

<sup>9</sup> All participating contractors and 44% of non-participating contractors were aware of their local BBNP grantee program.

**Figure 2** reports for all participating and non-participating contractors.

some preliminary evidence of modest amounts of spillover among nonparticipating contractors.



**Figure 2.** Contractor Assessment of the Effect of BBNP Grantee Program on the Market for Energy Efficiency

Reviewing these findings, 49% of participating contractors strongly agreed that there was more business for their company because of the BBNP grantee. These contractors represented 31% of all upgrades completed by all respondents from 2010 to 2012. A much smaller percentage of nonparticipating contractors, 6%, reported that the BBNP grantee program had increased the amount of business for their companies. This relatively small level of nonparticipant spillover is noteworthy for programs that have been operating for less than two years.

Similarly, 47% 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 35% of all upgrades completed by all respondents from 2010 to 2012. Again, a much smaller percentage of nonparticipating contractors, 9%, reported an increase in business in general in the marketplace due to the program.

When considering the energy efficiency market in the next two years, more than one-half of participating contractors strongly agreed that there will be more business for their company (54%) and that there will be more business in general in the marketplace (56%) than there would have been without the program. A small percentage of nonparticipating contractors strongly agreed that there will be an increase in business either for their own company (9%) or in the marketplace in general (11%).

Among both groups of contractors, larger percentages of respondents said they expect more energy-

efficiency work in the next two years because of the BBNP program than agreed that the program had already increased business either in general or for their company. This suggests that even though some contractors have not yet seen the impact of the BBNP program on the market, they expected to in the next two years.

**Net Upgrades Attributable to BBNP.** We made a preliminary estimate of the number of energy-efficiency upgrades attributable to the 22 BBNP grantees included in this preliminary market assessment, which in turn allows an initial 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 asked respondents (participating and nonparticipating contractors) to estimate the number of energy-efficiency upgrades they would have completed in the absence of the BBNP grantee activities during the 2010-to-2012 time period, with all other things remaining the same (i.e., the economy, energy prices, and other energy-efficiency programs). We estimated net BBNP upgrades by subtracting the number of upgrades completed with the BBNP grantee from the respondent's estimate of upgrades they would have completed in the absence of BBNP. Overall, the respondents estimated a total of 10,415 net upgrades attributable to BBNP, compared to 8,388 BBNP-supported upgrades, with the 90% confidence interval ranging from 6,468 to 14,384 upgrades. We estimate a NTG ratio of 1.2 (10,415 divided by 8,388), with the 90% confidence interval ranging from a NTG of 0.8 to 1.7 (Table 6).

We extrapolated the net impacts from the sample to the population of participating and nonparticipating contractors in the 22 grantee regions. For participating contractors, we extrapolated proportionally to the percentage of the grantee-reported BBNP upgrades represented by respondents' estimates of BBNP upgrades. For nonparticipating contractors, we extrapolated proportionally to the estimated population of contractors in each grantee region. Overall, we estimate a total of 29,581 net upgrades attributable to the 20,511 BBNP grantee-reported upgrades, with the 90% confidence interval ranging from 24,521 to 35,238 upgrades (Table 6). We estimate a NTG ratio of 1.4 (29,581 divided by 20,511), with the 90% confidence interval ranging from a NTG of 1.2 to 1.7.

**Table 6.** Net Upgrades Attributable to the BBNP

Population	BBNP-Supported Upgrades	Net BBNP Upgrades	90% Confidence Interval*		Overall NTG
			Low	High	
Survey Respondents	8,388	10,415	6,468	14,384	1.2
Extrapolated Estimate	20,511	29,581	24,521	35,238	1.4

\* The 90% confidence interval was based on the mean values of net BBNP upgrades.

Evaluations of whole-house retrofit programs in Massachusetts and New York found similar NTG values of 1.12 for each program. For example, a recent 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 Home Performance with ENERGY STAR program used a combination of homeowner and contractor surveys to estimate a NTG ratio of 1.12 (Quantec and Summit Blue 2006).

### **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 allows us to assess preliminary changes in the market or in market actors' behavior resulting from BBNP activities. Contractors were asked about upgrades that reduced energy usage

by 15% or more and changes in their standard practices. We note that these are self-reported data that have not been corroborated by other data sources such as field studies or sales data.

