UTILITY-ADMINISTERED LOW-INCOME PROGRAMS IN THE SOUTHEAST

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SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

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About the Southeast Energy Efficiency Alliance (SEEA)

The Southeast Energy Efficiency Alliance (SEEA) is one of six regional energy efficiency organizations in the United States working to transform the energy efficiency marketplace through collaborative public policy, thought leadership, outreach programs and technical advisory services. SEEA promotes energy efficiency as a catalyst for economic growth, workforce development and energy security across 11 southeastern states. These states include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

For additional information, visit www.seealliance.org.

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Executive Summary

Historically marked by high poverty rates, the Southeast continues to advance in its pursuit of comprehensive, energy efficiency offerings to serve low-income ratepayers. SEEA has produced this landscape assessment to provide a snapshot of current state and identify clear trends and opportunities as the region moves forward.

Among other contributors, higher than average energy burden plays a role in regional poverty. Energy burden, expressed as total annual utility spending on electricity and heating fuels as a percent of total annual gross household income, provides a useful measure of energy affordability, and its impacts on financial well-being. In the Southeast's largest cities, median energy burden is higher than the national average, and for low-income households, it is above the national threshold for a "stressful" energy burden. In general, these figures are a product of multiple factors – most obviously, lower earnings. However, another key driver of these numbers is high energy use, reflecting older, less-efficient homes and appliances, in addition to other influencers.

In recent years, southeastern utilities and policy makers have moved to address the dual issues of poverty and energy burden. This has been reflected in both the volume of policy directives surrounding this issue and the significant expansion of low-income energy efficiency programs.

A. Methodology

Due to limited data availability, SEEA chose to focus this analysis primarily on ratepayer-funded, low-income energy efficiency programs delivered by investor-owned utilities. In general, investor-owned utilities have more stringent reporting requirements due to their oversight by state utility regulators, and program plans and evaluation are publicly available. While recognizing that a variety of programmatic offerings may serve low-income communities, SEEA focused on programs that specifically target low-income households, over the timeframe 2012 to 2015, and collected a number of program design and performance indicators through a combination of surveys, interviews and supplemental research.

B. Program Coverage and Design

Using the methods described above, SEEA identified 28 low-income energy efficiency programs in eight of the eleven southeastern states. From a utility-level perspective, program coverage is fairly thorough, with the majority of the Southeast's large investor-owned utilities currently offering some kind of low-income program, and the majority of the Southeast's top ten largest metropolitan statistical areas (MSAs) being served by an electric utility that offers a low-income program. However, many of the most impoverished MSAs in the Southeast are not served by utility with low-income program offerings as defined in this paper, and data on rural service is less readily available.

Of the programs surveyed, the majority have launched within the past decade. However, some programs are much more well-established, with a handful just launched or in the pilot phase. To qualify customers,

the majority of programs currently operating in the Southeast reference some share of federal poverty guidelines as a qualification threshold.

Low-income program models tend to provide low- or no-cost measures to homeowners up to a certain threshold, or cap. Nearly half of the programs surveyed included in their original filing some sort of investment cap per home, or "not to exceed" limit. Of these programs, per-unit investment caps ranged from $1,105 to $4,000, with a median regional value of $2,000. Some utilities require a co-payment from the customer, but most do not.

Programs were fairly evenly split between weatherization and direct-install models. The most popular measures in southeastern low-income programs, energy-efficient light bulbs and low-flow showerheads, are often provided in both direct-install and weatherization programs.

The majority of southeastern public service commissions do not require low-income programs to pass cost-effectiveness tests, although in some cases, there is a lack of clarity regarding these requirements.

Utilities' experiences with marketing and outreach approaches differ substantially. For instance, some identified partnerships with community action agencies as critical, while others saw them as a potential administrative roadblock. Frequently cited success factors include open communication with partners and allies, as well as the flexibility to evolve these approaches over time.

C. Program Impacts

SEEA also collected information on program impacts as a rough measure of program investment, reach and effectiveness. In terms of programmatic investment, southeastern utilities spend slightly less on low-income programs as a share of their residential portfolios than do their national peers, with a median value of 10 percent of residential expenditures, compared to 18 percent nationally.

Southeastern low-income programs are typically more expensive than other residential programs relative to the energy savings they achieve. However, taken as a whole, southeastern low-income programs are less expensive than those run elsewhere in the country, with a median levelized value of $0.09, versus $0.13 nationally.

While the level of participation achieved relative to as-filed values ranges substantially, the programs analyzed met a median value of 69 percent of as-filed participation goals and 76 percent of as-filed savings.

