Better Buildings Neighborhood Program Summary of Reported Data From July 1, 2010 – September 30, 2013

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ACKNOWLEDGMENTS

This document presents a summary of data reported by organizations awarded federal financial assistance (grants or cooperative agreements) through the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP) from July 2010 or September 2010 through September 30, 2013. Although some awards have been extended into 2014, only the data reported through the end of September 2013 are included in this document.

We would like to thank the BBNP recipients who submitted these data, reviewed the information in this document, and provided revisions. We appreciate their perseverance and patience with the reporting process.

We would also like to thank Rebecca Ciraulo and Aayush Daftari at Navigant Consulting, Dave Roberts and Mike Heaney at the National Renewable Energy Laboratory (NREL) for compiling the quarterly information and the graphs and tables for this report.

Please contact Dale Hoffmeyer at betterbuildings@ee.doe.gov with any questions about this report.

TABLE OF CONTENTS

BBNP Summary of Reported Data 2

1.1. Introduction 2

1.2. Source of Data 3

1.3. Data Quality 4

1.4. Funding Synopsis 5

1.5. Program Design Synopsis 6

1.6. Driving Demand Synopsis 9

1.7. Financing Synopsis 10

1.8. Workforce Development Synopsis 11

1.9. Estimated Energy Savings Synopsis 13

APPENDIX A: Glossary Of Terms 16

APPENDIX B: Methodology To Calculate Source Energy Savings 21

APPENDIX C: Lifetime Energy Cost Savings Calculations 23

BETTER BUILDINGS NEIGHBORHOOD PROGRAM
SUMMARY OF REPORTED DATA

BBNP SUMMARY OF REPORTED DATA

1.1. Introduction

This document presents a summary of data reported by 41 organizations awarded federal financial assistance (cooperative agreements or grants) by the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP) from July 2010 or September 2010 through September 30, 2013. Although some awards were extended into 2014, only the data reported through the end of September 2013 are included in this document.

This document is not an evaluation of the recipients' BBNP program or a final report of the recipient's activities. The purpose of this document is to provide a summary of data reported quarterly by recipients. As the programmatic and building upgrade project data reported quarterly by each recipient is released, it will be available on the BBNP website at http://energy.gov/eere/better-buildings-neighborhood-program/progress. This report may be useful to researchers and others who plan to study what recipients reported.

This document, and one like it for each BBNP award recipient, follows a similar structure with similar graphs and tables. Each document includes the following sections: Funding Synopsis, Program Design Synopsis, Driving Demand Synopsis, Financing Synopsis, Workforce Development Synopsis, and Estimated Energy Savings Synopsis.

Two additional sources of information may be useful to researchers interested in the accomplishments of BBNP award recipients. First, is an independent evaluation of BBNP conducted by Research Into Action, NMR Group, Nexant, and Evergreen Economics. A Preliminary Process and Market Evaluation report was released in December 2012 and a Preliminary Energy Savings Impact Evaluation report was released in November 2013. Final reports will be released in 2014 and 2015. Second, as the recipient's final technical report is completed it will be available on the BBNP website. The final technical report was written by the recipient and contains more detailed information about the recipients' accomplishments and lessons learned. Some recipients conducted independent evaluations of their programs, and the final technical report is a source for locating those evaluations.

BBNP SUMMARY OF REPORTED DATA

1.2 Source of Data

The Better Buildings Neighborhood Program included 34 (25 topic 1 and 9 topic 2) competitively awarded, ARRA-funded Energy Efficiency Conservation Block Grants (EECBG) and 7 competitively awarded, FY10-funded State Energy Program (SEP) cooperative agreements. Topic 1 EECBG were awarded at the beginning of June 2010, Topic 2 EECBG were awarded in August 2010, and SEP agreements were awarded in October 2010. The first Quarterly Program Reports were due from recipients for Q4-2010 (grant start date through December 30, 2010) regardless of when the awards occurred.

All BBNP financial assistance agreements were originally set to expire between May and September 30, 2013. Four EECBG awards were completed in 2013 (Toledo, OH; Connecticut; Omaha, NE; and University Park, MD).The remaining agreements were modified to expire in 2014. Because the expiration date for some awards was extended, the total BBNP spending in this report will not equal the total awarded amount.

Organizations that received federal financial assistance under BBNP were required to submit a quarterly Federal Financial Report (SF-425), DOE Progress Report, and a BBNP Program Report. Most of the information in this document is based on recipients' BBNP Program Report submissions. A copy of the BBNP Program Report (Excel Template) may be obtained by emailing betterbuildings@ee.doe.gov. Recipients were also given the option to submit Program Report information via XML web service.

EECBG awards were funded by the American Recovery and Reinvestment Act (ARRA or Recovery Act). All federal recipients of ARRA funds were required to submit quarterly ARRA reports, in addition to agency-specific reports, via the ARRA federal reporting website. Information reported under the authority of ARRA is available on www.recovery.gov. Estimated job creation information in this report was obtained from www.recovery.gov.

EECBG (34) and SEP (7) awards had slightly different mandatory reporting requirements for BBNP quarterly Program Reports. For example, reporting job hours worked was mandatory for EECBG awards and voluntary for SEP. Reporting workers trained and certified was mandatory for SEP awards and voluntary for EECBG. Reporting the number of active contractors performing building upgrades under the program was mandatory for EECBG awards and voluntary for SEP.