We asked contractors to estimate the percentage of the energy-efficiency upgrades that they had installed (or would likely install in 2012) that reduced energy usage by 15% or more during 2010 to 2012. Participating contractors reported that approximately three-quarters of their projects for each year reduced energy use by 15% or more; nonparticipating contractors reported that just above one-half of their projects for each year reduced energy use by 15% or more.<sup>10</sup> For both participating and nonparticipating contractors, there was little evidence to suggest a large change in the percentage of high-savings projects between 2010 and 2012 (Table 7).

**Table 7.** Average Percent of Upgrades with 15% or More Reduced Energy Usage

Program Year	Participants		Nonparticipants	
	n	Mean Percent of All Upgrades	n	Mean Percent of All Upgrades
2010	140	73%	97	53%
2011	158	72%	94	52%
2012	158	75%	101	56%

We also asked participating contractors to assess the impact of their participation in the BBNP grantee program on upgrades that they had worked on outside of the program. Participating contractors most commonly talk about energy efficiency more often with customers (19%) and were using materials that are more efficient (12%). Since they began participating in the BBNP grantee programs, more than 40% of participating contractors have changed their standard practices in non-BBNP upgrades (Table 8).

**Table 8.** Changes to Standard Projects Outside of the Better Building Program (Multiple Responses)

Change	Participants (n = 189)
In general, talk about energy efficiency more with customers	19%
Use more efficient materials	12%
Offer more services/changed processes	7%
Compare efficiency levels of different equipment	4%
More focus on/more aware of energy-efficiency services	4%
Better quality work and skill level	4%
Explain payback period/savings	3%
Changed marketing/promotion practices	3%
More staff, training, and jobs	2%
Other	4%
Nothing/None	53%
Don't know	5%

Those participating contractors who said that they had made at least one change to their standard practices for projects outside the program were also asked to rate the level of influence that they believed the BBNP grantee program had on these changes. On an 11-point scale (where zero is “no influence at all” and

<sup>10</sup> It is difficult to verify contractors’ estimates of reduced energy usage associated with their upgrades. The Home Performance with ENERGY STAR (HPwES) website estimates 20% savings in utility bills: [http://www.energystar.gov/ia/partners/rep/pt\\_rep\\_home\\_performance/HPwESSampleBrochure.pdf?fea4-3b94](http://www.energystar.gov/ia/partners/rep/pt_rep_home_performance/HPwESSampleBrochure.pdf?fea4-3b94). However, evaluations of HPwES programs commonly estimate savings in energy units, such as kWh or BTUs, rather than in terms of percent of energy savings. See, for example, Quantec and Summit Blue, LLC. 2006. *Home Performance with ENERGY STAR Program: Market Characterization, Market Assessment and Causality (MCAC) Evaluation Final Report*. Prepared for New York State Energy Research and Development Authority (NYSERDA) or Opinion Dynamics. 2009. *Process and Impact Evaluation of The 2007-2008 Energy Trust of Oregon Home Energy Solutions Program. Volume 1: Summary Report*. ([http://energytrust.org/library/reports/ETO\\_HES\\_Process\\_and\\_Impact\\_Report\\_Volume\\_1.pdf](http://energytrust.org/library/reports/ETO_HES_Process_and_Impact_Report_Volume_1.pdf))



10 is “a great deal of influence”), 21% of participating contractors who were responsible for 10% of all upgrades reported that the BBNP grantee program had a strong influence (a rating of 7 or higher) on changes to their standard practices.

### Increased availability of trained contractors in the marketplace

Another key expected outcome that could indicate market effects of BBNP is increasing the technical capability of contractors through training. In order to assess the impact, both participating and nonparticipating contractors were first asked whether they or any of their staff had received any training in energy-efficient building practices or technologies, and, if aware of the BBNP grantee program, whether they or their staff had attended any trainings sponsored by that program (Table 9).

**Table 9.** Contractor Training in Energy-Efficient Building Practices

	Participants, Percent of Respondents (n = 189)	Nonparticipants, Percent of Respondents (n = 151)
Received <b>any</b> training	93%	64%
Attended training sponsored by the BBNP grantee	61%	18%
Believe number of trained contractors has increased (2010 to 2012)	84%	74%
Level of influence of BBNP on increased number of trained contractors is 7 or higher*	48%	8%

\* On a scale from 0 to 10, where 0 is “no influence at all” and 10 is “a great deal of influence.”