D. Clean Energy Incentive Program

While EPA's Clean Power Plan is currently stayed, a handful of southeastern states are evaluating strategies to more effectively leverage the incentives available through the Clean Energy Incentive Program (CEIP). By aggregating the level of investment in the low-income programs reviewed in this paper, SEEA found that current annual investment levels will only allow southeastern utilities to access approximately 30 percent of the funding available through the CEIP, based on a $4/ton market allowance value. With the addition of weatherization assistance program (WAP) programming, this number roughly doubles, but still leaves CEIP dollars on the

table. This suggests that southeastern states and utilities interested in tapping into this funding pool have an important opportunity to ramp up programs to be able to fully access this funding.

E. Recommendations for Future Research

SEEA considers this assessment a "first step" in better understanding the opportunities to advance energy savings for low-income residents and hopes that it will build momentum for future research in this area. In this paper, SEEA provides a number of recommendations for future research to further the collective understanding of the Southeast's low-income energy efficiency programs.

Introduction

A. Poverty in the Southeast

Regional Poverty Rates

Historically, the southeastern United States[1] has been characterized by high levels of poverty. In a region that is home to Appalachia, the Mississippi Delta and other geographies often associated with localized economic challenges, an average of 17.3 percent of individuals in the Southeast live in poverty, relative to 14.9 percent nationally (Short 2014).

Table 1: Percentage of People in Poverty by State (2011-2013 Average)

State	Percent in Poverty
Alabama	16.2%
Arkansas	18.7%
Florida	15.1%
Georgia	17.6%
Kentucky	18.1%
Louisiana	20.6%
Mississippi	20.7%
North Carolina	17.2%
South Carolina	17.3%
Tennessee	17.8%
Virginia	10.9%
Regional Average	**17.3%**
National Average	**14.9%**

Source: Short (2014)

Poverty and Energy Burden

A contributor to the Southeast's high poverty rates is energy expenditures. The Southeast has among the highest per capita electricity consumption values and a far higher level of energy intensity, or the amount of energy consumed to produce one dollar of gross state product.[2] Since 1990, energy use per person in this region has outpaced the national average (SEEA 2013).

A term frequently used to describe the impact of energy usage on household-level poverty is "energy burden." Energy burden provides a useful measure of energy affordability, expressed as total annual utility spending on electricity and heating fuels as a percent of total annual gross household income. While there is no single, uniform threshold to indicate a high home energy burden, numerous researchers have

[1] For purposes of this paper, SEEA defines the Southeast as the eleven states within the SEEA footprint: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.
[2] Average energy use per capita in the Southeast is approximately 372 million BTU versus 353 million BTU nationally (EIA 2013). Average energy intensity in southeastern states is 9.3 thousand BTU per dollar of GDP, versus 6.2 thousand BTU per dollar nationally (EIA 2015).

identified six percent of gross household income as "unaffordable." In a 2016 analysis, the American Council for an Energy-Efficient Economy (ACEEE) identified a southeastern median energy burden of four percent within its largest metropolitan statistical areas (MSAs), relative to the national median of 3.5 percent. In addition, the report observed that low-income households in the Southeast experience a median 8.2 percent energy burden, relative to a national median of 7.2 percent (Drehobl and Ross 2016).

In general, these figures are a product of multiple factors – most obviously, lower earnings. However, the other key driver of these numbers is high energy use, which is a result of various contributors such as older, less-efficient homes and appliances. Taken as a whole, this metric points to significant untapped energy-saving opportunities for low-income communities in the Southeast.

B. Southeastern Experience with Low-income Energy Efficiency Programs

History

Harkening back to the days of rural electrification, utilities operating in the Southeast tend to maintain strong dual economic development and poverty alleviation focuses. In recent years, this focus has converged with energy efficiency program growth, allowing utilities to provide a valuable customer service while also empowering low-income customers to participate more fully in their local economies by freeing up funds previously spent on utility bill payment.

Utility-administered energy efficiency programs, while generally considered "newer" to the Southeast, have ramped up significantly in the past decade. Since 2007, the Southeast region has committed $611 million in annual ratepayer dollars to energy efficiency programs – an increase of 279 percent over seven years (SEEA 2016).

While utility ratepayer assistance has been in place for many years, recent efforts to alleviate localized poverty have often incorporated utility-administered, low-income energy efficiency programs. According to ACEEE, of all spending on residential energy efficiency programs in 2014, 18 percent of electric efficiency expenditures and 34 percent of natural gas efficiency spending went toward low-income programs (Cluett et al. 2016). Typically, utility energy efficiency programs are designed and delivered at the rate class level, meaning a "residential program" is typically open to any and all ratepayers within the residential class, regardless of income level.