BBNP SUMMARY OF REPORTED DATA

1.3. Data Quality

The data summary provided in this document is based on information recipients formally submitted to DOE using the BBNP Quarterly Program Report or ARRA report (EECBG only). Recipients reported quarterly totals for some information like spending, estimated energy savings, assessments completed, and workers trained or certified. Information like invoiced cost and loan amount was reported for each upgrade project. A total invoiced cost or loan amount is obtained from summing all the values reported for each upgrade project record that included this information. Estimated energy savings was reported as a total for the quarter and an estimate was reported for each upgrade project. Where appropriate, we have indicated the percent or quantity of upgrade projects that had complete information. These upgrade project records were used to determine some values in the figures and tables.

The data reported by recipients may include three types of errors: non-response, incorrect response, or processing errors.

> Non-response—Although some data in the BBNP Program Report was mandatory and other information was optional, not all recipients consistently reported the mandatory data elements. Missing mandatory data elements can be characterized as not available, not applicable, or not reported.
>
> Incorrect Response—Data reported by recipients could be incorrect because the requested information was not understood; there was a lack of attention to detail; or information was misrepresented.
>
> Processing Errors—Data reported could also be incorrect because of errors introduced when extracting the data from Program Reports and loading it into a central database. Processing errors can also be introduced when querying the central database to provide summary information.

DOE made several attempts to ask recipients to provide missing information and to verify the information that was reported. For example, recipients were provided a summary of what had been reported and a list of data quality issues following each quarterly reporting period, along with numerous requests to correct errors.

BBNP SUMMARY OF REPORTED DATA

1.4. Funding Synopsis

BBNP was first announced by Vice President Biden as "Retrofit Ramp-Up" on April 21, 2010. The program presented initial awards of $452 million in ARRA funding to 25 state and local governments to "ramp-up" energy efficiency building retrofits. DOE ultimately awarded a total of $508 million to 41 state governments, local governments, and non-governmental organizations. Financial assistance of $1.4 million to $40 million per recipient was awarded through the competitive portions of the EECBG Program ($482 million in ARRA funds) and the SEP ($26 million).

The goals of BBNP were the following:

- Develop sustainable energy efficiency upgrade programs
- Leverage $1 to $3 billion in additional resources
- Upgrade 100,000 residential and commercial buildings to be more energy efficient
- Engage 10,000 to 30,000 contractors in work on energy efficiency upgrades
- Achieve 15% to 30% energy savings from energy efficiency upgrades
- Save consumers approximately $65 million annually on their energy bills
- Reduce the cost of energy efficiency program delivery by 20% or more

Figure 1 shows total recipient expenditures, other federal expenditures,[1] and non-federal expenditures[2] (leveraged spending) compared to the total investment in building upgrades (reported as invoiced cost).

The definition for non-federal expenditures includes the building owner's contributions for the building upgrade cost. Based on the reported invoiced upgrade costs we would expect to see a larger amount reported for non-federal expenditures. It appears that the total non-federal expenditures reported did not include all building owner investments.

Recipients reported leveraging expenditures of more than $750 million from other federal grants and private sources (including building owners) to implement programs and complete building improvements. In addition, recipients estimated leveraging over $440 million in available capital from private and non-BBNP sources to provide financing for building improvements. The Financing Synopsis provides more details on recipient financing investments and results.

[1] Other federal expenditures may include additional federal financial assistance award funds or loans from the Department of Energy or another federal agency.

[2] Non-federal expenditures may include third-party, in-kind contributions and the portion of the costs of a federally assisted project or program not borne by the federal government. This should include building owner contributions to building upgrade project cost.

