



## INTERIM REPORT

THE  
**CADMUS**  
GROUP, INC.

# SEEA Better Buildings Neighborhood Program

April 18, 2013

***Prepared by:***

The Cadmus Group, Inc.  
Energy Services Division  
720 SW Washington Street, Suite 400  
Portland, OR 97205  
503.467.7100

***Prepared for:***

Southeast Energy Efficiency Alliance  
50 Hurt Plaza SE, Suite 1250  
Atlanta, GA 30303



Prepared by:  
Carol Mulholland  
Linda Olsson  
Eric Rambo  
Laura James  
Emily Miller  
Alex Rekkas

The Cadmus Group, Inc.

720 SW Washington Street  
Suite 400  
Portland, OR  
Tel: 503.467.7100  
Fax: 503.228.3696

*An Employee-Owned Company*  
[www.cadmusgroup.com](http://www.cadmusgroup.com)

Corporate Headquarters:  
100 Fifth Avenue, Suite 100  
Waltham, MA 02451  
Tel: 617.673.7000  
Fax: 617.673.7001

## Glossary of Terms

APR	Annual percentage rate
BBP	Better Buildings Neighborhood Program
BPI	Building Performance Institute
CDFI	Community Development Finance Institution
CESI	Clean Energy Solutions, Inc.
DOE	Department of Energy
EECBG	Energy Efficiency Conservation Block Grant
EGIA	Electric & Gas Industries Association
HEMC	Home Energy Makeover Contest
HERO	Homeowner's Equity Recovery Opportunity
HERS	Home Energy Rating System
HPwES	Home Performance with ENERGY STAR <sup>®</sup>
HUD	U.S. Department of Housing and Urban Development
IOU	Investor-owned utility
IRB	Interest rate buy-down
IT	Information technology
LEAP	Local Energy Alliance Program
LLR	Loan loss reserve
NES	Nashville Electric Service
NEW	Nashville Energy Works
PPA	Program Performance Agreement
PSD	Performance Systems Development
QA	Quality assurance
QC	Quality control
RFI	Request for information
RFP	Request for proposals
RLF	Revolving loan fund
SCE&G	South Carolina Electric and Gas

SEEA	Southeast Energy Efficiency Alliance
SEP	State Energy Program
SHINE	Sustainable Home Initiative for a New Economy Program
TVA	Tennessee Valley Authority
USVI	United States Virgin Islands
UVA CCU	University of Virginia Community Credit Union
WISE	Worthwhile Investments Save Energy

## Table of Contents

EXECUTIVE SUMMARY .....	II
INTRODUCTION.....	1
SCOPE OF WORK AND APPROACH .....	4
Approach .....	4
Researchable Questions .....	4
Process Evaluation Methodology .....	4
Program Documentation and Data Review .....	4
Program Stakeholder Interviews .....	4
Home and Building Owner Surveys .....	5
Contractor/Vendor/Trade Ally Interviews.....	5
Survey Sampling Plan .....	5
Impact Evaluation Methodology.....	7
PROCESS EVALUATION .....	8
Program Design and Administration .....	8
Program Administration .....	8
Target Markets and Incentive Structure .....	17
Financing Options.....	21
Local Market Characteristics.....	28
Marketing and the Customer Experience .....	30
Understanding the Customer .....	30
Marketing Channels and Tactics.....	36
Energy Efficiency Awareness .....	41
Satisfaction.....	42
Market Engagement and Workforce Development.....	43
Workforce Development .....	43
Community and Utility Partnerships .....	47
Program Sustainability.....	52
Long-term Plans .....	52
Leveraged Funding.....	54
Regional Training and Support .....	55
Change in Local Energy-Efficiency Market .....	56
IMPACT EVALUATION .....	58
Database Review .....	58
Energy Savings by Sub-grantee .....	59
Residential Buildings .....	59

Commercial Buildings .....	64
Measure Distribution.....	69
Residential.....	69
Commercial .....	74
CONCLUSIONS AND RECOMMENDATIONS .....	78
Program Design and Administration .....	78
Staffing and Regional and National Support .....	78
Target Markets and Incentives.....	80
Financing Options.....	80
Marketing and the Customer Experience .....	82
Understanding the Customer .....	82
Marketing Channels and Tactics.....	83
Satisfaction.....	83
Market Engagement and Workforce Development.....	84
Community and Utility Partnerships .....	85
Program Sustainability.....	85
APPENDICES .....	86
A. RESEARCHABLE QUESTIONS.....	87
B. SURVEY RESULTS.....	91
Demographic Findings.....	91
C. RETROFIT RESULTS .....	95
D. LEVERAGE OF GRANT DOLLARS .....	96
Reported Funds.....	96
Unreported Leverage.....	96

## Tables

Table 1. Residential Retrofits Completed Through October 2012.....	3
Table 2. Commercial Retrofits Completed Through October 2012 .....	3
Table 3. Final Sample Sizes for Residential Customers .....	6
Table 4. Sample Sizes for Commercial Participants .....	6
Table 5. Business Models Employed by SEEA BBP Sub-grantees .....	9
Table 6. Sub-grantee Administrative Organizations .....	10
Table 7. Residential Program Administration by Sub-grantee .....	11
Table 9. Factors Influencing Selection of Target Market(s) .....	17
Table 10. Residential Incentives Available (Not Financing-Related).....	18
Table 11. Commercial Incentives Available (Not Financing Related).....	19
Table 12. Incentive Recipient Structure.....	21
Table 13. Residential Financing Options as of October 2012 .....	24
Table 14. Commercial Financing Options as of October 2012.....	24
Table 15. Marketing Tactics Used by Sub-grantees .....	39
Table 16. How Contractors First Heard of Program.....	44
Table 17. Active Coordination with Utility Residential Rebate Programs .....	48
Table 18. Residential Programs' Services Coordinated with Utilities .....	50
Table 19. Sub-grantee Current and Future Funding .....	53
Table A-1. Researchable Questions: Program Design, Launch and Operations.....	87
Table A-2. Researchable Questions: Marketing and the Customer Experience.....	88
Table A-3. Researchable Questions: Market Engagement and Effects .....	89
Table A-4. Researchable Questions: Program Sustainability and the Regional Role.....	90
Table B-1. Sub-grantee Source of Funds* .....	94
Table D1. Reported Leveraged Funds .....	96



## Figures

Figure 1. Reasons for Getting an Assessment, by Participants and Partial Participants .....	33
Figure 2. Most Important Reason Residential Participants Made Energy Improvements After Getting Assessment.....	34
Figure 3. Major Challenges Homeowners Face When Making Energy-saving Improvements .....	35
Figure 4. How Customer Groups Heard About the Program* .....	41
Figure 5. How Much Home Energy Assessments and Energy Improvements Increase Energy-efficiency Knowledge.....	42
Figure 6. Satisfaction with Overall Program Experience .....	42
Figure 7. Total Residential Electricity Savings per Year, by City.....	59
Figure 8. Total Residential Gas Savings per Year, by City.....	60
Figure 9. Maximum, Mean, and Minimum Residential Electricity Savings per Household per Year, by City .....	61
Figure 10. Maximum, Mean, and Minimum Residential Gas Savings per Household per Year, by City...	62
Figure 11. Maximum, Mean, and Minimum Residential Electricity Savings per Square Foot per Year, by City .....	63
Figure 12. Maximum, Mean, and Minimum Residential Gas Savings per Square Foot per Year, by City	64
Figure 13. Total Commercial Electricity Savings per Year, by City .....	65
Figure 14. Total Commercial Gas Savings per Year, by City .....	65
Figure 15. Maximum, Mean, and Minimum Commercial Electricity Savings per Site per Year, by City ...	66
Figure 16. Maximum, Mean, and Minimum Commercial Gas Savings per Site per Year, by City .....	67
Figure 17. Maximum, Mean, and Minimum Commercial Electricity Savings per Square Foot per Year, by City .....	68
Figure 18. Maximum, Mean, and Minimum Commercial Gas Savings per Square Foot per Year, by City .....	69
Figure 20. Residential Attic Insulation Distribution .....	70
Figure 21. Residential Wall Insulation Distribution .....	70
Figure 22. Residential Floor/Foundation Insulation Distribution .....	71
Figure 23. Residential Window Installation/Replacement Distribution .....	71
Figure 24. Residential Air Sealing Distribution.....	71
Figure 25. Residential Radiant/Vapor Barrier Distribution .....	72
Figure 26. Residential HVAC Measure Distribution .....	72
Figure 27. Residential Domestic Hot Water Measure Distribution.....	73
Figure 28. Residential Lighting Measure Distribution .....	73
Figure 29. Residential Appliance Measure Distribution .....	74
Figure 30. Commercial Shell Measure Distribution.....	74
Figure 31. Commercial HVAC Measure Distribution .....	75
Figure 32. Commercial Hot Water Measure Distribution .....	75
Figure 33. Commercial Lighting Measure Distribution.....	76
Figure 34. Commercial Appliance Measure Distribution.....	76
Figure 35. Commercial Information Technology Measure Distribution.....	77
Figure B-1. Year House Built .....	91
Figure B-2. Income Distribution Among Survey Respondents .....	91
Figure B-3. Highest Education Level Attained by Survey Respondents.....	92
Figure B-4. Ethnicity of Survey Respondents .....	93
Figure B-5. Age of Survey Respondents .....	93
Figure C-1. Completed Retrofits by Month, by Sub-grantee.....	95

## EXECUTIVE SUMMARY

The Southeast Energy Efficiency Alliance (SEEA) contracted with The Cadmus Group to evaluate its portfolio of 13 programs in the Southeast Consortium Better Buildings Neighborhood Program. As identified in SEEA's request for proposals, primary objectives for the evaluation are these:

- 1) To examine the design, delivery, and market effects of each sub-grantee Program and identify opportunities to increase each Program's success; and
- 2) To quantify and verify the energy savings achieved through the Program funded home energy improvements and the cost-effectiveness of those savings.

Cadmus collected information about the programs, interviewed program staff and market actors, surveyed building owners, and analyzed project data reported to SEEA. The evaluation work began during the summer of 2012 and will end in 2013. This report details interim findings that sub-grantees and SEEA can use to improve programs during the final phase of the funding period and apply to future initiatives.

### Program Achievements to Date

At the time of writing, the SEEA sub-grantees were nearly three-quarters of the way through the program period funded by the DOE grant. As of October 31, 2012, sub-grantees have completed 2,189 of the 3,624 (60%) of the residential retrofits they committed to achieve. While 12 are still pending final quality assurance inspections, grantees are expected to soon complete 26 commercial retrofits, far exceeding their goal of 17.

At this time, Cadmus is evaluating energy savings base on the sub-grantees' reported values. While the data contains several anomalies and requires further analysis, it does appear that SEEA sub-grantees have achieved significant savings. Program-wide, residential claimed savings are 8,281,199 kWh.

### Opportunities for Near-term Focus

The evaluation team looked for findings and opportunities that could help sub-grantees increase success in the remaining grant period. Key conclusions and the associated recommendations for near-term action include:

- Contractors and word of mouth were the most effective marketing channels to communicate and convert building owners to full participation. These channels are relatively low-cost and easy to mobilize. Contractors also indicated an interest in additional training to help with sales and marketing.

***Recommendations:***

1. Develop a new training program for contractors including sales tips, case studies about program value achieved by participants, and how to communicate and take advantage of new financing options. Leverage program trainers or high performing contractors who have proven successful in the delivery of the program.
  2. Consider a contractor incentive for completed retrofits, which could take the form of a cash incentive during a limited time “spring cleanup” promotion or a points-based scheme to earn prizes or chances to win a valued prize.
  3. Increase public and program recognition for active contractors. Consider a “green star” or some form of recognition that contractors who have performed 5 or more retrofits and passed QA/QC verifications can use in their marketing, have associated with listings on program websites, or recognize in social marketing and/or press releases. Highlighting successful contractors will also signal to contractors who may be struggling that the program can work, and will give them a model to follow.
  4. Build word-of-mouth campaigns by engaging prior participants to share their experiences. Encourage participants to host energy makeover open houses of their homes, as the New Orleans WISE program does, or share their experiences at community meetings or other local events. Contractors might be willing to sponsor refreshments as partners in these events.
  5. Consider offering a referral bonus to prior participants.
- Many partial participants indicated they did not move forward because they didn’t have confidence in the energy savings assessment.

***Recommendations:***

6. Take actions to make sure customers know what to expect from an audit, how to use the report, and to help validate the assessment as a reliable source of information.
  7. Add “Understanding your Energy Assessment” pages to website, or create brochures that present all or pieces of an actual energy assessment. Point out different types of information and explain how accurate it is.
  8. Provide case study examples of prior program participants documenting actions taken and the results they achieved. Include quotes about the experience, expectations, and benefits (comfort, quiet, or other non-energy benefits). Offer these case studies via program websites and as support materials for contractors to use.
- The change in DOE policy to allow programs to meet the 15% saving criteria with a portfolio of projects could expand the number of prospects eligible for the program. The Charlottesville LEAP BetterBasics model, which expands participation options, provides an example of how programs could take advantage of this opportunity as well as build ongoing interest and sustainability for the program.

***Recommendations:***

9. Encourage grantees to adopt the portfolio approach and communicate this to their contractor networks as an exciting enhancement for Spring 2013. Encourage contractors to follow up with audit participants who did not move forward with a retrofit (a marketing postcard could be provided for this purpose).
  10. Consider providing or acquiring analytical support if needed for programs to determine an approximate number of projects that might be added based on estimated savings achieved in completed projects.
- Long-term sustainability is one of the BBP's main goals. Programs that actively built community partnerships with local organizations, neighborhood groups, and lenders appear to be best positioned for long-term viability. Community organizations were particularly effective at providing marketing support. SEEA has developed a breadth and depth of experience in utility-community partnerships that individual programs do not have, and has learned lessons in developing lender relationships.
11. Programs should evaluate opportunities to develop a few key additional partnerships in the remaining months. Lessons learned by SEEA and programs where successful partnerships have been created could be shared in a cross-program workshop or webinar to help those programs that do not have sustainable activities in place.
  12. Programs should consider developing a stakeholder advisory council (if one does not exist) and formally convene it on a regular basis to give feedback on sustainability challenges and possible solutions.

Additional conclusions and recommendations that are more applicable to longer-term operations and future programs are included in the full report.

## INTRODUCTION

SEEA was established in 2007 to promote energy efficiency in a region that had experienced 20% population growth in the previous decade.<sup>1</sup> As a recipient of seed funding from the U.S. Department of Energy's (DOE's) Better Buildings Neighborhood Program (BBP), SEEA seized the opportunity to leverage its resources as a regional energy-efficiency advocacy organization to enable multiple communities in the Southeast to establish energy-efficiency programs.

The DOE had a broad vision for the BBP. The program attempted to develop sustainable energy efficiency retrofit programs across the country, with the intent that these programs would provide a foundation for sustainable market transformation. The grant recipients were expected to use funds to incent building owners to invest their own money into their own property, leading to deep retrofits (at least 15% reduction in energy use) of over 100,000 buildings over the grant period. Further, programs were expected to be sustainably designed and leverage \$5 of outside funding for every \$1 of federal funding, so that the end of the grant period did not result in the end of the program activity. The BBP supported several models for sustainability, ranging from cyclical financing mechanisms to utility sponsorship.

SEEA's proposal was unique among BBP grantees. Most of the BBP grantees were large cities or metropolitan regions that proposed to use the funds to develop a local energy efficiency program, with a single menu of incentives and a single financing program. A few larger programs proposed to work in multiple cities within one state. SEEA, on the other hand, proposed to spread the funding across their region, involving 13 communities ranging in size from Atlanta, GA to Carrboro, NC, and spread across 8 states and one US Territory. SEEA intended to develop a collection of smaller programs, each with their own locally-crafted program design, operating as experiments in community-based energy-efficiency, and generating a wealth of information on best practices. These would be jointly supported by financing and data collections systems operated at a regional level, allowing for efficiency of scale and easing barriers to long-term growth and the addition of more programs in the future. The DOE awarded SEEA \$20 million to support their proposed scope of work, and set a target of 10,000 buildings retrofitted by the end of the grant period.

Through a competitive process conducted after the grant was awarded, SEEA selected the sub-grantees listed below to develop programs that upgrade homes and businesses to decrease energy use in the Southeast:

1. City of Atlanta, Georgia
2. City of Carrboro, North Carolina
3. City of Chapel Hill, North Carolina
4. City of Charleston, South Carolina
5. City of Charlotte, North Carolina

---

<sup>1</sup> U.S. Department of Energy. *Better Buildings Neighborhood Program: SEEA Southeast Consortium*. Last modified November 29, 2011. Accessed October 30, 2012. [http://www1.eere.energy.gov/buildings/betterbuildings/neighborhoods/seea\\_profile.html](http://www1.eere.energy.gov/buildings/betterbuildings/neighborhoods/seea_profile.html).

6. Local Energy Alliance Program (LEAP) in Charlottesville, Virginia
7. City of Decatur, Georgia
8. Green Jobs Alliance in Williamsburg, Virginia (for the Hampton Roads region)
9. Nexus Energy Center of Huntsville, Alabama
10. JEA in Jacksonville, Florida
11. City of Nashville, Tennessee
12. City of New Orleans, Louisiana
13. Territory of the U.S. Virgin Islands (USVI)

Each sub-grantee developed a program based on its community's unique market context, experience, and partnership opportunities. Sub-grantees reported on their programs' progress to SEEA, and worked with SEEA to report to DOE. Cadmus evaluated the programs in order to explore the differences between the sub-grantees' program models and draw conclusions about models, resources, and other factors that affect program outcomes. We examined the following four aspects of each program:

1. Program design and business model
2. Marketing and customer experience
3. Market engagement and workforce development
4. Program sustainability

Through interviews with program staff, market actors, and community partners, as well as surveys of program participants and nonparticipants, Cadmus gained a comprehensive view of the nuanced approach each sub-grantee took in developing their program to drive energy efficiency in the Southeast.

Cadmus examined each program's components by reviewing a variety of success metrics for insight into which factors influenced program outcomes in each area. The DOE focused their BBP grants on driving retrofit activities, so completed retrofits are a key success metric for each program. Each sub-grantee established a target number of completed retrofits in their Program Performance Agreement (PPA); Table 1 and Table 2 present these targets for residential and commercial projects, respectively. In addition to the number of retrofits, the BBP grants were intended to effect a lasting change in the market for energy-efficiency retrofits that would propel this work forward after the grant period ended. Customer and contractor satisfaction ratings are included in the tables below as an indicator of the local buy-in on both the supply and demand sides of the industry.

**Table 1. Residential Retrofits Completed Through October 2012**

City	PPA Retrofit Target	Completed Residential Retrofits	% Target Achieved	% Satisfied or Very Satisfied	
				Customers	Contractors
Atlanta	553	233	42%	81%	1 of 2
Carrboro	104	25	6%	N/A	1 of 1
Chapel Hill	428	89	21%	100%	N/A
Charleston	300	91	30%	100%	2 of 3
Charlotte	200*	0*	N/A	N/A	N/A
Charlottesville	589	724	123%	98%	4 of 4
Decatur	54	54	100%	100%	1 of 1
Hampton Roads	100	62	62%	82%	2 of 3
Huntsville	400	322	81%	100%	1 of 1
Jacksonville	380	206	54%	100%	2 of 3
Nashville	375	363	97%	N/A	N/A
New Orleans	317	45	14%	83%	2 of 2

Source: Southeast Energy Efficiency Alliance. *Quarterly Report*. Prepared for the U.S. Department of Energy. October 31, 2012.

\*Charlotte focused its retrofit target on multifamily units. The program had projects in at least 9 buildings nearing completion in October 2012. The number of units retrofitted in each building was not known.

**Table 2. Commercial Retrofits Completed Through October 2012**

City	PPA Retrofit Target	Completed Commercial Retrofits	% Target Achieved	Customers Satisfied or Very Satisfied
Carrboro	5	5	100%	1 of 1
Charleston	1	0	0%	N/A
Charlotte	2	0	0%	N/A
Charlottesville	7	8	114%	2 of 2
USVI	3	3 (pending a quality assurance review)	100%	1 of 2

Source: Southeast Energy Efficiency Alliance. *Quarterly Report*. Prepared for the U.S. Department of Energy. October 31, 2012.

\*Atlanta and Jacksonville had a few commercial projects, but no formal commercial program. Their savings results are presented in the impact evaluation, but their commercial programs were not evaluated from a process perspective.

## SCOPE OF WORK AND APPROACH

### Approach

For the program and market effects evaluation, Cadmus examined each program from a 360-degree set of perspectives, which included program and delivery staff, energy advisors, auditors and retrofit contractors, financial service vendors, utility partners, and home and building owners. In addition, we reviewed program plans, documentation, marketing collateral, and other materials. Cadmus evaluated the programs both individually and across the regional collaborative.

### Researchable Questions

Researchable questions guided Cadmus' development of survey instruments and interview guides, and provided an overall focus for our research and analysis. This report presents four areas of focus:

1. Program design and business model
2. Marketing and the customer experience
3. Market engagement and workforce development
4. Program sustainability

Appendix A contains the specific researchable questions that guided our evaluation.

### Process Evaluation Methodology

Cadmus gathered and analyzed data from program staff, partners, contractors, and home and building owners. The owners surveyed included program participants, partial participants, and nonparticipants. A summary of our focus and approach for each type of data we collected is outlined below.

#### Program Documentation and Data Review

Cadmus received documentation and tracking databases where available from SEEA and from sub-grantees. Cadmus reviewed this source material prior to developing stakeholder interviews, customer surveys, and trade ally evaluation tools. The Energy Efficiency and Conservation Block Grant (EECBG) and SEEA monthly reports served as the primary information source for program activities and participant statistics.

#### Program Stakeholder Interviews

Cadmus received feedback about the programs from SEEA staff during the kick-off meeting, and then conducted 26 interviews with over 35 key stakeholders who direct or influence the SEEA programs' delivery. These stakeholders included SEEA representatives, city representatives, and other community partners such as partner utilities and financing institutions. We conducted 11 of these interviews in person.

The interviewees provided invaluable first-hand intelligence about program performance, trade ally involvement, and the level of coordination among the different types of trade allies.



## Home and Building Owner Surveys

Cadmus conducted telephone surveys with participating, partially participating, and nonparticipating home and building owners. Partial participants are defined as those who completed an audit or initial building review, but then did not proceed to install energy-efficiency measures. For programs that are still underway, we will conduct additional surveys during the summer of 2013.

The surveys included questions about participants' motivation to participate and questions about the program's influence on additional energy-efficiency behaviors or investments they may have made as a result of participating. We used the responses to these questions to qualitatively assess levels of freeridership and spillover. Freeridership is defined as the percentage of participants that would have taken the same action without the incentives provided by the program. Spillover is defined as energy savings attributable to the program but that was not incentivized by the program. An example of spillover would be someone who learns about high efficiency HVAC equipment through program marketing, and purchases a high-efficiency furnace, but does not apply for a rebate because the program timeline expired, or for some other reason.

## Contractor/Vendor/Trade Ally Interviews

Cadmus conducted interviews with 20 participating trade allies in sub-grantee localities where the programs pre-screened contractors before approving them to do work through the program. Two programs, Nashville and Charlotte did not establish a pool of pre-qualified contractors. In Nashville, contractors are participants in the Tennessee Valley Authority (TVA) Program, but do not have direct contact with BBP staff. In Charlotte, the program is managed through an RFP process. Program staff reviews each proposed project, including the proposed contractor; receiving approval for one project does not guarantee the contractor additional program projects.

The interview results provided insight into each program's influence on trade allies' views and behaviors, such as their awareness of and participation in the SEEA program activities, training, administrative processes, marketing, and communications. These interviews included questions about each program's impact on the overall market for energy-efficiency retrofits and any barriers to program sustainability.

## Survey Sampling Plan

Cadmus estimated the appropriate sample size for targeted retrofits for each survey type and sub-grantee area using confidence and precision estimates for a proportional response of 0.5, plus an allowance for a small amount of unusable responses. Sub-grantee areas with participation greater than 100 required approximately 70 completed surveys to achieve 90% confidence with  $\pm 10\%$  precision. Smaller survey samples were required for areas with participation levels lower than 100. After reviewing actual retrofits completed and the participant and nonparticipant contact information grantees were able to provide, Cadmus reduced the targeted sample sizes because our original targets turned out to be ambitious for the available sample. Table 3 (residential) and Table 4 (commercial) outline the final sample sizes for each sub-grantee area.

**Table 3. Final Sample Sizes for Residential Customers**

Sub-grantee	Participants				Partial Participants				Nonparticipants	
	Original 2012 Target	Total Available Sample	Target Based on Total Available Sample	Number of Completes	Original 2012 Target	Total Available Sample	Target Based on Total Available Sample	Number of Completes	Original 2012 Target	Number of Completes
Atlanta	35	107	35	21	30	431	30	6	15	15
Carrboro	5	10	10	0	30	0	0	0	15	15
Chapel Hill	35	142	35	14	30	59	30	16	15	15
Charleston	10	80	30	14	30	15	15	4	15	15
Charlottesville	50	233	50	58	30	0	0	0	15	15
Decatur	30	45	30	10	30	0	0	0	15	15
Hampton Roads	32	56	32	17	30	0	0	0	15	15
Huntsville	35	87	35	4	30	0	0	9*	15	15
Jacksonville	35	55	35	16	30	26	26	1	15	15
Nashville	35	0	0	0	30	0	0	0	15	15
New Orleans	6	44	30	12	30	0	0	0	15	15
<b>Total</b>	<b>308</b>	<b>859</b>	<b>322</b>	<b>166</b>	<b>330</b>	<b>531</b>	<b>101</b>	<b>36</b>	<b>165</b>	<b>165</b>

\* Cadmus incorporated nine responses from a similar survey implemented as part of the State Energy Program evaluation completed for the National Association of State Energy Officials.

**Table 4. Sample Sizes for Commercial Participants**

Sub-grantee	Original 2012 Target	Total Available Sample	Target Based on Total Available Sample	Number of Completes
Carrboro	5	1	1	1
Charlotte	2	9	9	5
Charlottesville	7	8	8	2
USVI	3	2	2	2
<b>Total</b>	<b>17</b>	<b>20</b>	<b>20</b>	<b>10</b>

## Impact Evaluation Methodology

For this report, Cadmus used the self-reported values provided in the SEEA monthly reports to determine, by city, the number of retrofits, gross savings, number of measures installed, and other metrics. Cadmus plans to conduct a more intensive review, including a net-to-gross analysis, once more data is available specific to completed retrofits. Cadmus is working with the sub-grantees to acquire the necessary data.

## PROCESS EVALUATION

### Program Design and Administration

The DOE required all BBP programs to meet certain directives, including completing a targeted number of retrofits meeting a 15% savings target and leveraging other resources to meet a 5:1 ratio with the funding provided by the BBP.<sup>2</sup> Within these constraints, sub-grantees designed programs to fit their existing capacity and perceived community needs and resources. Some sub-grantees leveraged an existing program design while others had to design or redesign a program before launching in their markets.

### Program Administration

This section of the report discusses variations in program design and administration with respect to the following:

- Business and administrative models
- Program launch and operations
- Infrastructure and staffing resources
- Regional and national support

### Business and Administrative Models

Though each program had its own unique design, Cadmus was able to group the sub-grantee programs into three broad business models for the purpose of analysis:

1. *A utility add-on aligned with an existing utility program.* The utility add-on model sought to complement programs run by local utilities. Atlanta, Nashville, and Decatur designed their programs to generate more interest for the utility programs by offering incentives on top of utility incentives. They also thought that the utility program would enable them to launch quickly. New Orleans established itself as a marketing arm for the Entergy-New Orleans program, and chose not to provide additional rebates. Jacksonville, a utility itself, utilized the SEEA funds to add a component to an existing incentive program.
2. *A new program, independent of any utility programs, serving customers on a one-off basis.* Carrboro, Chapel Hill, Charlottesville, and Hampton Roads did not have an existing utility program to leverage, and created new programs in their areas. Charleston created a program separate from its local utility, despite the ability to leverage the program. Huntsville created an entirely new program that would be administered by the utility with the assistance of Nexus Energy Center.
3. *A grant program for energy-efficiency projects.* Charlotte took an entirely different approach and developed a grant program for which multifamily and commercial

---

<sup>2</sup> For every \$1 of SEEA funding, sub-grantees were expected to secure \$5 of outside funding or equivalent in-kind support for program incentives, operations, and marketing. Leverage could include utility rebates, financing options, or co-marketing opportunities.

customers could apply for funding specific projects at their facilities. The program was modeled after another residential program already in place.

Within each model, sub-grantees chose to administer programs through a municipal department, nonprofit organization, nonprofit municipal utility, or a for-profit organization. Table 5 summarizes the different business models, approaches, and types of organizations that served as the administrator for each program.

**Table 5. Business Models Employed by SEEA BBP Sub-grantees**

Model	Approach	City	Administrator
1. Utility Add-On	Offer additional incentives to increase participation in existing utility programs	Nashville	Municipal
		Atlanta	Municipal
		Decatur	Third party
	Added marketing services to promote utility program	New Orleans	Nonprofit
	Added new components (audits and financing)	Jacksonville	Municipal utility
2. New Program	Independent integrated business (no utility partner)	Carrboro	Third party
		Chapel Hill	Third party
		Charlottesville	Nonprofit
		Charleston*	Third party
		Hampton Roads	For profit
	For-profit fiduciary agent runs on behalf of government	USVI	For profit
Nonprofit implementer	Huntsville**	Nonprofit	
3. Grant Program	Provide grants for specific projects	Charlotte	Municipal

\* Charleston created its program independent of any utility program, but they advertised the available South Carolina Electric and Gas utility rebate program on their WISE Website.

\*\* Huntsville initially paired their program with a utility, then transitioned it to an independent integrated business.

City municipal departments housed the programs in Nashville, Charlotte, and Atlanta. Four additional cities, Charleston, Decatur, Chapel Hill, and Carrboro, originally intended to have the grant programs managed by their municipal departments but changed the model during the design phase. These cities outsourced program operations to third-party organizations that act as management or consulting companies contracted by SEEA or the sub-grantee and tasked with program design and/or management on the sub-grantee's behalf.

In Huntsville and Charlottesville, new nonprofit organizations were created to manage the programs. Charleston and New Orleans utilized existing local nonprofits to manage their programs.

The sub-grantee program administrators are summarized in Table 6.

**Table 6. Sub-grantee Administrative Organizations**

	Utility	Government	Nonprofit	Third party*
Atlanta		Mayor's Office Division of Sustainability		
Carrboro				Clean Energy Solutions, Inc.
Chapel Hill				Clean Energy Solutions, Inc.
Charleston			Sustainability Institute	
Charlotte		City Department of Neighborhood & Business Services		
Charlottesville			Local Energy Alliance Program	
Decatur				CLEAResult
Hampton Roads				Green Jobs Alliance
Huntsville			Nexus Energy Center	
Jacksonville	JEA			
Nashville		Mayor's Office of Environment and Sustainability		
New Orleans			Global Green	
USVI		Virgin Islands Energy Office		Clean Energy Solutions, Inc.

\* Third party indicates an agent, such as a consulting firm that is contracted to administer the program and is subject to oversight from contracting entity.

### Program Start Up and Launch

Program start-up includes the process of designing the program, hiring all necessary staff and sub-contractors, developing necessary forms, marketing materials, Websites and other resources, and training program partners. After programs have launched – that is, retrofits have begun – the start-up phase continues while the program conducts initial outreach, builds a name, fixes aspects of implementation or design that don't work, and otherwise refines its operation. It was common for retrofit activity to increase very slowly while program details were being polished, and marketing was getting started. Three years is a short period of time for any complex program to become fully developed, and most of the SEEA sub-grantees have been ramping up their programs for the entire BBP grant period. Over the course of the BBP grant period, the SEEA programs were active, and were constantly reforming their program designs to find the right model for sustainable operation.

Sub-grantees started activity after the grant award at different levels of development. All 13 of the sub-grantees had been identified by the time the grant award was finalized in May 2010. LEAP, having received funding through a separate grant the year before, already had a fully designed program up and running. Other cities, including Atlanta, New Orleans, Jacksonville, Hampton Roads, Huntsville, and the USVI had varying levels of program design in place, including identifying the program administrator and a basic outline of their program design. Remaining sub-grantees, including Chapel Hill, Carrboro, Charleston, Decatur, Charlotte and

Nashville, had identified the entity to receive the funds from SEEA, but little else. All cities received different levels of funding, which impacted the level and complexity of start-up and launch activity required. (See Table B-1 for detail on sub-grantee budget allocation.)

In their oversight role, SEEA worked with each city to establish a solid foundation for success in program planning and design. However, agreements took time to finalize, delaying the launch of some programs. Table 7 presents the amount of lead time each sub-grantee required before reporting their first retrofit. This lead time includes start-up and whatever period of time was required after program launch to attract a customer, finish a retrofit, and complete the steps necessary to report it. Lead times varied greatly depending on what infrastructure already existed and what bureaucratic hurdles needed to be overcome in order to start the program. Trends evident with different administrators and business models are discussed below.