Almost all participating contractors (93%) and nearly two-thirds of nonparticipating contractors (64%) reported having received training in energy-efficient building practices or technologies; not surprisingly, a higher percentage of participating contractors (61%) had attended training sponsored by a BBNP grantee than had nonparticipating contractors (18%).

When asked whether the number of contractors trained in energy-efficient building practices or technologies had increased from 2010 to 2012, the majority of both groups (84% of participating contractors and 74% of nonparticipating contractors) reported that the number had increased. Those who were aware of the BBNP grantee program and reported an increase in the number of trained contractors were asked to rate the level of influence of the BBNP program on the increase. Nearly one-half (48%) of the participating contractors who were responsible for 31% of all upgrades reported that the BBNP grantee program had strongly influenced this increase in number of trained contractors.<sup>11</sup> In addition, 8% of nonparticipating contractors felt the program had had a strong influence on the number of trained contractors. This evidence suggests that BBNP had a positive impact on the number of trained contractors in the regions served by BBNP grantees.

### Increased marketing of energy efficiency by contractors

BBNP expects grantees to increase consumer demand through marketing and outreach. A preliminary indicator of market effects would be an increase in the level of marketing of energy efficiency by contractors in BBNP grantee regions that contractors attributed to the BBNP grantee.

As shown in Table 10, nearly two-thirds of participating contractors (65%), who were responsible for 64% of all upgrades, and one-half of nonparticipating contractors indicated that their marketing of energy efficiency and energy-efficient features had increased since 2010. Furthermore, 47% of participating contractors and 18% of nonparticipating contractors said that changes that they had made to marketing had

<sup>11</sup> Includes those rating the program’s influence anywhere from 7-10 on a scale of 0-10, where 0 is “no influence at all” and 10 is “a great deal of influence.”

led to an increase in the number of upgrades.

Nearly one-third (31%) of participating contractors, who were responsible for 14% of all upgrades, reported that the BBNP grantee program had strongly influenced their decision to increase marketing of energy efficiency and energy-efficient features. In addition, 4% of nonparticipating contractors reported that the BBNP grantee had strongly influenced their decision to increase marketing. This evidence suggests that BBNP had a positive impact on the marketing practices of a notable percentage of participating contractors and even a small percentage of nonparticipating contractors.

**Table 10. Marketing of Energy Efficiency Since 2010**

	Participants, Percent of Respondents (n = 189)	Nonparticipants, Percent of Respondents (n = 151)
The amount you market energy efficiency and energy-efficient features has increased.	65%	50%
The number of projects you have worked on has increased due to the changes you made to marketing.	47%	18%
Level of influence of BBNP on increased marketing is 7 or higher	31%	4%

### Increased sales and availability of high-efficiency equipment and products

The last preliminary indicator of market effects is the level of sales of high-efficiency equipment and materials. Surveys of 164 distributors from 22 of the BBNP grantees provided data for this indicator. 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.

We asked distributors who reported awareness of the BBNP grantee program about the influence of the program on equipment sales for several equipment types. Table 11 shows that, for each equipment type, the majority of residential distributors said that the BBNP grantee program had no impact on sales. However, a substantial number (ranging from 35% to 44% of distributors, depending on type of equipment) thought the program had a positive impact. Only one respondent said that the program had a negative impact on sales of any of the equipment types.<sup>12</sup>

**Table 11. Impact of the BBNP Grantee Program on Equipment Sales (Residential)\***

Equipment Type	n	Positive	Negative	No Impact	Don't Know/ Refused
HVAC and water heating systems	50	44%	2%	52%	2%
Building automation and/or controls	20	35%	0%	65%	0%
Building envelope products	5	40% (2)	0%	60% (3)	0%
Lighting	5	40% (2)	0%	60% (3)	0%
Other energy-related equipment	22	41%	0%	55%	5%

\* Base: Respondents Aware of a BBNP Grantee Program

We asked distributors who were aware of a BBNP grantee program whether their business and stocking practices had changed since the BBNP grantee program began – and if so, how they have changed. Over one-half of the distributors who were aware of the BBNP grantee programs (26% of all distributors) reported that their business or stocking practices had changed (Table 12). Nearly one-half (46%) said that they now compare the efficiency levels of different equipment for their customers, and the same proportion said they now explain to customers how the high-efficiency equipment or materials work and why it is more efficient than standard equipment. Similar percentages (45% and 43%) said that, since the program began, they started talking to customers about payback periods and savings over time, and that they talked more about energy efficiency in general with their customers. More than one-quarter (28%) said they now stock

<sup>12</sup> The respondent did not provide a reason as to why the program had a negative impact on equipment sales.

more efficient equipment and materials. Fewer than one-half (43%) said that there had been no changes.