BBNP SUMMARY OF REPORTED DATA

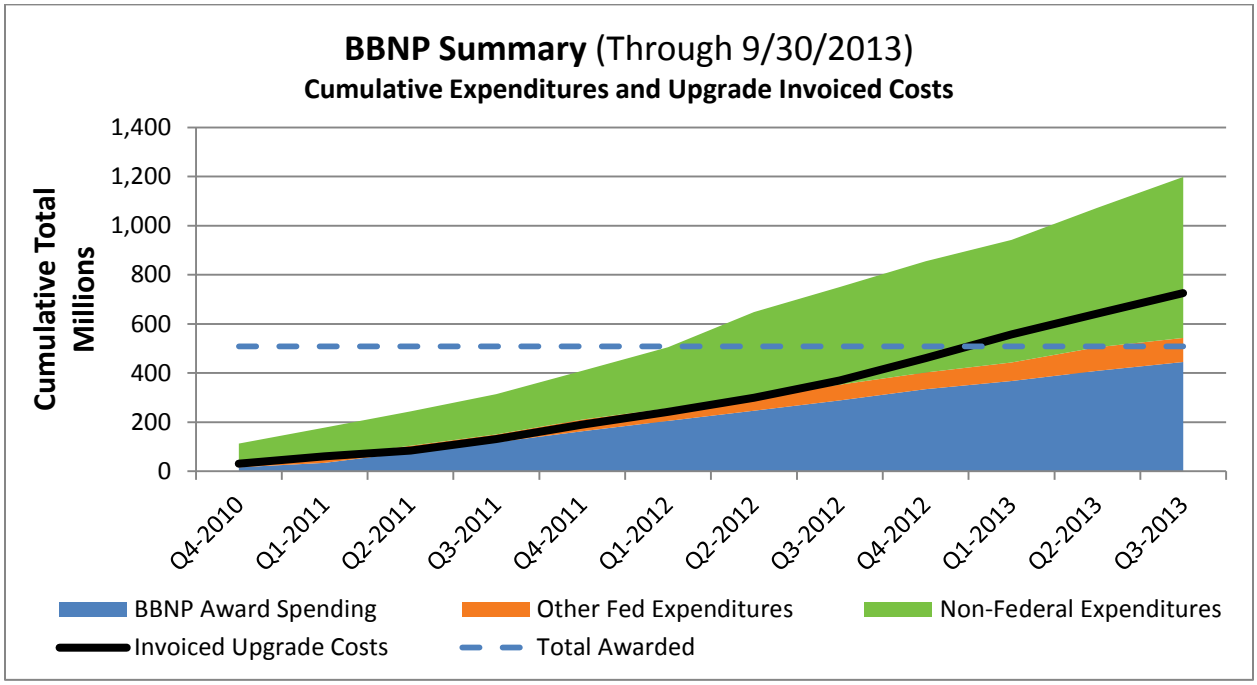

Figure 1. BBNP Cumulative Expenditures and Upgrade Invoiced Costs

1.5. Program Design Synopsis

The Vice President's Middle Class Task Force released a "Recovery Through Retrofit" report in October 2009 that identified market and non-market barriers preventing the home energy upgrade market from achieving national-scale success, including the following:

- Access to Information: Consumers do not have access to straightforward and reliable information that they need to make informed decisions about home energy upgrades.
- Access to Financing: Homeowners face high upfront costs for home energy upgrades that often go beyond their average budget. Some homeowners are concerned that they will be unable to recoup the value of their investment should they choose to sell their homes.
- Access to Skilled Workers: A shortage of skilled workers and green entrepreneurs is preventing the expansion of efficiency upgrades on a national scale.

In the original BBNP Funding Opportunity Announcement, DOE challenged organizations to test innovative, “game changing” ideas that could create a comprehensive framework for building retrofits, including processes for financing, marketing/education, delivery, monitoring, and verification measurement that could serve as templates for other communities across the

country. The program designs of recipients included activities to drive consumer demand, offer affordable financing, and develop a skilled workforce to complete home energy upgrades.

Most recipient program designs targeted residential single-family building upgrades, but some also targeted multifamily residential, commercial, agricultural or industrial sectors. Table 1 below shows the recipient award amount and the number of upgrades reported by building type.[3] Although the variance in the size of commercial buildings is large, Table 1 shows the number of commercial buildings upgraded regardless of the size. Recipients could, and many did report the commercial building square footage upgraded.

[3] DOE cautions against dividing the award amount by the number of upgrades reported in Table 1 as a metric of success. These programs require a significant initial investment to initiate, and results may be low during the first year or two. However, as the number of upgrades increases and fixed costs stabilize, the cost per upgrade tends to decrease over three to five years. Several of the recipients used their BBNP award funds to establish revolving loan funds and loan loss reserves, and these programs will continue to support the financing of additional building upgrades without additional federal funding. In addition, recipients funded activities to encourage upgrades in homes and commercial buildings; however, the energy savings from upgrades to one commercial building can be substantially greater than one home.

BBNP SUMMARY OF REPORTED DATA

Table 1. Award Amount and Reported Upgrades by Recipient

Award Amount and Reported Upgrades by Recipient (Through 9/30/2013)						
Recipient	Total Awarded	Reported Upgrades				
		Single-Family	Multi-Family Units	Commercial	Industrial	Agricultural
ADECA, AL (SEP)	$ 3,013,751	518				
Austin, TX	$ 10,000,000	1,728	1,837			
Boulder County, CO	$ 25,000,000	2,851	5,388	1,713		
Camden, NJ	$ 5,000,000	158		94		
Chicago Metro Agency for Planning	$ 25,000,000	3,489	2,689	7		
Commonwealth of MA (SEP)	$ 2,587,976	413				
Connecticut Innovations, Inc.	$ 4,171,214	1,501				
CSG, Bainbridge Island, WA	$ 4,884,614	928				
Eagle County, CO	$ 4,916,126	540	1,286			
Fayette County, PA	$ 4,100,018	805		5		
Greater Cincinnati Energy Alliance	$ 17,000,000	1,461		23		
Greensboro, NC	$ 5,000,000	369	498	16		
Indianapolis, IN	$ 10,000,000	1,164		9		
Kansas City, MO	$ 20,000,000	2,703		106		
Los Angeles County, CA	$ 30,000,000	3,913	580	273		
Lowell, MA	$ 5,000,000		441	23		
NYSERDA	$ 40,000,000	16,749				
Omaha, NE	$ 10,000,000	1,360		43		
Philadelphia, PA	$ 25,000,000	1,968	204	3		
Phoenix, AZ	$ 25,000,000	276	227	561		
Portland, OR	$ 20,000,000	3,199		55		
Rutland, VT	$ 4,487,588	620				
San Antonio, TX	$ 10,000,000	1,807		37		
Santa Barbara County, CA	$ 2,401,309	57				
Seattle, WA	$ 20,000,000	1,814	767	57		
Southeast Energy Efficiency Alliance	$ 20,000,000	3,585	1,553	26		
St. Lucie County, FL	$ 2,941,500	209				
State of Maine	$ 30,000,000	9,130	2,682			
State of Maine (SEP)	$ 4,538,571		589			
State of Maryland	$ 20,000,000	987	653	7		16
State of Michigan	$ 30,000,000	6,094	113	84		
State of Michigan (SEP)	$ 4,994,245			47		
State of Missouri	$ 5,000,000	48				147
State of Nevada (SEP)	$ 5,000,000	408				
State of New Hampshire	$ 10,000,000	808	365	66		
Toledo-Lucas Co. Port Authority (OH)	$ 15,000,000			67		
Town of Bedford, NY	$ 1,267,874	193				
Town of University Park, MD	$ 1,425,000	204				
VDMME, VA (SEP)	$ 2,886,500	327				
WDC, WA (SEP)	$ 2,587,500	549				
Wisconsin Energy Efficiency Project	$ 20,000,000	1,747	1,458	225	15	
TOTAL	**$ 508,203,786**	**74,680**	**21,330**	**3,547**	**15**	**163**