**Table 7. Residential Program Administration by Sub-grantee**

Sub-grantee	Administrator	Business Model	Date Contract Signed	Date of First Retrofit	Lead Time (no. months)*
Atlanta	Municipal	Utility Add-on	July 7, 2010	May 24, 2010	0
Charlottesville	Nonprofit	Independent (Pre-existing Program)	June 6, 2010	June 1, 2010	0
Charleston	Third party	Independent	January 25, 2011	April 23, 2011	4
Chapel Hill	Third party	Independent	September 27, 2010	February 27, 2011	5
Jacksonville	Municipal utility	Utility Add-on	July 13, 2010	January 13, 2011	6
Hampton Roads	Third party	Independent	July 13, 2010	February 14, 2011	7
Nashville	Municipal	Utility Add-on	June 1, 2010	February 9, 2011	8
Carrboro**	Third party	Independent	September 27, 2010	July 29, 2011	10
Decatur	Third party	Utility Add-on	July 7, 2010	May 2, 2011	10
Huntsville	Nonprofit	Initially Utility Add-on, then Independent	July 7, 2010	May 4, 2011	10
New Orleans	Nonprofit	Utility Add-on	July 7, 2010	December 1, 2011	17

\* Cadmus calculated the lead time from the date the PPA was signed; however, some programs (including those in Atlanta, Charleston, and Jacksonville) actually launched before final sub-grantee agreements with SEEA were in place. Charlottesville had a program in operation before it was awarded BBP funds.

\*\*Carrboro deliberately delayed launch of its residential program while developing its commercial program.

Several municipal sub-grantees had difficulty getting their programs started. For Decatur, Atlanta, Carrboro, and Chapel Hill, this difficulty was partially due to the difficulty of coordinating between two city governments. SEEA helped three of these city sub-grantees sideline this issue by contracting with a third-party administrator on their behalf. Atlanta elected to manage its own grant. Hampton Roads, a non-profit sub-grantee, on its own elected to subcontract program administration to a third-party.

### **DOE Guidance**

DOE guidance issued throughout the grant period complicated program design and administration. Although the BBP grant award was finalized in May 2010, DOE had not yet finished defining many program requirements. Sub-grantees sought detail and clarification from SEEA on federal rules related to reporting, program design, fees, Davis Bacon regulations, and other issues throughout the start-up phase. SEEA staff reported that they relayed these concerns and questions to the DOE, but did not receive timely responses.

In an effort to clarify requirements, DOE began issuing series of guidance memoranda to grantees. As of January 2013, DOE has issued 21 formal guidance documents, with the first document issued five months after grants were awarded. While the documents do establish DOE positions on issues affecting program design and operations, such as how to track commercial and multifamily buildings, allowable costs, and fees for services, many grantees expressed frustration that these rules were set so late in the grant period. SEEA encouraged sub-grantees to have programs operational as fast as possible, and most were either already launched or at an advanced design stage when DOE issued the first guidance document. Sub-grantee and SEEA staff expressed frustration that late-arriving DOE guidance often required them to change program design or alter the programs' financial sustainability plans. Table 8 outlines the guidance documents provided so far.

**Table 8. DOE Guidance Documents October 2010-January 2013**

<b>Date</b>	<b>Guidance Title</b>	<b>Detail</b>
October 26, 2010	Guidance for EECBG Grantees on Sub-Recipient Monitoring	Explanation of the sub-recipient monitoring process, sample monitoring procedures and best practices, and examples of desktop and onsite monitoring review documents.
December 17, 2010	Guidance Reporting Leveraged Funds	Description of approach to minimize double counting of grant program impacts funded by multiple DOE sources.
December 21, 2010	Guidance for Grant Recipients on Closeout Procedures	Description of closeout procedures for the grant awards.
January 4, 2011	Guidance for Eligibility of Activities under the Energy Efficiency and Conservation Block Grant	Description of updated eligibility information.
February 18, 2011	Guidance on Allowable Costs for Marketing and Outreach Strategies	Description of how BBP funds can and cannot be used for marketing and incentive programs. Guidance also describes unallowable program structures based on DOE financial assistance rules.
March 14, 2011	Updated Finance Guidance	Description of how funds are expended for revolving loan funds, how loan loss reserves are expended, and how to treat interest earned.



Date	Guidance Title	Detail
March 25, 2011	Monthly Reporting Template	Announcement regarding modifications to the monthly reporting template, which was fixed to accommodate a date entry field.
July 26, 2011	New Guidance for Counting Commercial and Multifamily Building Upgrades	Description of how to count commercial and multifamily buildings. Commercial buildings are tracked according to a target number of buildings or a target square footage. Multifamily are treated as commercial or residential depending on how they were initially counted in a program's targets. Selecting one consistent approach is encouraged.
August 6, 2011	Solar Public Interest Waiver Extension Memorandum of Decision	Programs offering solar as an eligible project may be granted extensions.
August 23, 2011	Clarification on the 10% Limitation on Use of Funds for Administrative Expenses	Announcement that only 10% of grant funds can be used for administrative expense, excluding the costs of meeting reporting requirements for all grantees.
September 1, 2011	Financial Assistance Memo on the Treatment of Rebates and Utility Retroactive Discounts Earned Under Energy Efficiency and Conservation Block Grants	For grantees funding a retrofit within their own operations: Treatment of rebates received during the project and after the project is complete; how utility retroactive discounts are distinguished from rebates.
September 6, 2011	Historic Preservation Report Deferral	The collection of historic preservation reports is deferred while DOE awaits OMB approval for reporting.
October 21, 2011	EECBG Grantee Update: Contractor and Customer Revenue Streams	Grantees are restricted from imposing fees on contractors, customers, facility owners or other parties in conjunction of retrofit projects without prior approval from DOE.
February 7, 2012	Treatment of Rebates and Utility Retroactive Discounts Earned Under Energy Efficiency and Conservation Block Grants	For programs that receive rebates from utilities for providing assessments and upgrades, grantees must apply rebate funds to existing project costs prior to requesting additional funds from DOE.
March 23, 2012	Update Policy for EECBG Grant Recipients on Expected Energy Savings of Building Upgrades	Grantees may use a portfolio approach for meeting the 15% energy savings target for building upgrades.
April 6, 2012	Utility Bill/ Energy Usage Data	Updated schedule for grantee delivery of utility billing data to DOE. 12 months pre and 12 months post required.
April 13, 2012	Semi-Annual Davis-Bacon Act Enforcement Report	Guidance on Davis-Bacon Act Enforcement Report
September 26, 2012	No-cost Time Extension	Grantees may request no-cost time extensions by February 2013.
October 16, 2012	Property Disposition Guidance	Guidance from DOE on property disposition.
October 17, 2012	Updated EECBG Financing Guidance for Treatment of "Evergreen" Funds	Description of how grant funds can be used for financing programs such as revolving loan funds, loan loss reserve, interest-rate buy downs, and third-party loan insurance, both during and after the grant's period of performance.
January 31, 2013	Close Out Guidance	Resources for the closeout process.

### **Use of Third-Party Administrators**

SEEA and sub-grantees selected third-party administrators for their depth of energy-efficiency program management experience. The nature of the subcontracting agreement meant that these organizations focused primarily on client satisfaction, rather than a broader organizational mission. The third-party administrators generally started their city's program up quickly once agreements were in place, but the procurement process required to identify, screen, and contract with the third-party caused additional delay. Decatur staff credited CLEAResult with making theirs one of the earlier programs to launch, after a long, but failed, attempt to establish a joint program with Atlanta. City representatives from Carrboro credited the third-party administrator for making their program run more efficiently.

However, SEEA viewed some of the programs supported by for-profit third-party administrators as high in cost and not sustainable. Hampton Roads and Decatur reported that their programs were perceived as "Cadillac programs run on a Chevrolet budget." Both programs were terminated early, in part due to expense, despite having successfully completed a number of retrofits. Hampton Roads was closed amid concerns that the organization had spent its initial allocation without producing many retrofits, and that there may be evidence of unsound management practices. SEEA closed the Decatur program because of concerns that the program's model was not sustainable.

### **Leveraging Utility Programs**

Nashville, Atlanta, Jacksonville, Decatur, and New Orleans leveraged existing utility rebate programs with the intention to launch quickly and increase participation, but other operational details held them back. Atlanta's staff was frustrated by the city's inability to process rebates and the difficulty of managing the program page on the city Website. Other cities that experienced similar difficulties, such as Carrboro and Chapel Hill, resolved their problems by outsourcing the program management.

As a utility, JEA had a great deal of implementation infrastructure to lean on, but struggled to align internal goals with BBP requirements. Because the utility already had a per-measure rebate system in place, JEA staff designed Jacksonville's program to incent audits and subsidize financing. The staff expected this program to drive more intensive activity into their existing rebate programs, which did not complement the BBP goal of achieving short-term retrofits. JEA frequently modified Jacksonville's program to satisfy what utility staff perceived as changing requirements, which created an administrative burden. SEEA did not provide additional allocations to JEA because it was concerned that the high number of audits completed were not converted to retrofits, the part of the program not funded by SEEA.

*New Orleans' NOLA WISE program initially operated independently from the Entergy energy-efficiency program. NOLA WISE was redesigned to better align with Entergy's program requirements, and experienced an uptick in interest. In addition, a series of meetings and discussions between Entergy, NOLA WISE, and SEEA staff resulted in changes at Entergy. Entergy has embraced some aspects of the NOLA WISE program: they now require their trade allies to have a BPI certification, and are discussing the possibility of continuing the NOLA*

### **Community Partnerships**

Sub-grantees with government and nonprofit-run programs appear to have been more inclined to reach outside of their program offices to leverage support through community partnerships.

Nashville immediately partnered with utility program implementers to ensure quick program launch and efficiency. The Local Energy Alliance Program (LEAP) partnered with the City of Charlottesville, Rappahannock Electric Cooperative, UVA Community Credit Union (UVA CCU), and several other organizations. This allowed the program manager to focus on marketing and building partnerships. While much of Charlottesville's success appears to be due to a talented and motivated staff, the program also had the distinct advantage of having a fully operational program on the ground and other sources of funding when the DOE grant started.

### **Staffing Resources and Infrastructure**

Several SEEA sub-grantees found that their programs were more complex, and required more planning and design, outreach to partners, and operational oversight than they had expected. While the sub-grantees were able to learn from each other's mistakes in some instances, program differences resulted in unique problems with insufficient staffing, and underdeveloped systems in place for data collection and tracking, marketing, and quality assurance.

Program administrators often underestimated program staffing needs, which slowed program start up and inhibited program performance in some areas. Sub-grantees most frequently mentioned reporting and processing applications and rebates as activities that took up more time than anticipated. In one city, one program manager devotes 50% of his time to reporting. In many programs, understaffing contributed to delays in processing rebates for contractors and participants, and limited program staff time to develop community partnerships. The Carrboro, Chapel Hill, Decatur, Nashville, and Atlanta programs all were largely the responsibility of one full-time equivalent employee, but most were able to partly depend on staff time from other partners. Charlottesville and Huntsville, by contrast, have a more robust staff (currently two FTE dedicated to BBP, plus partial time from additional employees), and stated that reporting was a burden, but manageable.

Program staff, while limited in number, had to manage several tasks requiring a broad set of skills. Program administrators had diverse backgrounds, usually involving some program management experience, and often, but not always, some experience related to building science or energy efficiency. Many program managers noted that project management skills are more important to having a successful program than is technical knowledge about energy efficiency. One interviewee noted the importance of program staff having a Building Performance Institute (BPI) certification if they work directly with contractors. However, program administrators were generally able to contract for any specific expertise they did not have in-house, including quality assurance (QA) inspectors.

Information technology (IT) infrastructure was one area of implementation where most programs' staff struggled to outsource effectively. SEEA initially attempted to develop a regional IT solution. The contract with Performance Systems Development (PSD) was not successful, and sub-grantees were required to develop their own systems. (SEEA's experience with the PSD contract is discussed in greater detail later in this report.) LEAP staff was eventually able to find a suitable tracking and data program by hiring an outside IT consultant to assess their needs and draft their RFP document. LEAP then issued the RFP, reviewed resulting proposals, and selected a new IT contractor. For small programs, using an outside consultant gave the sub-grantee access to expertise they cannot afford to keep on staff.

## Regional and National Support

As coordinator for several programs across a region, SEEA recognized that it possessed a unique capability to effect change on a regional scale. Sub-grantee program managers agreed that SEEA could and did play an important role in advancing regional energy-efficiency policy. However, they were less likely to agree that SEEA could play a role directly supporting ongoing energy-efficiency programs. When asked to explain, sub-grantees referenced initial disorganization, difficulty negotiating agreements, problems in coordinating a regional IT system, and an effort to provide region-wide marketing help during the grant's early period.

SEEA, as a non-profit agency representing the entire southeast region, has a broad ability to contract for services in their territory without many of the bureaucratic delays or limited staffing municipalities face. However, SEEA also had challenges with staffing and turnover and did not have full staffing during the BBP grant's initial eighteen month period. SEEA frequently engaged as the contract party on sub-grantees' behalf to support their implementation of the BBP grant. However, in certain cases this caused bottlenecks and delays. For example, SEEA worked with the neighboring communities of Chapel Hill and Carrboro to hire a single implementer, Clean Energy Solutions, Inc. (CESI), to jointly administer these two programs. But when SEEA took more time than anticipated to negotiate a contract amendment for additional funding, both towns had to suspend their programs for nearly 6 months until new funds became available to pay CESI. According to interviewees, the suspension damaged the program's reputation and contractors' level of trust. At the time of this writing, the program had just begun to regain a steady stream of incoming projects after starting up again in June of 2012.

Sub-grantees also frequently mentioned the failed attempt to develop a regional IT system. SEEA had sought to lift the sub-grantees' administrative burden of developing IT systems to manage data tracking and reporting, by developing a data portal to serve all sub-grantees. A few sub-grantees reported they were involved in trying to implement the resulting contract, and dedicated many staff hours to learning how to operate the system, even going so far as to require their contractors to be trained on it.

According to interviewees, sub-grantees anticipated having access to the system data portal for several months, but the IT contractor ultimately failed to deliver a workable system. Unfortunately, because of this failure, many sub-grantees needed to reallocate staff resources to developing an IT function, an area for which most sub-grantees reported they do not have sufficient expertise. The challenges resulting from resource limitations and delays in developing a workable IT system resulted in lower quality data and great frustration on the part of sub-grantees.

Finally, sub-grantees pointed to the Home Energy Makeover Contest (HEMC) as an example of where a regional support role is not necessary, and local control may be better. Charlottesville pioneered a HEMC to market its program, which SEEA sought to replicate across other programs. SEEA's goal was to support sub-grantees by hiring the Electric & Gas Industries Association (EGIA) to implement and recruit participants for a HEMC in each locality. Unfortunately, because EGIA needed to work with sub-grantees at a local level, but was only directly accountable to SEEA, sub-grantees had little leverage with EGIA, who failed to perform on its contract obligations.

During interviews, many sub-grantees expressed frustration and dissatisfaction that they were not the direct client of EGIA, and therefore did not have the ability to influence their performance. In the end, confused lines of authority and the lack of EGIA performance contributed to what sub-grantees described as the failure of and disappointment in HEMCs. The concept itself did not fail: Charlottesville administered its own HEMC multiple times because of its initial success. Several other sub-grantees indicated they liked the idea, and would do it again if they had full control.

SEEA, for its part, recognized the implementation issues resulting from delays with software development, financing tools, and other areas where SEEA intended to provide support. The staff sought to change that by increasing their internal capacity, both in terms of overall manpower as well as specific expertise (program managers, marketing specialists, etc.). As SEEA has grown in capacity, they have been able to more successfully take on program supportive roles for the sub-grantees. For example, SEEA administered the signing of four loan loss reserve (LLR) agreements in 2012. They also played a key role assisting New Orleans work through its issues with Entergy. SEEA has become more strategic about where they get involved, and has had greater success. Sub-grantee staff noted that most of their concerns with SEEA were related to earlier events, and that in recent months service has been improved.

## Target Markets and Incentive Structure

SEEA encouraged sub-grantees to choose one or two broad target markets (residential, commercial, or both) for the programs. Generally, sub-grantees did not base this choice on a market assessment, but instead responded to other factors. Table 9 illustrates factors that influenced sub-grantees' selection of a target market.

**Table 9. Factors Influencing Selection of Target Market(s)**

Influencing Factors	Examples
Existing internal knowledge	<ul style="list-style-type: none"> <li>• Carrboro had an existing structural improvement program for small businesses</li> <li>• Jacksonville had experience with its current residential rebate programs</li> </ul>
Existing program infrastructure	<ul style="list-style-type: none"> <li>• Decatur, Atlanta, New Orleans, and Nashville layered their programs on top of an existing utility program</li> </ul>
Perceived ease of success	<ul style="list-style-type: none"> <li>• Chapel Hill, Atlanta, Decatur, Charleston, Huntsville, and Nashville thought the residential market would be easier than commercial</li> </ul>
Model other programs and lessons learned	<ul style="list-style-type: none"> <li>• Charlottesville determined that more work was being conducted in residential and there had been more lessons learned there about how to apply grant dollars</li> </ul>
Desire to fill market gap	<ul style="list-style-type: none"> <li>• USVI and Charlotte chose the commercial market because programs for residential and public markets were already available</li> <li>• New Orleans emphasized building a qualified contractor network because of contractor mistrust in the community</li> </ul>

Carrboro, Charlotte, and the USVI are the only sub-grantees that initially focused on the commercial market. Carrboro chose commercial because they had previous experience in that sector and wanted to counterbalance what Chapel Hill was offering. Charlotte chose commercial, and within that sector focused on multifamily, which offered strong potential for high energy savings and maximum impact on the community.

Most of the cities leveraged some incentive funding from other sources for their program. Table 10 and Table 11 illustrate the energy-efficiency incentives available to customers for residential and commercial programs, respectively, including leveraged resources such as utility incentives.

**Table 10. Residential Incentives Available (Not Financing-Related)**

City	SEEA and Utility Audit Rebates	SEEA Retrofit Rebates	Utility Incentives	Maximum Rebate
Atlanta	Free (utility walk-through only)	Phase I: 25% up to \$2,000 Phase II: 25% up to \$2,000 plus \$1,500 water heater incentive,	Up to \$2,200 Up to \$2,200	\$5,700 + free audit
Carrboro	75% of the energy audit cost, up to \$150	40% for envelope retrofits and 20% for HVAC replacements, up to \$1,500		\$1,650
Chapel Hill	up to \$150	Phase I: 50% for envelope retrofits and 25% for HVAC replacements, up to \$5,000 Phase II: 50% for envelope retrofits and 25% for HVAC replacements, up to \$1,500	\$425 for 15% savings for 100 customer pilots	\$5,575
Charleston	\$200	Phase I: \$1,500 Phase II: \$1,000 maximum for 15% savings	Up to \$2,500 Up to \$2,500	\$4,200
Charlottesville	\$250	HPwES Phase I: \$1,000 for 20% energy savings, plus \$500 for each additional 10% savings, up to 60% HPwES Phase II: up to \$1,000 BetterBasics: \$450		\$3,250
Decatur	Free (utility walk-through only)	\$1,000 for 15% savings plus	Up to \$2,200	\$3,200 + free audit
Hampton Roads	None	25% up to \$2,500 for building envelope		\$2,500
Huntsville	WISE: Free (\$300 value, includes \$150 utility contribution) WISE Gold: \$350 cost is refunded if retrofits completed	WISE: max of \$400 for 15% savings WISE Gold: max of \$400 for 20% savings		WISE: \$700 WISE Gold: \$750
Jacksonville	Phase I: \$500 Phase II: \$350 Phase III: 25% plus 75% if 15% energy savings		Utility only: value unknown	Unknown
Nashville	Phase I: Free to first 700 customers Phase II: \$150, refunded if 15% savings. Audits are conducted by utility	Phase I: \$200 Phase II: \$200, \$300 plus team rebates	Up to \$500 Up to \$500	\$1,150
New Orleans	Phase I: Free Phase II: Cost limited to \$35		Up to \$3,000 (Utility only)	\$3,000 + free audit

**Table 11. Commercial Incentives Available (Not Financing Related)**

	SEEA Audit Rebates	SEEA Retrofit Rebates	Maximum Rebate
Carrboro	\$400 cost to customer	N/A	<i>[Subsidized audit]</i>
Chapel Hill	Expected early 2013	Expected early 2013	NA
Charlotte	<i>Funding level dependent on project; Grant-funded through RFP process</i>		NA
Charlottesville	None	25% of the project cost on the first \$10,000 plus 15% of the project cost above \$10,000, with a maximum rebate of \$25,000	\$25,000
New Orleans	None	None	NA
USVI	Free if retrofit implemented	Determined by project: \$4,000 to \$80,000	\$80,000 plus cost of audit

Sources: Documentation received from SEEA, program manager interviews, program Websites, and monthly reports.

The amount of the rebate did not determine program success or satisfaction with the program. Sub-grantees' residential sector programs differed widely between the level and type of rebate, as well as participants' program experiences. Large rebates above \$1,000 were common but not necessarily a determinant of success. For example, Nashville has a flat rebate level of \$200 on top of TVA rebates, and has come close to meeting its retrofit target. Nashville's program also minimized additional steps for homeowners and contractors, simplifying the participation process. By contrast, incentives available to customers in Atlanta were substantially larger—up to \$4,200 including utility rebates—yet the additional paperwork steps generated complaints from contractors and customers.

There is evidence that the initial rebate level set market expectations. Contractors in both Georgia programs, where incentive levels were some of the highest, complained they were unable to make sales after the BBP rebates ran out, despite still having access to utility rebates at least as high as what was offered in Nashville. Wherever higher rebates had recently been offered, lowered rebates were clearly less effective at motivating customers to action. Jacksonville, Charlottesville, and Chapel Hill were forced to dramatically cut program rebates from their initial level, and program staff in all areas reported a significant reduction in interest from customers. In Chapel Hill, the cap on rebates was dropped from \$5,000 to \$1,500 in October 2011. Staff reported that since that drop, the overall project size has also dropped considerably. It is difficult to see this impact in monthly reporting, perhaps because of the delay between reporting initial interest and completing a retrofit.

Some sub-grantees developed their incentives and eligible measures based on what the utility offered. Nashville, Atlanta, Decatur, New Orleans, and Jacksonville developed their programs to complement existing utility programs, allowing each program to start up quickly. However, adding onto the utility program may have caused cities to miss other opportunities in the area. For example, interviewees noted that market research conducted in Atlanta suggested that the energy-efficiency opportunity was in the commercial sector, not residential.

Another difference between the programs was how the incentive dollars were assigned and distributed. Table 12 illustrates the different approaches used by sub-grantees. While the discount was intended for the customer, it was distributed in one of two ways: either as a reimbursement to the customer after the customer paid the full amount to the contractor, or as an

instant rebate, which required the contractor to deduct the amount from the customer's invoice and then submit the incentive application to the program.

Instant incentives had several advantages. They gave the sub-grantees leverage to insist that contractors complete paperwork completely and correctly. They were also more convenient for customers, who had the instant gratification of paying less up front, rather than having to come up with the cash and then wait for a rebate. Finally, they shielded customers from the delays in processing and disbursement that plagued the programs, especially in the early months.

The instant model in effect shifted the burden and risk of offering rebates from the customer to the contractor. Contractors had mixed reactions to the instant incentive model. Some contractors preferred the instant rebates, because they wanted to have greater control over customer satisfaction. Other contractors, in particular large contractors, reported that they did not want the extra paperwork. They did not consider the incentive to be enough of a sales generator to make up for the administrative burden. Smaller contractors reported that fronting the rebates and then waiting for the reimbursement was very difficult with their limited cash flow. One contractor in Charleston noted: *"It's stressful sometimes, waiting on our profit for a job. It's a bit more of a liability for us because sometimes it doesn't work smoothly."*

LEAP and Charleston WISE were the only sub-grantees to experiment with incentives to the contractor. A \$500 incentive LEAP offered through a pilot in May 2011 resulted in a spike in retrofits. However, the program found it to be too expensive to sustain. Following the pilot, Charlottesville redesigned the program and launched what is now their BetterBasics initiative, which provides a smaller incentive for smaller projects. The initiative is still meant to be a help

*LEAP created a second program, called BetterBasics, that allows contractors to offer incentives to customers for one of two less intensive projects, either air sealing and insulation or a new HVAC system with duct sealing. LEAP is considering another new program that would allow customers to implement a retrofit over months or even years, keeping track of their participation and warning them once they reach a certain savings level. This would encourage customers to move towards greater efficiency. By making sure they have something for everyone, LEAP also ensures that contractors are more likely to tell customers about options available through LEAP.*

to contractors, in that it makes it easier for customers to participate by reducing the level of commitment required from them. LEAP intended BetterBasics to capture a greater volume of customers, and encourage more contractors to direct

more projects through LEAP's programs. Staff and contractors reported this has been a popular program, although it is not possible to determine the number of BetterBasics retrofits compared to the existing Home Performance with ENERGY STAR<sup>®</sup> (HPwES) program using available program data.

Each city's incentive recipient structure is outlined in Table 12.



**Table 12. Incentive Recipient Structure**

	Direct to Residential Customer	Instant to Customer (rebate issued to contractor)	Direct to Commercial Building Owner
Atlanta	X		
Carrboro	X		X
Chapel Hill	X		
Charleston		X	
Charlotte			X
Charlottesville	X		X
Decatur	X		
Hampton Roads	X		
Huntsville	WISE	WISE Gold	
Jacksonville		X	
Nashville	X		
New Orleans		X	
USVI			X

## Financing Options

According to SEEA program staff, the DOE placed a high priority on establishing financing programs for BBP that are specifically designed to encourage retrofits. Financing was widely expected to more completely overcome the upfront cost barriers to energy-efficiency retrofits, and held the promise of doing so at a much reduced cost to government if a leveraged or cyclical financing tool was used to support loans. Further, financing tools were expected to be a primary mechanism for achieving the high leverage targets set by the grant, and to establish a foundation upon which to make each grantee's program sustainable after the term of the grant expired.

In early BBP training and workshops, the DOE heavily emphasized a financing structure called a loan loss reserve (LLR) that would achieve both the leverage and sustainability goals. An LLR is a dedicated pool of funding held by a lender or third party that is used to offset risk to loan capital. Lenders agree to offer low-cost financing in return for having access to the pool. For every loan they issue using their own capital, a portion of the LLR funds are set aside in case the borrower defaults. LLR programs around the country tend to have set-aside rates of around 10%<sup>3</sup>, enabling them to leverage private capital at a rate even higher than the 5:1 target for the BBP grant. In addition, as loans are repaid, the LLR funds cycle back into the loss reserve pool and can support new loans, making the potential leverage ratio much higher. While the fund could suffer losses from payouts for default, default rates for such programs have been shown to range from 0% to 3% range<sup>4</sup>, so the fund can conservatively be expected to last for years, or even decades. The DOE referred to this type of program - that continues to offer the incentive of low-

<sup>3</sup> National Governor's Association, *State Clean Energy Financing Guidebook*. January 2011. Accessed online March 1, 2013 at <http://www.nga.org/files/live/sites/NGA/files/pdf/1101CLEANENERGYFINANCING.PDF>.

<sup>4</sup> Hayes, Sara, Steven Nadel, Chris Granda, and Kathryn Hottel, *What Have We Learned from Energy Efficiency Financing Programs?* American Council for an Energy-Efficient Economy, September 2011.

cost financing with no need for an additional influx of government funding - as “evergreen,” and strongly encouraged programs to adopt this model.

The PowerSaver program, a grant program launched by the U.S. Department of Housing and Urban Development (HUD) in 2011, established a model of lending similar to an LLR in that it allowed government funds to leverage private sector capital. However, rather than set up dedicated fund, the PowerSaver program offers a loan guarantee. In both cases, the lender is reimbursed for all or a portion of their loss in the case that the borrower defaults. However, under PowerSaver, no money is set aside. The government simply allocated funds to pay the appropriate portion of the loss when a default event occurs.

SEEA successfully worked with SunTrust Mortgage to apply for PowerSaver grants to serve Chapel Hill/Carrboro and Charleston. SunTrust is the grant awardee in this case, but they explicitly partnered with SEEA, who is providing an IRB on the PowerSaver loans. As a partner, SEEA is party to data from the loan program.

BBP grantees also considered revolving loan funds (RLFs), on-bill financing programs (OBF), and interest rate buy-downs (IRBs). RLFs are the simplest program structure, involving a dedicated fund used as loan capital. The entity that holds the fund makes loans, and as loans are repaid, the fund is replenished and can make new loans. The key difference between a LLR and a RLF is that the RLF does not leverage private capital. The fund itself provides the loan capital, so each dollar supports fewer loans. However, it is “evergreen” like a LLR. SEEA used some of their financing budget to expand an RLF that already existed in the City of Carrboro for commercial lending. Charleston planned to establish an RLF, but the \$25,000 included in their budget was not sufficient to establish a meaningful program.

In OBF programs, the customer repays the loan through their utility bill. The utility may or may not provide the loan capital, origination, and servicing. Charleston pursued OBF with the local water utility, but negotiations ultimately dissolved (discussed in greater detail in Residential Financing Programs section).

An IRB is a one-time payment made to the lender at the time the loan is issued, that represents a portion or all of the interest that would be due on the loan over the full term. For example, if the lender requires 6% interest, a third party could offer the present value of 3% interest of the loan over the full term as an upfront payment. The customer will pay the remaining interest through their regular payment stream.

The LLR, PowerSaver, RLF, OBF, and IRB were not mutually exclusive, and were often applied together to create financing products tailored for the energy-efficiency market. As mentioned above, SEEA layered an IRB onto the PowerSaver loans in North Carolina and Charleston. JEA used an IRB and a LLR in their program. These programs are discussed in greater detail below.

### **Regional Approach**

SEEA’s original proposal to DOE pledged to establish a region-wide financing accessible to all sub-grantees. SEEA staff felt this would offer a potential lender the biggest possible market, and so achieve the greatest interest from financing partners. In addition, it would allow the program to achieve economies of scale by only requiring one contract, one LLR fund, one origination and

servicing center, and would store all information for loans in all programs in one data tracking system, which SEEA also planned to develop. Because SEEA was working toward this regional solution, most sub-grantees (all but Carrboro, Jacksonville, and Charlottesville) did not incorporate a local loan program into their initial program design. SEEA held the LLR funding in its own budget, and therefore didn't include funding for financing options in the budget for most of its sub-grantees. (Charleston is an exception. They had \$25,000 to set up a RLF. Ultimately, the city decided this funding was too small to set up a meaningful RLF, and the fund was never established.)

SEEA invested a great deal of time and energy into developing a regional financing option, but found, as did many other BBPs around the country, that it was difficult to convince lenders to get involved. Shortly after the grant award, SEEA issued a request for information (RFI) for an energy-efficiency financing program, and received several proposals. Although they received several responses, most failed to meet the proposed terms from the RFI on one or many levels. SEEA did move forward with negotiations with one potential partner. However, the partner proposed a higher than expected interest rate, and was unable to operate in Louisiana. In addition, according to SEEA staff, the lender refused to accept any risk from the proposed program, expecting SEEA to bear all of it. In discussions with other potential lender partners, SEEA staff determined that the prospective loan volume from the program was not sufficient to attract high-quality proposals from lenders big enough to have the necessary geographic footprint.

### **Community-Based Financing**

After exploring several avenues that failed to come to fruition, SEEA changed tactics. Using Charlottesville and Jacksonville as examples, SEEA began approaching lenders about more localized programs. As a result, SEEA now works with several different types of lenders and holds contracts to provide LLRs for residential loan products in New Orleans, Huntsville, and Nashville. In these cases where the lenders receive SEEA BBP funds, SEEA is able obtain reporting data from the lender. New Orleans and Nashville are working with local partners, a local bank and a CDFI, respectively. Huntsville is working with Abundant Power, which is a loan underwriter and program management company that specializes in energy efficiency. The remaining sub-grantee communities can access loans through SunTrust, which was awarded PowerSaver grants for programs in Chapel Hill/Carrboro and in Charleston.

The residential financing options offered by the cities are outlined in Table 13, and commercial financing options are outlined in Table 14.

**Table 13. Residential Financing Options as of October 2012**

City	Date Financing Launched	Lender	SEEA BBP Funding	Non-BBP Funding	Interest Rate	# Loans*
Charlottesville	Available before program	UVA CCU (PowerSaver)		Loan guarantee	~6% (fluctuates)	undisclosed
Jacksonville	November 2010	JAX Metro Credit Union, Coastline Federal Credit Union, Community First Credit Union	LLR (\$100,000) IRB		0%	121
New Orleans	February 2012	Fidelity Homestead Savings Bank		LLR (\$715,000) EECBG (As of Feb 2013 \$400,000 redirected to NOLA Wise for cash incentives)	Unsecured: 3.75% to 10.39% Secured: 5.24% to 6.29%	12
Charleston	August 2012	SunTrust (PowerSaver)	IRB (\$200,000)	Loan guarantee	~5% (fluctuates)	0
Huntsville**	September 2012	Abundant Power		RLF (\$350,000)	6%	0
Nashville	September 2012	The Housing Fund (CDFI)	LLR (\$200,000)		3.25% to 5.25%	0
Carrboro/ Chapel Hill	August 2012	SunTrust (PowerSaver)	IRB	Loan guarantee	~4% (fluctuates)	0

\* The number of loans is approximate as of September 2012.

\*\*Huntsville offers customer the choice of a loan or a rebate. Loans are supported by SEP funds, and not BBP funds, so projects supported by a loan will not be part of the BBP program.

**Table 14. Commercial Financing Options as of October 2012**

City	Date Financing Launched	Lender	SEEA BBP Funding	Non BBP Funding	Interest Rate	# Loans*
Carrboro	Available before program	City of Carrboro	RLF (\$55,000)	RLF(\$45,000)	3%	6
New Orleans	Expected 2013	Fidelity Homestead Savings Bank	LLR (\$300,000)		unknown	0

\* The number of loans is approximate.

## Residential Financing Programs

### *Establishing Partnerships*

Charlottesville was the first sub-grantee to have a program residential financing option available, through the UVA CCU Green Sense program. Charlottesville began coordinating with UVA CCU during the Green Cities program, before the launch of BBP. Often in partnerships, ironing out the terms of an agreement can cause major delays in implementing a program, or even derail it entirely. Charlottesville avoided these issues by not defining an agreement with UVA CCU.