Distributors reporting that their business and stocking practices had changed since BBNP had begun were asked to rate the influence of the BBNP grantee on the changes, using a scale from 0 (“no impact”) to 10 (“a great deal of impact”). Out of all distributors, 6% rated the influence of the BBNP grantee as seven or higher.

**Table 12.** Business and Stocking Practice Changes since the BBNP Grantee Program Began (Multiple Responses)\*

Change in Practices	Distributors (n= 74)
Compare efficiency levels of different equipment	46%
Explain to customers how the high-efficiency equipment/materials work and why it is more efficient than standard equipment	46%
Talk to customers about payback periods and savings over time	45%
In general, talk about energy efficiency more with customers	43%
Stock more efficient materials	28%
Training and certification of staff to become energy auditors/home performance contractors	4%
Other	3%
Nothing/None	43%
Don't know/Refused	3%

\* Base: Respondents Aware of a BBNP Grantee Program

Distributors who were aware of a BBNP grantee program assessed the influence of the program on the marketplace (Table 13) using a scale from 0 (“strongly disagree”) to 10 (“strongly agree”). There was little attribution of effects from BBNP for this preliminary indicator of market effects. Fewer than one out of ten distributors (7%) agreed (i.e., gave an agreement rating of 7 or higher) with the statement, “My company has more business than it would have had without BBNP,” and slightly more (12%) agreed with the statement, “The marketplace in general has more business than it would have had without BBNP.”

**Table 13.** Agreement with Statements on the Effect of the BBNP Grantee Program on Energy-Efficient Equipment Market

Statement	Percent Strongly Agreeing (Rating 7 to 10); (n= 164)
My company has more business today than it would have had without BBNP	7%
The marketplace in general has more business today than it would have had without BBNP	12%

\* Base: Respondents Who Made Changes due to the BBNP Grantee Program

## Conclusions

We found preliminary evidence of market effects attributable to BBNP grantee programs. Both participating and nonparticipating contractors reported that BBNP grantee programs are having a positive effect on their businesses and the marketplace in general, including spillover retrofit projects outside of BBNP. Further, participating contractors reported that they have adopted more energy efficient practices since participating in BBNP. The surveys also found evidence that BBNP has had a positive impact on the marketing of energy efficiency by participating contractors and even on a small percentage of non-participating contractors, and contractors reported increased availability of trained contractors due to BBNP. Finally, suppliers and distributors reported increased sales and availability of high-efficiency equipment and products and a shift in their own business and stocking practices, with an increased emphasis on energy efficiency.

Energy efficiency programs that seek to change markets can result in program impacts that extend beyond the direct impacts of the program. Therefore, it is important to measure market level impacts of

these types of programs. This study provides preliminary evidence of market effects of BBNP and provides insights into ways to measure market effects. We are continuing our evaluation of BBNP market effects, which includes a second round of surveys of contractors and distributors.

## 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.

Eto, J, R. Prah, and J. Schlegel. 1996. *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs*. Prepared for The California Demand-Side Measurement Advisory Committee, Project 2091T. LBNL-39058, UC-1322. Berkeley, Calif.: Lawrence Berkeley National Laboratory. ( <http://eetd.lbl.gov/ea/EMP/reports/39058.pdf>)

Opinion Dynamics. 2009. *Process and Impact Evaluation of the 2007-2008 Energy Trust of Oregon Home Energy Solutions Program. Volume 1: Summary Report*.

([http://energytrust.org/library/reports/ETO\\_HES\\_Process\\_and\\_Impact\\_Report\\_Volume\\_1.pdf](http://energytrust.org/library/reports/ETO_HES_Process_and_Impact_Report_Volume_1.pdf))

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

Research Into Action (RIA) and NMR Group, Inc. 2012. *Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program*.

([http://www1.eere.energy.gov/analysis/pdfs/bbnp\\_preliminary\\_process\\_market\\_eval\\_report\\_011513.pdf?utm\\_source=bbnp\\_bbnv&utm\\_medium=email&utm\\_campaign=4-23-13](http://www1.eere.energy.gov/analysis/pdfs/bbnp_preliminary_process_market_eval_report_011513.pdf?utm_source=bbnp_bbnv&utm_medium=email&utm_campaign=4-23-13))