Program designs were diverse not only because of the building sector targeted, but also because different strategies were used in different communities. Recipients like the Southeast Energy Efficiency Alliance and Los Angeles County included several sub-grants to communities, each with unique program designs. Recipients were also actively encouraged by DOE to change program design strategies during the grant period, especially if an approach was not working. You can find more information about a recipient's program design on the BBNP website.

1.6. Driving Demand Synopsis

BBNP-funded programs used a variety of strategies and tactics to increase demand for energy-efficient building upgrades. These ranged from traditional advertising to online outreach to political campaign-style grassroots outreach to contractor sales training and empowerment and beyond. You can find a synopsis of each recipient's activities to drive demand in the individual grant recipient Summary of Reported Data or the recipient's final technical report.

Figure 2 shows the cumulative energy assessments and upgrades from all building sectors reported through 9/30/2013 and the estimated annual source energy savings[4] **(right axis)**

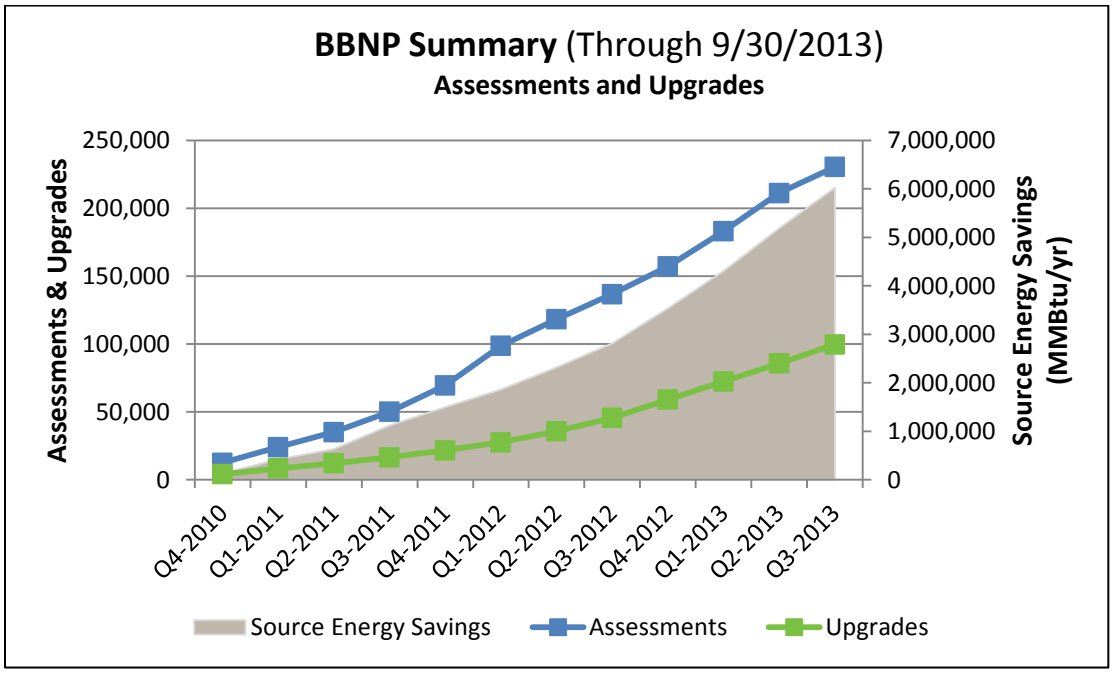

Figure 2. BBNP Assessments, Upgrades, and Estimated Savings

[4] Source energy, also called primary energy, is the amount of fossil fuels and electricity plus the losses associated with the production of electricity (i.e., losses that occur in the generation, transmission, and distribution). Total estimated source energy savings was calculated by DOE. See Appendix B.

BBNP SUMMARY OF REPORTED DATA

1.7. Financing Synopsis

Access to financing was identified as a key barrier to home energy upgrades in the Recovery Through Retrofit report and BBNP recipients made substantial investments to overcome it. Recipients used public funds to establish revolving loan funds (RLFs) in 22 states. These funds were one source of capital for making loans to eligible borrowers. As these loans are repaid, additional loans are made and the funds may continue indefinitely.

Banks, credit unions, and other financial institutions offer a source of private capital for making loans. Twenty-five recipients established loan loss reserve (LLR) funds—a common type of credit enhancement—to reduce lender risk exposure and negotiate more accessible loans. LLR funds are used to cover some portion of the lenders' cost of unpaid loans. If there are few defaults the funds may continue for many years.

To make loans more attractive to borrowers, 15 recipients used public funds to buy down interest rates of loans, making them more affordable. The Financing Investments and Results table shown below in Table 2, shows the grant funding investments in Revolving Loan Funds (RLF), Loan Loss Reserves (LLR), or Interest Rate Buy-Down (IRBD).