LEAP had several conversations with UVA CCU to explain the benefits of the program and convince credit union staff that the saving potential was real. The program infrastructure—such as eligible measures, a registered contractor network, and the QA policy—helped LEAP convince the credit union of the program merit. The credit union moved forward on its own to establish the Green Sense loan option for participants in the LEAP program. Later, the credit union applied for the PowerSaver loan with assistance from LEAP, but again, no formal relationship was established. The UVA CCU PowerSaver program does not require customers to use the LEAP Home Performance with Energy Star program, but does encourage customers to participate by posting links to the program on the credit union's website, joint marketing with LEAP, and verbally referring customers to the LEAP program.

New Orleans offered another successful model for starting up a lender partnership. In order to get the attention of potential partners, SEEA contracted with a local consultant that was well-known and respected by the city financial institutions. This consultant carried the program message to several potential partners individually, and identified champions within each institution. Champions tended to be younger executives looking for a way to distinguish themselves, who were interested in programs with an underlying social benefit. Once SEEA issued its RFP for a financing partner in New Orleans, the champions responded to the RFP because the local consultant had already established relationships with and educated local financial institutions about the opportunity.

JEA already had a relationship with several area credit unions, in particular the utility's affiliated credit union. Nevertheless, in a manner similar to New Orleans approach, JEA staff met with several other area lenders before designing their financing program. Eventually, through an RFP process, JEA found three credit unions to join the program.

Community development financial institutions (CDFIs) can provide lending with far more flexibility in structure than traditional lenders. These non-profit institutions tend to be organized around a social mission. In Nashville, a local CDFI is oriented toward the availability of affordable housing. Its mission dovetails nicely with a residential energy-efficiency program. In this instance, the city also invested considerable time in identifying the appropriate contact within the organization and then presenting the case for energy efficiency and potential partnerships. SEEA used some of the remaining funds from its own financing line item in its own budget to encourage the CDFI to move forward with the partnership.

Not all locally-focused efforts were successful. Charleston's initial efforts to develop a program were ultimately not successful. In Charleston, the primary cause for the failure appears to be misaligned incentives and program complexity. The City of Charleston contracted with Abundant Power Group to design and implement an on-bill financing (OBF) program through the water utility. Although Abundant Power Group has considerable experience in this area, they were unable to navigate a series of roadblocks. Interviewees for this evaluation reported that the utility, although it had signed a contract and was nominally on board with the program, caused numerous delays in implementation. Eventually, the city decided to forego the on-bill component. Abundant Power Group next investigated a RLF approach. Delays due to having to coordinate with Performance Systems Development (PSD) software and disagreement among city stakeholders eventually derailed the project.

### **Financing Program Design**

Most of the SEEA-backed loan products have only recently been launched, and their impact is yet to be determined. Charlottesville and Jacksonville, however, have had loans associated with the programs for most of the programs' duration. Once UVA CCU staff were convinced that energy efficiency offered real savings, they built their own program, Green Sense, in parallel with the LEAP program and with no financial support from SEEA or any other outside parties. To obtain a program loan, UVA CCU simply requires that a homeowner be financing a project being done through LEAP that follows LEAP requirements. In 2011, UVA CCU was awarded a PowerSaver grant. As with GreenCents, UVA CCU is the sole awardee, and neither SEEA nor LEAP is an explicit partner. After UVA CCU was awarded the PowerSaver grant, they contracted with LEAP to provide QA, but this agreement is separate from the HPwES and BetterBasics programs.

The two organizations keep open lines of communication, but because there is no formal agreement between them relative to funding the program, LEAP does not receive any data on loan activity from UVA CCU. Nevertheless, both parties have been very satisfied with their partnership to date. A UVA CCU representative stated that regardless of whether the PowerSaver grant continues past its current 2014 expiration date, UVA CCU sees potential in energy-efficiency lending, and will continue to offer some kind of loan product to target this market.

UVA CCU was also the first DOE PowerSaver grantee to have a PowerSaver program up and running. To date, according to UVA CCU staff there have been "*quite a few*" BBP loans, though the level of activity is below what they expected. UVA CCU does not report results to SEEA because the program is not funded with BBP money, and while they did provide Cadmus with an estimate of completed loans, they asked that we not publish the number. An estimated 10% to 25% of projects completed through LEAP are associated with a UVA CCU loan.

PowerSaver programs, though not yet proven across the region, are underpinning financing programs in three additional SEEA sub-grantee cities. SEEA worked closely with sub-grantee staff and SunTrust Mortgage to write successful PowerSaver proposals for Chapel Hill/Carrboro, and Charleston.

Both the Charleston and Carrboro/Chapel Hill areas also have access to an energy efficiency financing option through the PowerSaver program. Sun West Mortgage Company partnered with SEEA on two successful proposals for PowerSaver awards. SunWest offers the PowerSaver loans, and SEEA contributes an IRB that buys the interest rate down roughly two percentage points in Charleston, and roughly 3 percentage points in the Carrboro/Chapel Hill area, so that the customer pays around 5% interest or 4% interest, respectively (The actual interest fluctuates according to US Treasury rates). One important feature of these PowerSaver programs is that unlike in Charlottesville, because SEEA is party to the agreement, they receive loan activity data for Charleston and North Carolina.

Several programs that have launched recently use LLRs to make financing more affordable for customers. Nashville has been particularly successful using the LLR to target borrowers with less access to financing, and to make loans affordable. With SEEA providing a LLR to the CDFI, the city has launched a loan specifically targeting low-to-middle-income borrowers. The acceptable credit scores are as low as 580, and the interest rate is tiered, with lower rates available for

lower-income customers. The City of New Orleans contributed funds from another EECBG grant to establish a loan-loss reserve for their residential financing program, and SEEA contributed funding to establish a LLR for their commercial financing program. Both programs are offered through Fidelity Homestead Savings Bank.

Jacksonville did not have funds to dedicate to a cyclical fund such as an LLR. Instead, they contributed to an interest rate buy-down (IRB) from their SEEA funding. They started with a buy-down of six percentage points making the loans roughly 1.9% APR, and saw relatively low response. In the fall of 2011, the city piloted a full IRB to 0% to simplify marketing, with the institutions themselves contributing the remaining 2%. Customer response increased dramatically. After re-launching the financing aspect of the program at 0% with a \$5,000 cap in January 2012, the city experienced a surge in interest.

Jacksonville program staff reported that the IRB was a very popular tool with lenders, because it allowed them to capture a five to 10-year stream of capital up front, reducing their risk and improving their cash flow. The three credit unions who joined their program ranged in size: one small (\$35 million in assets), one medium (\$300 million in assets), and one large (\$1 billion in assets). Staff reported that the smallest of the three has been the most engaged. It actually changed its charter in order to serve all JEA customers, rather than just city employees. This credit union has also reached out to contractors directly to encourage them to promote the program. Meanwhile, the large credit union, which processes up to \$1 million/day in auto loans, dropped out of the program because it was too small. JEA staff acknowledged that the program was still in the early phase of implementation, but were hopeful that energy efficiency loans could become a common type of product that lenders are anxious to provide, like car loans.

Jacksonville seems to have had the most successful financing program to date of the sub-grantees. This program differs from other sub-grantees in that retrofits through their program appear to have been largely driven by the financing option. Of 206 reported retrofits in Jacksonville, 121 (59%) had an associated loan. In addition, program staff reported that roughly 75% of applications were approved for a single measure, but between approval and loan closing, customers decided to add measures to the project. The average size of financed projects was more than double the size of projects that did not use financing. This may indicate that the financing program allowed customers to achieve deeper energy savings than they would have without financing.

Nevertheless, based on experience with both IRBs and cash incentives, SEEA staff reported that they prefer to offer cash incentives. Cash incentives may be the less expensive and less complicated approach to achieving the same result. It is difficult to put a precise savings-per-dollar value to an IRB, because it is dependent on several details of the loan terms. In particular, an IRB becomes more expensive as more percentage points are bought down, as loans get larger and as loan terms get longer. This difference in cost is largely hidden from the borrower, and therefore has little added effect on their motivation. Putting dollar caps on the IRB amount adds a level of complexity to the financing product that is difficult to express to consumers. Adding to the problem is the fact that once a sub-grantee starts advertising its program lending rate, they are bound by truth in lending laws, which may be unfamiliar to many program administrators.

## Commercial Financing Programs

Commercial lending has been more difficult to establish than residential lending. The BBP sub-grantees did not concentrate as much on commercial programs in general, and SEEA and sub-grantees have less of an understanding about how to effectively engage businesses in a retrofit program as compared to homeowners. Commercial lending is more expensive than residential lending because the risk of default is often higher. In addition, because commercial projects tend to be larger in scale than residential projects, a larger pool of capital is required to support a commercial loan program.

Carrboro leveraged their existing revolving loan fund for commercial property upgrades. Using their BBP grant funding, they more than doubled the size of the fund, from \$45,000 to \$100,000. Of 5 commercial projects that Carrboro has complete, 3 have utilized the RLF. New Orleans also has an operational commercial financing program through Fidelity Homestead Savings Bank, the same organization that is supporting the residential financing program in New Orleans.

While Carrboro's and New Orleans' programs also offer commercial loans, the primary SEEA experiment with commercial financing was the USVI program. The USVI program was focused exclusively on the commercial sector. This area, where the air-conditioning season is year-round and electricity rates are as high as \$0.50/kwh, seemed like a good candidate for an on-bill financing program due to the high savings potential. USVI Energy Office and SEEA staff agreed that the primary barrier to better energy efficiency was the upfront cost. The program offset part of the cost with a 40% grant, but that left customers still responsible for paying a significant portion of the bill upfront. SEEA's own staff dedicated a great deal of time and energy to establishing commercial lending in USVI. Their original plan was to set up an OBF with the territory's electric utility, but the utility was not interested. SEEA staff also reached out to private lenders, but could not generate serious interest. According to Energy office staff, two local banks began to offer financing to this market, but the 9% interest rate was too high to attract many customers.

In addition to the barriers common to commercial financing everywhere, the USVI program faced several hurdles specific to the context of the area. SEEA wanted to target their program to small business owners on the island. However, these small business owners were unfamiliar with financing, and therefore financing institutions were likewise unfamiliar lending to them. SEEA staff speculated that lenders anticipated high default rates from this population.

## Local Market Characteristics

Program staff and contractors consistently mentioned a few characteristics as being key influences on the energy-efficiency market in their community: level of education, number of high income residents, weather, local economic conditions, energy prices, and housing stock. In some areas, program staff also stated there was a lack of available skilled contractors.

Several programs operated in communities that identify as being a university town, which the cities perceived as an advantage. Program managers in Charlottesville, Huntsville, Decatur, Chapel Hill, and Carrboro all perceived their community's high concentration of wealthy and highly educated individuals as a benefit. Charlottesville reported this was the easiest market to reach. In Chapel Hill, one staff person described the typical customer as: "*older, wealthy, with an*



*older home, and someone who wanted to do something positive for the environment in a one-off action rather than through sustained small behaviors.”*

Program staff in Jacksonville, Atlanta, Hampton Roads, New Orleans, and the USVI all mentioned different local market factors they attributed to shaping the energy-efficiency market in their area. Interviewees reported that Charlotte identifies as being an energy capital because it is the headquarters for Duke Energy, and so residents and local businesses have a greater awareness of energy issues. Jacksonville, New Orleans, and Atlanta are large metropolitan areas with a diverse population. Program managers in New Orleans noted that the city is 40% low income, which impacts the program demand, level of incentives, and service offerings. Many homes in the city are over 100 years old. Tailoring a program and targeting marketing messages in these areas can be difficult.

Hampton Roads staff perceived that a lack of awareness among both customers and contractors was a major detriment to program uptake. Charlottesville, although noting that the customer base tends to be well-educated and interested in energy efficiency, saw a lack of contractor knowledge and training. New Orleans, like Charlottesville, focused on creating a more highly skilled contractor network. In New Orleans, this was done specifically to build customers' trust in local contractors.

Contractors expressed similar opinions of local market factors as those mentioned by program staff. However, contractors were more likely to cite weather as a factor. In Virginia and North Carolina, contractors noted the mild weather, and mild winters in particular, as a challenge for the energy-efficiency market. In Huntsville, a contractor reported that: *“Our electricity rates are pretty low and we have a moderate climate. It’s not like California.”* More southern locations, such as cities in Georgia, noted that hot summers could be used to drive energy-efficiency initiatives.

According to staff at the USVI Energy Office, the small business owners the program wanted to target had very little understanding of energy efficiency. To keep the process simple and to overcome the lack of trained contractors on the island, the program hired one contractor, headquartered in North Carolina, to conduct audits as well as complete the installation work. Program staff reported that customers felt this contractor was too expensive and preferred to use contractors they already knew and trusted.

In the USVI, not only is the weather hot most of the year but energy prices are over \$0.50/kWh, and some structures, including one participant building, are nearly 300 years old, all of which increase demand for energy-efficiency services. Like program managers, contractors tended to emphasize the prevalence of well-educated people as another key factor in driving energy efficiency.

In addition, the USVI Energy Office struggled with program administration. SEEA attempted to design a turnkey program for USVI, managed from North Carolina by CESI, the firm that was also hired to manage the Chapel Hill and Carrboro programs. CESI staff reported that managing the program from afar presented several difficulties. In particular, the lack of face-to-face contact made it difficult to establish strong relationships with the USVI Energy Office, the electric utility, or other local partners.

## Marketing and the Customer Experience

The DOE intended BBP funds to help customers and suppliers overcome barriers in order to build robust energy-efficiency services industries where there was previously little activity. As with any start-up business, sub-grantees sought to understand their prospective customers and what would drive them to participate. This section outlines the sources and depth of market information that sub-grantees used to understand their customers, and details how they applied that information. This section also presents key findings regarding customer awareness, program satisfaction, and marketing tactics.

### Understanding the Customer

In order to determine how best to reach their target market, program managers must understand what barriers customers face, what motivates them to invest, how to find them, and how much they are able and willing to spend on energy efficiency. These questions can be difficult to answer, especially for a broad-based initiative such as an energy-efficiency program.

### Market Assessment

Each city invested different levels of staff time and dollars into researching their target markets. Some cities invested in formal studies of the community to identify key market segments. Others relied on staff members' understanding and experience. Cities using utility add-on programs had the benefit of a general understanding of who participated in the utility program. All cities with a utility add-on program chose to target the same types of customers who participated in the utility programs, instead of exploring other potential customer segments. If not working with a utility program, cities did not possess the luxury of having pre-existing customer information, and tended to rely on staff experience, evaluations of similar programs in other areas, and stakeholder feedback to select their target market.

Jacksonville and Atlanta appear to have invested the most in market research. Atlanta hired a local business school intern who used ZIP code data from participants in the Georgia Power program to identify likely customer segments. This intern identified two specific neighborhoods for targeting, and developed a demographic profile of each neighborhood, concluding that: "*the majority of our target is 45 years of age or older, live in homes that are at least 40 years old, and are involved in their neighborhood associations.*"<sup>5</sup> Atlanta then contracted with a public relations firm to develop a marketing plan. It is not clear to what extent Atlanta followed the plan and targeted these neighborhoods. Atlanta struggled with procedural obstacles, including extensive paperwork and slow payment of incentives, which may have countered the effects from their emphasis on marketing.

At the program design stage, Jacksonville relied on a high level assessment of market characteristics based on their own knowledge and experience. JEA, which has decades of institutional knowledge and staff experience delivering energy services to the community, has considerable in-house market knowledge. Staff recognized that the market for energy assessments that might propel deeper savings was weak in Jacksonville. Also, at the time the program started, there were only a few Home Energy Rating System (HERS) raters in the area.

<sup>5</sup> Alequresh, Laila, R. Arora, I. Barnola, K. Nelson, K. Perfetuo, E. Roques, and V. Tran. *SHINE Marketing Project Report Final*. 2010.

JEA decided to incentivize audits in order to drive awareness of the benefits of audits, create demand for HERS raters, and hopefully to also drive deeper retrofits.

Jacksonville program staff took on market research internally. Based on JEA's pre-existing residential rebate program, city program staff had a good sense of who was likely to participate in the audit portion of their program. To further narrow down their target population for tailored marketing, JEA acquired PRIZM<sup>6</sup> data and are in the process of conducting a market segmentation analysis. Jacksonville's success in driving participation in its program attracted attention from other SEEA sub-grantees, with other cities calling on JEA staff for advice in developing market profiles.

Some cities collected informed opinions about the market from program partners, including utility staff and contractors. New Orleans staff had an understanding of the reconstruction market in New Orleans following Hurricane Katrina, which made this area much different from other areas in terms of housing stock and income. Despite the fact that 40% of New Orleans is considered low income, the city decided that their target market should be families with higher income (above \$75,000 per year), young children, and that were college educated. LEAP had an extensive network of stakeholders, including at least one contractor, that provided insight and opinions as it developed its program. LEAP consults this group frequently to update them on current program activity and as they consider new program ideas. Other cities used similar in-house knowledge.

With or without market research, most of the cities offering residential programs identified their target market as individuals with a household income above \$75,000 per year, college educated, and who live in a home built prior to 1970. Participant data confirms these assumptions and findings. Based on participant surveys, 70% of participants own a home built in 1979 or earlier, 70% of participants have a household income of \$60,000 or more per year, and 83% reported having a bachelor's degree or higher.

Once their programs were up and running, most sub-grantees collected demographic information from participating customers. Charlottesville, for example, issues a survey link via e-mail that captures participants' income, education level, size and age of home, and geographic location within the program's coverage area. This information helps managers determine which customers segments they are successfully reaching, but does not give them information about markets that are potential participants but are not responding. Nashville is addressing this problem by issuing an RFP for a marketing organization to carry forward the program in neighborhoods where it is established, as well as provide strategic research and planning to move the program into areas they have not yet reached.

None of the sub-grantees conducted formal market research to support their commercial programs. As with the residential market, these cities relied primarily on staff experience and common assumptions. The cities assumed that small commercial customers were the most likely

---

<sup>6</sup> PRIZM segmentation is a widely used geographic and demographic segmentation system developed by Claritas, Inc. and now owned by Nielsen. PRIZM is comprised of over 60 segments that help marketers determine the preferences and behavioral characteristics of customer sets.

to need assistance and be meaningfully served by programs the size of the BBP. Charlotte and Chapel Hill considered the broad commercial market as too difficult to address at this stage. They instead focused their programs on multifamily housing, which presents a more homogenous set of energy usage patterns and retrofit challenges. All sub-grantees assumed that commercial customers are more motivated to save money on their energy bills, and are more burdened by a lack of upfront capital, than residential customers.

## Market Profile

### **Residential**

Results from participant surveys confirmed that these programs successfully reached their intended target market. Participants tended to have higher incomes (above \$75,000), and were college educated, had a median age around 49, and live in an older home.

However, some of the demographic results were surprising. For residential programs, 52% of partial participants have incomes over \$100,000 per year, compared to 42% of participants. Similarly, 68% of partial participants have a graduate degree compared to only 54% of participants. Survey data also shows that African Americans are less likely to participate: African Americans made up 21% of the nonparticipant group (baseline for the community), but only 13% of the partial participant respondents, and an even smaller percentage of the participant group. Demographic findings are detailed in Appendix B.

Homeowner surveys provided insight into the motivations behind participation in the home energy assessment, as well as motivation for conducting energy-saving upgrades. Understanding these drivers is a critical element of developing effective messages and program offerings.

Participants stated that the energy assessment was a good investment because:

*“...it let you sort of target specific problem areas, not waste your money on stuff that wasn't going to make much of a difference.”*

*“...I am saving money now.”*

*“...LEAP had grant money at the time and they reimbursed me for like half the cost, and with the rebates I've saved a lot of money, and I'm more comfortable in my home. I feel good about what I've done.”*

*“...it helped me prioritize.”*

*“...it's saving me money on my electric bill right now. I was pleasantly surprised at the savings.”*

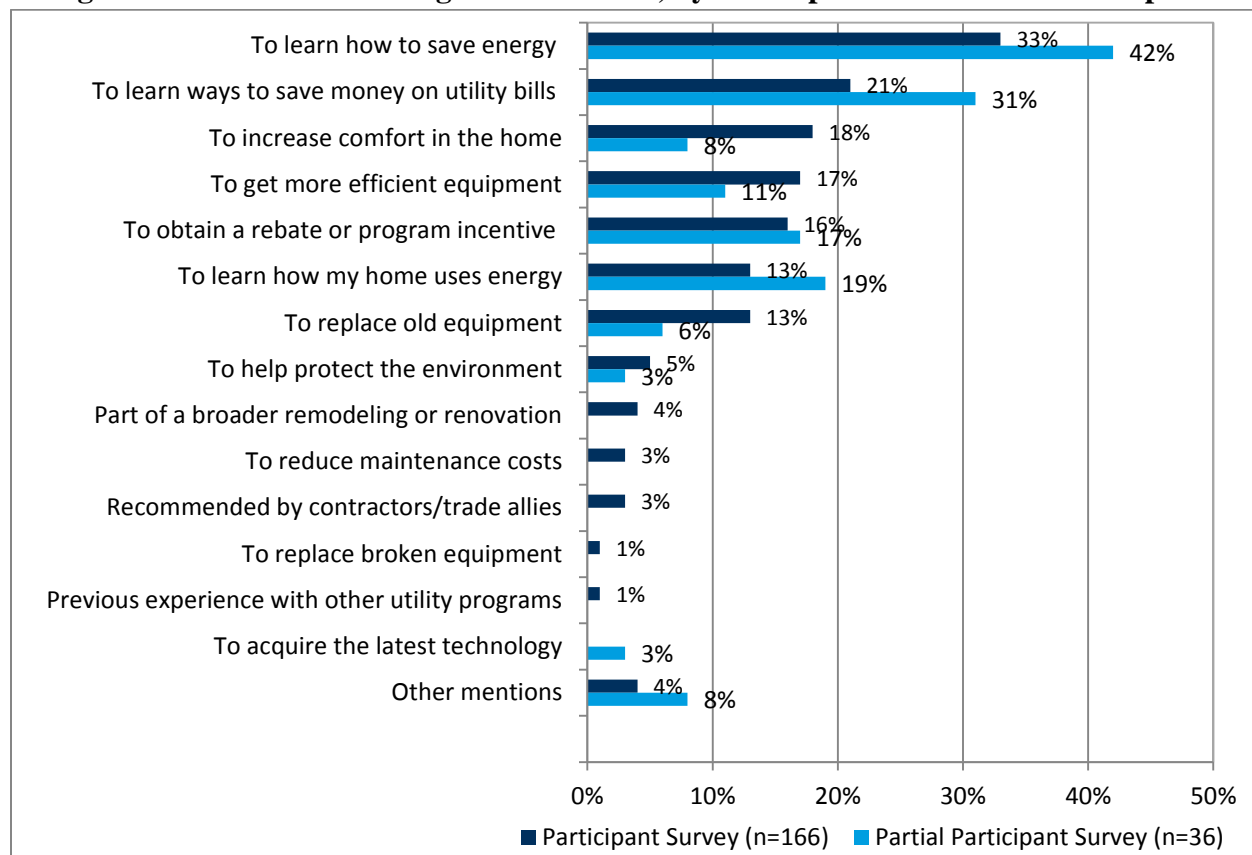
When asked why they signed up for an assessment, both those who installed upgrades (participants) and those who only received the home energy assessment (partial participants) offered the same reasons. (Figure 1). However, participants were more likely to identify multiple reasons and a wider variety of reasons for having the assessment. The most common response was to learn how to save energy, mentioned by 42% of partial participants and 32% of participants. This was also the most significant motivating factor for

participants, but was mentioned by only 32%. Similarly, the second most frequently mentioned reason was to learn ways to save money on utility bills, mentioned by 33% of partial participants compared to only 21% of participants.

Participants were more likely than partial participants to cite increasing comfort in the home (18% vs. 8%), getting more energy-efficient equipment (15% vs. 11%), replacing old equipment

(13% vs. 6%), and other less frequently mentioned reasons like helping protect the environment or reducing maintenance costs than partial participants, as shown in Figure 1.

**Figure 1. Reasons for Getting an Assessment, by Participants and Partial Participants**



Despite the variety of reasons for getting an energy audit, saving money on utility bills was the primary reason participants chose to make energy-saving improvements to their homes after getting an audit. Figure 2 illustrates that saving money on utility bills was identified by 36% of participants as the single most important reason for making energy improvements after getting an assessment.

**Figure 2. Most Important Reason Residential Participants Made Energy Improvements After Getting Assessment**

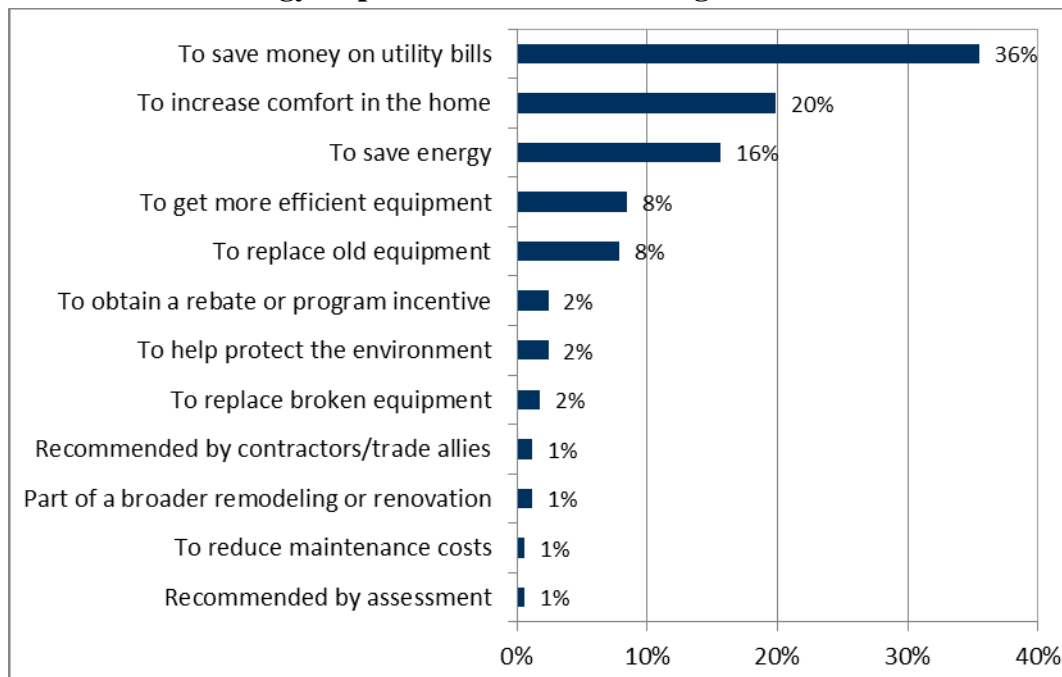
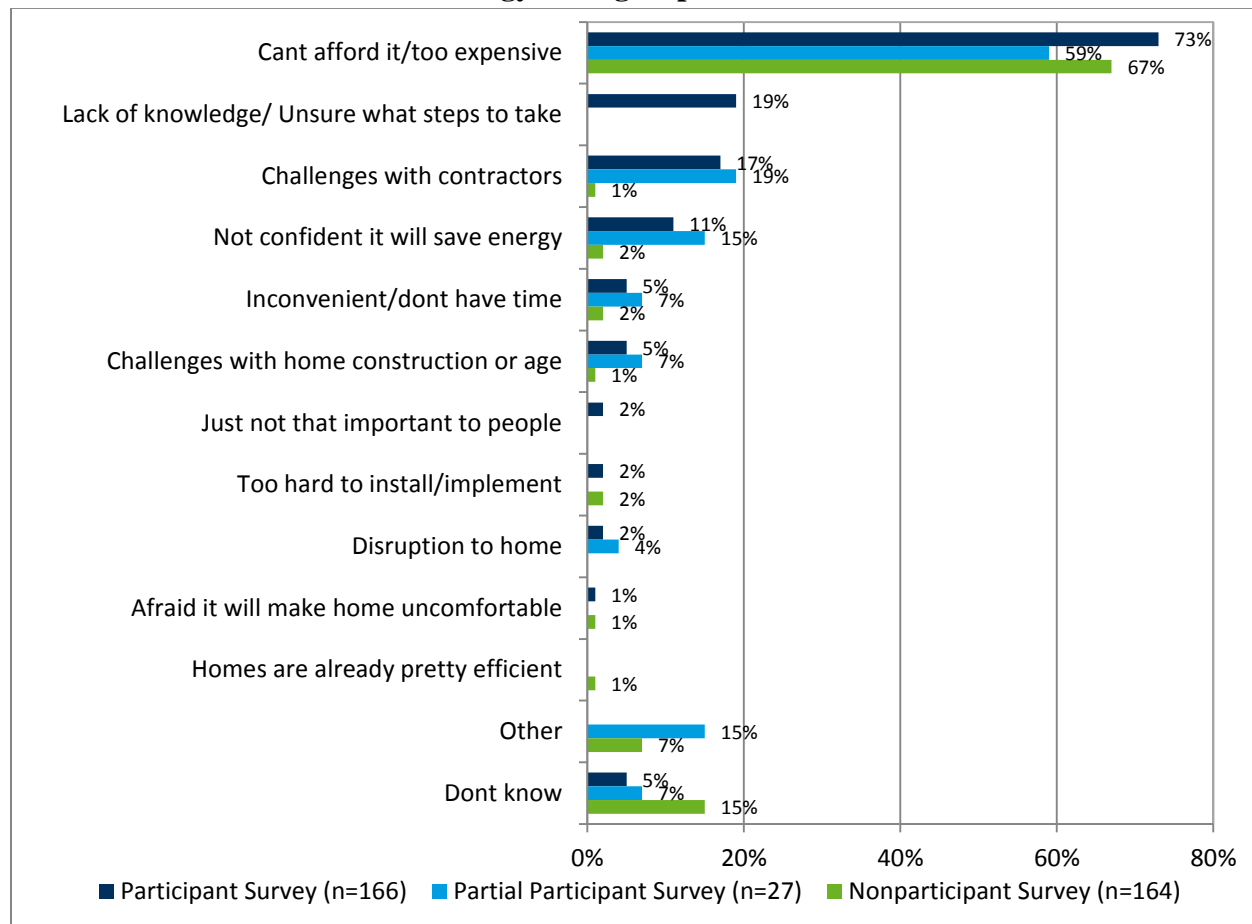


Figure 3 depicts the responses participants, nonparticipants, and partial participants provided about the challenges they face when making energy-saving improvements in their home. Overwhelmingly, all three types of survey respondents identified affordability as the primary barrier to making energy-saving improvements in their home.

**Figure 3. Major Challenges Homeowners Face When Making Energy-saving Improvements**



Partial participants and nonparticipants reported different reasons for not fully participating in the programs. When asked if they considered participating in the program, approximately 40% of surveyed nonparticipants reported that they considered it, but many of those respondents chose not to because it seemed inconvenient. One partial participant observed: *“You have to be dedicated to do this. You have to really want to save the money.”* By contrast, approximately one-third of partial participants indicated skepticism in the process, reporting a lack of confidence that energy-efficiency upgrades recommended in the audit would save energy.

Twenty-nine percent of partial participants reported that being allowed to use their own contractor or a contractor outside of the program would make them more likely to conduct retrofit work. One partial participant noted: *“I’m willing to do it. I have a reputable contractor willing to do the work, but they [the program administrators] won’t let me use him.”*

### **Commercial**

For commercial programs, the survey sample of nine respondents was too small to provide a robust characterization of the commercial market. Respondents’ buildings included five offices and six apartment buildings. Four respondents pay rent and five own or manage the building. While the results do not present a clear picture of which market segments the current programs

are reaching, the respondents did indicate that the program provided them with very meaningful assistance. Seven of nine respondents were very satisfied with their experience, while one was somewhat dissatisfied, and one did not respond. Eight of the surveyed commercial customers said they would not have made the same improvements without the program, and the same eight cited the energy-savings information as being very important to their decision to move forward with a retrofit. Two respondents said rebates were very important, and three said rebates were somewhat important. Four respondents participated in order to save energy, save money on utility bills, or make bills less expensive for tenants, while one wanted to increase comfort in the building.

## Marketing Channels and Tactics

Sub-grantees relied on a common set of marketing tactics, consisting of traditional methods such as TV, radio, and newspaper ads, as well as earned media and more grassroots approaches such as neighborhood competitions and local events. Some sub-grantees leveraged partnerships to get the word out, such as with contractors, utilities, local government, and local community organizations.

### Contractors

Many sub-grantees considered contractors to be the best vehicle for program marketing. Cities such as Charlottesville, New Orleans, and Charleston worked closely with contractors to help them market the program. Hampton Roads staff reported that its program relied almost entirely on contractor marketing. This allowed the city to leverage the regular marketing activities of contractors, who presented the program to customers at a point when they were likely to be very receptive; that is, when they were considering the costs and benefits of a building retrofit. This was also an extremely inexpensive form of marketing from the program's perspective, costing only the time and resources to train contractors. Charlottesville staff quoted a SEEA analysis showing that contractor marketing was their most cost-effective marketing tactic. Survey results confirm that contractor marketing was the most effective marketing channel: 21% of residential customers surveyed reported learning about the program through a contractor, more than any other source.

For their part, several contractors expressed disappointment that the program did not more heavily market itself. Contractors' level of satisfaction seemed strongly influenced by their expectations when entering the program. In Hampton Roads, for example, contractors reported that the city had promised to lead program marketing, but did not follow through. In New Orleans, although the city staff emphasized marketing and contractors were aware of New Orleans WISE's advertising, they said it was not effective. Atlanta contractors did not think the program had done any marketing at all, despite the fact that Atlanta had invested more than any other sub-grantee in marketing-related expenses (including both paid advertising and market research). One contractor stated that the Atlanta staff had: "*constantly said they would do [marketing] but didn't.*" However, an Atlanta contractor that also worked on the neighboring Decatur program thought Decatur's marketing was well-done. Decatur did not invest in market research or paid advertising. Instead, the program leveraged the City of Decatur's well-circulated, low cost communication channels, primarily the city newsletter.