Policy Directives

In recent years, policy makers within the energy sector have increasingly turned their attention to energy efficiency opportunities within the low-income sector. Recent policy directives regarding low-income energy efficiency include the following:

- In Florida, the Public Service Commission has established low-income programming as a priority for utilities subject to targets under the Florida Energy Efficiency and Conservation Act (FEECA). In its final order approving energy efficiency goals for these utilities, the Commission articulated that, "FEECA Utilities shall be required to address measures targeted for this [low-income]

customer segment in their proposed plans during the program development stage of this proceeding (FPSC 2014)."

- The Tennessee Valley Authority (TVA), which serves customers in seven southeastern states, has focused the recent activities of its Energy Efficiency Information Exchange (EEIX) advisory group on developing ideas for programs that serve low-income end-use customers, in addition to rolling out a two-year, multi-city low-income pilot.[3]
- The Arkansas Public Service Commission recently instituted a process within its Parties Working Collaboratively (PWC) utility working group to streamline and standardize the weatherization programs offered by its investor-owned utilities.[4]
- In 2015, the Virginia General Assembly passed legislation requiring pilot programs for energy assistance and weatherization for low income, elderly and disabled individuals in their respective service territories (Virginia General Assembly 2015). This legislation was further strengthened by Executive Directive 3, issued by Governor Terry McAuliffe with specific implementation instructions for a number of Virginia's state agencies (Commonwealth of Virginia 2015).
- At the national level, the U.S. Environmental Protection Agency (EPA) has developed the Clean Energy Incentive Program (CEIP), which provides early-action incentives for energy efficiency in low-income communities as part of its Clean Power Plan (CPP), the first-ever national standards for controlling carbon dioxide emissions from large sources in the electric power sector. While the CPP is currently stayed while litigation is pending, the CEIP remains a partial driver of low-income programming efforts.

Even as policy and programmatic interest in low-income energy efficiency opportunities grows, few regional resources exist to support these efforts, and data regarding the performance and trajectory of current programs are scarce and often inconsistent. SEEA has developed this paper in order to provide a snapshot of current activity in the region, establishing a baseline from which future research and analysis can proceed. Our scope and research methodology are described in the section that follows.

[3] TVA's Extreme Energy Makeovers (EEM) pilot program is a collection of seven projects created to provide cost-effective, deep-energy retrofits focusing on a whole house approach to achieve maximum energy savings. The target for EEM are homes in low income communities that are at least 20 years old with a goal to achieve a 25 percent energy reduction of the home's energy use. The estimated energy savings is 1,000 MWh/year at approximately $10/square foot. TVA will invest approximately $40 million investment over two years in these low-income projects.

[4] While not explicitly classified as low-income programs, as described later in this paper, Arkansas' utility weatherization programs tend to reach a predominantly low-income customer base. Arkansas' utilities tend to classify these customers as "hard to reach," rather than "low income."

Research Methodology

A. Scope of Analysis

While a variety of policies and programs serve the low-income sector in the Southeast, varying degrees of information are available for each. As a result, SEEA chose to focus this analysis on ratepayer-funded, low-income energy efficiency programs delivered by investor-owned utilities. In general, investor-owned utilities have more stringent reporting requirements due to their oversight by state utility regulators, and program plans and evaluation are publicly available. Numerous cooperative and municipal utilities in the Southeast administer programs that address low-income customer needs; however, they are excluded from this analysis based on generally limited data availability.[5] SEEA has included only a handful of municipal utilities in this analysis – all of which report on their annual activities as covered utilities under the Florida Energy Efficiency and Conservation Act (FEECA).

In addition, because electric energy efficiency programs are more widely available in SEEA's footprint than natural gas efficiency programs, this paper focuses on electric efficiency programs. However, it is important to note that the majority of these programs also result in some level of non-electric savings for customers that use other fuels. For example, a weatherization program that increases home envelope performance for improved summer air conditioning performance, will also have increased winter heating performance and reduce natural gas or other heating fuels during winter.

In general, the term "low-income program" tends to describe energy efficiency offerings for which income level is a qualifying criterion. In the context of this analysis, SEEA focused on income-qualified programs, with the exception of the Arkansas Weatherization Program (AWP). Although it is not classified as a low-income program or exclusively means-tested, AWP has been established to primarily serve low-income customers. For instance, the most recent program evaluation for AWP states that, "AWP customers largely continued to be low-income ratepayers, primarily due to the required co-pays," which may be covered by DOE for WAP-eligible customer, but otherwise, are the homeowner's responsibility (Central Arkansas Development Council 2016).