Table 2. Financing Investments and Results (Through 9/30/2013)

Financing Investments and Results (Through 9/30/2013)	
RLF (Commercial)	**$39,180,788**
RLF (Residential)	**$28,532,003**
Percent of Total Awards Invested in RLF	13%
LLR (Multi-Sector)	**$7,791,637**
LLR (Commercial)	**$36,704,152**
LLR (Residential)	**$30,154,770**
Percent of Total Awards Invested in LLR	15%
Interest Rate Buy-down	**$10,399,504**
Total Financing Investment	**$152,759,531**
Percent of Total Awards	30%
Total Capital (Private and Other Non-BBNP) Leveraged for Lending	**$ 443,645,923**
Results	
Amount Loaned Out (Residential and Commercial)	**$166,924,842**
# of Loans (Residential and Commercial)	**12,788**
Average Loan Amount (Residential)	**$11,135**
Average Loan Amount (Commercial)	**$145,182**

About 28% of the total awarded amount was invested to make energy efficiency financing more accessible. Using revolving loan funds, recipients used funding as a source of capital to make loans for energy efficiency projects. They also established loan loss reserve funds to attract private capital as a source for lending. Over $440 million in private and other non-BBNP sources of capital were leveraged to finance building upgrades. These investments in financing had an initial return that resulted in over $160 million in financed building upgrade projects. However, the long- term return is yet to be realized because these funds will continue, resulting in future financed building energy efficiency upgrades.

1.8. Workforce Development Synopsis

The workforce development table below shows the total number of workers trained and certified as reported by recipients. Most recipients reported the number of workers trained and certified each quarter; the table shows the cumulative total through 9/30/2013. The table also shows the number of active participating contractors reported by recipients for one quarter. The number of participating contractors may increase or decrease each quarter; however it is not summed across quarters because many of the same contractors actively participated during multiple quarters. Therefore, only the number of participating contractors reported in the most recent quarter is provided in the table. Additionally, not all recipients reported this information. Reporting workers trained and certified was mandatory for 7 SEP recipients and voluntary for 34 EECBG recipients. Reporting the number of active contractors performing retrofits was required for 34 EECBG recipients and voluntary for 7 SEP recipients.

Table 3. Workforce Development Results (Through 9/30/13)

Workforce Development Results[5] (Through 9/30/13)	
Number of Trained Workers	**5,506**
Number of Certified Workers	**2,026**
Active Participating Contractors (Q3-2013)	**1,457**

Figure 3 shows jobs created or retained. EECBG recipients were required to report jobs created or retained expressed as ‘‘full-time equivalent’’ (FTE) for Recovery Act reporting. The Recovery Act reporting specified direct jobs created and retained by sub-recipients and vendors. This information is in blue in Figure 3.

EECBG recipients were asked on the BBNP Program Report to report hours worked per quarter directly funded by BBNP funds, as well as hours worked administrating or working on the BBNP

[5] Reporting the number of trained and certified workers was mandatory for SEP and voluntary for EECBG. Reporting the number of active contractors was mandatory for EECBG and voluntary for SEP.

program if funded by other federal and leveraged funds (i.e., state and local funds, utilities, financial institutions, private contributions, etc.). This includes, but is not limited to, administrative staff, consultants, and contractors involved in the management or deployment of BBNP-related building upgrades and assessment activities. This information is in green in Figure 3 and is estimated based on total hours worked during the quarter reported by the recipient divided by 520 hours per quarter. The BBNP Program Report definition was broader than direct jobs reported for the Recovery Act and is one reason why Recovery Act Reporting and BBNP Reporting in Figure 3 differ.

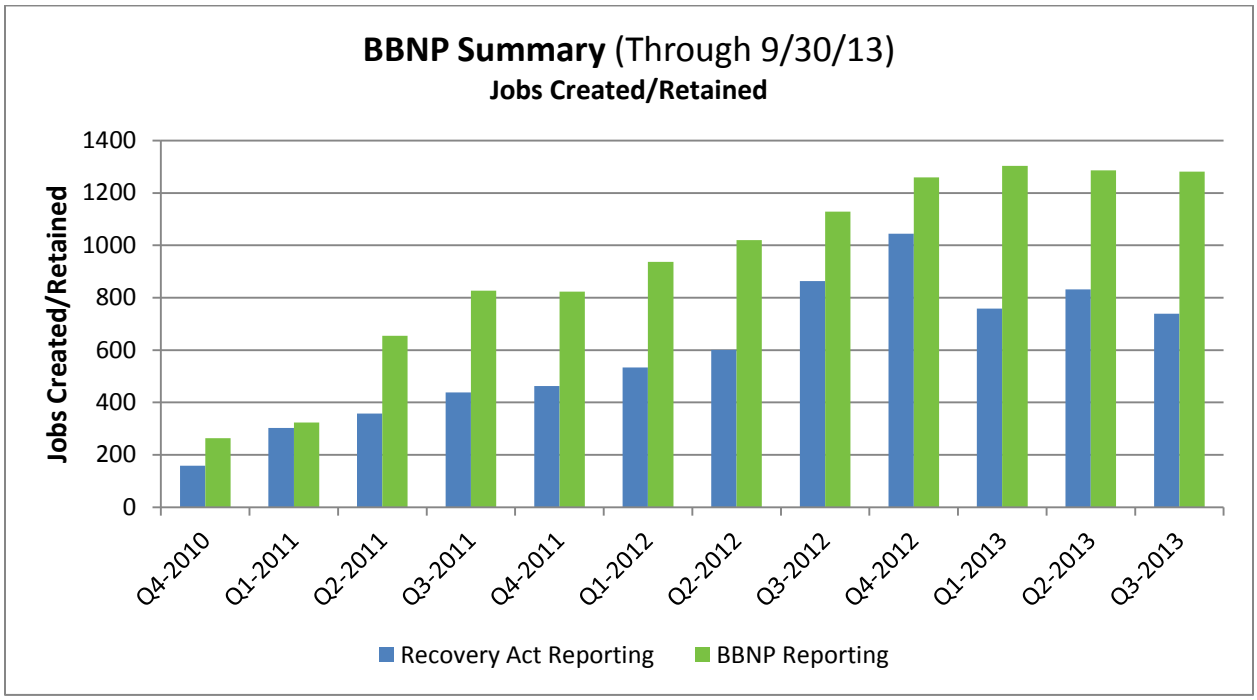

Figure 3. BBNP Jobs Created/Retained for the Quarter[6] (Through 9/30/2013)