The Decatur, Charlottesville, and North Carolina program contractors were pleased with program marketing. Three of four contractors interviewed in Charlottesville said the program did



a great deal of marketing, and that the marketing effort was effective. Contractors from Charlottesville and Chapel Hill/Carrboro were the only ones to state that the customers were generally or sometimes already aware of the program.

How the cities engaged with the contractors impacted how engaged the contractors were in marketing the program to their customers. Most cities provided an orientation session or training to educate contractors about the program services and processes. Most contractors reported that training was adequate, although they had to invest some time and energy into mastering the forms and software systems.

### **Grassroots Marketing**

Although different cities put different levels of effort into program marketing, most adopted a grassroots approach. Grassroots marketing techniques included using neighborhood organizations such as neighborhood associations, churches, or schools; getting earned media from local press; co-branding with contractors and other partners; and hosting or coordinating local events like the HEMC or Charlottesville's 250th anniversary. This kind of marketing was the most readily available to most sub-grantees.

New Orleans and Atlanta placed the most emphasis on developing professional marketing campaigns, as exhibited through their engagement of professional marketing and public relations support. New Orleans started marketing with a high-level approach, including TV ads featuring a celebrity spokesperson. Given low initial uptake, SEEA encouraged New Orleans to move in the direction of more grassroots marketing. Since their early efforts, New Orleans has focused on more grassroots approaches, including neighborhood canvassing, yard signs and other neighborhood-based collateral, and working with AmeriCorps staff based in targeted neighborhoods. The community outreach program model fits well with New Orleans' neighborhood culture, according to program staff interviews. After an extremely slow start, New Orleans has recently seen an increase in retrofits, although it is too early to determine whether the new marketing approach will be effective. As previously discussed, Atlanta invested a lot of money in marketing research before the program launched, but this has not translated into high uptake. This may be partly due to challenges of the scale of Atlanta's target market compared to other sub-grantees.

The cities offering residential programs all experimented with the idea of implementing local contests. Charlottesville pioneered the HEMC, which allowed homeowners and contractors to enter a proposal for a home energy audit and energy-efficiency retrofit free of charge. The city can then use the contest and the experience of the winning participant to generate earned media and customer interest. LEAP conducted one HEMC and recently participated in a second led by their lender partner, UVA CCU, both of which had high levels of participation. They estimated the conversion rate of entering the contest to getting a retrofit through the program at 10-12% over time, but the contests also generate awareness, allow the sub-grantee to reach out to partners, and engage contractors.

SEEA adopted the HEMC concept and introduced it to the other cities. The HEMCs in other communities all suffered from glitches in implementation that took large amounts of staff time to resolve or that resulted in contractor or participant dissatisfaction. Despite this, most sub-

grantees liked the concept and said they will replicate it if they have internal control over its implementation.

Nashville tried a different form of neighborhood collaboration contest, which encouraged groups of neighbors to participate in a program together. Despite strong encouragement from SEEA for the concept, the neighborhood team program has had only minimal participation.

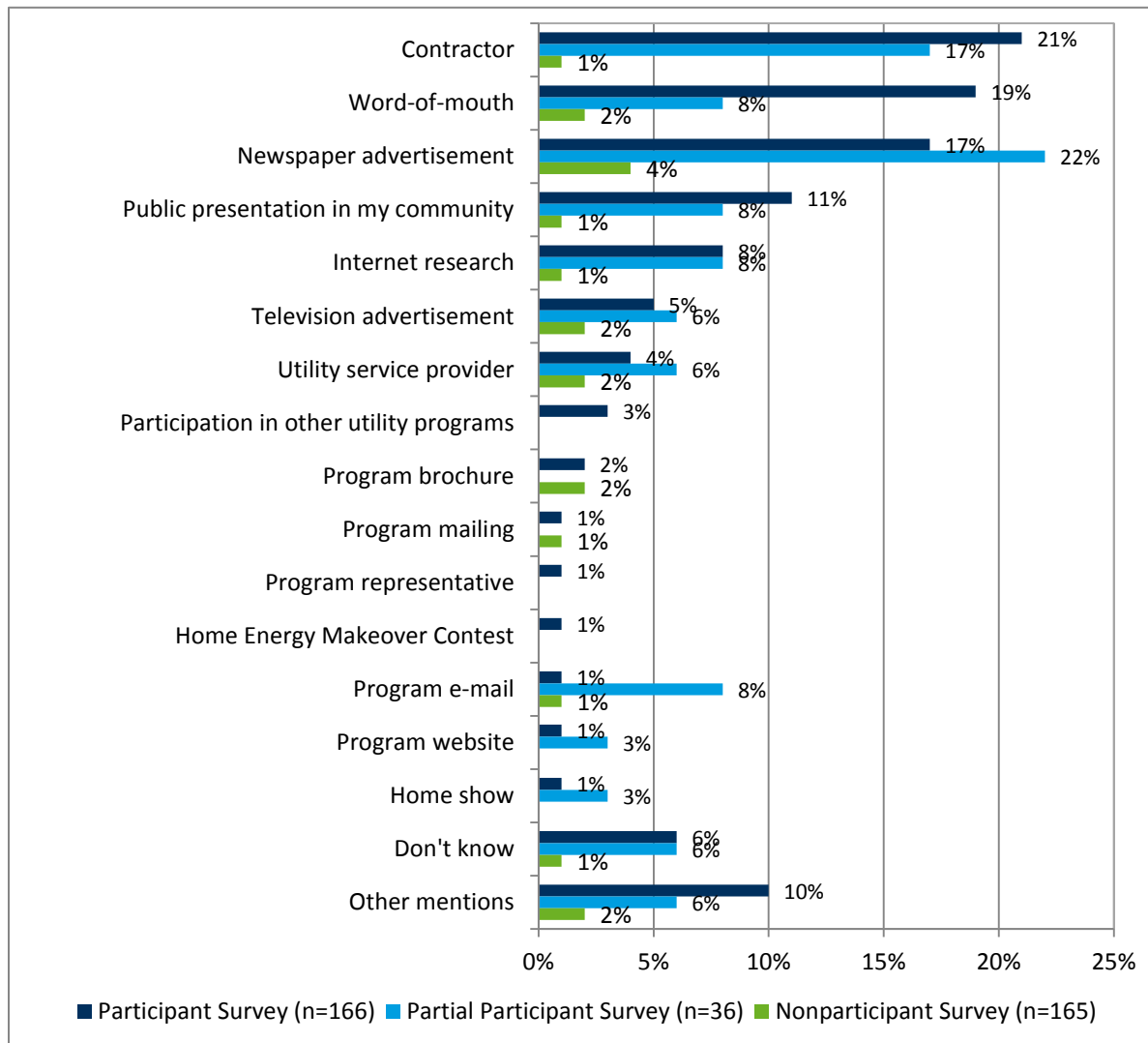
Table 15 illustrates the types of marketing tactics used by each sub-grantee.

**Table 15. Marketing Tactics Used by Sub-grantees**

	TV/ Radio/ Newspaper/ Online Ads	Earned Media	Neighborhood Outreach	Mailings/ Bill Inserts	Print Materials Delivered at Events	Website/ Social Media	Contests/ Events	Contractor Marketing Training	Cooperative Marketing with Contractors
Atlanta	Yes	Yes	Yes	Yes	Yes	City Website	Yes	Yes	Video on Website and use of SHINE icons
Carrboro	Bus wraps	Yes	Yes	No	Yes	City Website	Yes	Yes	No
Chapel Hill	Yes	Yes	Yes	No	Yes	City Website	Yes	Yes	No
Charleston	Planned for spring 2013	Yes	Pilot in fall 2012	No	Hand fans, stickers, flyers	Twitter, Charleston WISE Website	Community workshops	Yes	Planned for spring 2013
Charlotte	Yes	Yes	No	No	No	City Website	Funds issued competitively	No	No
Charlottesville	Yes	Yes	Yes	Yes	Yes	LEAP Website, Twitter, Facebook, Vimeo	HEMC (3 times)	Yes	Yes
Decatur	No	Blogs	Yes	City newsletter	Minimal	City Website; City Facebook page	Yes	Yes	Yes
Hampton Roads	Online	Yes	No	No	Yes	Yes	No	Yes	No
Huntsville	National Public Radio ads	Yes	Yes	No	Yes	Nexus Energy Center Website; Twitter; Facebook; Pinterest; LinkedIn, You Tube	Showcase home; HEMC; Madison County Home and Garden Show	Yes	Sponsored joint events
Jacksonville	Yes	Yes	Yes	Yes	Yes	JEA Website; credit union sites	Home and garden shows; HEMC	No	Yes (lenders and contractors)
Nashville	No	Yes	Neighborhood contest; outreach through Go Green Nashville	Yes	Yes	NEW Website; city- managed Website	Several	No	Yes (through TVA)
New Orleans	TV spots, publications	Yes	Neighborhood showcase; neighborhood associations	No	Yes	NOLA WISE Website; monthly e-blast to 6,000 subscribers, Facebook, Twitter	HEMC	Yes	No
USVI	No	No	No	No	No	USVI Energy Office Website	No	No	No

Cities generally did not track how participants came into the program or the sign-ups with regard to different marketing efforts, making it difficult to evaluate the effectiveness of one tactic over another. The survey results indicate that the most successful marketing channels were not necessarily the ones that took the most resources.

Figure 4 shows the relative importance of different points of entry into the program among participants, partial participants, and nonparticipants who reported having heard of the program. Overall, just 18% of nonparticipants had heard of the program. Partial participants and nonparticipants reported a different pattern of entry than participants. Participants were most likely to enter the program through a contractor or word-of-mouth, followed by a newspaper advertisement. A newspaper ad was the most likely form of entry for both partial participants and nonparticipants, and nonparticipants were far more likely than other group to report learning of the program through a program brochure. This implies that a knowledgeable program representative could be important for establishing trust and presenting clear program information. On the other hand, participants and partial participants were more likely than nonparticipants to report learning of the program through internet research.

**Figure 4. How Customer Groups Heard About the Program\***

\* Results aggregated across surveyed cities.

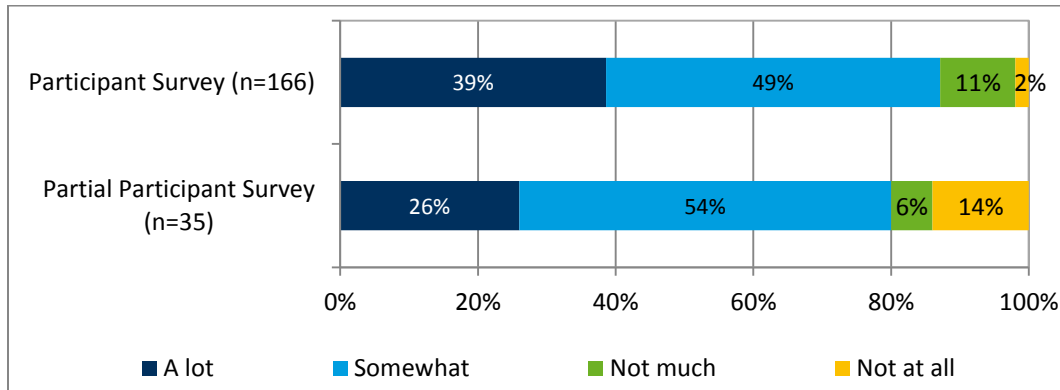
## Energy Efficiency Awareness

In addition to driving audit and retrofit activity, sub-grantees sought to enhance awareness about energy efficiency. Most sub-grantees assessed early energy-efficiency awareness in their community as low, and the contractors interviewed confirmed this low level of awareness, particularly in Atlanta, Jacksonville, Hampton Roads, and New Orleans. Charlottesville, Chapel Hill, Decatur, and Huntsville perceived a higher level of energy-efficiency awareness in the more affluent, highly educated customer segments, which is one reason why they initially targeted these groups for participation.

There is some evidence that energy assessments were successful educational tools. Participants were more likely than partial participants to state that the energy assessment increased their knowledge either somewhat or by a lot. Figure 5 illustrates that participants were more likely

than partial participants to say that the energy assessment and energy improvements increased their knowledge of energy efficiency.

**Figure 5. How Much Home Energy Assessments and Energy Improvements Increase Energy-efficiency Knowledge**

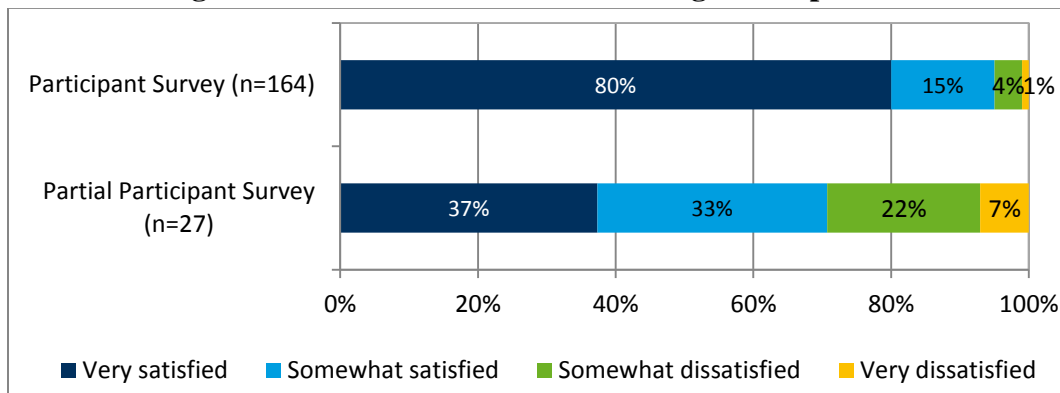


\* Total may not sum to 100% due to rounding.

### Satisfaction

Participants expressed high levels of satisfaction with the program, while partial participants expressed much lower levels of satisfaction. Figure 6 depicts that 80% of participants are very satisfied, compared to only 37% of partial participants.

**Figure 6. Satisfaction with Overall Program Experience**



\* Total may not sum to 100% due to rounding.

When asked why they were only somewhat satisfied or not satisfied, many partial participants said they were dissatisfied with contractors available through the program network or skeptical about the validity of contractor quotes. Other concerns varied from the process being too long and complicated, to the improvements being too expensive, or to not receiving an assessment report.

Partial participant suggestions for how to improve the program regarding contractors:

*“[I was] not happy with the choice of contractors through the program. I thought they tried to take advantage of the program and overprice the repairs. Going on my own, it ended up being less expensive to do the repairs.”*

When asked how the program could be improved, partial participants and participants stated reasons related to contractors, such as having more contractors to choose from, offering a rating service that has ratings and information about contractors, and for programs to be more diligent about inspecting and verifying contractors' work.

## Market Engagement and Workforce Development

Program success is not only dependent on the strength of the program design, but also on how that design is implemented in the community. Once a program is conceived on paper, it is up to the city staff to communicate effectively with their target audience and develop key partnerships. As one of the goals of BBP was to effect market transformation, cities were tasked with forging partnerships that would last not only for the duration of the grant, but that would continue to have an effect after the grant ends. SEEA's BBP sub-grantees all made an effort to understand their market workforce's capability to support the program and to leverage utilities, contractors, auditors, and community organizations as partners that can help their programs succeed.

### Workforce Development

In order to sustain an active market in energy-efficiency building retrofits, there must be an adequate supply of well-trained, knowledgeable contractors. As part of the goal of market transformation, therefore, all cities sought to support and increase the number of contractors able to conduct energy-efficiency retrofits.

#### Recruitment

With the exception of Charlotte<sup>7</sup>, all cities sought to recruit program contractors meeting certain business and technical requirements. Atlanta, Decatur, Carrboro, Chapel Hill, and Nashville relied on contractors that had been pre-vetted through Georgia Power, Duke Energy, and TVA rebate programs. The Georgia cities identified a limited subset of SHINE and Decatur WISE contractors through an RFP process. Charlottesville, New Orleans, Huntsville, Charleston, and Hampton Roads developed their own requirements for contractors.

Most cities selected a limited number of contractors that they worked with over the duration of the program. Charlottesville and Jacksonville made an effort to build a network of affiliated contractors. Charlottesville has open applications, and accepts all contractors that meet its requirements. Most city staff, especially in programs with a larger contractor base, found that a small subset of their registered contractors became much more engaged in the program.

Most cities initially brought contractors into the program by contacting them directly. Table 16 illustrates that one-third of the contractors who responded to this question reported first hearing about the program when a program staff member contacted them directly. The cities used several other means for identifying contractors, including talking to contractors at trade shows, speaking at trade association meetings, and notifying community organizations that work with contractors. Casual word-of-mouth (other organizations and people who spread the word about the program) seemed to work almost as well as outreach events at attracting the small number of contractors the programs required.

---

<sup>7</sup> Charlotte's program was designed as a grant process, negating the need for a contractor network.

New Orleans effectively managed contractor recruitment and training through Green Coast Enterprises, which enabled Global Green USA to focus on marketing. Chapel Hill and Carrboro, which had approved only 3-4 contractors to participate in their program originally, have now contracted with EGIA to pre-screen contractors that want to offer the newly launched PowerSaver loans from SunTrust Mortgage, in addition to the incentives available through the BBP.

**Table 16. How Contractors First Heard of Program**

	No. of Contractors (n=15)
Asked by city	5
Community organization	3
Utility	2
Another contractor	2
Outreach event	3

### Training and Certification

With the exception of Charlotte and USVI, which both offered only commercial programs, all cities required contractors to have BPI or another widely recognized industry certification, such as being a HERS rater or Certified Green Builder. Huntsville and New Orleans offered BPI training, and other cities, such as Hampton Roads, offered to reimburse contractors for a portion of the training cost. Even though Charlotte did not require BPI certification, it offered the training to 12 contractors.

Several contractors took advantage of these training opportunities. Of the contractors interviewed, more than one-third had at least one person trained and certified in order to participate in the program, and several reported they had multiple people trained and certified.

New Orleans and Charlottesville each made training an emerging energy-efficiency workforce a hallmark of their programs. According to New Orleans program staff, following Hurricane Katrina, many New Orleans residents witnessed fraudulent contractor behavior, and as a result the community developed a skepticism and mistrust of contractors. By providing BPI certification to a select number of contractors, New Orleans WISE pre-certified a group of service providers for the larger community. This was an essential element of New Orleans WISE's ability to encourage participation. The city noted that 41 individuals have received program training through Green Coast Enterprises, and that where before New Orleans WISE there were no BPI-certified contractors in the state of Louisiana, now there are seven.

Charlottesville program staff recognized the lack of a qualified contractor workforce as a barrier to the long-term sustainability of the energy-efficiency industry in their area. One interviewed contractor noted how important this peer network is for staying on top of the most relevant topics in the industry. When asked what part of the program he liked best, a Decatur contractor said: *“The relationships between the city and CLEAResult and the contractors and the community really felt like a partnership. And that really includes the interaction between the three contractors. We all knew each other and we fit together very well.”*



At least three contractors, in Huntsville and New Orleans, requested sales training. New Orleans in particular identified the need to provide sales training to contractors, and is working toward that objective in the coming months. Charlottesville and Jacksonville, the two cities with the most successful loan programs, engaged the lender to introduce and promote the loan product to the contractor network. This was considered part of the contractors' training in services offered through the program. In spite of this training, not all contractors in these two cities reported that they promote the financing options to customers.

### Quality Assurance

In order to verify that contractors were performing as promised, all cities had an established program QA policy, with the exception of Charlotte. The intensity of this policy ranged from Hampton Roads and Nashville conducting 100% site inspections, to most other cities conducting periodic inspections. With the exception of Jacksonville, no city staff expressed concerns regarding contractor workmanship, and customers overall expressed satisfaction with the work conducted through the program.

Cities followed largely similar protocols for QA. City staff addressed the program standards and common QA issues during contractor orientation. They required contractors to fill out paperwork that included detailed accounts of the energy audit and measures implemented. Each city then had either an internal staff member or contracted QA inspectors conduct on-site inspections of at least a portion of all projects. When the inspector found an issue, the contractor was required to make corrections free-of-charge. In some programs, projects for a customer with a complaint were submitted for a QA inspection, but contractors were not required to make repairs unless the inspector felt it was necessary.

SEEA contracted with Advanced Energy on behalf of Chapel Hill and Carrboro to perform QA on their residential projects. Advanced Energy provides the program training for contractors when they join the program, and incorporates QA/QC topics into the training. Advanced Energy also added a sales component to their training. Advanced Energy then uses QA/QC inspections as an opportunity for further training. The first five projects for each contractor are inspected, so that the inspections can serve as further training and correct any recurring problems early on. After the first five projects, inspections are done on 1 of each 10 projects. According to program staff, contractors have had a very positive response to this holistic, hands-on training approach.

Staff in Jacksonville acknowledged that the program did not have an active QA procedure. To some extent, they leveraged the utility's normal QA review of any measures that received a JEA rebate. However, for any measures that were not incented by the utility, there was no inspection procedure. The city had not fully developed its QA process after redesigning the program six months into implementation. Staff performed spot checks and followed up on complaints. They reported that 90% of inspections reveal no problems with the contractor work. Two of three contractors interviewed in the Jacksonville area mentioned that other contractor's qualifications are not adequately reviewed when being admitted to the program, and that projects are not being

Participants satisfied with contractors stated:

*"They did exactly what they said they would do, and charged what they said they were going to charge. They were neat and on time."*

*"They did the work professionally and efficiently."*

*"They were very prompt, they cleaned up after themselves, and the comfort of the house was instantly better, more than I expected."*

adequately inspected. These contractors stated that the program has established policies, but these policies are not being implemented.

With the exception of Jacksonville, as described above, and Hampton Roads, where contractors complained about the QA inspector being a competitor, contractors did not have concerns about QA procedures. Nashville and Charlottesville use QA as a training opportunity to address any concerns with the contractors' level of workmanship. In Charlottesville, contractors were complimentary of the knowledge and experience of the on-staff QA inspector.

### **Challenges and Contractor Satisfaction**

While the majority of contractors interviewed noted that they benefitted from participating in the program, many contractors also reported a numbers of program challenges.

The most frequently mentioned challenge was operational. Contractors from eight cities noted concerns with paperwork being lost, not being able to contact city staff with questions, and other operational challenges. Contractors in Atlanta were particularly concerned that customers had not received promised rebates. According to one contractor, their customer had been waiting for a rebate for six months. Similarly, software programs required by some cities for either administrative or technical purposes posed a challenge for some contractors. Two contractors in Charlottesville reported not understanding how to use the software programs, but said that staff support was sufficient to overcome the problem. On the other hand, program staff at SEEA and some sub-grantee offices reported frustration with some contractor's approach to paperwork, cash flow, and other business management issues. They noted that contractor work styles were not uniform. Some contractors did mention process bottlenecks as a challenge, in particular the amount of required paperwork.

Programs that changed requirements or rebates levels frustrated contractors, especially when they had already promised a certain program incentive to customers. A contractor in Decatur noted that he had several customers "*in the queue*" when the program shut down. A large HVAC dealer in Hampton Roads noted that the frequent program changes were a turn-off, especially since he already had manufacturer rebates he could offer to customers.

Contractors in Huntsville, New Orleans, Charleston, and Jacksonville expected that the city would generate customer leads for them, which has not happened as expected. However, contractors in Charleston and Huntsville noted a preference for generating their own leads and conducting the audits themselves, because they often disagree with program auditor recommendations.

High upfront costs were a concern for smaller contractor companies. One contractor reported having to pay over \$7,000 to satisfy insurance and certification requirements, and had yet to see a return on that investment. Larger companies were able to rely on capacity, such as certain certifications, that they already had internally.

Contractors in programs that had ended, particularly in Decatur and Atlanta, were very concerned about how the program ending had impacted their business. Multiple contractors were expecting to have to lay off employees as a direct result of the program ending. These contractors also noted that program work had become a significant part of their business.

Contractor in other programs, in particular in Charlottesville, reported that the program was a much smaller portion of their overall business.

Contractors were also concerned about changing policies or rules, and promises that the program did not keep. For example, contractors in Hampton Roads did not expect to be the sole marketers of the program. Two contractors said the city had explicitly promised to market the program, but did nothing. One contractor stated that not only did the city not follow up on program leads, it gave the same lead sheet to all contractors. Customers were then irritated by receiving multiple calls from competing contractors. In addition, contractors stated that they were not reimbursed for their training costs, because they did not reach the minimum number of projects before the grant closed. Contractors in Decatur and Huntsville also mentioned changing policies as a problem. A contractor in Decatur noted that the program shut down so quickly he was left with customers who had been promised rebates, but no more rebates were available.

Some cities initially sought to protect the consumer by employing an energy auditor directly, or by requiring that the auditor and contractor be different entities. Many contractors expressed a preference for an integrated contractor model in which the auditor also conducts the retrofit work. Huntsville, New Orleans, Charleston, and others moved toward this model in later stages of the program, and found it to be more efficient and effective at moving customers forward than using separate auditors and contractors.

In some cases, retrofit contractors expressed disagreement with recommendations made by auditors, prompting additional audits and additional expense for the homeowner. New Orleans initially structured its program with separate auditors and contractors so that it could comply with the Homeowner's Equity Recovery Opportunity (HERO) Program, a state-funded tax break for homeowners who have retrofit work on their home. However, program staff discovered that few customers were interested in the HERO Program, and ultimately decided to move to an integrated model to better serve customer needs.

## **Community and Utility Partnerships**

Partnerships were critical to the success of all programs in the BBP portfolio. The high leverage requirement of the BBP grants necessitates harnessing resources and activities funded by other organizations and individuals. At a more fundamental level, partnerships helped provide cities with expertise, connections, brand recognition, and a community foundation that will remain after the BBP grants end. As discussed above, an active partnership with area contractors was central to most programs' design. Other critical partners included utilities, city government, and financial institutions. Some cities were also able to leverage relationships with community organizations.

### **Utility Partnerships**

Utilities can be a powerful partner for local energy-efficiency programs. Large investor-owned utilities (IOUs) have established communication channels for energy information, well-known brands, and a significant program management infrastructure that sub-grantees can tap into for their program. Utility programs provided eligible measure frameworks, savings estimates, contractor networks, and QA services for several BBP programs. Perhaps most significantly, utilities often offer rebate programs that drive energy-efficiency retrofits. SEEA sub-grantees were able to leverage utility rebate programs regardless of whether the program actively

coordinated with the utility by communicating with staff, and designing their programs to fit with the utility rebate structure and requirements.

Utility partnerships varied. Jacksonville initially added energy assessments to a program already in existence. New Orleans, after experimenting with different approaches, took on marketing for the existing utility program. Atlanta and Decatur increased the amount of the rebate already available from the utility for retrofits that achieved the 15% energy-savings requirement. Contractors, particularly in Decatur, reported that this was extremely effective in driving demand. Indeed, Decatur met its retrofit target in just a few months of active implementation.

Charleston leveraged utility rebates from South Carolina Electric and Gas (SCE&G), but did not actively coordinate with a utility program. Table 17 shows each city's program coordination with a utility.

**Table 17. Active Coordination with Utility Residential Rebate Programs**

Sub-grantee	Coordination with Utility Program?
Charleston	None
Hampton Roads	None
Huntsville	Huntsville Utilities (WISE); None (WISE GOLD)
Charlottesville	Rappahannock Electric Cooperative
Decatur	Georgia Power
New Orleans	Entergy New Orleans
Chapel Hill	Duke Energy
Nashville	Tennessee Valley Authority;
Atlanta	Georgia Power; Atlanta Gas Light Company
Carrboro	Duke Energy
Jacksonville	JEA

SEEA staff and program staff reported challenges to establishing utility partnerships. Not all utilities are equally proactive in the energy-efficiency market, nor are all utilities convinced of the benefits of programs such as the BBP. Many utilities cover a much larger area than the sub-grantee program area, and participation might trigger issues of unequal service provision to all customers. In some cases, the sub-grantee program did not align well with the utility's service footprint. Dominion Virginia Power, the largest electric utility in the Charlottesville area, has a service territory that is not contiguous (having a "swiss cheese" appearance), so that LEAP is active in some but not all of its territory, and likewise, it is the electric provider in some but not all of LEAP's area of activity. In addition, some programs may have simply been too small to be of interest to the utility.

Even where the utility agreed to participate, if the utility leadership did not fully embrace the program, the utility was not a good partner. Huntsville, for example, encouraged Huntsville Utilities to begin a rebate program for which Nexus Energy Center would provide the incentive funding. Huntsville Utilities (HU) complied, but was not an engaged partner. Nexus wanted its program to have a heavy customer education component and a comprehensive audit requirement.

HU wanted to offer a walk-through assessment, rather than a comprehensive audit, based on what they had offered in the past. The program was not geared to maximizing savings in every participating home, as was required by the DOE grant. HU was unwilling to consider changes to the program, even though the suggested changes were designed to increase overall saving achieved by the program. The SEEA sub-grantee felt that the utility was uncomfortable releasing any control over design or management of the program. Eventually, in order to better target their program, Nexus broke off their partnership with the utility. They launched Huntsville WISE GOLD in October 2011, and ended the original Huntsville WISE Program in March 2012. Since that time, the number of retrofits has dropped. However, the city said they are able to offer customers better service, and have time to better “nurture” their three participating contractors.

The programs in Georgia followed a different model, where they molded their program around the existing Georgia Power program, without asking the utility to make changes. They were able to do this because the program was already structured to promote intensive retrofits, by offering customers relatively high per-measure incentives. Though this model could operate without active coordination between the utility and the programs, there was some overlap. Georgia Power allowed Atlanta to leverage some of their QA/QC for retrofit projects. The grant manager for the City of Decatur attended coordination meeting between the Georgia Power implementer, ICF International, and Georgia Power staff, to stay abreast of program activity. Nashville leveraged TVA rebates in a similar fashion.

Over time, SEEA has become more effective at working with sub-grantees to develop relationships with utilities. SEEA staff, including its consultants, worked closely with New Orleans and Entergy to resolve issues between the two organizations. SEEA staff also helped coordinate between Decatur’s CLEAResult team and ICF International, Georgia Power’s implementer. Over the duration of the BBP, SEEA staff supported many of the programs as they worked with their local utility, and of course has worked even more directly with JEA, which is itself a sub-grantee. In some cases, SEEA staff set up regular, even bi-weekly, meetings with utility representatives to work through coordination issues, and they have met with state regulators to inform them about the goals and benefits of BBP. This provided SEEA staff with a depth of experience and understanding of community-utility partnerships.

Table 18 illustrates the ways in which sub-grantees with a residential program coordinated with utilities. Commercial programs were conducted outside of the scope of any utility programs.

**Table 18. Residential Programs' Services Coordinated with Utilities**

Sub-grantee	Coordination with Utility Staff	Contractor Network	Utility Audit Requirement	Quality Assurance	Market Research Shared	Marketing Activities Shared
Atlanta	Yes	Yes	Yes	Yes	Yes	No
Carrboro	No	Yes	No	No	No	No
Chapel Hill	No	Yes	No	No	No	No
Charlottesville	Yes	No	No	No	Yes	Yes
Charleston	No	No	No	No	No	No
Decatur	Yes	Yes	Yes	Yes	No	No
Hampton Roads	No	No	No	No	No	No
Huntsville	Yes for WISE; No for WISE Gold	Yes	Yes for WISE; No for WISE Gold	No	No	No
Jacksonville	Yes	Yes	Yes	Yes	Yes	Yes
Nashville	Yes	Yes	Yes	Yes	Yes	Yes
New Orleans	Yes	Yes	Yes	No	Yes	Yes

Utilities often operate on a scale several orders of magnitude larger than the sub-grantee programs. This enabled some cities to access a powerful engine to drive the program, but in other cases made it difficult for a city to approach a utility and convince them of the benefits of coordinating. The cities' relationship with the utility is in large part dependent on the utility's internal approach to energy efficiency. For example, energy-efficiency programs have not been a priority for Dominion Virginia Power, which until recently had no energy-efficiency program. Therefore, the Virginia programs did not have a relationship with the utility. At the outset of the program, this was also the case for Progress Energy, which operates in Virginia and North Carolina. Duke Energy in North Carolina contributed to a small pilot through Chapel Hill, and has subsequently initiated an energy-efficiency program of its own. However, coordinated interaction between Duke Energy and the Chapel Hill and Carrboro programs is still pending.

New Orleans WISE staff managed to successfully overcome an initially cool relationship with the major electricity provider in the area, Entergy. Entergy New Orleans rolled out an energy-efficiency rebate program at the same time that the SEEA BBP application was submitted. According to New Orleans program staff, the Louisiana regulatory commission wanted Entergy to select the same implementer hired to run the SEEA program, Global Green USA. Entergy hired CLEAResult instead. The Entergy program audit incentives did not align well with the SEEA program, which tried to leverage the state tax credit. The state tax credit required a separate auditor and contractor, which customers found frustrating. This also discouraged contractors from utilizing the New Orleans WISE program, because if they performed the audit they could not perform the retrofit work. Meanwhile, the Entergy program was very popular. Working closely with Entergy, the state regulator, and SEEA, New Orleans WISE redesigned their program to mesh with the Entergy model instead of the state tax credit, and offered additional incentives such as residential and commercial loans. They now operate the Entergy call center as well.

Several municipal and cooperative utilities participated in the program, including JEA, Rappahannock Electric Cooperative near Charlottesville, Nashville Electric Service (NES), and

Huntsville Utilities. NES and Huntsville Utilities are both distributors in the TVA power system. Nashville customers had access to TVA incentives, but Huntsville customers did not.