In some cases, utilities may not break out their low-income offerings as a separate programmatic entity; instead, they may offer them as a tier or subset of other residential programs. Entergy Mississippi exemplifies this approach; within each of their low-income Quick Start programs, the company offers a dedicated low-income pathway. However, because these tiers are not filed separately, SEEA has not included them in the scope of this analysis.

Several of the programs assessed in this paper serve both single-family and multifamily homes. Still other programs specifically serve the multifamily market. While there is significant overlap between low-income and multifamily households, this paper focuses on the former. Extensive discussion of multifamily programming in the Southeast can be found in Fournier et al. (2016). In addition, a handful of southeastern utilities offer programs that can anecdotally be said to serve low-income ratepayers – for example, programs that address manufactured housing – but which are not included in this analysis.

[5] Exceptions include Orlando Utilities Commission and JEA, which report savings to the Florida Public Service Commission due to their inclusion in Florida Energy Efficiency and Conservation Act requirements.

The filing and evaluation cycles for programs analyzed vary from state to state, and from utility to utility. For the purposes of this paper, SEEA associated each program with the year for which it covered the most calendar days. For instance, SEEA associated programs in Louisiana and Mississippi that were launched at the end of 2014 with the 2015 program year, which accounted for more than half of the calendar days in which these programs ran.

SEEA considered the three most recent program years (2012-2014) for which all programs included had an evaluation conducted. A handful of programs launched during this timeframe, and some launched in 2015. For the 2015 program year, SEEA utilized as-filed projections for instances in which evaluated results were not yet available for all of the programs. In cases where neither was available, SEEA utilized results from 2014 as a rough estimate.

B. Data Sources

SEEA's analysis largely drew from program plans, evaluations and cost recovery filings available via public service commission or public utility commission websites. In certain cases, SEEA supplemented this information with data pulled from utility websites. SEEA gathered data on spending, savings and participation from each program for years in which they were operating. SEEA calculated cost metrics in 2012 dollars, and annual incremental net savings at the meter. Programs for which this level of detail was not explicitly articulated were assumed to have both of these characteristics.

To verify data collected and gain additional insight into the qualitative aspects of program administration, SEEA contacted individual utility program administrators. To ensure consistency in data collection, SEEA developed a survey, included as Appendix B to this paper. Some program administrators chose to respond to this survey via email; others asked to be interviewed by phone.

C. Program Design Metrics

For each program included, SEEA gathered information on the following:

- Program name
- Program start date
- Program description
- Program measure mix
- Program eligibility requirements
- Per-unit spending caps

In many cases, programs have gone through multiple iterations, often changing names, measure mix and other key parameters. For purposes of this paper, SEEA considered program iterations over time as one unit (one program) unless the program had been fundamentally changed, as in Dominion Virginia's Low Income Program, which was discontinued and replaced by a new Income- and Age-Qualified Program. Where programs have only changed slightly, SEEA chose to include program names, descriptions and measure mix from the most recent iteration.

In cases where multiple utilities paid into the same program but reported separately, SEEA considered each utility's efforts as a separate program.

SEEA also reviewed key findings around challenges and successes for utilities that responded to SEEA's data request, or for which this information was readily available from program evaluations or other documentation.

D. Performance Metrics

SEEA examined a handful of performance metrics for each of the programs surveyed, including the following:

- Share of residential portfolio investment
- First-year cost
- Levelized program administrator cost of saved energy (CSE)[6]
- Share of planned participation

Specific details regarding SEEA's calculation of these metrics is available in each section.

E. Data Limitations

Evaluation and reporting practices employed by utilities serving the Southeast vary significantly. Developing an "apples to apples" comparison across states and utility program administrators can be a complex exercise. Utilities have a range of evaluation and reporting cycles, which complicated the data gathering process for the 2015 program year. Required reporting metrics vary; for instance, most utilities in the Southeast report net savings, but a handful report gross savings. Some report savings at the meter, while others report savings at the generator and still others report both.

In some cases, specific metrics were not available consistently for every program year. For instance, participation values were not publicly available for some programs, while spending was not available for others. Throughout this document, SEEA has noted the number of programs that provided each metric.

[6] The levelized cost of saved energy (LCSE) assesses the cost of acquiring a single year of annualized incremental energy savings. In this paper, SEEA considers the LCSE from a utility or program administrator perspective. Program administrator costs include administrative, education, marketing, outreach and evaluation, measurement and verification (EM&V) costs, in addition to financial incentives paid to customers or contractors.