[6] Reporting job hours worked was mandatory for EECBG and voluntary for SEP. ARRA Reporting only includes EECBG data.

BBNP SUMMARY OF REPORTED DATA

1.9. Estimated Energy Savings Synopsis

Energy savings was a primary goal of BBNP. Recipients reported saving consumers and business more than $69 million in energy costs annually. This included saving over 280 million kWh of electricity and 19 million therms of natural gas annually. The gross estimated lifetime energy cost saving from these energy efficiency upgrades is estimated to be over $800 million.[7]

Recipients reported estimated energy savings in two ways.

First, recipients were asked to report estimated savings data quarterly: total kilowatt-hours of electricity, therms of natural gas, gallons of fuel oil, and gallons of propane saved, along with dollars in energy costs saved. Table 4 shows the total estimated energy savings of all program activities reported by recipients through 9/30/2013. This information is being verified through an independent evaluation of BBNP. A preliminary Energy Savings Impact Evaluation report by the independent evaluators was completed and released in November 2013. A final Energy Savings Impact Evaluation will be available in 2015.

Table 4. Estimated Annual Energy Savings (Through 9/30/2013), As Reported in Program Summaries

Estimated Annual Energy Savings (Through 9/30/2013)	
kWh Electricity	284,736,708
Therms Natural Gas	19,344,629
Gallons of Oil	3,632,892
Gallons of Propane	514,097
Total Estimated MMBtu Savings (Source Energy)[8]	6,024,745
Sum of Estimated Energy Cost Savings	$69,046,770
Average % Savings per Upgrade / # of Upgrades Used to Calculate	Residential single family 22%/34,198[9] Residential multifamily 26%/14,114 Commercial 7%/2,918

Secondly, recipients were asked to report estimated savings data quarterly for each upgrade project. Recipients used a variety of methods to estimate energy savings, including deemed savings approaches and building modeling approaches. Table 5 shows the sum of the estimated energy savings of all building upgrade projects reported by the recipients through 9/30/2013. The second column shows the number of upgrade projects that were summed to estimate the energy savings in the third column. Not all reported projects included complete energy savings

[7] See Appendix for lifetime energy cost savings calculation.

[8] Total estimated source energy savings was calculated by DOE. See Appendix B.

[9] The average percent savings was calculated by DOE using recipient reported estimates of project energy savings.

information; therefore, the total number of projects in the second column will not equal the total number of upgraded projects completed and shown in Figure 2 above.

Table 5. Sum of Estimated Annual Energy Savings (Through 9/30/13), As Reported for Individual Upgrade Projects

Sum of Estimated Annual Energy Savings (Through 9/30/13)		
	Number of Projects Summed	**Sum of Estimated Savings Reported**
kWh Electricity	61,850	283,754,856
Therms Natural Gas	55,938	18,492,790
Gallons of Oil	11,906	3,428,653
Gallons of Propane	649	305,404
Sum of Estimated Annual Energy Cost Savings	77,418	$65,587,880

The program-reported total in Table 4 will not necessarily equal the sum of estimated savings in Table 4. Recipients were originally asked to only report individual building upgrade projects that were estimated to achieve at least a 15% reduction in total building energy use. Recipients were also told to include estimated energy saving from all upgrades in their program summaries, including upgrades that achieved less than 15% reductions in total building energy use, in their program totals. In 2012, recipients were given the option to continue to report only building upgrade projects that saved 15% or to report all building upgrade projects so long as the total portfolio of projects (by building sector) achieved an average savings of 15%.

Differences between the total energy savings in Table 4 and Table 5 are expected because the information was collected in two different ways. Summing the energy savings from all the reported projects will not necessarily equal the total estimated savings for the program. Projects estimated to achieve less than a 15% reduction in total energy savings may not have been reported or the energy-saving information for some reported projects may have been missing or incomplete.

APPENDIX A: GLOSSARY OF TERMS

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ARRA or Recovery Act:	American Recovery and Reinvestment Act of 2009
Active Participating Contractors:	Active contractors are qualified (qualified according to the individual recipients' program guidance) contractors who have performed one or more building upgrades in the reporting quarter.
Assessments:	Expert review of a building's energy savings opportunities, which typically includes an onsite inspection of the building and its systems and results in recommendations for building energy performance improvements.
BBNP:	Better Buildings Neighborhood Program
BBNP Award Spending:	Total outlay amount for recipients through 9/30/13
Certified Workers:	Number of workers with a nationally-recognized certification. Recipients could choose to adopt an alternative to nationally-recognized certification and provide a justification for the alternative certification chosen.
EECBG:	Energy Efficiency Conservation Block Grant
IRBD:	(Interest Rate Buy-Down) Program administrators provide lenders or investors with an up-front payment when a financial product is originated to reduce the interest rate a customer pays. The payment is typically the present value of the difference between the interest rate the customer will pay and the "market" interest rate of the financial product over the expected life of the financial product.
Invoiced Upgrade Costs:	Total cost of the building energy efficiency upgrades, as invoiced by the contractor performing the work, which includes the building owner's contribution, and any incentives or grants funded by BBNP funds, other federal funds or non-Federal sources intended to reduce the building owner's cost.