JEA, as the sub-grantee, was heavily invested in the success of the program. JEA was able to leverage the utility's marketing knowledge and marketing distribution framework. In addition, they relied in part on the utility's already-established QA process for some measures implemented through the program. Nevertheless, JEA staff reported some discord over competing goals within the organization. JEA executives wanted the BBP to support existing JEA programs by primarily offering audits. SEEA, on the other hand, wanted the BBP funding to directly incent retrofits. The sub-grantee struggled to resolve these conflicts.

Rappahannock Electric Cooperative has been receptive to LEAP, as the only electric cooperative actively engaged in BBP. LEAP coordinated with Rappahannock Electric Cooperative to reach the outlying counties inside their program footprint. As with Dominion Virginia Power, LEAP is only able to reach a fraction of its service base through Rappahannock Electric Cooperative's bill inserts, but the coordination is low cost.

### **Local Government Partnerships**

Regardless of whether the city was the actual sub-grantee, many local governments were able to provide some helpful services. However, for programs with the city as the lead implementer, the results have been mixed.

Decatur, Carrboro, and to some extent Chapel Hill relied heavily on city marketing channels and staff support. The city marketing channels added legitimacy and a stronger voice to program brand and outreach efforts. The for-profit agents that administered the Decatur, Carrboro, and Chapel Hill programs worked closely with city staff. City staff dedicated large amounts of time to ensuring that programs operated smoothly. LEAP staff maintain a close relationship with the mayor's office, which has acted as a program champion. LEAP coordinated with the city on specific marketing campaigns and incentives, particularly for the Energize!250 campaign.

The program in Atlanta is managed directly by the city, and the program had hoped to leverage the city marketing and accounting infrastructure. According to staff, being offered through the mayor's office added program legitimacy and raised the program profile. However, contractors reported that no marketing activity was visible. Contractors also reported the program was understaffed and unnecessarily burdened by layers of bureaucracy. Although the city has achieved over 200 retrofits and received three allocations of funding from SEEA, it is unclear whether they have resolved these internal issues. While Atlanta has reported more total retrofits than many other sub-grantees, they had only met 42% of their target as of October 2012.

### **Community Organizations**

Community organizations, if not actually implementing the programs themselves, were primarily useful as grassroots marketers, lending credibility to the program, providing a platform for community presentations, and sometimes co-marketing other programs. Community organizations were able to provide some staff support and other resources, though not to the degree of city government. Still, some sub-grantees are looking to other organizations to help them sustain their program after BBP ends.

Charlottesville LEAP and Nashville sub-grantees both have a goal of providing energy-efficiency options community-wide. Many of their initiatives involve working with other organizations. Currently, LEAP receives a fee to provide QA services for UVA CCU energy-efficiency loan programs outside of their BBP. Although providing income to the program, this has been unpopular with some contractors that do not want LEAP to have knowledge of the business volume through non-LEAP channels. Another idea that LEAP is developing is a membership program for local businesses and non-profits, in which the participating organizations can receive free or subsidized retrofit services in return for convincing a certain number of their members to participate in LEAP.

The Nashville Mayor's Office, which administers the city's BBP, Nashville Energy Works, has also been actively engaging other organizations in energy efficiency initiatives to expand its portfolio. The mayor's office worked with Hands On Nashville to win competitive grant funding from the U.S. Department of Housing and Urban Development (HUD) to implement Go Green Nashville, which will conduct weatherization retrofits in at least 30 low-income homes. The mayor's office is also working with Hands On Nashville and Vanderbilt University to address the sustainability of energy efficiency in the area. Nashville's goal is to ensure having an energy-efficiency option for every homeowner in the area, weather through direct grants, loans, or just the TVA rebates. The city hopes to transfer the program management to Hands On Nashville once the BBP ends.

Even when both parties share a mutual interest, working out the details of an initiative and a partnership takes time. Some BBPs, including in Decatur and Hampton Roads, were not running long enough for the city to establish community partnerships. In Decatur, program staff reported that the program had begun working with the utility through their administrator, CLEAResult, and that in some cases they had leveraged city connections for marketing and outreach. Hampton Roads reported they were completely unsuccessful reaching out to other organizations. Staff felt their program manager may have had a poor personal reputation that contributed to this.

## Program Sustainability

One of the DOE's goals with BBP is to establish programs that have long-term viability beyond the grant period. Program sustainability is comprised of several elements: funding, revenue, community and political support, workforce quality, and program staff capabilities and capacity. Some sub-grantees recognized the challenge of establishing a foundation for program sustainability, and deliberately took steps to ensure long-term program success. Other sub-grantees approached program sustainability as an afterthought, planning to deal with this later in the grant period once the program was better established. Cities that were more active in building community partnerships—including financing arrangements—appear to have those programs that are best positioned for long-term viability.

## Long-term Plans

The programs in Jacksonville, Decatur, Hampton Roads, USVI, and Atlanta will not operate past the grant period, and some of these programs have already closed. Charleston has not yet identified a future course of action, while Huntsville and Charlottesville have State Energy Program (SEP) funds that can be used through 2013. The remaining cities have actively discussed succession planning for their programs.



One aspect of long-term planning is funding. Table 19 outlines the sub-grantees' current and future funding sources. Nearly all sources of funding are grants, which may not be sustainable revenue streams. Although there are examples of community-based energy efficiency programs that use fees to partially sustain operations, the DOE notified sub-grantees that per US government regulations, they could not collect fees for services funded by federal grant dollars.

**Table 19. Sub-grantee Current and Future Funding**

City	Program Name	Current Funding	Future Funding	Financing Option in Future	Future Manager
Atlanta	SHINE	Closed	None	None	None
Carrboro	WISE	BBP and city of Carrboro (RLF)	CESI developing Regional Energy Alliance	Sun Trust through November 2013 (HUD considering PowerSaver extension through 2015)	Regional Energy Alliance
Chapel Hill	WISE	EECBG formula and BBP	CESI developing Regional Energy Alliance	Sun Trust through November 2013 (HUD considering PowerSaver extension through 2015)	Regional Energy Alliance
Charleston	WISE	BBP	None	Sun Trust	Awarded \$750,000 grant from private donors
Charlotte	CB Retro	EECBG and BBP (will expire in June 2013)	None	None	Rolled into city economic development office
Charlottesville	LEAP	BBP and SEP	SEP	UVA CCU	LEAP
Decatur	DecaturWISE	Closed	None	None	None
Hampton Roads	Next Step	Closed	None	None	None
Huntsville	WISE (WISE Gold)	BBP and SEP	SEP	Advanced Energy as of September 2012	Not yet identified
Jacksonville	JEA Shop Smart	Closed	None	None	JEA, if program is revitalized
Nashville	Nashville Energy Works	BBP	Portion of interest accrued from The Housing Fund loans	The Housing Fund as of September 2012	Local nonprofit
New Orleans	New Orleans WISE	EECBG and BBP	Global Green USA may provide bridge funds until Entergy can acquire program	Fidelity Homestead Savings Bank	Rolled into Entergy-New Orleans' EnergySmart Program
USVI	USVI WISE	Closed	None	None	None

Sub-grantees may be able to begin collecting fees once the grant period ends. How this regulation affects financing programs based on loan loss reserves provided through BBP funds is

unclear. The commercial market in particular, which involves larger, more complicated projects, may benefit if programs can charge fees. SEEA indicated their research showed the commercial market would bear a fee.

Some sub-grantees explored and are pursuing viable alternatives to fees. Nashville, through its partnership with the local CDFI, The Housing Fund, will generate a revenue stream by receiving a portion of the interest accrued through Nashville Energy Works-related, low-interest energy-efficiency loans.

For administrative program management, a few sub-grantees are pursuing a succession plan while other sub-grantees plan to “wait and see what happens”. New Orleans, who markets Entergy-New Orleans’ residential rebate program, has discussed the likely possibility of the utility absorbing the program administration currently conducted by Global Green USA and Green Coast Enterprises. New Orleans WISE has, according to interviews, generated unprecedented interest in having the utility run a viable energy-efficiency rebate program. Nashville will transfer management of the program from the mayor’s office to a local nonprofit it deems as best suited for program management. At the time of writing, Nashville had issued an RFP but not yet determined a successor. The timing of the RFP and selection of a successor organization will allow for a substantial transition period so that program transfer can occur smoothly.

## Leveraged Funding

The sub-grantees were either wholly dependent on SEEA’s BBP funds, were dependent primarily on BBP but also were able to leverage utility funds, or had more diversified sources of funding. The breakdown of funding for each city is as follows:

- SEEA BBP funds only: Hampton Roads, USVI
- SEEA BBP funds and leveraging utility funds: Atlanta, Decatur, Jacksonville, (note that this does not indicate a formal partnership with the utility)
- Diversified – Charlottesville, Nashville, Charlotte, Huntsville, Carrboro, Chapel Hill, New Orleans, Charleston

For the BBP grant, DOE set a funding leverage target of 5:1, intending to encourage sub-grantees to utilize related resources available in the community to complement the BBP funds. Programs operating in areas with active utility rebate programs were able to leverage existing utility resources, including incentives as well as program infrastructure such as contractor networks and QA services. An additional advantage to leveraging a utility program is that they can provide a relatively stable resource over a long-term period.

In all cities, any customer investment in retrofit projects was counted as leverage. In addition, many programs were able to leverage other sources of federal funding, such as EECBG formula grants, and SEP funds. While these funding sources allowed grantees to expand their reach during the grant duration, they do not help the programs become sustainable. Most of these federal sources of funding will decline precipitously shortly after the BBP grant period itself has ended.

Where other federal funding was available, some program managers meshed different grant streams into a single program, allowing them to maximize the impact from a single program design and set of program systems. This dramatically increased the funding program administrators had available, but added administrative and data-tracking requirements, which in some cases caused grantors to be concerned about whether their specific requirements were met. For example, Charlottesville and Huntsville received funding from BBP and, through their respective states, the SEP. In each place, both streams of funding went into the same program, despite the fact that the grants' requirements differ in terms of minimum savings, audit software, and reporting requirements. Huntsville increased the savings requirement to 20% so participants would not have to deal with these differences. They also distinguished funding by location: retrofits in the City of Huntsville and Madison County used BBP funding, while all other locations used SEP funding. Charlottesville, on the other hand, managed use of funds by time. They used nearly all of their BBP funds first, and then began using the SEP funds. In a few instances where participants were eligible for SEP but not BBP dollars, Charlottesville used funds from the SEP first.

*Nashville is one sub-grantee that has taken steps to address program sustainability. By partnering with The Housing Fund, a local CDFI, to provide energy-efficiency loans to low and middle-income program participants, the Nashville Energy Works Program will receive a portion of the interest accrued to use toward program operations.*

Many programs were able to leverage in-kind marketing and outreach support from other community organizations, including financial institutions offering energy-efficiency loan programs, as well as city government, regional government agencies, neighborhood associations, school and church networks or other community organizations focused on housing, the environment or other social issues related to BBP.

More detail on leverage is available in Appendix D. Cadmus was not able to determine the exact amount of funds leveraged by each grantee, nor the amount of leverage across different sources.

## Regional Training and Support

Sub-grantees echoed the sentiment that more training and support would have been helpful to them in the early stages of the grant. DOE provided BBP trainings via Webinars, but most sub-grantees reported that these trainings were too general to be beneficial. Sub-grantees needed detailed discussion opportunities and guidance beyond the basics in order to shape their programs.

Several sub-grantees reported that they derived great benefit from the summits organized by SEEA, most recently in March 2012, and from the national energy-efficiency conference in December 2011. As a regional alliance, SEEA was able to bring together staff from similar areas with similar challenges, and give them the opportunity to exchange ideas and compare notes. Many sub-grantees reported they looked first to other SEEA sub-grantees when seeking outside help, in particular for program design and marketing issues.

## **Change in Local Energy-Efficiency Market**

One of the goals of BBP was to effect real market change, and to increase the viability of an energy efficiency industry in their area. Though this evaluation is not able to provide a formal definition of “market change” there are some sub-grantee accomplishments that seem likely to make a change in the market that will last even after the grant ends. These include innovations in program design to deliver energy efficiency services, a better trained workforce, in increased customer awareness of the benefits of energy efficiency and the programs and incentives available to help achieve greater energy efficiency. These kinds of outcomes represent the ability of entrepreneurial BBP sub-grantees to effect broader marketplace changes.

## **Program Design and Partnerships**

Sub-grantees initially designed programs with the objective of making energy efficiency retrofits easier and more attractive for people. As program implementation progressed, administrators were able to see opportunities to increase participation by modifying their program design.

Charlottesville is adjusting their program model to include multiple tiers. In addition to offering the HPwES Program, LEAP added a BetterBasics tier that allows non-HPwES contractors to participate, and that also allows homeowners to engage with the program without spending as much money. In the future, Charlottesville plans to implement a staged retrofit program, wherein they will track customer activity and allow the customers to receive cumulative energy-savings credit for one retrofit at a time over a period of months or years. Credit to customers may be in the form of bonus rebates for achieving additional savings, or a simple energy certificate verifying that they reached a target level of efficiency. This change costs relatively little to implement, since the data collection system is already in place, but it gives the city great flexibility in how it engages with customers that are less committed than the initial early adopters.

Nashville successfully caught the attention of its utility and power distributors with the program model it built for the area. According to interviews regarding the Nashville Energy Works Program, TVA and possibly NES see the benefit of energy-efficiency programs. Nashville Energy Works was an example to 154 other power distributors of what is possible when organizations work together. Attracting the interest of these organizations with a long-term interest in local energy efficiency could boost the impact of similar programs going forward.

## **Workforce Development**

As previously described, Charlottesville and New Orleans emphasized building contractor skills and credibility through their program model. New Orleans WISE opened the door for BPI certifications in Louisiana, pioneering the certification for seven contractors. New Orleans WISE’s efforts caught the attention of utility partner Entergy-New Orleans, who has now added BPI certification as a component of its rebate programs. Additionally, New Orleans WISE sought to engage underserved populations, such as at-risk young adults, through apprenticeship programs. While the initial pilot was unsuccessful, New Orleans WISE learned what types of partners they need in order to revise the program with an improved iteration of the apprenticeship model that will equip an unstable workforce with critical job skills.

**Customer Awareness/Demand**

Survey results indicate the program may have had a significant impact on energy efficiency and program awareness. Of participants, 55% reported being very knowledgeable about energy efficiency, with the remaining 45% stating being somewhat knowledgeable. Of this somewhat knowledgeable group of participants, nearly 90% reported that their energy-efficiency knowledge increased because of the program.

Forty-seven percent of partial participants reported being very knowledgeable about energy efficiency, while 50% said they were somewhat knowledgeable. Eighty percent of partial participants reported that the program improved their energy-efficiency knowledge a lot or somewhat.

In comparison, only 34% of nonparticipants reported being very knowledgeable about energy efficiency, with 59% reporting being somewhat knowledgeable.

## IMPACT EVALUATION

This chapter provides a high-level overview of participation, electricity savings, and the distribution of installed measure types across the participating cities. Cadmus obtained the tracking data we used for this review from SEEA on October 31, 2012, which included data from the fourth quarter (Q4) of 2010 to Q3 2012.

### Database Review

Cadmus reviewed the tracking data in the consolidated database provided by SEEA. The database was well designed and included all of the information fields necessary to evaluate energy savings. The database included building square footage, estimated energy savings, estimated percent of total energy consumption saved, and a comprehensive set of fields for both quantities of measures installed and for baseline measures prior to improvement. These last two sets of data are essential for estimating savings.

Despite the usefulness of the database structure, however, the data content was inadequate to conduct a complete engineering analysis of claimed savings. Far too many records had missing data in all of the critical data fields. These issues include:

- Quantities of installed measures are not documented in the database. For instance, no nominal R-value or ceiling insulation thickness was reported for 1,137 of 1,211 buildings (94%) with ceiling insulation installed. The area insulated was also not recorded.
- Baseline conditions are not available in the tracking data. Even in the 74 instances where quantities of installed ceiling insulation were reported, baseline conditions were not reported.
- 22% of records do not contain information about claimed energy savings.
- 14% of records do not contain information about the percentage of savings relative to baseline consumption.
- 65% of records do not contain the size of floor space.

For cities with available billing data, the data in the database are generally adequate. Billing analysis only requires that the measures implemented are indicated in a generic sense. For cities without billing data, an engineering review is the only way to verify savings. Cadmus has been working with the individual cities to re-capture information needed to conduct an engineering review, specifically targeting cities for which we do not currently have billing data.

Engineering analysis requires information about the improvements that were made, the amount and quality of those improvements, and the baseline conditions that were improved upon. Cadmus understands that implementation conditions vary widely across cities, and it is difficult to capture this information given the nature of the relationship between sub-grantees and contractors and the resources available to program staff. The engineering analysis will be particularly important to assess potential instances of data entry errors that cannot otherwise be identified. As shown in the figures in this chapter, several of the outlier values entered for kWh and therm savings appear to be highly unrealistic, and may be the result of data entry mistakes.

Engineering analysis could confirm these errors and provide an alternate estimate of savings. It may also identify instances of data entry errors that do not manifest as outlier values.

## Energy Savings by Sub-grantee

Cadmus assessed each sub-grantees' reported electricity and gas savings from residential and commercial participants, using the sub-grantee reported values for estimated electricity saved per year (kWh/year) and estimated therms saved per year (therms/year) for each household or commercial building. As noted above, 22% of the records did not contain information about energy savings. Thus, the results described in this section only reflect buildings with reported savings values.

### Residential Buildings

Because the tracking data does not contain measure-level energy-savings data, Cadmus assessed project-level savings and calculated the average electricity savings per participant. USVI and Charlotte did not operate residential programs, and thus are not represented in the following analysis.

### Total Energy Savings

Figure 7 summarizes the total residential electricity savings from each of the 11 cities that reported savings values. The red line represents the average residential electricity savings across all cities. Charlottesville reported the largest amount of electricity saved (approximately 2,500,000 kWh/year), followed by Jacksonville and Nashville. The total kWh/year saved is partially a factor of the total retrofits. Charlottesville and Nashville reported the most retrofits, at 724 and 364, respectively. Jacksonville reported 206 retrofits. (Retrofit totals for all cities listed in Table 1.)

**Figure 7. Total Residential Electricity Savings per Year, by City**

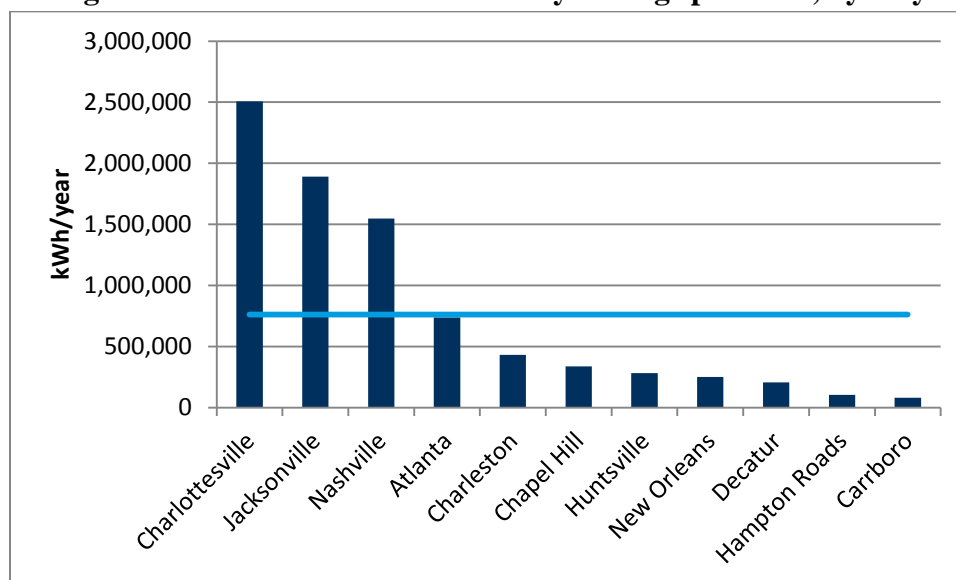
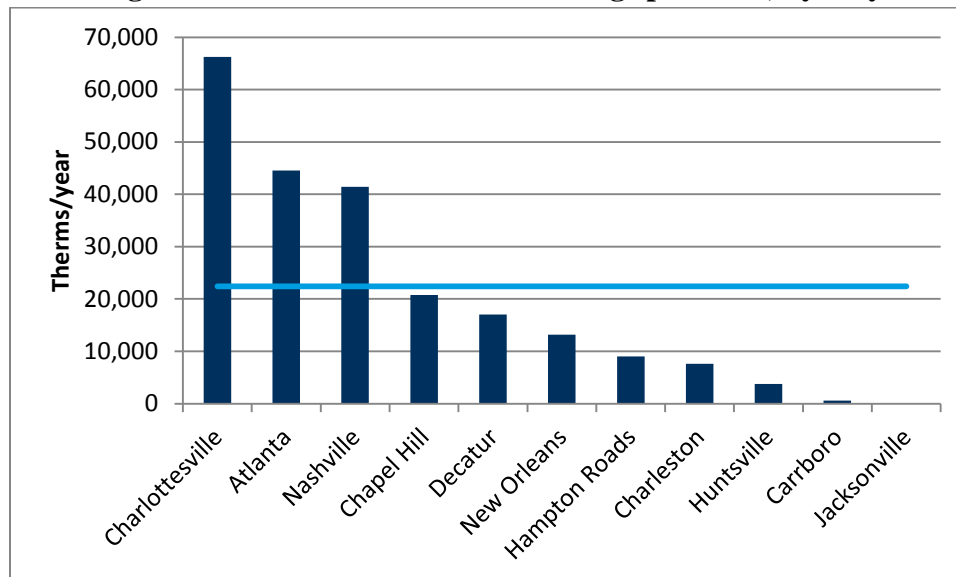


Figure 8 summarizes the total residential gas savings reported by each city. Again, Charlottesville reported the greatest amount of gas saved. Atlanta had the second most gas savings reported, followed by Nashville. Jacksonville did not report any gas savings.

**Figure 8. Total Residential Gas Savings per Year, by City**



### Average Savings per Building

Figure 9 summarizes the average electricity savings per residential building, showing the maximum, mean, and minimum savings claimed. The red line represents the mean of the averages (4,890 kWh/household/year), as a basis for comparison between cities. The maximum savings seem unrealistically high in most cities, considering that the average southern household consumes 14,561 kWh in total over a year.<sup>8</sup> Also, Charlottesville reported one building with an electric penalty of more than 10,000 kWh, a claim that also merits further investigation. Jacksonville had the largest average savings, at 9,177 kWh per year. As an average value, this too seems high. Nothing in the measure installation data would explain such a high value. A billing or engineering analysis is necessary to confirm or correct these values.

<sup>8</sup> Energy Information Agency, U.S. Department of Energy. *Residential Energy Consumption Survey (RECS)*. 2009. Available online: <http://www.eia.gov/consumption/residential/data/2009/index.cfm?view=consumption#fuel-consumption>.



**Figure 9. Maximum, Mean, and Minimum Residential Electricity Savings per Household per Year, by City**

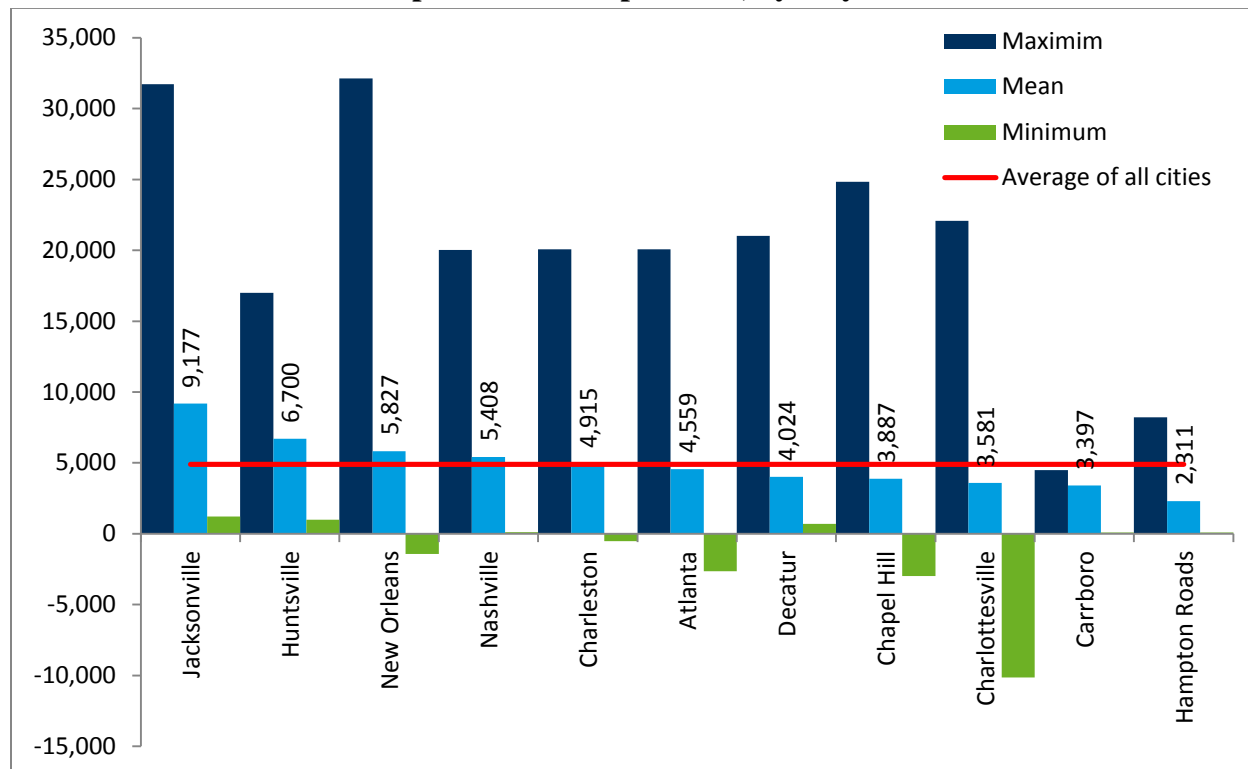
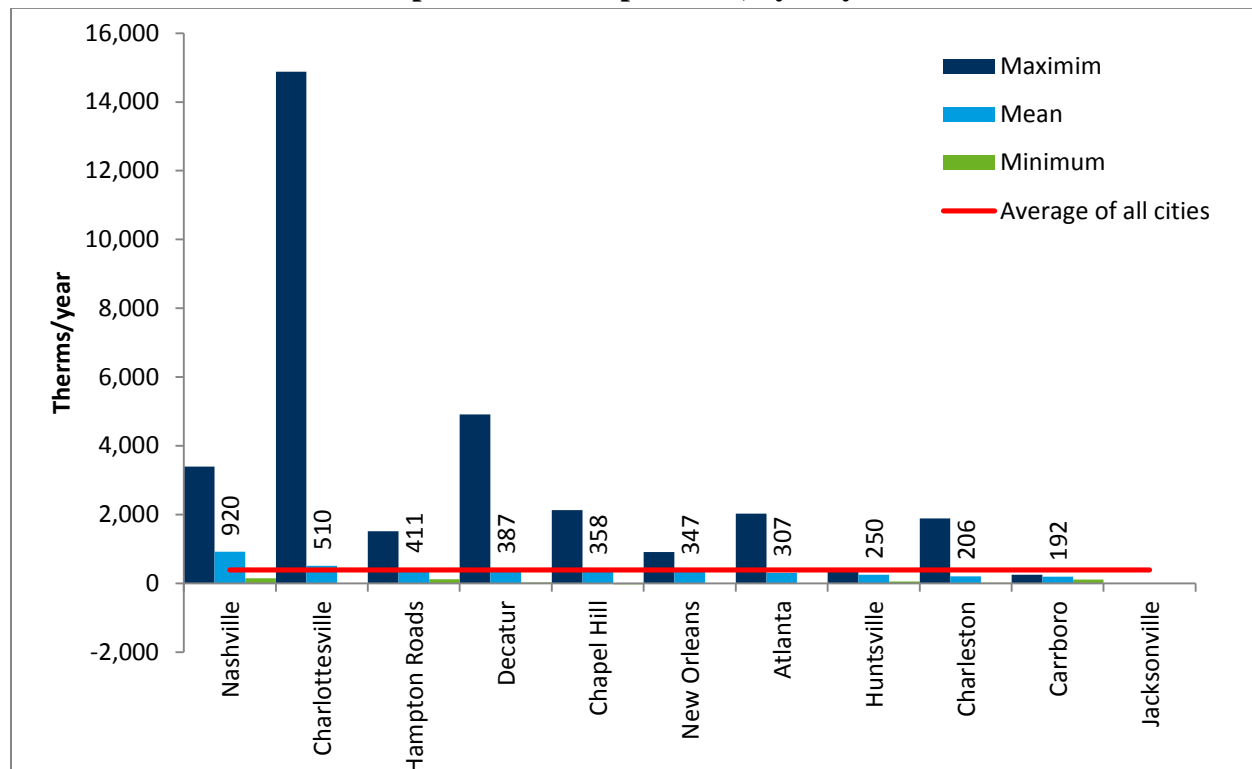


Figure 10 shows the maximum, mean, and minimum gas savings claimed. The average savings, shown by the red horizontal line, was 389 therms/year, or 73% of the average southern household's consumption.<sup>9</sup> Nashville had more than double the average therm savings of the other cities. Jacksonville did not claim any gas savings.

The maximum gas savings value, reported by Charlottesville, is very high (14,880 therms/year). This value is from a household that received various insulation measures. Nevertheless, this level of savings seems unrealistic and Cadmus will investigate this value to the extent that data is available.

<sup>9</sup> Ibid. RECS shows the household average across the total south to be 52 MCF (thousands of cubic feet) per year. Cadmus converted this value as 532 therms per year (1 MCF is equal to 10.23 therms).

**Figure 10. Maximum, Mean, and Minimum Residential Gas Savings per Household per Year, by City**



### Average Savings per Square Foot

Where information about building size was available, Cadmus reviewed claimed savings per square foot. This provides a more equal basis for comparing savings among sub-grantees because it controls for the average size of each participant's home.

Figure 11 shows the maximum, mean, and minimum electricity savings (kWh/year) per square foot for each city. Jacksonville did not provide building floor space information for participating residential households, and therefore JEA projects were excluded from this analysis. The floor space information from other cities is sparse, so the averages do not include all participating buildings.

The red line represents the mean of the average savings per square foot, or 2.20 kWh/year. Huntsville, New Orleans, Charleston, and Nashville reported average annual savings per square foot that exceeded the average of the consortium. Huntsville's savings are more than twice the average. It is important to note, however, that 74% of Huntsville's database entries were missing square footage data (and were therefore not included in the calculation of average savings per square foot).