Program Coverage and Design

A. Program Coverage

To begin, SEEA assessed the general availability of low-income programs across the Southeast from a number of perspectives. SEEA found that 28 publicly filed, electric utility-administered low-income programs are available in eight of SEEA's 11 states, and collected information on the following programs for as many years between 2012 and 2015 for which data were available.[7]

Table 2. Low-Income Energy Efficiency Programs in the Southeast

State	Utility	Program Name
Arkansas	Entergy Arkansas	Arkansas Weatherization Program
Arkansas	Southwestern Electric Power Company (SWEPCO)	Arkansas Weatherization Program
Arkansas	Oklahoma Gas and Electric (OG&E)	Arkansas Weatherization Program
Arkansas	Empire District Electric Company (Empire)	Arkansas Weatherization Program
Arkansas	OG&E	OG&E Weatherization Program
Arkansas	Empire	Residential Weatherization Program
Florida	Florida Power & Light	Residential Low-Income Weatherization
Florida	Duke/Progress Energy Florida[8]	Low-Income Weatherization Assistance
Florida	Duke/Progress Energy Florida	Neighborhood Energy Saver
Florida	Gulf Power Company	Residential Community Energy Saver
Florida	Orlando Utilities Commission (OUC)	Efficiency Delivered (Previously Home Energy Fix-up)
Florida	JEA	Neighborhood Efficiency Program
Florida	Tampa Electric	Residential Weatherization and Agency Outreach
Kentucky	Louisville Gas & Electric Company/ Kentucky Utilities Company (LG&E/KU)	Residential Low-Income Weatherization (WeCare)
Kentucky	Kentucky Power	Targeted Energy Efficiency
Kentucky	Duke Energy Kentucky	RCEE/Low Income Services Program
Kentucky	Duke Energy Kentucky	Low Income Neighborhood Program

[7] No such programs are currently available in Alabama, Georgia or Tennessee. Alabama Power, Georgia Power and the Tennessee Valley Authority are each currently running low-income pilots, but have not established sustained or publicly certified programs.

[8] Duke Energy and Progress Energy merged in summer 2012.

Louisiana	Entergy Gulf States Louisiana/Energy Louisiana LLC[9]	Income Qualified
Louisiana	SWEPCO	Income Qualified
New Orleans	Entergy New Orleans[10]	Income Qualified
Mississippi	Mississippi Power Company	Neighborhood Efficiency
North Carolina	Dominion North Carolina Power	Low Income
North Carolina and South Carolina	Duke Energy Carolinas	Low-Income Energy Efficiency and Weatherization Assistance
North Carolina and South Carolina	Duke Energy Progress	Neighborhood Energy Saver
South Carolina	South Carolina Electric and Gas Company (SCE&G)	Residential Neighborhood Energy Efficiency Program (NEEP)
Virginia	Dominion Virginia Power	Low Income Program (2009-2014)
Virginia	Dominion Virginia Power	Income and Age-Qualified EE Program (2015)
Virginia	Appalachian Power Company	Residential Low-Income Weatherization Program

Source: SEEA Analysis

Based on this information, it appears that the majority of the Southeast's large investor-owned utilities currently offer some kind of low-income program. Of the 10 largest utilities in the Southeast, ranked by 2014 retail sales, eight currently offer low-income energy efficiency programs, as follows:

Table 3. Low-Income Program Offerings for the Southeast's Ten Largest Electric Utilities

Utility	Low-Income Program?
1. Florida Power & Light	Yes
2. Georgia Power	No
3. Dominion	Yes
4. Alabama Power	No
5. Duke Energy Carolinas	Yes
6. Duke Energy Florida	Yes
7. Duke Energy Progress (NC)	Yes
8. SCE&G	Yes
9. Entergy Louisiana LLC	Yes
10. Tampa Electric	Yes

Source: SEEA Analysis

Similarly, the majority of the Southeast's top ten largest metropolitan statistical areas (MSAs) in the Southeast are currently served by an electric utility that offers a low-income program.

[9] Entergy Gulf States Louisiana and Entergy Louisiana LLC merged in 2015, but their energy efficiency programs were originally filed separately.

[10] Entergy New Orleans is regulated by the New Orleans City Council, and not by the Louisiana Public Service Commission, as are other investor-owned utilities in the state.