APPENDIX A: GLOSSARY OF TERMS

Jobs Created/Retained:	For the purpose of Recovery Act reporting jobs created and retained was estimated based on the job hours directly funded with BBNP funds during a reporting quarter divided by 520 hours per quarter. EECBG recipients were required to report jobs created or retained expressed as ''full-time equivalent'' (FTE) for Recovery Act reporting. The Recovery Act reporting specified direct jobs created and retained by sub-recipients and vendors. For the purpose of BBNP Quarterly Program reporting, jobs created and retained was estimated based on the job hours worked directly funded with BBNP funds and job hours worked funded by other federal funds and leveraged funds (i.e. state and local funds, utilities, financial institutions, private contributions, etc.) during a reporting quarter divided by 520 hours per quarter. This includes, but is not limited to; administrative staff, consultants, and contractors involved in the management or deployment of assessment and building upgrade activities. The BBNP Program Report definition was broader than direct jobs reported for the Recovery Act
LLR:	(Loan Loss Reserve) A form of credit enhancement through which a program administrator (or other entity) promises to pay a lender some portion (less than 100%) of losses the lender endures on a financial product or pool of financial products. 5% to 20% LLRs are common.
Labor & Materials:	Recipient outlays of BBNP award funds incurred as part of an assessment or upgrade directly associated with the installation of energy efficient equipment, appliances, or building components (e.g. insulation, windows, etc.). This includes incentives or grants to reduce a building owner's labor or material costs to complete and energy assessment or upgrade.
Marketing & Outreach:	Recipient outlays of BBNP award funds for communication activities designed to identify, reach and motivate potential customers to participate in a program and learn more (e.g. assessment or other informational activity) about energy efficiency or initiate an energy efficiency upgrade.
MMBtu	One million British thermal units (Btu).

APPENDIX A: GLOSSARY OF TERMS

Multi-Family Unit:	A unit in a building with multiple housing units--a structure that is divided into living quarters for two or more families or households in which one household lives above or beside another. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two or more families.
Non-Federal Expenditures:	These may include third-party, in-kind contributions and the portion of the costs of a federally assisted project or program not borne by the Federal Government. This should include building owner contributions to building upgrade project cost.
Other Federal Expenditures:	These may include additional federal financial assistance award funds or loans from the Department of Energy or another federal agency.
Other Program Expenses:	Recipient outlays of BBNP award funds not classified as labor & materials or marketing & outreach. These expenses are often associated with program overhead. Outlays are distinct from DOE's definition of expenditures, which is most relevant with financing programs (i.e., Funds drawn down and provided by the recipient to a third party, to capitalize a loan fund, are considered outlays. Funds drawn down by the recipient to capitalize a loan fund in-house are not considered outlays until the funds are loaned out.).
RLF:	(Revolving Loan Fund) Funds of capital used to provide loans for energy efficiency and renewable energy improvements; loan repayments recapitalize the funding pool to enable additional lending.
SEP:	State Energy Program
Single-Family:	A housing unit, detached or attached, that provides living space for one household or family. Attached houses are considered single-family houses as long as they are not divided into more than one housing unit and they have an independent outside entrance. A single-family house is contained within walls extending from the basement (or the ground floor, if there is no basement) to the roof. A mobile home with one or more rooms added is classified as a single-family home. Townhouses, row-houses, and duplexes are considered single-family attached housing units, as long as there is no household living above another one within the walls extending from the basement to the roof to separate the units.

APPENDIX A: GLOSSARY OF TERMS

Source energy:	Also called primary energy, is the amount of fossil fuels and electricity plus the losses associated with the production of electricity (i.e., losses that occur in the generation, transmission, and distribution).
Total Capital (Private and Other non-BBNP) Leveraged for Lending:	Capital committed by one of more third parties for financing energy efficiency building upgrades. This can include federally funded (non-BBNP) revolving loan funds and private capital from credit unions, banks or other financial institutions.
Trained Workers:	Number of workers trained under a nationally-recognized organization or curriculum. Recipients could choose to adopt an alternative to nationally-recognized training and provide a justification for the alternative training chosen.
Upgrades:	Also called building upgrades or retrofits, an individual or group of measures that a customer undertakes to improve building performance, with benefits including more efficient energy use, improved comfort and indoor air quality, ensured combustion safety, and lower utility bills.

APPENDIX B: METHODOLOGY TO CALCULATE SOURCE ENERGY SAVINGS

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DOE used the following methodology to calculate source energy savings:

$$E_{svgs} = \sum_{i=Energy\ Type} E_{svgs\ source,i}$$

$$E_{svgs\ source,i} = E_{svgs\ site,i} \times CF_{MMBtu,i} \times CF_{Site\ to\ Source,i}$$

where,

E_{svgs} is the total annual energy savings in MMBtu
$E_{svgs\ source,i}$ is the annual source energy savings in MMBtu for each energy type *i* as shown in Table B-1
$E_{svgs\ site,\ i}$ is the total estimated annual site energy savings for each energy type *i* as shown in Table B-1
$CF_{MMBTU,\ i}$ is the MMBtu conversion factor for each energy type *i* as shown in Table B-1
$CF_{Site\ to\ Source,\ i}$ is the site to source conversion factor for each energy type *i* as shown in Table B-1.