**Figure 11. Maximum, Mean, and Minimum Residential Electricity Savings per Square Foot per Year, by City**

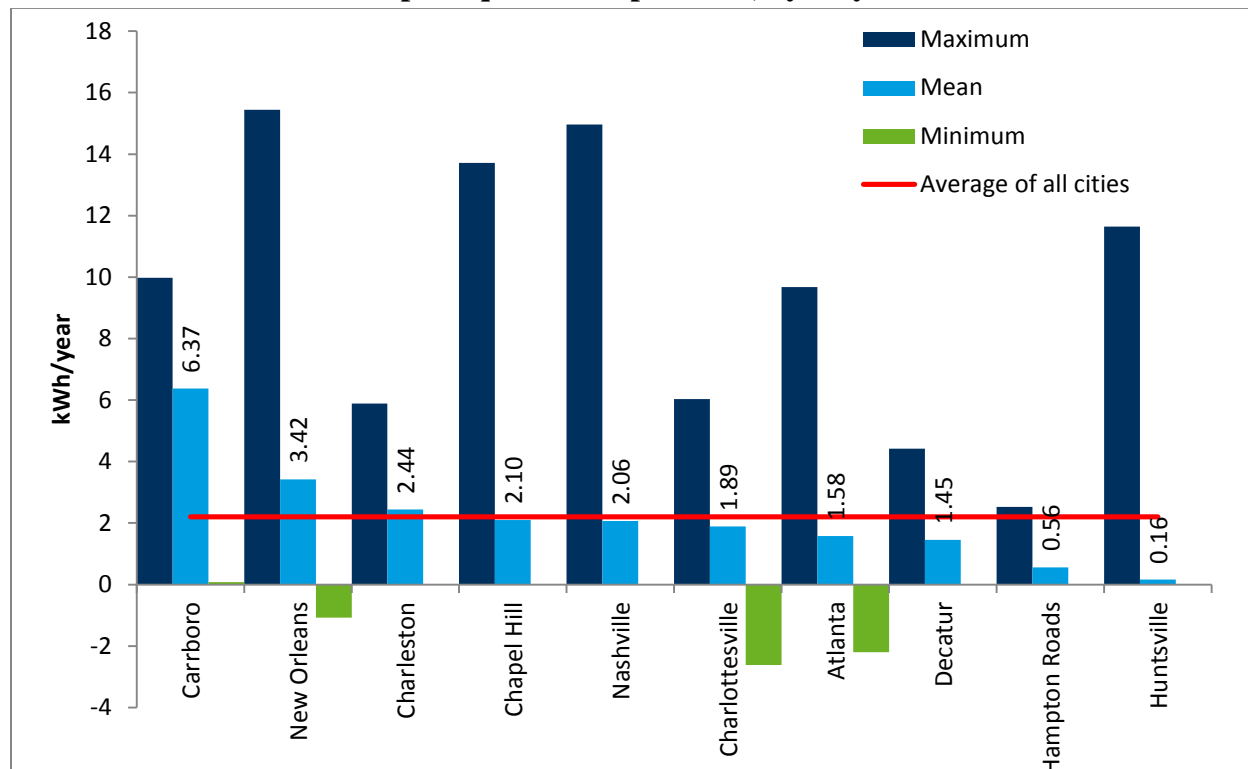
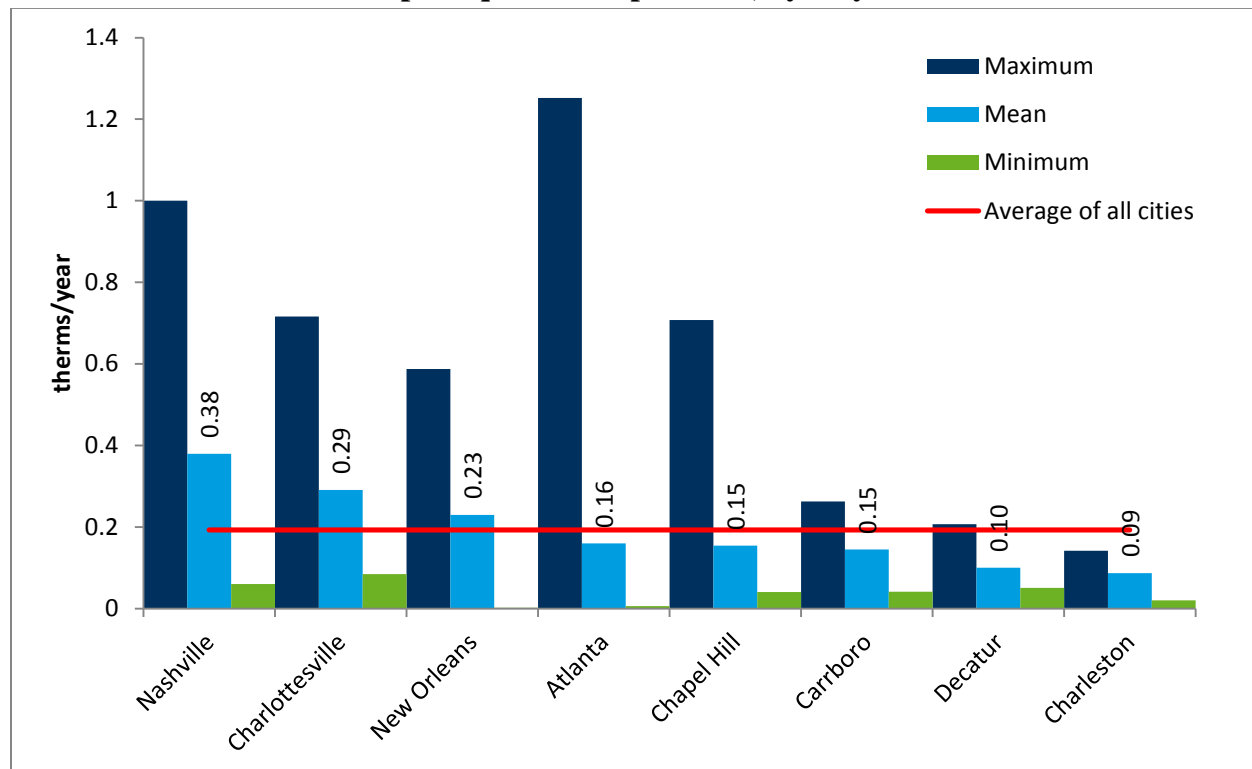


Figure 12 shows the maximum, mean, and minimum gas savings per square foot. Several cities had sparse square footage data and could not be represented in this figure. The average savings, shown by the red line, was 0.19 therms/square foot/year. Nashville had highest therm savings per square foot. Cadmus did not assess heating degree days per city for this analysis. However, as Nashville generally has a colder climate than several of the other cities represented, and natural gas is a common fuel for home heating, this result is not surprising.

**Figure 12. Maximum, Mean, and Minimum Residential Gas Savings per Square Foot per Year, by City**



## Commercial Buildings

Cadmus assessed project-level savings and calculated the average electricity savings per participant. Four cities reported commercial participation in the tracking database: Atlanta, Carrboro, Charlottesville, and Jacksonville. Two sub-grantees with active commercial programs, Charlotte and USVI, have not reported any projects to date. Two of the sub-grantees reporting data, Atlanta and Jacksonville, did not have formal commercial programs, and therefore no process evaluation was conducted for commercial projects in those two cities. However, as these cities are reporting valid commercial savings for 8 and 4 commercial projects, respectively, we have included those results in this impact analysis.

## Total Energy Savings

Figure 13 summarizes the total commercial electricity savings reported by each city. Jacksonville greatly exceeds the other cities in reported electricity savings, at over 1,500,000 kWh/year. This reported value is very high and is discussed in the context of savings per site and per square foot in the next two sections.

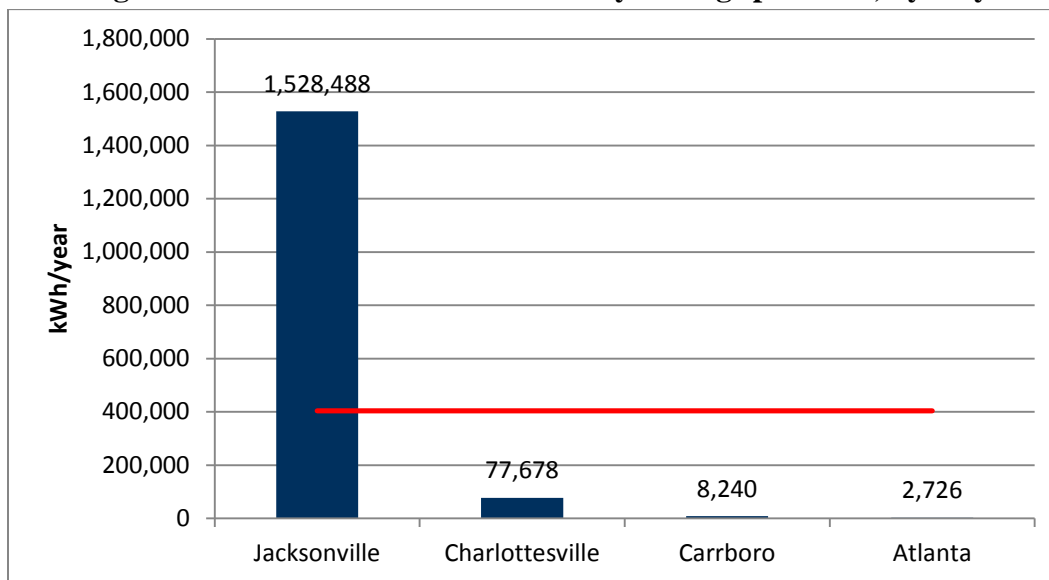
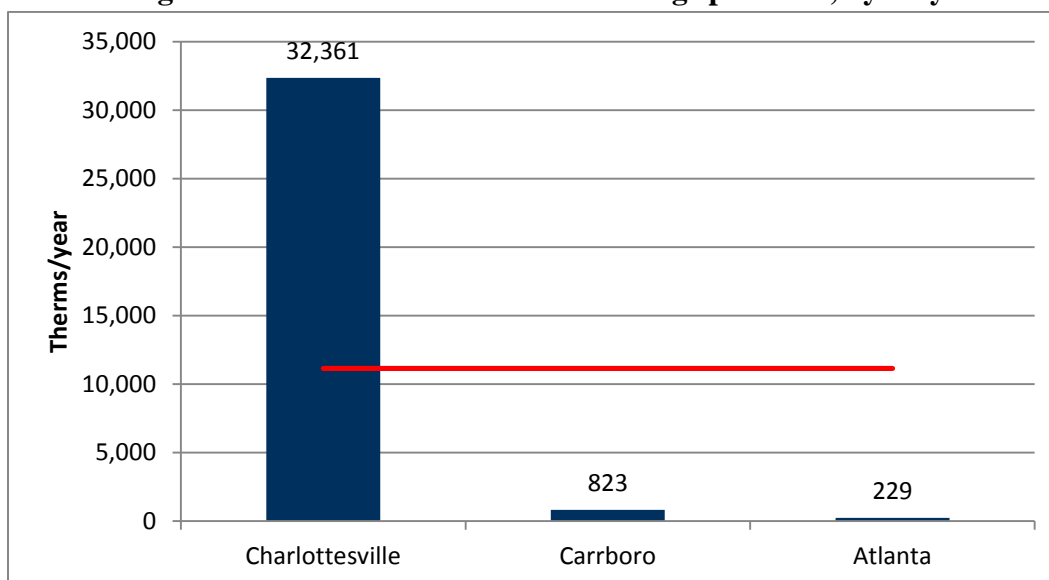
**Figure 13. Total Commercial Electricity Savings per Year, by City**

Figure 14 summarizes the total commercial gas savings by city. Jacksonville did not report any therms saved. Charlottesville reported the largest amount of gas savings at 32,361 therms/year.

**Figure 14. Total Commercial Gas Savings per Year, by City**

### Average Savings per Site

Figure 15 shows the maximum, mean, and minimum electricity savings per site. The average commercial building annual electricity savings for Jacksonville was very large at 556,072 kWh/year, which is significantly greater than the average of 99,051 kWh/year. This average is calculated from only 4 projects, and may not represent average project size were the program to expand.

**Figure 15. Maximum, Mean, and Minimum Commercial Electricity Savings per Site per Year, by City**

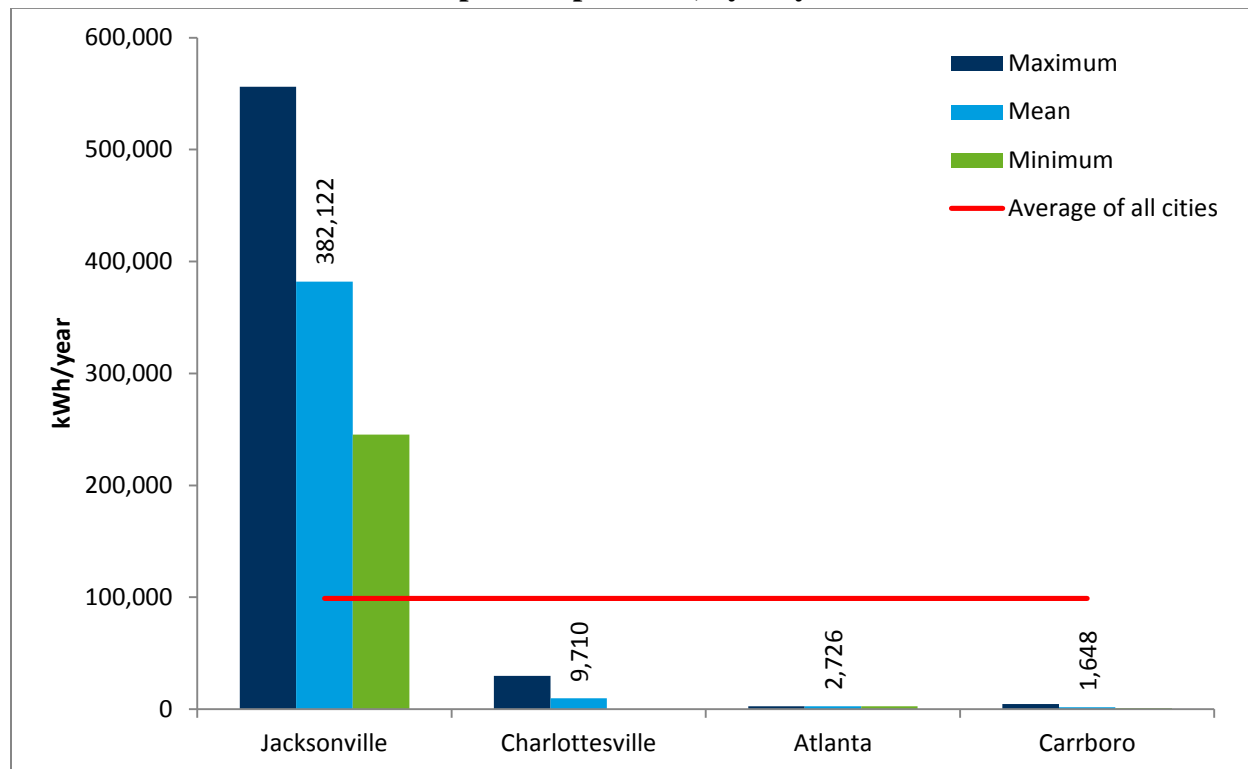
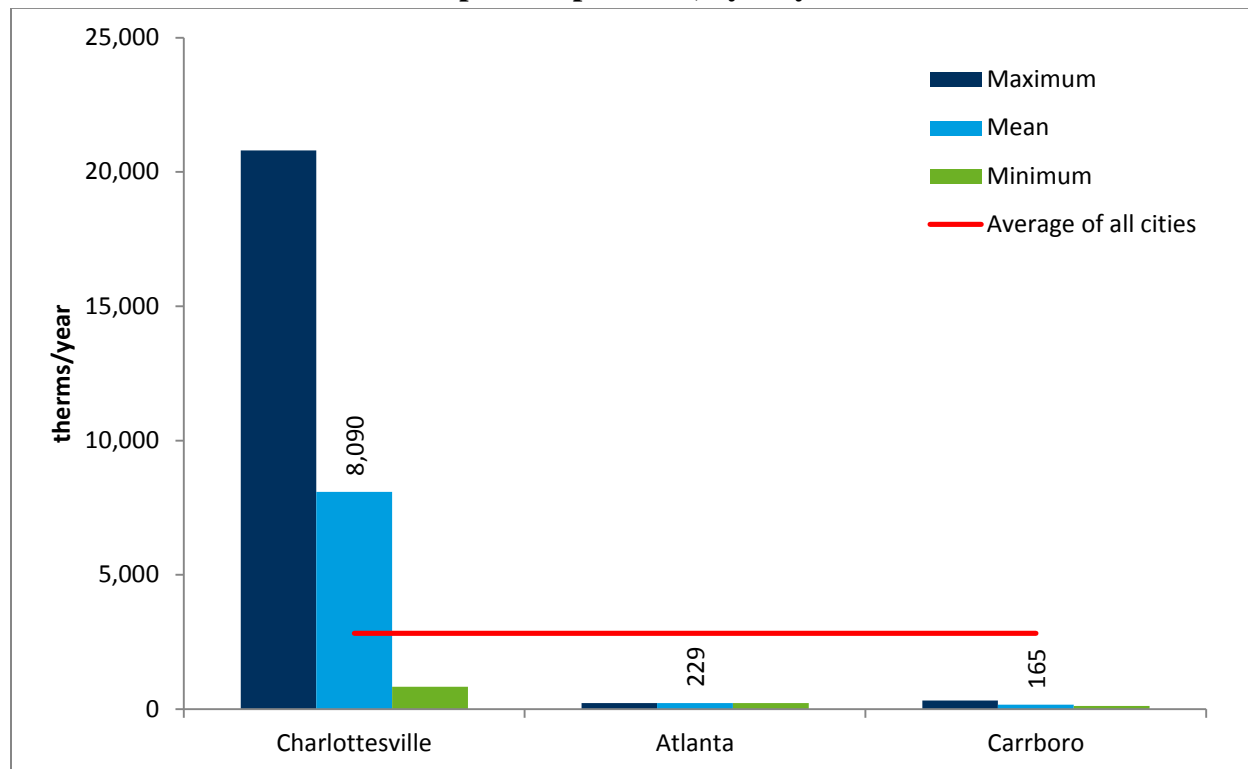


Figure 16 shows the maximum, mean, and minimum gas savings per site. The average savings, shown by the red line, was 2,828 therms/year. Charlottesville had far greater mean savings than the other two cities, at 8,090 therms/year. Jacksonville did not claim any gas savings.

**Figure 16. Maximum, Mean, and Minimum Commercial Gas Savings per Site per Year, by City**



### Average Savings per Square Foot

Figure 17 shows the maximum, mean, and minimum commercial electricity savings per square foot for each city reporting commercial participants. Jacksonville reported savings per square foot of building space that exceeded the average of 3.9 kWh/square foot/year. Jacksonville reported particularly large savings per square foot that was almost three times the average.

**Figure 17. Maximum, Mean, and Minimum Commercial Electricity Savings per Square Foot per Year, by City**

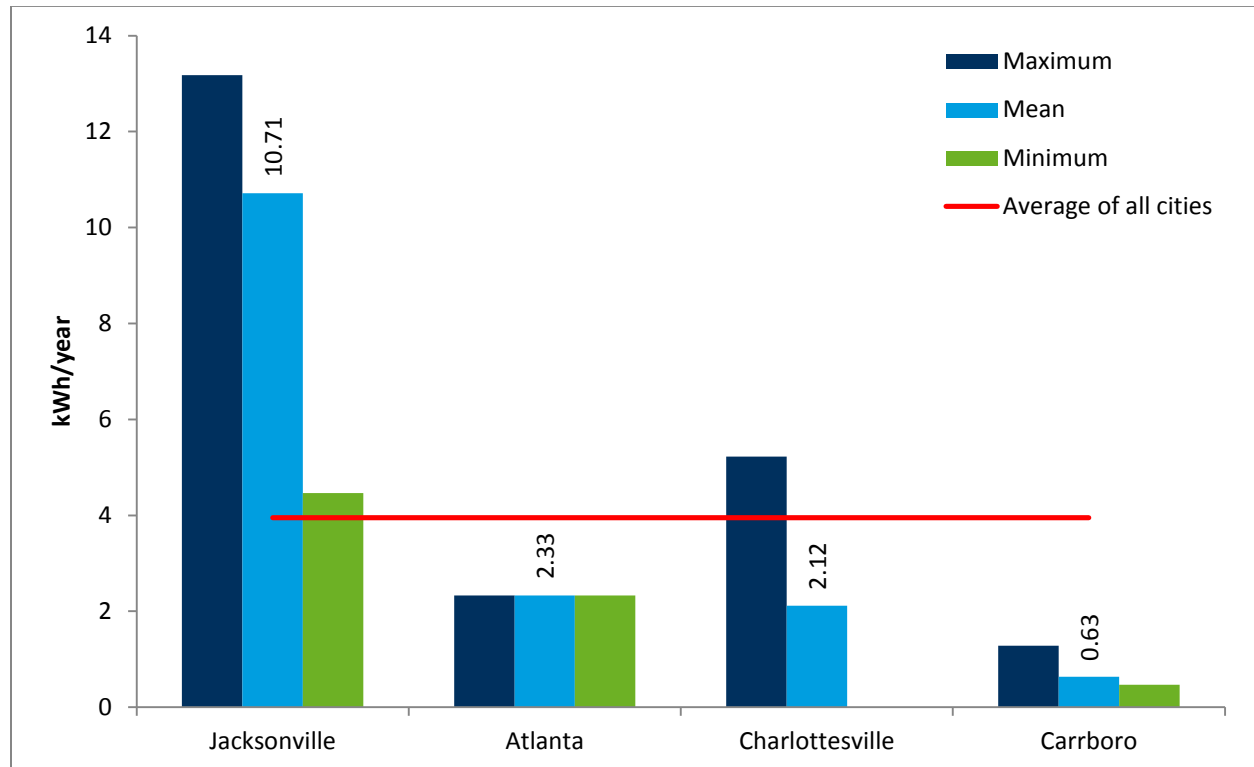
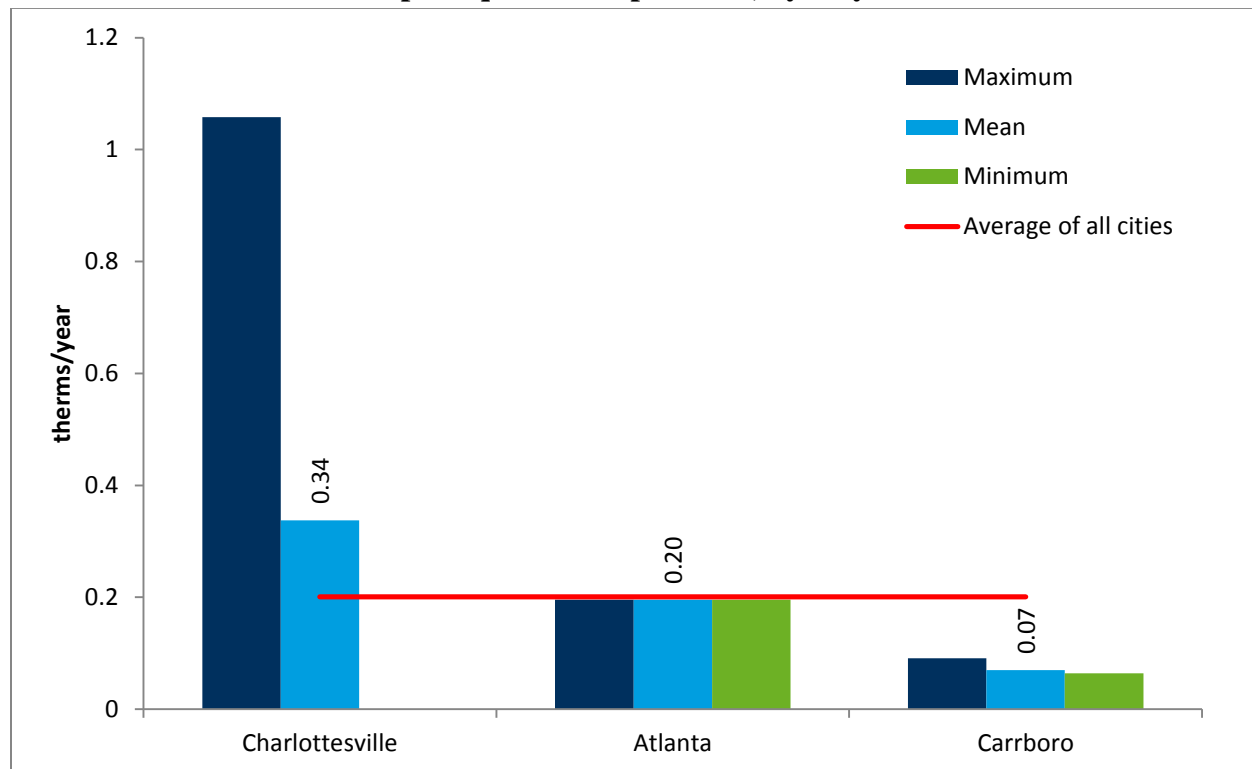


Figure 18 shows the maximum, mean, and minimum gas savings. Charlottesville reported far greater savings than the other two cities; however, when normalized by square footage, the difference is not as great as it was when comparing savings per site. The average savings across all cities was 0.20 therms/square foot/year.



**Figure 18. Maximum, Mean, and Minimum Commercial Gas Savings per Square Foot per Year, by City**



## Measure Distribution

Cadmus assessed the types of measures installed by each city for residential and commercial participants. This analysis is intended to show the types of measures installed in cities with high and low reported levels of energy savings.

### Residential

Figure 19 shows the percentage of participating households from each sub-grantee that had at least one shell measure installed through the BBP. Shell measures include insulation (attic, wall, and foundation), window replacements, air sealing, and radiant barriers.

In most cities, nearly all households received one of several shell measures that were offered by the sub-grantees. The exceptions were Charlottesville, Jacksonville, and Huntsville, where approximately half of participants or less received a shell measures. There is no pattern suggesting that these three cities claimed lower savings than the others. In fact, Jacksonville and Huntsville claimed the highest per-building electricity savings.

**Figure 19. Residential Shell Measure Distribution**

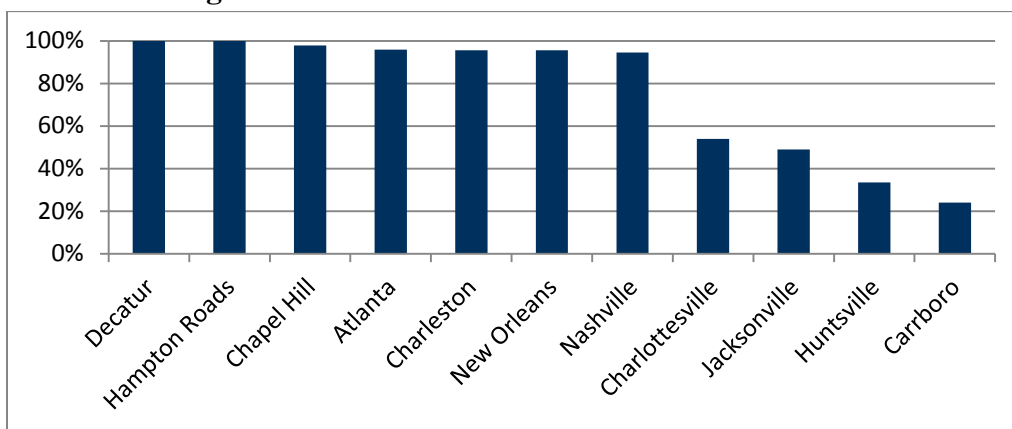
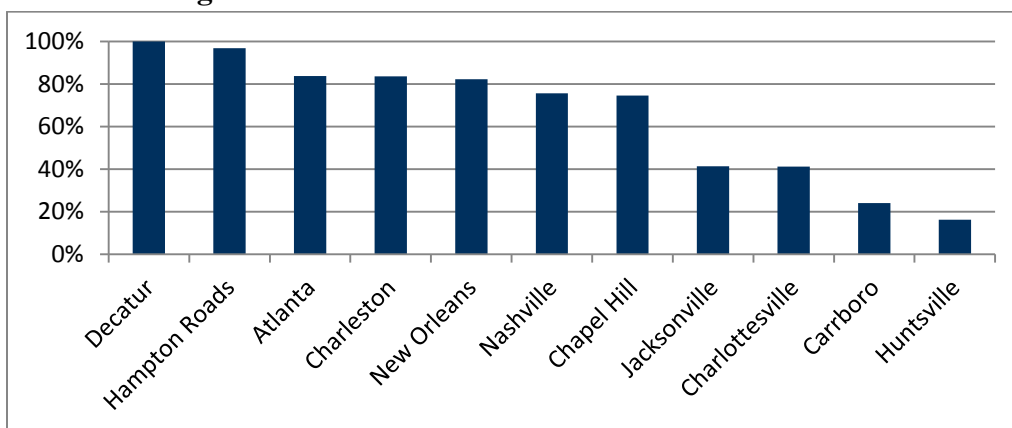
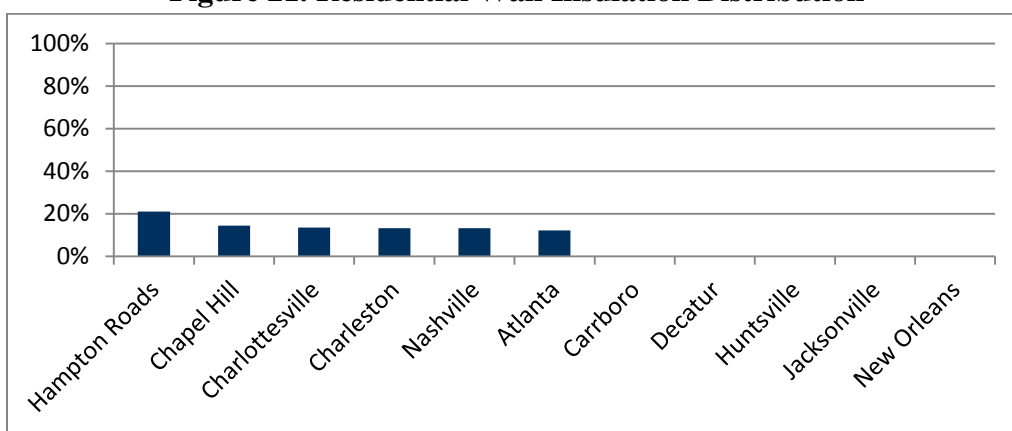


Figure 20 through Figure 25 summarize the distribution of each type of shell measure in the programs. Each bar presents the percentage of projects reported by the sub-grantee that included the measure.

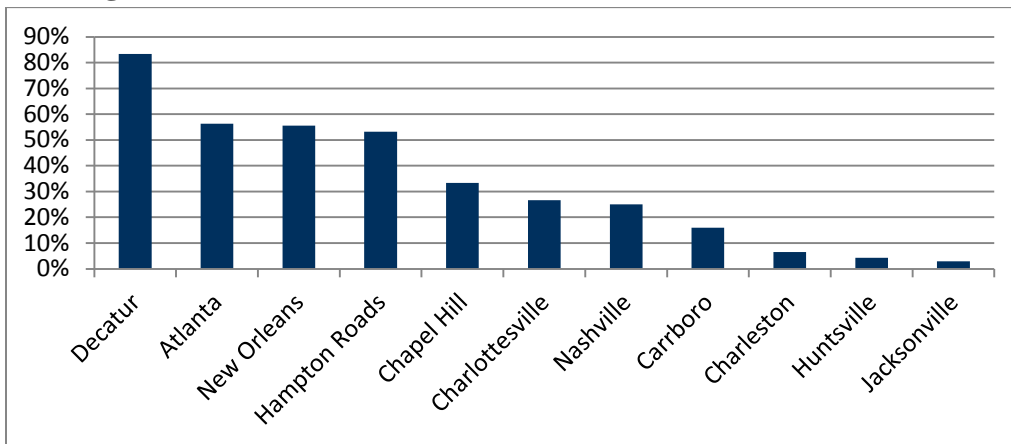
**Figure 20. Residential Attic Insulation Distribution**



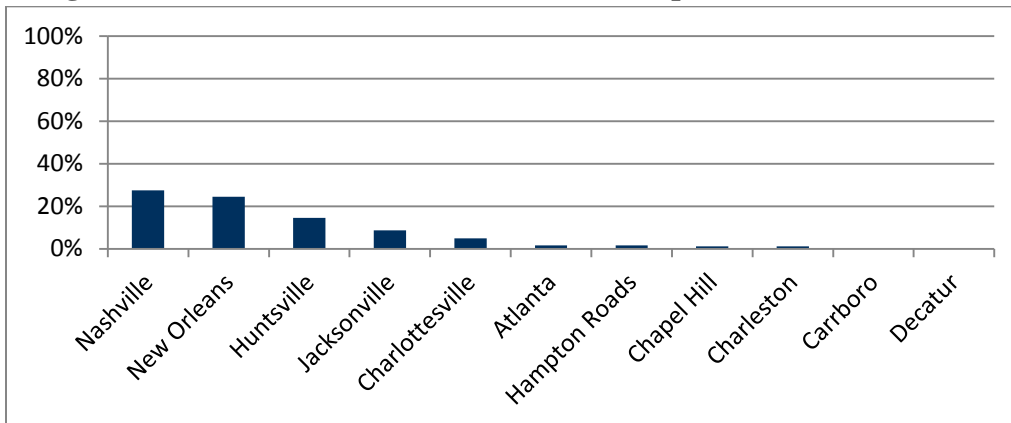
**Figure 21. Residential Wall Insulation Distribution**



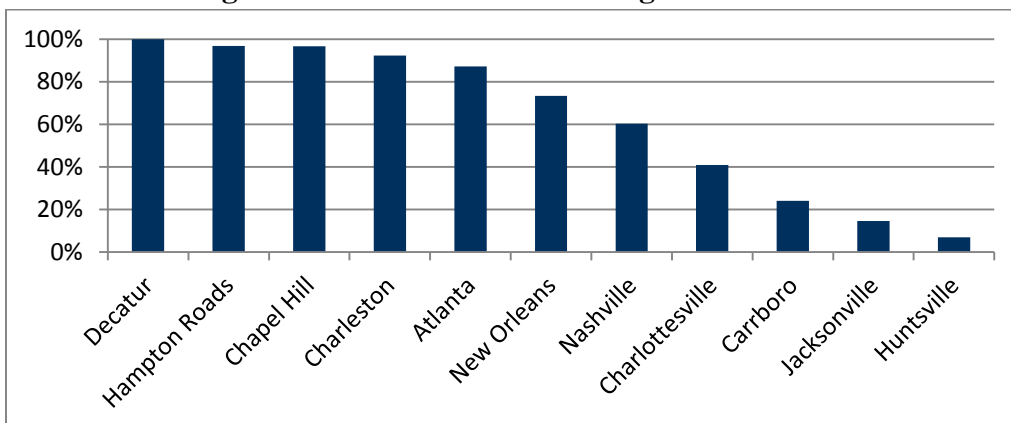
**Figure 22. Residential Floor/Foundation Insulation Distribution**



**Figure 23. Residential Window Installation/Replacement Distribution**



**Figure 24. Residential Air Sealing Distribution**



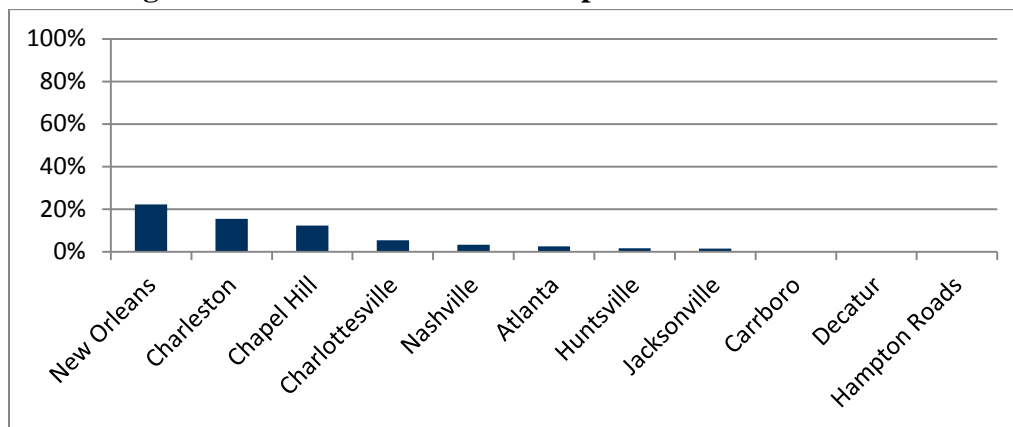
**Figure 25. Residential Radiant/Vapor Barrier Distribution**

Figure 26 shows the percentage of households in each city with at least one HVAC measure installed through the BBP. HVAC measures include furnaces, boilers, wood stoves, heat pumps, air conditioning units, ventilation systems, HVAC tune-ups, duct sealing, duct insulation, and programmable thermostats.