Table 4. Low-Income Programs in the Southeast's Ten Largest MSAs

Geography	Electric Utility Servicing	Low-Income Program?
1. Miami-Fort Lauderdale-West Palm Beach, FL	Florida Power & Light	Yes
2. Atlanta-Sandy Springs-Roswell, GA	Georgia Power	No
3. Tampa-St. Petersburg-Clearwater, FL	Tampa Electric	Yes
4. Charlotte-Concord-Gastonia, NC-SC	Duke Energy Carolinas	Yes
5. Orlando-Kissimmee-Sanford, FL	OUC, Florida Power & Light, Duke Energy Florida	Yes
6. Nashville-Davidson-Murfreesboro-Franklin, TN	Nashville Electric Service/Middle TN Electric Cooperative (TVA)	No
7. Virginia Beach-Norfolk-Newport News, VA-NC	Dominion	Yes
8. Jacksonville, FL	JEA	Yes
9. Memphis, TN-MS-AR	MLGW (TVA)	No
10. Louisville/Jefferson County, KY-IN	LG&E/KU	Yes

Source: American Community Survey

Finally, SEEA examined the low-income programmatic coverage for the ten southeastern MSAs with the highest percentage of residents falling below the federal poverty level. A number of these geographies are served by municipal utilities, which are not covered in the scope of this analysis. Of those that are included in this assessment, about 50 percent do offer standalone, low-income programming, as indicated below.

Table 5. Low-Income Programs in Southeastern MSAs with the Largest Percentage of Residents Below the Poverty Line

Geography	Percent Below Poverty Level in the Last 12 Months	Electric Utility Servicing	Standalone Low-Income Program?
1. Tallahassee, FL Metro Area	23.1%	City of Tallahassee Utilities	Not covered in this analysis
2-T. Jackson, MS Metro Area	19.9%	Entergy Mississippi	No[11]
2-T. Mobile, AL Metro Area	19.9%	Alabama Power	No
4. Augusta-Richmond County, GA-SC Metro Area	19.6%	Georgia Power	No
5-T. Memphis, TN-MS-AR Metro Area	19.4%	MLGW (TVA)	Not covered in this analysis
5-T. Shreveport-Bossier City, LA Metro Area	19.4%	SWEPCO	Yes
7. Montgomery, AL Metro Area	18.9%	Alabama Power	No

[11] Entergy Mississippi does offer low-income tiers within its residential program portfolio.

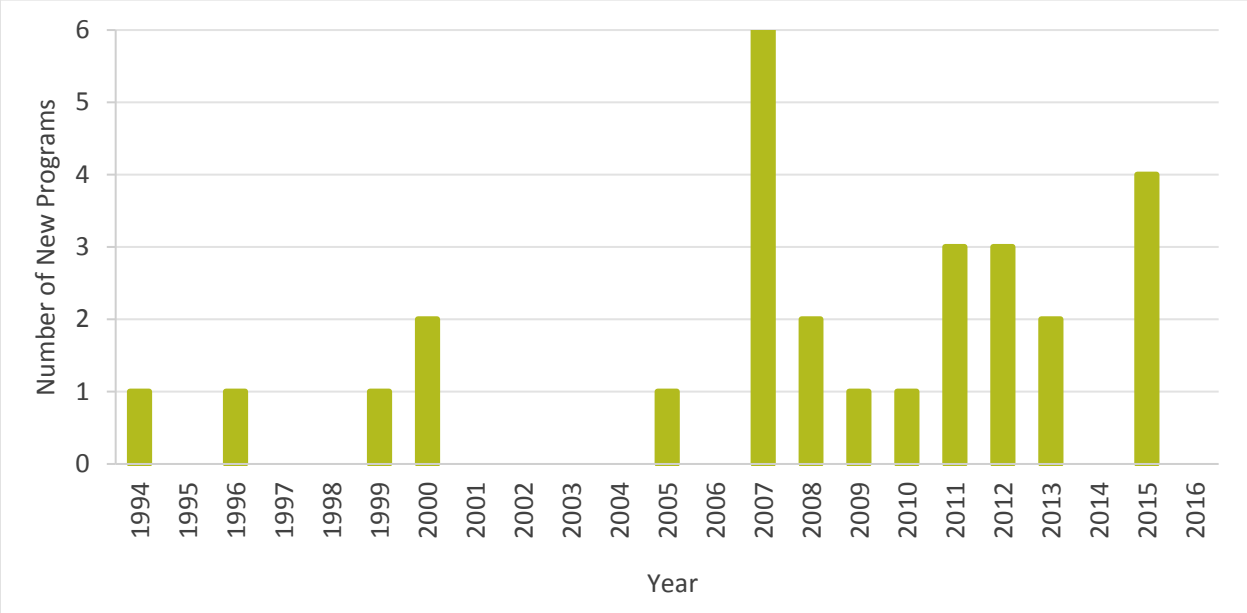
8. New Orleans-Metairie, LA Metro Area	18.7%	Energy New Orleans	Yes
9. Lakeland-Winter Haven, FL Metro Area	18.5%	Lakeland Electric	Not covered in this analysis
10-T. Gulfport-Biloxi-Pascagoula, MS Metro Area	18.3%	Mississippi Power	Yes
10-T. Ocala, FL Metro Area	18.3%	Ocala Utility Services	Not covered in this analysis

Source: American Fact Finder 2014, 2010-2014 Five-Year Estimates.