Table B-1. MMBTU and Site to Source Conversion Factors by Energy Type

Energy Type	MMBtu Conversion Factor	Site to Source Conversion Factor
Electricity	0.00341214 MMBtu/kWh	3.365
Natural Gas	0.1027 MMBtu/ccf	1.092
Natural Gas	0.1 MMBtu/therm	1.092
Fuel Oil (Type 2)	0.14 MMBtu/gallon	1.158
Propane/LPG	0.09133 MMBtu/gallon	1.151
Kerosene	0.135 MMBtu/gallon	1.205
Wood	20 MMBtu/cord	1

APPENDIX C: LIFETIME ENERGY COST SAVINGS CALCULATIONS

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The Present Value Lifetime Savings (PVLS) is the total energy cost savings over the expected life of the installed efficiency upgrades, expressed in 2012 dollars. A PVLS value is calculated for each grant recipient program as follows:

$$PVLS = \sum_{p=1}^{n} \left\{ C_{svgs,p} \times \left[\frac{(1+d)^{\overline{L}} - 1}{d \times (1+d)^{\overline{L}}} \right] \right\}$$

where,

p is the project number for the grant recipient
n is the number of projects reported for the grant recipient
$C_{svgs,p}$ is the estimated annual energy cost savings reported for project *p* by the recipient ($/yr)
d is the discount rate, assumed to be 6%
$\overline{L}$ is the energy-savings-weighted lifetime of the efficiency upgrades installed for a recipient, expressed in years and calculated as follows:

$$\overline{L} = \frac{\left(\overline{L}_{res} \times E_{svgs,res}\right) + \left(\overline{L}_{com} \times E_{svgs,com}\right)}{\left(E_{svgs,res} + E_{svgs,com}\right)}$$

where,

$\overline{L}_{res}$ is the source energy-savings-weighted lifetime of the residential efficiency upgrades installed for a recipient
$E_{svgs,res}$ is the total estimated annual source energy savings in MMBtu for all residential upgrades reported by the grant recipient
$\overline{L}_{com}$ is the project-count-weighted lifetime of the commercial efficiency upgrades installed for a recipient
$E_{svgs,com}$ is the total estimated annual source energy savings in MMBtu for all commercial upgrades reported by the grant recipient

$\overline{L}_{res}$ is calculated as follows:

$$\overline{L}_{res} = \frac{\sum_{i=1}^{4}\left(Cnt_i \times E_{svgs,i} \times L_i\right)}{\sum_{i=1}^{4}\left(Cnt_i \times E_{svgs,i}\right)}$$

where,

i is the type category of efficiency upgrades installed as shown in Table C-1

Cnt_i is the number of energy efficiency upgrades of type *i* installed by a recipient

$E_{svgs,i}$ is the assumed annual energy savings in MMBtu for each energy efficiency upgrade of type *i* as shown in Table C-1.

L_i is the assumed lifetime in years for energy efficiency upgrades of type *i* as shown in Table C-1.

Table C-1. Residential Project Energy Upgrade Categories, Lifetimes and Energy Savings[10]

Type Category	Description	Assumed Lifetime (Years)	Assumed Source Energy Savings (MMBtu/yr/measure)
R1	Simple direct-install measures including CFL's, low-flow showerheads, water heater blankets, HVAC tune ups and other low cost measures	5	0.5
R2	HVAC replacement, programmable thermostats, refrigerators, dishwashers, hot water heaters and any large appliance	15	7
R3	Duct sealing and duct insulating	15	10
R4	House air sealing, house insulating, window replacement and any other insulating (except duct insulating)	20	20

$\overline{L}_{com}$ is calculated as follows:

$$\overline{L}_{com} = \frac{\sum_{j=1}^{4}(Cnt_j \times L_j)}{\sum_{j=1}^{4}(Cnt_j)}$$

where,

j is the type category of efficiency upgrades installed as shown in Table C-2.

Cnt_j is the number of energy efficiency upgrades of type *i* installed by a recipient

L_j is the assumed lifetime in years for energy efficiency upgrades of type *j* as shown in Table C-2.

[10] Assumed Lifetime for residential measures was estimated by NREL based on NAHB Study of Life Expectancy of Home Components, DEER, and consulting with evaluation experts. Assumed Source Energy Savings was estimated/adapted from the Better Building Energy Savings Measure Packages developed by NREL using BEopt. General methodology is documented here: http://www.nrel.gov/docs/fy11osti/50572.pdf

APPENDIX C: LIFETIME ENERGY COST SAVINGS CALCULATIONS

Table C-2. Commercial Project Energy Upgrade Categories and Lifetimes[11]

Type Category	Description	Assumed Lifetime (Years)	Assumed Source Energy Savings (MMBtu/yr/measure)
C1	CFLs, faucet aerators and HVAC tune ups	5	100
C2	Commercial kitchen equipment, thermostats	11	6
C3	HVAC (packaged), refrigeration, hot water heaters, LED and linear fluorescent lighting	15	100
C4	Chillers, boilers, PV, solar thermal, insulation, windows	20	100

[11] Assumed Lifetime for commercial measures was estimated by NREL based on a review of DEER and consulting with evaluation experts. Assumed Source Energy Savings was derived using regression analysis of reported commercial projects with energy savings and installed measures. A measure may include several instances of one technology installed in a project.

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