Hampton Roads reported the greatest percentage of residential participants receiving an HVAC measure through the program, at 100%. Carrboro had the lowest percentage of residential participants receiving an HVAC measure through the program, at 52%.

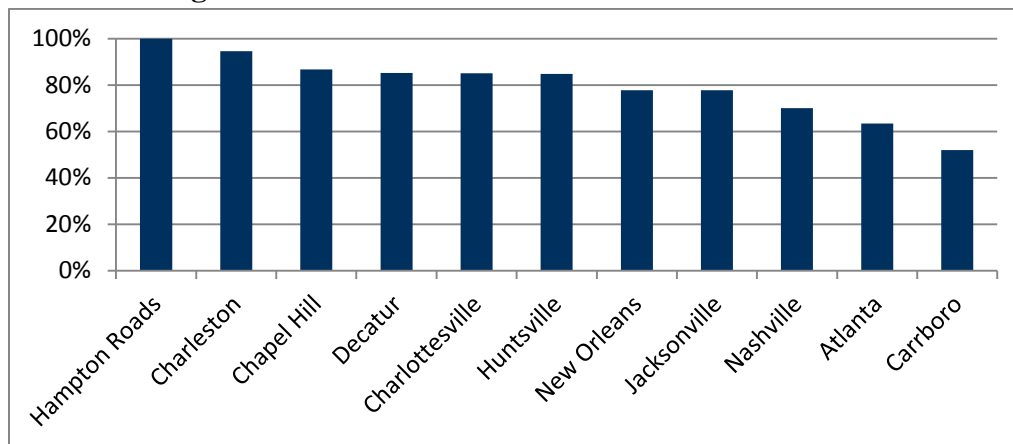
**Figure 26. Residential HVAC Measure Distribution**

Figure 27 shows the percentage of households in each city with at least one domestic hot water measure installed through the BBP. Domestic hot water measures include water heaters, water equipment insulation, low-flow faucet aerators, and low-flow showerheads.

New Orleans reported the greatest percentage of residential participants receiving a domestic hot water measure, at 33%. Huntsville and Nashville had the smallest percentage of participants receiving a domestic hot water measure, at 1% each.

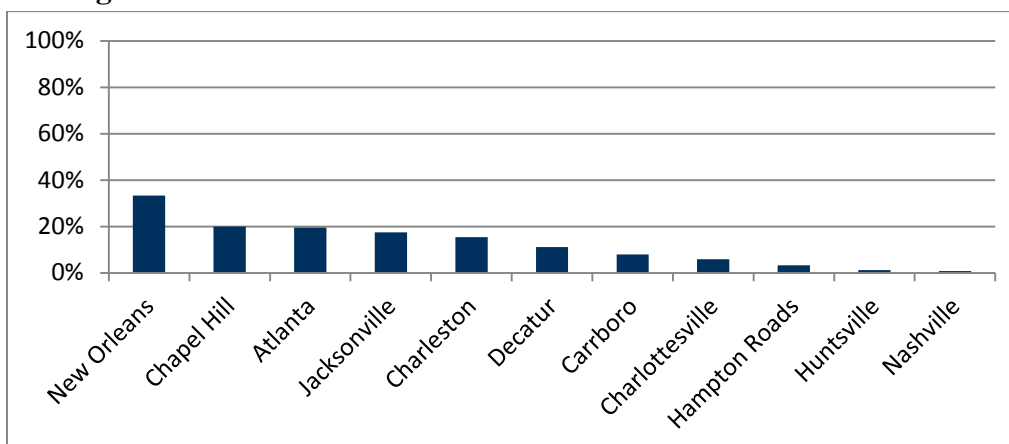
**Figure 27. Residential Domestic Hot Water Measure Distribution**

Figure 28 shows the percentage of households in each city with at least one lighting measure installed through the BBP. Chapel Hill had the greatest percentage of participants who received lighting measures, at 17%. Decatur, Hampton Roads, and Nashville did not have any participants that received a lighting measure through the BBP.

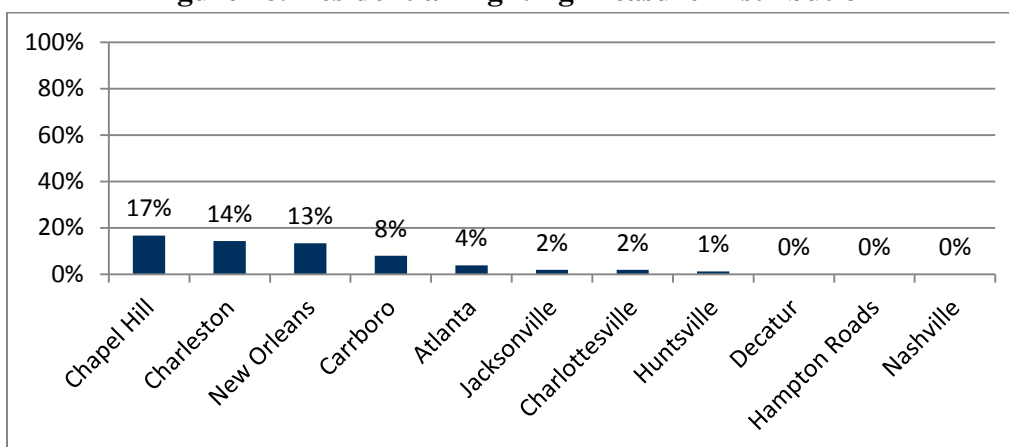
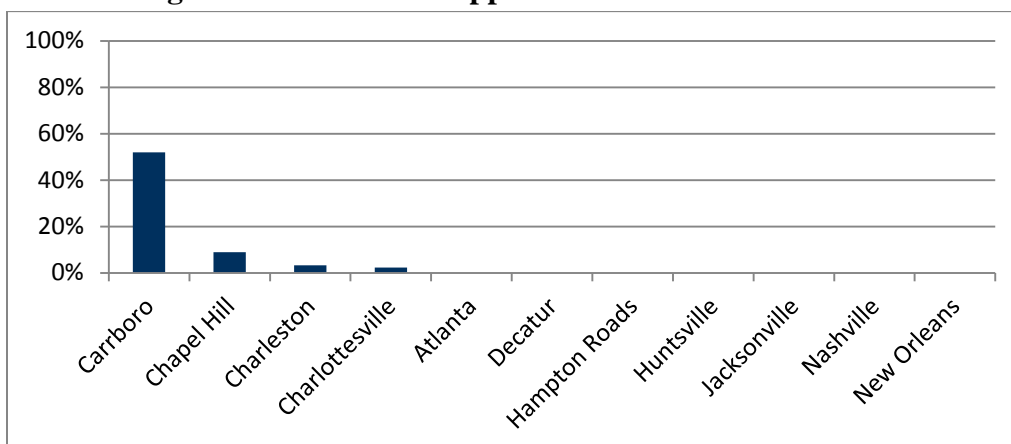
**Figure 28. Residential Lighting Measure Distribution**

Figure 29 shows the percentage of households that received an appliance measure through the BBP. Refrigerators are the only appliance rebated through this program.

Only four cities had residential participants who received refrigerators: Carrboro, Chapel Hill, Charleston, and Charlottesville. Carrboro had the largest percentage of affected households (52%) and Charlottesville had the smallest percentage (2%).

**Figure 29. Residential Appliance Measure Distribution**

Based on the percentage of homes that received each type of program measure, it is not possible to identify clear patterns that would explain the high savings rates for electricity and gas in Nashville, Huntsville, and Jacksonville. Further data is required for Cadmus to establish whether these claimed savings are reasonable.

## Commercial

The following six figures summarize the measure-type distributions among commercial participants in each city.

Figure 30 summarizes the percentage of commercial participants who received at least one shell measure through the BBP. Commercial shell measures include an exterior wall or roof replacement, window replacement, and insulation (ceiling, wall, and floor).

Of the four cities with commercial participants, only Atlanta and Carrboro installed shell measures through the BBP. Furthermore, Atlanta buildings received shell measures exclusively.

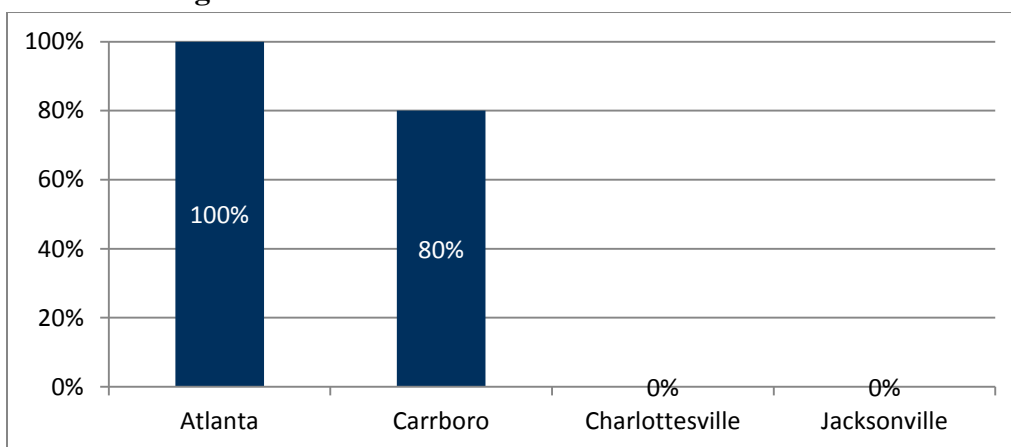
**Figure 30. Commercial Shell Measure Distribution**

Figure 31 summarizes the percentages of participating commercial buildings that received at least one HVAC measures through the BBP. Commercial HVAC measures include HVAC

equipment upgrades, heat exchanger replacements, boilers, furnaces, packaged heating units, and residential-type central air conditioners.

Just as Atlanta buildings installed shell measures exclusively, Jacksonville's commercial buildings installed HVAC measures exclusively. As these projects were not the result of formally organized programs, we cannot comment on why participants did not install more or different measures.

**Figure 31. Commercial HVAC Measure Distribution**

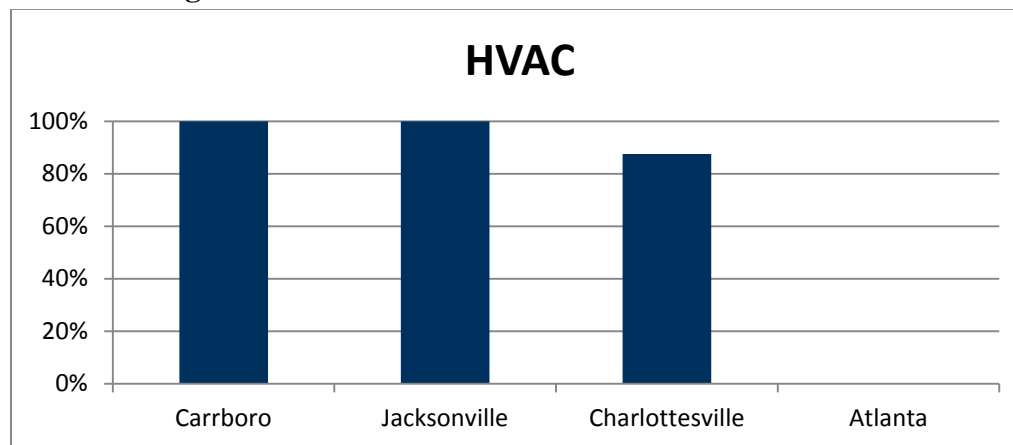


Figure 32 summarizes the percentage of participants that received at least one hot water measure, which include central chillers and electric water heaters. Charlottesville is the only city with commercial participants who received a hot water measure. Approximately one-quarter of commercial buildings in Charlottesville received such measures.

**Figure 32. Commercial Hot Water Measure Distribution**

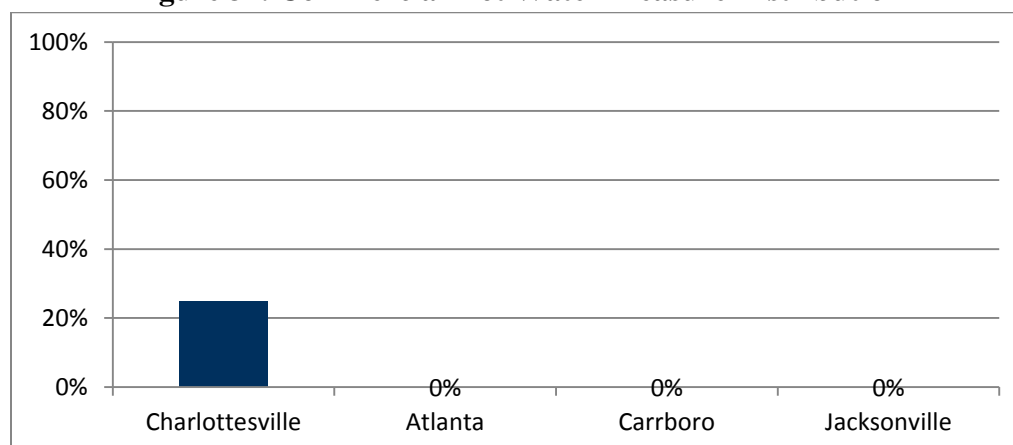


Figure 33 shows that only the Charlottesville program installed lighting. Lighting measures include CFLs, LEDs, and lighting controls.

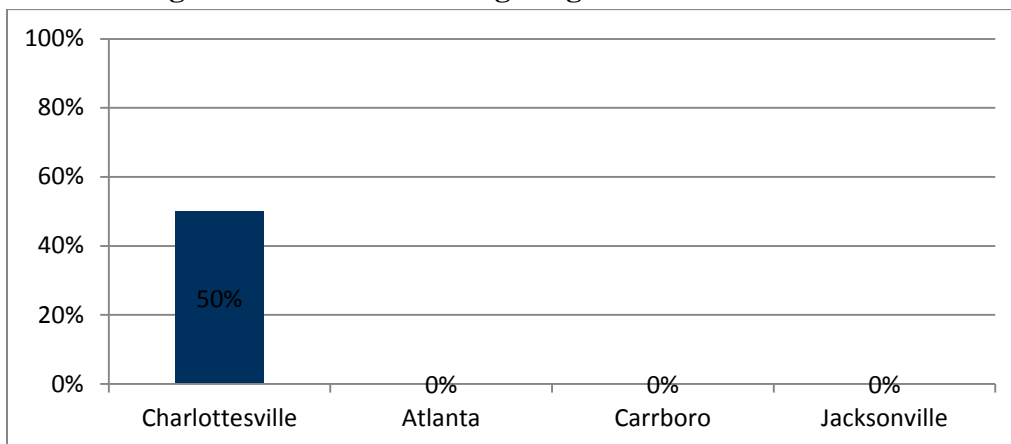
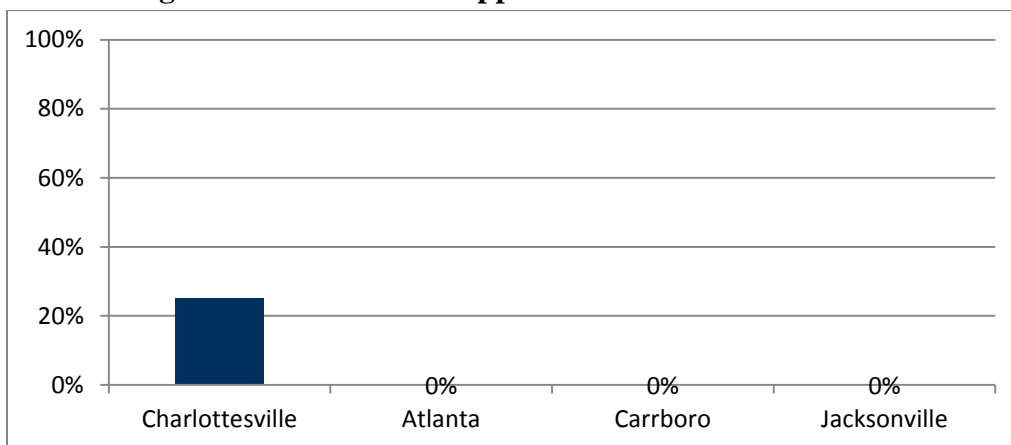
**Figure 33. Commercial Lighting Measure Distribution**

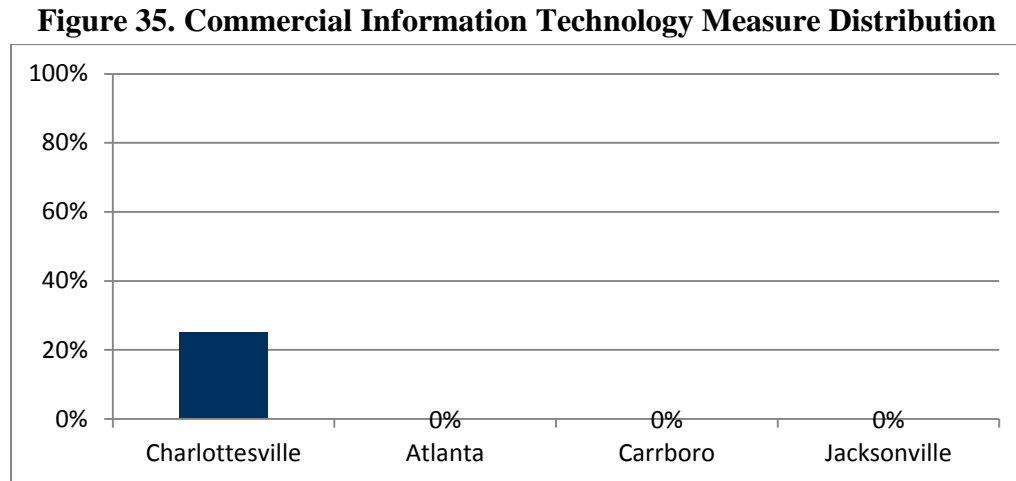
Figure 34 summarizes the distribution of appliance measures for commercial program participants. Commercial appliance measures include ovens, dishwashers, clothes washers, refrigerated food service equipment, and food-grade refrigerators and freezers.

Carrboro and Charlottesville were the only cities with commercial participants who received an appliance measure. Half of the commercial participants in Carrboro and 25% of the commercial participants in Charlottesville received an appliance measure through the BBP.

**Figure 34. Commercial Appliance Measure Distribution**

Charlottesville is the only city with commercial participants who received at least one IT measure. IT measures include ENERGY STAR office equipment, servers, computers, and monitors. Twenty-five percent of Charlottesville's commercial participants received an IT measure through the BBP.





As with the residential buildings, there is no basis to evaluate the appropriateness of claimed savings based on the mix of commercial measures installed. This is especially true because the programs in individual cities installed such different measures. Additional data will be needed to evaluate the claimed savings.

## CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations are presented in the four major areas of investigation for the process evaluation work:

- Program Design and Administration
- Marketing and the Customer Experience
- Market Engagement and Workforce Development
- Program Sustainability.

Where appropriate the conclusions and recommendations are presented separately for sub-grantees, SEEA, and DOE.

### Program Design and Administration

Each sub-grantee designed their program to fit the existing capacity, community needs and resources. SEEA and DOE also influenced the program design with policy and constraints in how funds could be used.

### Staffing and Regional and National Support

Sub-grantee level:

- The BBP sub-grantees typically underestimated the amount of staffing budget required to launch a brand new program. Unless a program was structured to use staff from partner organizations, such as those having arrangements with utility program implementers, three full-time equivalent staff were needed to support basic program functions such as marketing, operations, reporting, and relationship development. At least 1/2 of a full-time equivalent staff must be devoted to manage program reporting. Then additional staff support is required to expand existing activities and plan for future programming.
  - Sub-grantees should ensure that the proposed budget for programs with a new delivery infrastructure sets aside sufficient staff hours to manage all the tasks associated with start-up, including partner recruiting, training and handling, responding to customers, and, in particular, data capture and reporting.

SEEA-level:

- SEEA served an important regional policy support role by creating and leveraging relationships, partnerships, and agreements that sub-grantees would be challenged to effect on their own. As SEEA has grown in capacity and institutional experience, it has been helpful in resolving issues between sub-grantees and large partners, such as utilities, and has been instrumental in creating a financing option for several residential programs and one commercial program.
  - SEEA should continue to identify strategic areas where they can support local programs, such as utility relationships, financing, and regional policy issues.

- Early in the program, SEEA intended to relieve some of the sub-grantees burden by organizing regional-level contracts for IT services and by coordinating the HEMCs. However, SEEA did not have the internal capacity to oversee and manage the contracts. As a result, the efforts from SEEA and the sub-grantees were lost before SEEA was able to determine non-performance and terminate the contracts.
  - Before engaging in a regional support role, SEEA should determine whether they have the in-house capacity to prepare and sign the contract, and also to oversee implementation. If SEEA does not have this capacity, some sub-grantees may be able to provide services in their area of expertise, either regionally or on a limited basis with other sub-grantees. For example, Charlottesville has been involved in several successful HEMCs, and may be able to implement contests for other communities. This type of assistance request must be accomplished on a contract basis, so the sub-grantee providing services can recoup their costs.
- Once SEEA convened them, sub-grantees enjoyed the opportunity to network, share success stories, and consult with their colleagues. Because SEEA did not convene sub-grantees for the first time until 2012, earlier networking opportunities were lost.
  - For any future programs with regional scope, SEEA should hold a kick-off meeting with all partners that establishes missions, goals, processes, and expectations. The administrator of this meeting should receive feedback from the partners and adjust the processes accordingly. It is important that all processes have clear, established lines of communication between SEEA and sub-grantees.

#### DOE-level:

- All of the sub-grantees are interested in making their programs sustainable, which is the key BBP objective. However, after some of the sub-grantees began pursuing a fee structure to support the services they provide, DOE decided that the grant prohibits collecting fees. This decision left most of the programs with only federal dollars to support their administrative activities. Pursuing additional grant funding is time-consuming and typically requires a longer lead time than was available to the sub-grantees by the time DOE made its decision.
  - DOE should be encouraged to develop program funding models that encourage and reward programs to create sustainable models with fees for services or other revenue generating activities. SEEA should coordinate with the National Association of State Energy Officials and other BBPs to develop suggestions for DOE to structure and manage these models while remaining in accordance with federal spending regulations. Without revenue, marketing services, operations, and program administration, the programs are unsustainable, which is counter to the grant goals.
- The grant leverage and retrofit requirements were set to levels that even well-established programs are only barely able to achieve, and they did not allow for start-up costs or experiments with innovative ideas that might not succeed. Program administrators' focus on meeting those requirements may have detracted from thoughtful program design. Mid-program adjustments, such as allowing the portfolio approach (which averaged 15% savings across projects), were helpful but not enough. Most sub-grantee programs' design

is still oriented to quickly achieving high savings and retrofit targets, and is not well adapted for moving toward sustainable implementation.

- Program targets need to allow flexibility for the time and costs required for startup, particularly for stand-alone programs. For example, DOE might apply the leverage requirement only to those dollars spent on direct program expenses such as rebates and marketing costs in the initial year, which would give the program administrators leeway to make necessary investments in infrastructure and administrative processes. Another approach would be to establish tiered retrofit targets that increase as the program develops; this approach would not penalize programs for the time it takes to and build up to the high performance levels.

## Target Markets and Incentives

- High rebates (above \$1,000) are not a guarantee of success and are not always necessary. Once high levels of incentives are given, any reductions can create dissatisfaction from contractors and customers. Most importantly, programs that rely heavily on rebates funded through federal grant dollars do not have budget to continue once the grant dollars are gone. This is an example of how the DOE goals of high leverage and retrofit levels were contradictory with their goal of sustainable market transformation.
  - Identify and fine-tune the non-rebate services that programs provide, such as giving customers recommendations for measures to implement and having trusted service providers capable of installing those measures. Contractors could be trained in technical and sales topics to facilitate these services. Another approach is to convene a forum for energy-efficiency minded contractors to share techniques and experiences.
  - Charlottesville's BetterBasics Program can serve as a model that better meets the needs of customers who want to improve energy efficiency but do not want a whole house retrofit at one time.
- The findings for commercial programs are sparse and anecdotal given the lack of data. Commercial markets have proven to be sufficiently difficult and different from residential markets.
  - Programs with limited resources or limited success in the residential market should consider focusing on only one market before expanding to both markets.

## Financing Options

- The overall impact of a financing option is difficult to assess because of the limited data available on the loan products, the customers who used them, and the impact that financing had on conversion rates and the types of retrofit work accomplished. However, it appears that financing programs have not generated large numbers of retrofits without other financial incentives also being offered, except in Jacksonville. Even when rebates are available, only a small percentage of projects are financed.
  - SEEA should capture more information if possible about loan recipients. This may mean signing non-disclosure agreements with lenders or otherwise ensuring the data will be protected. Metrics such as approval date, loan amount, annual percentage rate, loan terms, applicable IRB, and credit score—provided on a per-retrofit basis and

- matched to a particular sub-grantee—could provide insight into which customer segments use financing. In situations where SEEA holds the LLR contract, SEEA should make sure the agreement requires the lender to provide the metric data to the fullest extent possible.
- Offering a LLR can adjust the loan product in several ways, including having lower rates, longer terms, or lower credits requirements. Perhaps because the sub-grantees allowed the lenders to determine loan terms and requirements, lenders appeared to have lowered rates more often than making other types of concessions. As a result, BBP-supported loan products in SEEA’s territory were not necessarily more available to participants with difficulty getting credit. Other BBPs around the country have pushed for expanded credit requirements and been successful, so SEEA’s experience may indicate the typical lender preference rather than their unwillingness to modify credit terms.
    - SEEA should evaluate all possible options available through a LLR, so that they can identify and negotiate with lenders for the best arrangement to support their sub-grantees’ programs. There are different approaches to maximizing the impact of a LLR, many of which have trade-offs. For example, lower credit requirements may result in higher risk of default. Other programs around the country can provide good insight into the implications of different loan options.
  - Loans are harder to market than cash rebates. Simple loan products with an easily understandable benefit, such as Jacksonville’s 0% interest rate, are best at attracting customer attention. This is the reason that PowerSaver may be a difficult tool for energy-efficiency programs to use: it’s complex and the interest rate is constantly adjusting, making it difficult to market to customers. It may not be necessary to offer a 0% interest rate to attract participation. For example, Charlottesville did not have a full IRB and still attracted dozens of customers to its financing option. Engaging the contractor base in marketing a financial program may help ensure that customers understand what products are available and are not intimidated by them. Contractor outreach was a feature used by both Charlottesville and Jacksonville, which were the most successful loan programs.
    - Financing should match what the appropriate customer segment needs. Awareness about the loan options is critically important to program uptake, and should be included as part of contractor sales and marketing training (as most participants heard about the program through a contractor). Involving lenders in the actual training would ensure that contractors have accurate information, and would build relationships between contractors and lenders. Additionally, this could allow for easy resolution of communication problems and lead to enhanced customer service, as well as giving contractors greater buy-in to the loan product. SEEA should monitor these relationships to ensure that customer interests are being met.

## Marketing and the Customer Experience

### Understanding the Customer

- JEA has invested in market research more as the program has matured. They will be able to apply the knowledge gained to other programs that have already worked through start-up issues, and may be able to gather better evidence about marketing effectiveness. Nashville and New Orleans are also moving in that direction. This is in contrast to Atlanta, where implementation difficulties may have masked the impact of their heavy investment in market research up front.
- Partial participants noted more vague reasons for signing up, such as an interest in learning about how they could save energy or money. Partial participants may be low on the decision curve, and need a stronger message about program benefits.
  - Make sure that marketing messages present concrete reasons for participating to help people move forward with decision making. Incorporating testimonials and other tools in the energy audit report could help those customers with less defined reasons for getting an audit commit to retrofit work and see it as beneficial.
- Survey data indicates that program participants fall into a more narrow classification than program managers might have expected. Most participants tended to be middle income, Caucasian Americans with a bachelor's degree. Underrepresented groups included those who are highly-educated, those with above-average incomes, and African Americans.
  - Other BBPs had similar results. This is an area that may warrant focus groups or other studies to ascertain why some customer segments have less participation. The sub-grantees should also review outreach tactics and materials. Churches or other community networks may be more effective for marketing to certain groups. Program materials may need to be redesigned or alternate versions developed to ensure they appeal to additional customer segments.
- Residential programs that relied on lessons learned from other programs or institutional knowledge of their community were often just as successful or more successful than programs that commissioned a market study, as in the case of LEAP and Nashville. LEAP, which runs the most successful program, has not conducted a formal market study, but works with an informal stakeholder advisory council. The council provides LEAP with valuable insights into their target market, without requiring them to spend resources on a market study.
  - For fast start-up, sub-grantees can leverage lessons learned from other programs, rather than investing time and money in their own formal market research.
  - Sub-grantees should develop stakeholder advisory councils with representatives from key partner organizations, including contractors, utilities, lenders, and related nonprofits. The sub-grantees should then consult the council on a regular basis regarding operations, program development, and program performance. These councils can help sub-grantees design and launch pilot programs and decide when and if more sophisticated market research is needed. The council stakeholders may also be able to offer information about untapped markets and how best to target them, with minimal expense to the program. This council will have the added benefit of

- strengthening the program's ties to the community, which helps program partners feel more invested in the program success.
- Commercial BB programs face a more complicated market than do residential programs, and less is known about the best way to structure them because few have been implemented. Our anecdotal surveys result in a surprising finding: customers valued the energy-saving information and advisory services more than the financial incentives, which suggests that the sub-grantees may not have been targeting appropriate commercial sector decision drivers.
    - Sub-grantees with commercial programs should invest in market analysis. SEEA may be well positioned to gather information at a regional level that would be relevant to all BBP commercial programs.

## Marketing Channels and Tactics

- Survey results show that contractors and word-of-mouth were the most effective marketing channels. Sub-grantees also put a lot of time and resources into local events and paid advertising; in fact, newspaper advertisements were frequently mentioned as the way participants, partial participants, and nonparticipants heard about the program. Understanding the response rate to different channels, the acquisition cost per customer, and the media cost per customer has the potential to illuminate the most effective methods for reaching participants.
  - Sub-grantees should conscientiously make an effort to track the impacts of their various marketing efforts. For example, tracking participation following an ad campaign or neighborhood event can provide insight into the effect of those efforts. Evaluating the cost of the initiative compared to the number of participants gained during that time period can help sub-grantees generate an acquisition cost per customer to gauge marketing cost-effectiveness. Additionally, simple applications like Google Analytics can provide a great deal of information about how viewers arrived at the Website and what they did while they were there.
  - Sub-grantees should try to maximize the impact of contractors and word-of-mouth. New Orleans' neighborhood home tours are a good example of this.

## Satisfaction

- For the most part, program services are being delivered well, and participants are highly satisfied. Contractor trust is still a major barrier to participation. However, the partial participants' concerns about contractors that limits their satisfaction needs to be addressed. Partial participants expressed doubts about the pricing of work proposed, the validity of the energy-efficiency recommendations, and whether or not the retrofit would be worthwhile.
  - Sub-grantees should manage customer expectations. By posting a sample energy audit on the program Website with text such as "*How to Understand your Audit*" could help customers know what to expect and prepare them for interpreting the results.

- Pricing of contractor and flexibility in contractor selection are difficult issues. These could be topics of sub-grantee workshops, focus groups, or stakeholder workshops to determine if they are issues, and if so, how to address them.

## Market Engagement and Workforce Development

- Programs with larger contractor networks, particularly those with open enrollment, found that a small subsection of their registered contractors became much more engaged in the program. Since contractors are a key marketing channel, programs could benefit from finding ways to leverage this resource and reward or recognize the most active contractors.
  - Program managers should seek contractor champions that they can reward with financial incentives, or with rewards that are no or low cost to the program, such as recognition on the program Website, once they have completed a certain number of jobs. Finding and recognizing champions encourages contractors to participate, and also ensure that contractors who participate in the program successfully are highly visible to other contractors.
- Frequent program changes frustrated both contractors and customers. Better communications on the part of most sub-grantees might have helped mitigate this frustration by ensuring contractors learned about changes in time to begin work with any customers who might no longer qualify. Charlottesville handled communications particularly well; they consulted with their stakeholder advisors on a regular basis and communicated changes in advance.
  - Sub-grantees should develop protocols for effectively communicating any changes in program requirements to contractors, utilities, and other partners. Such protocols should be developed with input from relevant stakeholders, including a consistent amount of time before the changes take place and establishing consistent communication channels. Such a process will allow contractors to better manage how they communicate the program benefits to their customers. It will also reduce contractor risk.
- Many sub-grantees developed program trainings, but few knew how to establish a QA/QC process that was mutually beneficial to contractor, customer, and program. Contractors are an important part of the program brand and trustworthiness. Requiring highly qualified contractors and enforcing the requirement preserves the program brand value, and makes the program more valuable to contractors who participate.
  - The sub-grantees can offer to have a trusted individual or organization (that is not a direct competitor) provide QA/QC as an educational benefit to contractors. They should document and consistently enforce a QA program that inspects for technical as well as financial irregularities.
- Sales training and collateral are important support tools for contractors. Contractors seem to need more training and support on specific topics such as sales, marketing, and technical skills; program staff also need more support in this area. Many contractors found networking opportunities to be very helpful.
  - SEEA could facilitate sales training on behalf of the sub-grantees.