B. Program Start Date

Of the programs surveyed, the majority launched within the past decade. However, some programs are much more well-established, with LG&E/KU's WeCare program having the earliest start date (1994). Programs in Louisiana and Mississippi are currently being offered through their utilities' Quick Start portfolios; these programs are expected to transition into the comprehensive portfolio phase within the next several years.

Figure 1. Program Start Date



Source: SEEA Analysis.

C. Eligibility Criteria

As noted previously, one of the defining features of a low-income program is its qualification criteria, which ensure that programs reach those who need these services the most. Southeastern low-income programs utilize a variety of approaches for qualifying customers, as follows.

Table 6. Qualification Approaches for Southeastern Low-Income Programs

Utility	Program Name	Eligibility Criteria
Entergy Arkansas	Arkansas Weatherization Program	Homes built before 1997 and meeting three of seven additional inefficiency criteria.
SWEPCO		
OG&E		
Empire		
OG&E	OG&E Weatherization Program	Homes built before 2015 and meeting additional inefficiency criteria.
Empire	Residential Weatherization Program	Homes built before 2015 and meeting additional inefficiency criteria.
Florida Power & Light	Residential Low-Income Weatherization	WAP-delivered: eligible for financial assistance from federally-funded programs. FP&L Energy Retrofit: conducted in areas with a large proportion of customers who qualify for WAP.
Duke/Progress Energy Florida	Low-Income Weatherization Assistance	At or below program qualifying income levels based on the 2010 US Census block data with a 2% growth rate per year.
Duke/Progress Energy Florida	Neighborhood Energy Saver	Neighborhoods where at least 50% of the households earn less than 200% of federal poverty guidelines.
Gulf Power Co.	Residential Community Energy Saver	Neighborhoods where at least 50% of residents earn less than 200% of the federal poverty guidelines.
OUC	Efficiency Delivered (previously Hom Energy Fix-up)	Total family income of 35,000 or less and residential energy survey (now tiered; other income levels qualify for lesser incentives).
JEA	Neighborhood Efficiency Program	Neighborhoods where at least 50% of residents earn less than 150% of the federal poverty guidelines.
Tampa Electric	Residential Weatherization and Agen Outreach	Customer eligibility is by utilization of census data to identify eligible customer geographic regions or referral through local community assistance agencies which serve low-income households.
LG&E/KU	Residential Low-Income Weatherization (WeCare)	At or below 150% of federal poverty guidelines.
Kentucky Power	Targeted Energy Efficiency	Income at or below federal poverty guidelines, primary electric heat and use an average of 700 kWh per month.
Duke Energy Kentucky	RCEE/Low Income Services Program	income below 130 percent of the federal poverty level.

Duke Energy Kentucky	Low Income Neighborhood Program	Neighborhoods where 50% of the households have income equal to or less than 200% of the federal poverty level
EGSL/ELL	Income Qualified	Household income at or below 200% of 2013 Federal income eligibility guidelines.
SWEPCO	Income Qualified	At or below 200% of federal income eligibility guidelines.
Entergy New Orleans	Income Qualified	Less than 60% of AMI.
Mississippi Power	Neighborhood Efficiency	Neighborhoods where average income levels are at or below 200% of federal poverty guidelines.
Dominion NC	Low Income	200% of federal poverty guidelines.
Duke Energy Carolinas	Low-Income Energy Efficiency and Weatherization Assistance	Neighborhoods where at least 50% of the households have income equal to or less than 200% of the federal poverty level.
Duke Energy Progress	Neighborhood Energy Saver	200% of federal poverty guidelines per Census block.
SCE&G	Residential Neighborhood Energy Efficiency Program (NEEP)	Neighborhoods where at least 50% of households earn at or below 150% of federal poverty guidelines.
Dominion Virginia	Low Income Program	60% of state median income.
Dominion Virginia	Income and Age-Qualified Energy Efficiency Program	60% of state median income. Eligible customers on a fixed income and over the age of 60 must be 120% of state median.
Appalachian Power Co.	Residential Low-Income Weatherization Program	Electrically heated homes of customers with above average electric usage and a total annual household income at or below 60% of state median income.