## Community and Utility Partnerships

- SEEA has developed a breadth and depth of experience in utility-community partnerships that individual programs do not have. Also, SEEA was better at developing utility relationships than they were at developing lender relationships.
  - SEEA should document their experiences with utility-community partnerships to preserve that institutional knowledge. Case studies could include how relationships were initiated and nurtured, and how communication channels were kept open. SEEA may be able to use this experience and learning to support sub-grantees' relationships with utilities going forward. They can also apply some of these lessons to build partnerships with other large organizations.
- SEEA's experience with lenders is consistent with what other BBPs have experienced. Until loan volumes reach levels large enough to attract regional lenders, sub-grantees should look to community banks, credit unions, and CDFIs as the best choice for developing relationships with third-party lenders.
- It takes time to develop relationships with local lenders. The key in several cases was to get to know the lenders, create a dialogue, and identify internal champions (typically up-and-coming mid-level managers interested in green lending). Lenders in general do not move quickly and need many months to work through their decision-making process.
  - SEEA should continue fostering the financial institution relationships they've been developing. If a program intends to put out an RFP for lenders, it is important to reach out to them early in the process to preview the lending concept and get them comfortable with the idea.

## Program Sustainability

- Programs that actively built community partnerships with local organizations, neighborhood groups, and lenders appear to be best positioned for long-term viability. Community organizations were particularly effective at providing marketing support.
  - Programs might focus on developing one to two key partners in areas where they need more assistance, such as marketing or financing.
- Utility add-on program models had the advantage of quick start-up and the ability to leverage other utility services, such as QA, contractor networks, and market research. These resources allowed programs to start-up and achieve retrofits quickly, but came at a cost. These partnerships can restrain innovation and may not enhance market transformation.
- Not being able to charge fees has been an obstacle to establishing a sustainable program model. However, sub-grantees may be able to charge fees once the grant period expires.
  - Fees for services rendered is a viable way to generate revenue for administrative services. Michigan Saves, a non-profit offering a residential financing program, has successfully charged a per-loan fee for several years. Sub-grantees that consider charging a fee for services that were previously provided for free should have focus groups to determine appropriate fees and levels, as well as process around invoicing. Implementing this change will require ample communication with all affected parties.

## **APPENDICES**

## A. RESEARCHABLE QUESTIONS

**Table A-1. Researchable Questions: Program Design, Launch and Operations**

Key Areas of Investigation	Indicators	Data Sources
How effective is the program in driving demand for energy retrofits?	<ul style="list-style-type: none"> <li>• Performance to targets</li> <li>• Conversion rate</li> <li>• Cost/retrofit</li> <li>• Energy savings</li> </ul>	PM and Stakeholder Interviews Trade Ally Surveys Billing Analysis Engineering Analysis
Are customer needs and decision drivers understood?	<ul style="list-style-type: none"> <li>• Market studies conducted</li> <li>• Messages developed to target customer needs and decision drivers</li> <li>• Segment or targeting strategies are appropriate for addressing customer needs and decision drivers</li> <li>• Customers respond to marketing activities</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
Are market barriers identified and addressed?	<ul style="list-style-type: none"> <li>• Barriers addressed in design/strategy</li> <li>• Program design is sufficiently flexible to address unanticipated barriers</li> <li>• No new barriers created</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
Is the program logic and delivery flow effective?	<ul style="list-style-type: none"> <li>• Action/response assumptions valid</li> <li>• No bottlenecks in process</li> <li>• Acceptable transaction costs &amp; time</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
Does the organizational structure enable effective management and program success? City/subcontractor managed Utility alignment	<ul style="list-style-type: none"> <li>• Reporting alignment/authority</li> <li>• Time required for decisions</li> <li>• Roles and responsibilities understood and working effectively</li> <li>• Ability to influence and manage process steps and time required</li> <li>• Information flowing smoothly</li> </ul>	PM and Stakeholder Interviews
Are needed resources available to deliver the program?	<ul style="list-style-type: none"> <li>• Staff and leverage</li> <li>• Staff background and skills</li> <li>• Infrastructure               <ul style="list-style-type: none"> <li>- Information management/technology</li> <li>- Financial/progress reporting</li> <li>- Cash-flow management</li> </ul> </li> <li>• Funding</li> <li>• Financing options</li> <li>• Market or other information</li> </ul>	PM and Stakeholder Interviews
How do local/regional market factors affect the program's ability to achieve its goals?	<ul style="list-style-type: none"> <li>• Economy</li> <li>• Competing programs</li> <li>• Understanding of energy efficiency</li> <li>• Utility support/engagement</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys

**Table A-2. Researchable Questions: Marketing and the Customer Experience**

Key Areas of Investigation	Indicators	Data Sources
Are marketing activities and channels used reaching home and/or building owners effectively?	<ul style="list-style-type: none"> <li>• Level/frequency and reach</li> <li>• Overall response to program</li> <li>• Response following events/campaigns</li> <li>• Awareness of nonparticipants</li> <li>• Cost of acquiring participants</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
What was the impact of the Home Makeover Contest (and/or other major campaigns)	<ul style="list-style-type: none"> <li>• # of entries</li> <li>• # audits and retrofits generated by this promotion (or in timeframe)</li> <li>• Publicity</li> <li>• Leverage (city leaders, mailing list, etc.)</li> </ul>	PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
What lessons have been learned that might benefit others or change future outreach activities?	<ul style="list-style-type: none"> <li>• Traditional marketing</li> <li>• Program website</li> <li>• Community-based/social marketing</li> <li>• Collaboration with other organizations</li> <li>• Other innovative approaches</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
How did participants become aware of the program?	<ul style="list-style-type: none"> <li>• Customer recall of information sources</li> <li>• Use of tracking data</li> </ul>	Customer Surveys Trade Ally surveys
What or who was most influential in attracting the owner - To participate in the audit? - To complete the retrofit?	<ul style="list-style-type: none"> <li>• Messaging content addressed a need</li> <li>• Roles of program, contractor, utility, etc.</li> <li>• Cost/Savings/Financial options</li> <li>• Word-of-mouth/neighbors/friends</li> </ul>	Program materials review PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
How satisfied is the owner with the various program elements?	<ul style="list-style-type: none"> <li>• Overall satisfaction</li> <li>• Ratings of each step               <ul style="list-style-type: none"> <li>- Application</li> <li>- Audit</li> <li>- Retrofit</li> <li>- Rebate receipt</li> <li>- QA</li> </ul> </li> <li>• Time required</li> <li>• Improvements needed</li> <li>• Most frequently adopted upgrades</li> <li>• Cost and savings</li> <li>• Financing options</li> </ul>	Customer Surveys
How is the program affecting awareness, interest and perceptions?	<ul style="list-style-type: none"> <li>• Changes reported by consumers</li> <li>• Benefits perceived</li> <li>• Other actions taken</li> <li>• Communication to others by participants</li> </ul>	Customer Surveys
If used a financing option, how important was this in participating or in how much work was done?	<ul style="list-style-type: none"> <li>• Participation in retrofit</li> <li>• Number of actions taken</li> </ul>	Customer Surveys Database analysis

**Table A-3. Researchable Questions: Market Engagement and Effects**

Key Areas of Investigation	Indicators	Data Sources
How were effective relationships established with key market actors and allies? How has this helped or hindered program success?	<ul style="list-style-type: none"> <li>• Involvement of political entities</li> <li>• Utility collaboration/partnerships</li> <li>• Contractor participation/satisfaction</li> <li>• Educators/certification programs</li> <li>• Others</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys
Was workforce development evaluated and effectively implemented where needed?	<ul style="list-style-type: none"> <li>• Availability of certified contractors</li> <li>• Other workforce assessment(s)</li> <li>• Certification training offered</li> <li>• # new certifications</li> <li>• Other skill enhancement</li> <li>• Satisfaction with contractor work</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys
How effectively have contractors been engaged with the program?	<ul style="list-style-type: none"> <li>• Recruitment/qualification</li> <li>• Program training/adequacy</li> <li>• Audit and retrofit activity</li> <li>• Influence in recruiting participants &amp; conversion from audit to retrofit</li> <li>• Impact/benefit of vertical integration</li> <li>• Use of financing options</li> <li>• Customer satisfaction</li> <li>• QA/QC (including fraud detection)</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys Customer Surveys Database analysis
How has the program impacted the market for energy efficiency retrofits?	<ul style="list-style-type: none"> <li>• Perceptions of program (if any)</li> <li>• Perceptions of changes in customer interest in energy efficiency</li> <li>• Change in contractor business volume, profitability, competitiveness</li> <li>• Change in contractor practices</li> <li>• Change in the workforce</li> <li>• Change in related equipment sales</li> <li>• Impact on market barriers</li> <li>• Change in utility program participation</li> <li>• Influence of codes and standards</li> </ul>	PM and Stakeholder Interviews Customer Surveys Trade Ally surveys
How effectively have financing options been made available and used to benefit the program/owner?	<ul style="list-style-type: none"> <li>• Were existing loan options available?</li> <li>• What new options were introduced?</li> <li>• How many loans were processed as part of the program?</li> <li>• Did owners participate or adopt additional measures as a result of the loan availability?</li> <li>• What are typical loan characteristics: <ul style="list-style-type: none"> <li>- Average and range of amount</li> <li>- Terms (rate and time)</li> <li>- Loan performance</li> </ul> </li> <li>• Impact of program design and requirements</li> </ul>	PM and Stakeholder Interviews Customer Surveys Trade Ally surveys

**Table A-4. Researchable Questions: Program Sustainability and the Regional Role**

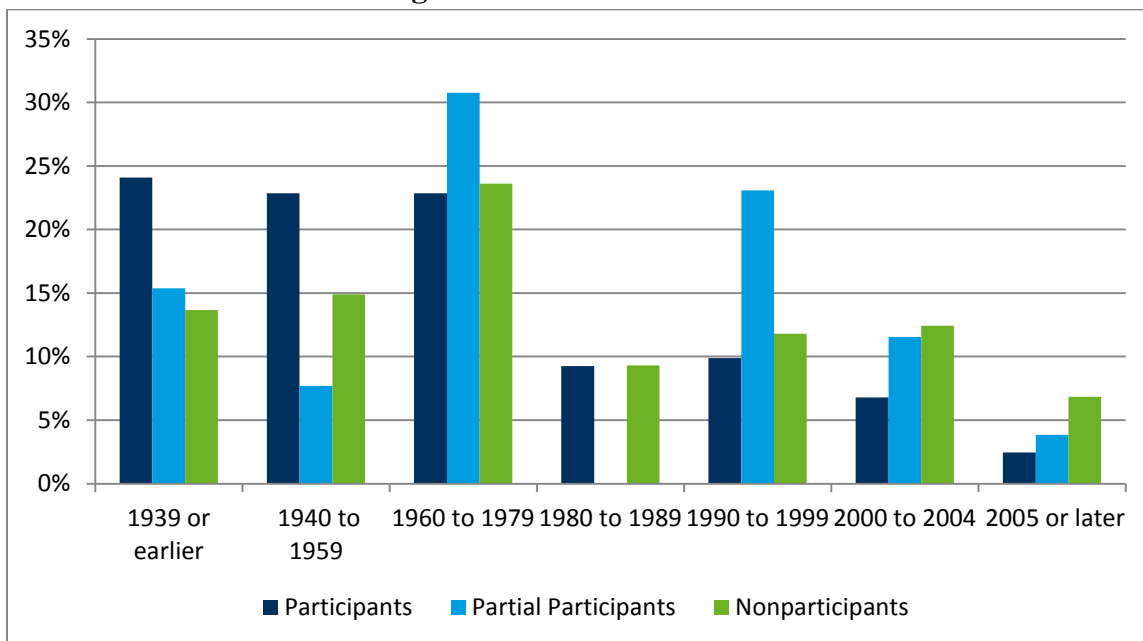
Key Areas of Investigation	Indicators	Data Sources
How is the program funded now?	<ul style="list-style-type: none"> <li>• Sources of funding (SEEA, SEP, etc.)</li> <li>• Restrictions on use of funds</li> <li>• Renewal opportunities</li> <li>• Complexities or advantages</li> </ul>	PM and Stakeholder Interviews
Is the allocation of funds to different activities effective and sustainable?	<ul style="list-style-type: none"> <li>• \$/% Cost by spend category</li> <li>• Cost/unit retrofit</li> <li>• Startup vs. ongoing costs</li> <li>• Administrative percentage</li> <li>• Relationships with bank and credit union partners</li> </ul>	PM and Stakeholder Interviews Database analysis
What do contractors and energy advisors think it will take to sustain the program?	<ul style="list-style-type: none"> <li>• Most critical elements</li> <li>• Additional needs</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys
How has regional training and support impacted the program success and staff capabilities	<ul style="list-style-type: none"> <li>• Staff background/experience</li> <li>• Training provided</li> <li>• Support activities               <ul style="list-style-type: none"> <li>- working well</li> <li>- could be better if...</li> </ul> </li> <li>• Perceived benefits of training/support</li> <li>• Unmet or future needs</li> </ul>	PM and Stakeholder Interviews Trade Ally surveys
How have DOE activities and requirements impacted the program success and staff capabilities?	<ul style="list-style-type: none"> <li>• DOE conferences</li> <li>• DOE communications</li> <li>• DOE reporting requirements</li> <li>• DOE guidelines</li> </ul>	PM and Stakeholder Interviews
What changes would be required for the program to become self-sustaining?	<ul style="list-style-type: none"> <li>• Design</li> <li>• Fees/funding</li> <li>• Dependencies</li> </ul>	PM and Stakeholder Interviews
What is expected to happen to the program at the end of the DOE funding period and what will enable this?	<ul style="list-style-type: none"> <li>• Future plans</li> <li>• New funding/revenue sources</li> <li>• Continuation/Expansion/Closure</li> </ul>	PM and Stakeholder Interviews

## B.SURVEY RESULTS

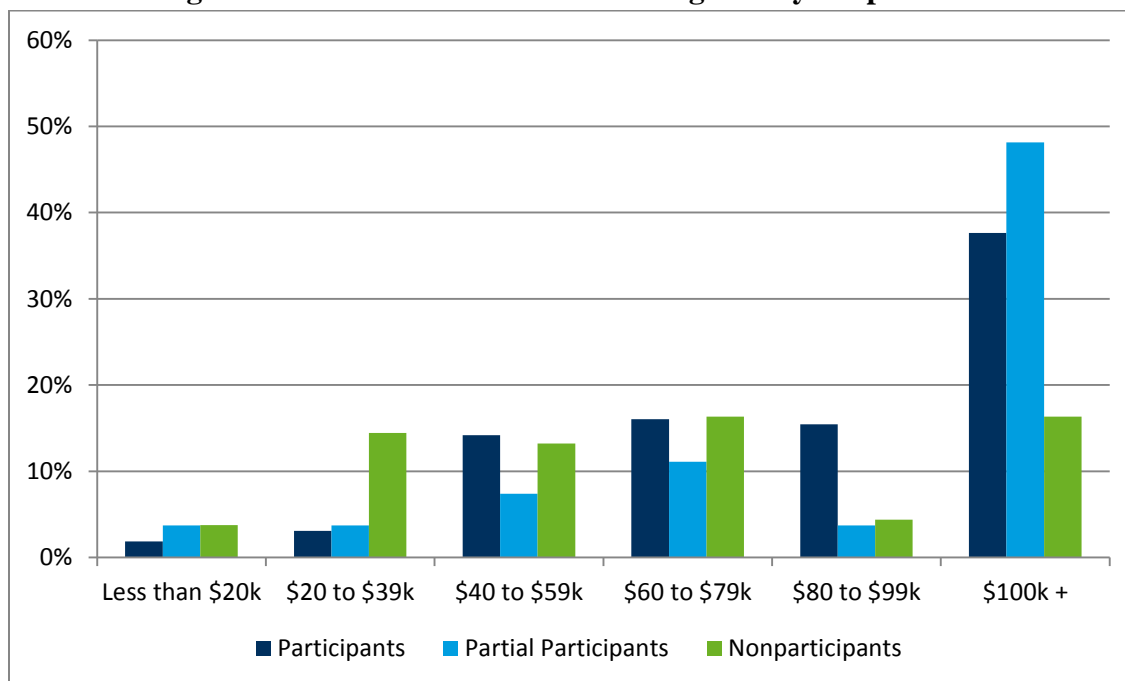
### Demographic Findings

Figures below present the results from the participant, partial participant, and nonparticipant surveys implemented by Cadmus.

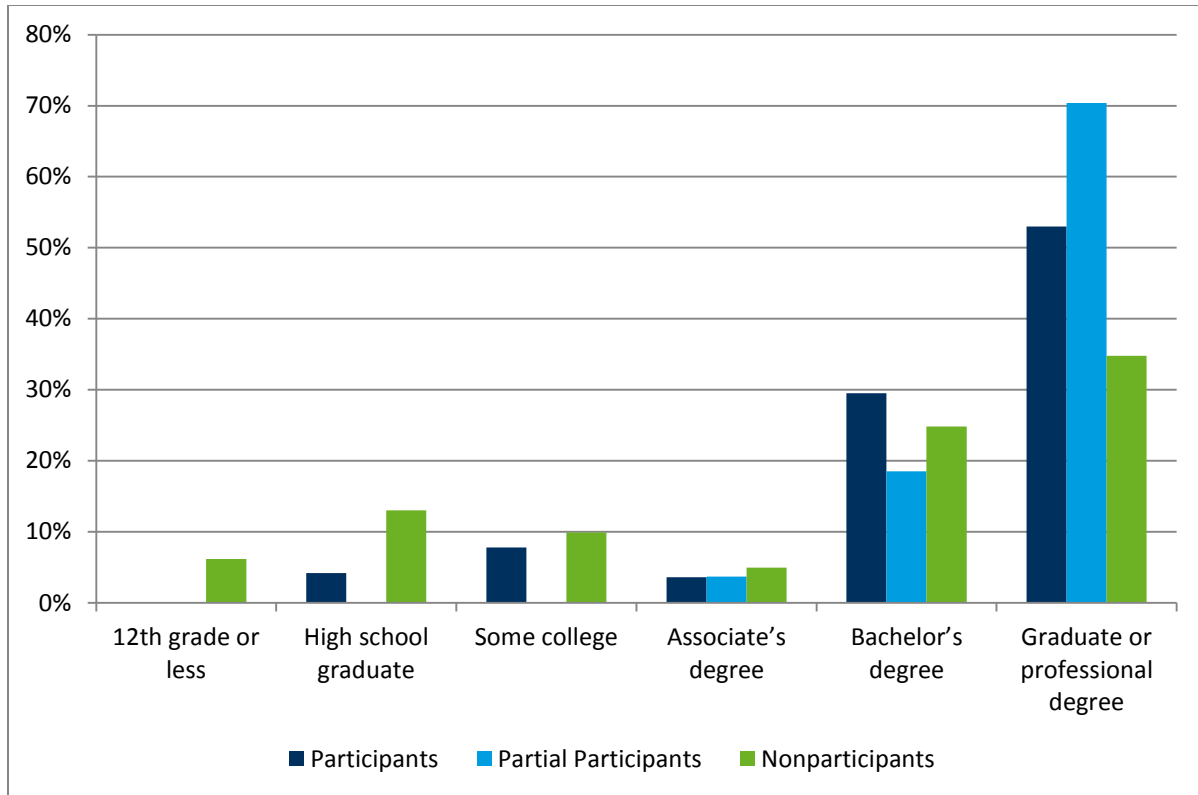
**Figure B-1. Year House Built**



**Figure B-2. Income Distribution Among Survey Respondents**

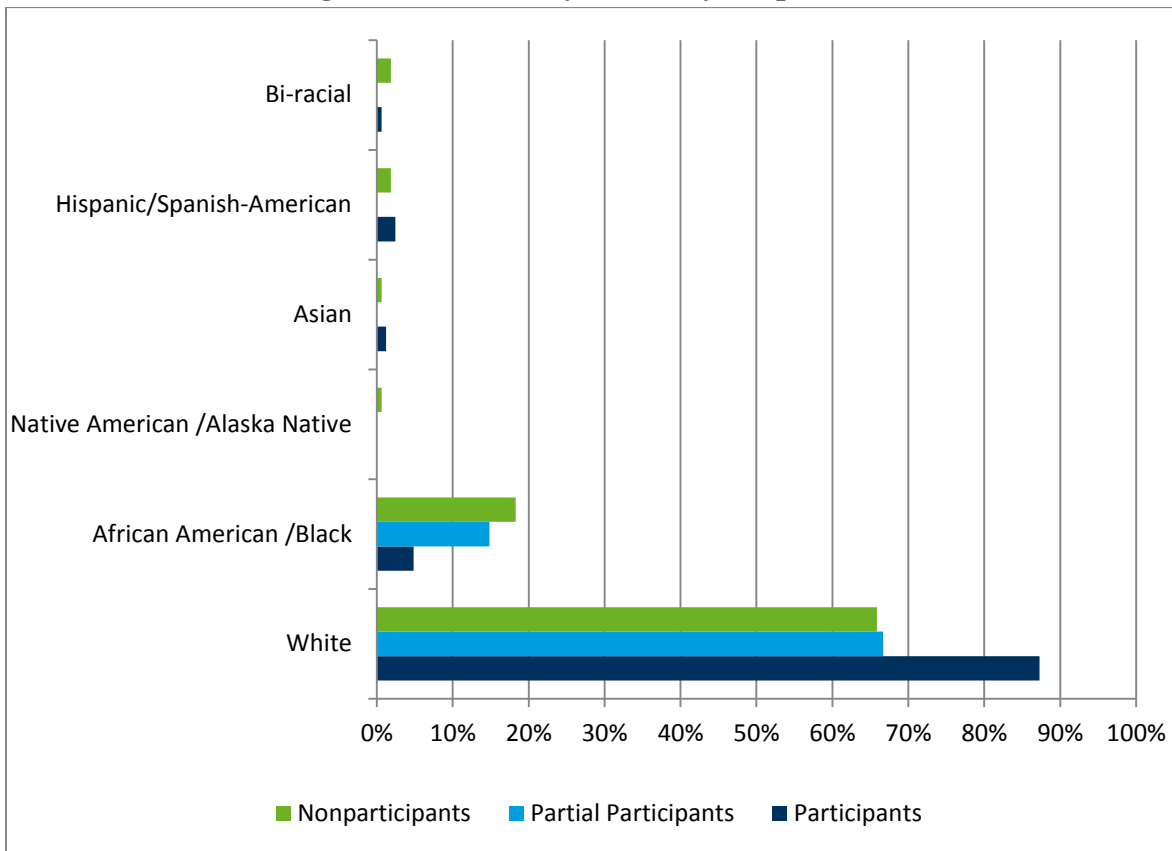


**Figure B-3. Highest Education Level Attained by Survey Respondents**





**Figure B-4. Ethnicity of Survey Respondents**



**Figure B-5. Age of Survey Respondents**

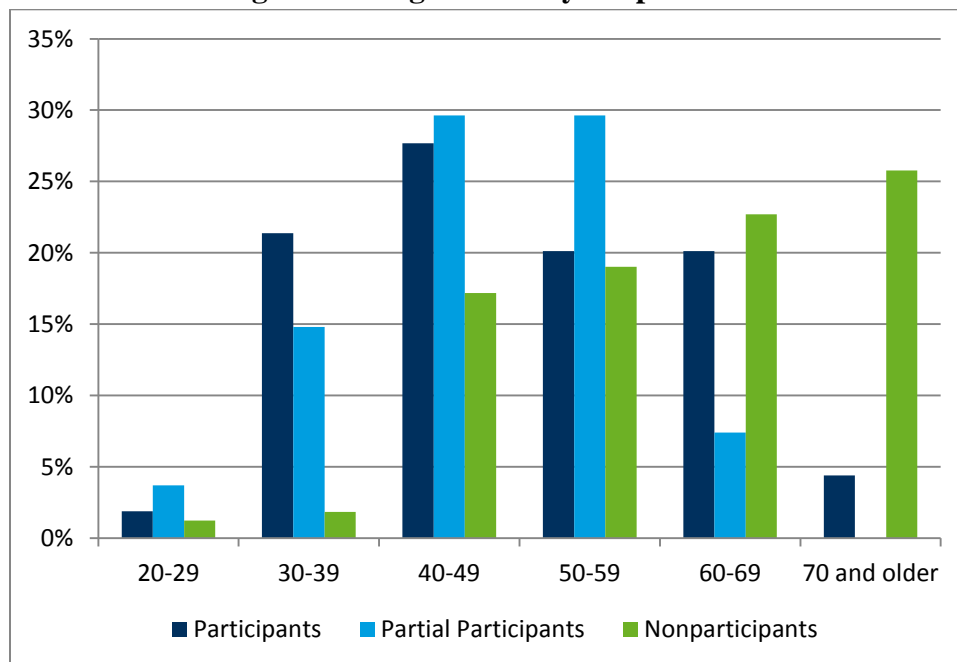


Table B-1 illustrates the different sources of funding (excluding in-kind marketing and outreach support) utilized by sub-grantees.

**Table B-1. Sub-grantee Source of Funds\***

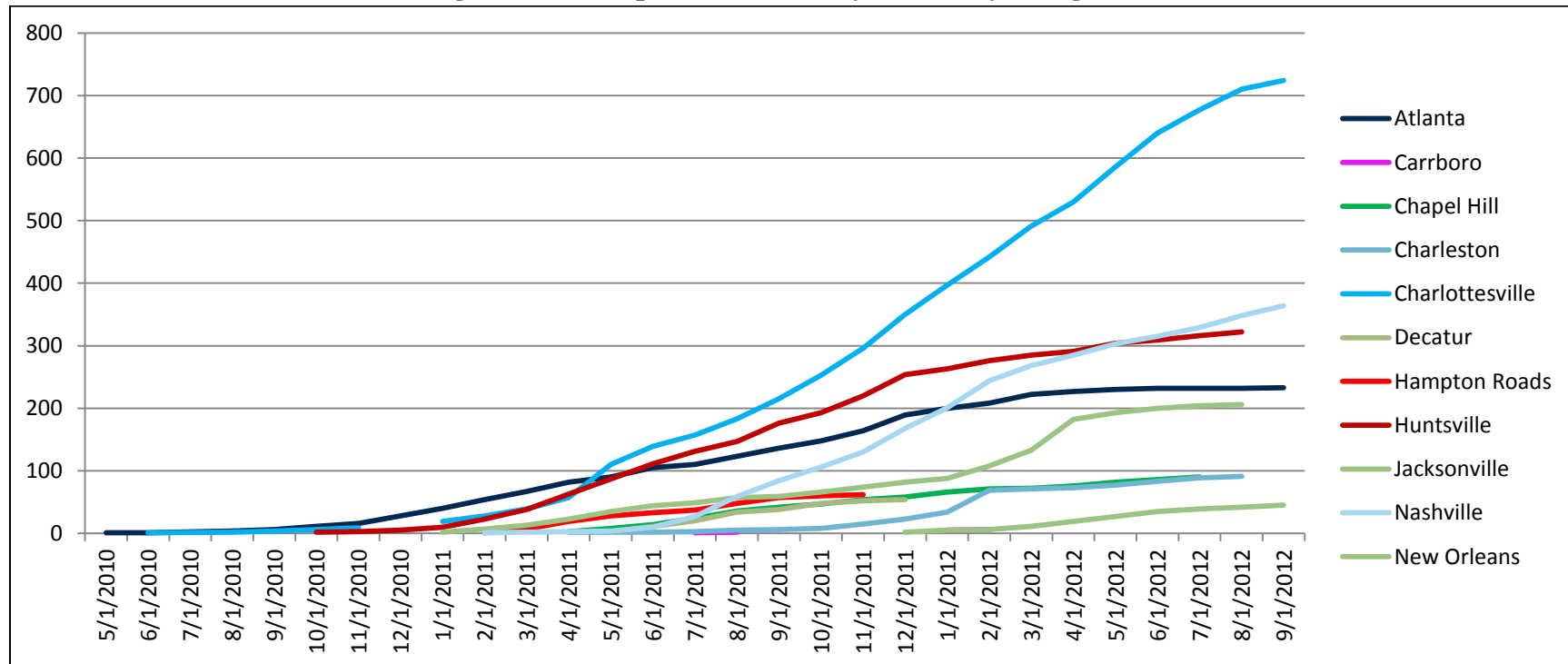
	BBP Initial Allocation	EECBG Formula	SEP	Other
Atlanta	\$1,200,000	X		U
Carrboro	\$297,005	X		F
Chapel Hill	\$950,000	X		F
Charleston	\$937,005			F
Charlotte	\$607,005	X		
Charlottesville	\$2,157,005		X	F, O
Decatur	\$182,010			U
Hampton Roads	\$500,000			
Huntsville	\$1,007,005		X	F
Jacksonville	\$1,220,000			F, O
Nashville	\$887,005			F
New Orleans	\$1,630,000	X (\$600k for LLR)		U, F
USVI	\$207,005			

\* O=Sub-grantee received other direct funding U = utility rebates (where SEEA sub-grantee is not the utility). F = related financing program available that is not supported by SEEA funds.

### C. RETROFIT RESULTS

Figure C-1 shows cumulative completed retrofits by sub-grantee by month. Evident in the slope of each line is a flat start-up phase when the program was being designed and partnerships were being established. Then, there is an inflection point when retrofits begin, and usually a second inflection when the pace of completed retrofits begins to decline. In some cases, such as Huntsville, the second inflection point appears to be correlated with a change in program design. For example, Huntsville retrofits taper off shortly after Huntsville launched the WISE GOLD program. In other cases, such as Atlanta, it is not clear what may have caused the slow-down in completed retrofits. One possible explanation is that the community had worked through its pool of early adopters, and will need to work harder to generate retrofits going forward. However, it is likely that the program would need to operate for a longer period of time for patterns in participation and the impact of certain program design changes to be conclusively identified.

**Figure C-1. Completed Retrofits by Month, by Sub-grantee**



Note: Jacksonville's grant is closed, but they continue to report retrofits.

## D. LEVERAGE OF GRANT DOLLARS

In the BB grant agreement, the DOE set a leverage target of 5:1, meaning they wanted the program established through the grant to utilize five dollars from other sources for every BB grant dollar spent to effect energy efficiency savings attributable to the grant. According to the Better Buildings Neighborhood Program Grant Recipient Management Handbook, “DOE considers this leveraging to include building owner contributions, financial institution funds, partner contributions, in-kind contributions, project revenues, other federal funds (including other DOE funds), and state funds. For example, Better Buildings grant recipients’ projects that leverage DOE Weatherization Assistance Program funds and associated resources could constitute one example of a source of leveraged funds.” As many of the types of funding to be counted as leverage were not controlled by SEEA, and so were not able to be tracked through the BB Program, we are not able to evaluate the total amount of leveraged dollars. We have attempted to identify the major sources of leveraged funds, and where possible indicated the maximum amount leveraged.

We have identified the following major categories of leveraged funds:

- Customer contributions (including loan amount, where available)
- Cyclical financing products (loan loss reserve funds and revolving loan funds) not created by sub-grantees
- Utility programs operated in collaboration with BB, or leveraged by sub-grantee programs
- Funding for other state and local programs operated in collaboration with BB

### Reported Funds

The sub-grantee monthly reports tracked some leveraged funds, including direct customer expenditure net of incentives, some utility incentives, loan amounts, tax credits, and other funding. The reported leverage is present in Table D1. Reported Leveraged Funds

**Table D1. Reported Leveraged Funds**

	Customer Cash	Loan Amount	Utility or Other Rebate	Tax Credit	Other Leverage	Total
Audit	\$64,576				\$41,950	\$106,526
Retrofit	\$4,334,715	\$1,289,135	\$474,945	\$71,402	\$248,712	\$6,418,908
Renewable	\$62,885				\$70,978	\$133,863
Total	\$4,462,175	\$1,289,135	\$474,945	\$71,402	\$361,639	<b>\$6,659,296</b>

### Unreported Leverage

Most of the dollars that could be considered leveraged by the SEEA grant dollars have not been reported or tracked by sub-grantees or SEEA. Below we identify the probable sources of leveraged funds.

## **Customer Contributions**

Most customer contributions were recorded by the sub-grantees and report to sEEA and the DOE. Not captured were loan amounts through UVA CCU, which did not provide detail on loans financed. We estimate that approximately 80 loans have been issued through either PowerSaver or the GreenCents loan programs.

## **Financing Products**

Funds loaned to a customer to pay for a retrofit, plus interest on the loan, fall into the category of customer contribution, since the customer has committed to repay the amount. However, LLRs and RLFs, common in the BBP, involve additional funds that should be considered leverage. In the case of a dedicated Loan Loss Reserve fund, where a pool of funding has been set aside to support a future stream of loans, the entire amount of the fund should count as leverage. For a revolving loan fund, the total amount of leverage is the actual amount loaned (counted as customer contribution, since the customer has committed to repay the amount), plus any amount remaining in the fund that could be used to financing a retrofit. SEEA leveraged an LLRs in new Orleans, and RLFs in Huntsville and Carrboro.

Several of the SEEA loan programs are PowerSaver programs. PowerSaver loans are backed by a guarantee from the federal government. In this case, the funds are not actually set aside. The government promises to make them available if and when a default occurs. Under the PowerSaver program, the loan amount certainly counts as leverage, but the leverage value of the federal guarantee is not clear. As no funds are set aside, one might argue no money is leveraged.

## **Examples of Utility Programs**

SEEA sub-grantees frequently designed their programs to fit into or on top of existing utility rebate programs. The utility dollars spent as incentives, as well as some portion of the marketing and administrative budget should be considered leverage. The rebate dollars are

- Jacksonville
- Georgia Power (Atlanta)
- Entergy New Orleans

## **Examples of Other State, Local, and Not-for-Profit Programs**

- SEP-funded programs in Huntsville and Charlottesville
- Charlottesville Energize 250
- Multiple not-for-profit partners collaborated to market and administer sub-grantee programs