Source: SEEA Analysis

As seen above, the majority of programs currently operating in the Southeast reference some share of federal poverty guidelines as a qualification threshold. Others qualify customers based on absolute income.

In general, “neighborhood sweeps” programs in the Southeast tend to qualify eligible customers based on the percentage of households earning at or below federal poverty guidelines. In some cases, this qualifies the entire neighborhood, but in others, it only qualifies individual homeowners within the neighborhood that can meet these requirements.

All of the Arkansas-based programs included within this assessment have both age and “inefficiency” criteria for qualifying homes. Similarly, programs operated by Appalachian Power and Kentucky Power qualify customers partially based on usage.

OUC offers a unique structure, based on absolute income, with sliding incentives based on program "tiers." This approach is discussed in the pages that follow.

D. Investment Caps

As noted previously, low-income program models tend to provide low- or no-cost measures to homeowners up to a certain threshold, or cap. Nearly half of the programs surveyed (12; primarily weatherization programs) included in their original filing some sort of investment cap per home, or "not to exceed" limit. Of these programs, per-unit investment caps ranged from $1,105 to $4,000, with a median value of $2,000. Some utilities require a co-payment from the customer, but most do not.

Two of the programs surveyed have more complex approaches to defining per-unit investment caps. In its 2015 Demand-Side Management filing with the Florida Public Service Commission, OUC expanded its previous Home Energy Fix-Up Program to a more comprehensive model that most directly assists low-income customers. OUC's new Residential Efficiency Delivered Program divides participants into income-qualified tiers, with investment caps tied to household income, as shown below.

Figure 2. OUC Income Qualification Tiers

Household Income	OUC Contribution
Less than $40,000	85% (not to exceed $1,700)
$40,001-$60,000	50% (not to exceed $1,000)
Greater than $60,000	Rebates only

Source: Orlando Utilities Commission 2015

Duke Energy Kentucky's Low-Income Services Program provides weatherization services according to the level of home energy inefficiency, or highest home energy use per square foot. Specific services provided within each Tier are as follows.

Figure 3. Duke Energy Kentucky Investment Tiers

	Therm/Square Foot	kWh Use/Square Foot	Investment Allowed
Tire 1	0 < 1 therm / ft^2	0 < 7 kWh / ft^2	Up to $600
Tier 2	1 + therms / ft^2	7 + kWh / ft^2	All SIR* ≥ 1.5 up to $4K

**SIR = Savings – Investment Ratio*

Source: Duke Energy Kentucky 2014.

E. Measure Mix

Low-income energy efficiency programs tend to focus on weatherization – the specific terminology for whole-building retrofit programs in the low-income sector. In general, these programs tend to provide an audit, followed by installation of cost-effective measures. Most prominently, these programs typically address heating and cooling energy use through insulation, air sealing, and heating, ventilation, and air

conditioning measures (Cluett et al. 2016). Other direct install programs involve the installation of efficiency measures in homes by utility representatives or contractors. As seen below, the most popular measures in southeastern low-income programs are light bulbs and low-flow showerheads, which are both common direct-install measures that may also be provided in weatherization programs.

Table 7. Program Measures Offered

Measure	Program Count
Light Bulbs	23
Low-flow Showerheads	20
Attic Insulation	14
Faucet Aerators	14
Equipment Repair/Maintenance	14
Air Infiltration Measures	13
Water Heater Blankets/Wrap	13
Duct Repair/Sealing	11
Water Heater Pipe Insulation	10
Equipment Replacement	10
Floor Insulation	8
Wall Insulation	8
Water Heater Pipe Wrap	8
Water Heater Temperature Check and Adjustments	8
Refrigerator Replacement	7
HVAC Filters	7
Duct Insulation	6
Winterization Kit	5
Foundation Insulation	4
Windows	4

Source: SEEA Analysis

In addition to those described above, other measures used in the programs include refrigerator coil brush or cleaning, ceiling insulation, air filter change reminder, window film, refrigerator replacement, refrigerator thermometer, water heater replacement, toilet replacement, LED night lights, venting check-up and repair, power strips, programmable thermostats, filter changes, roof coating, outlet and switch cover foam gaskets, irrigation repairs, minor plumbing repairs, toilet flappers, wall plate thermometers and home energy reports.

Some of the newer or redesigned programs also incorporate power strips, addressing plug load issues, and programmable thermostats. Other measures have tended to change over time. In particular, many utilities that previously offered CFLs are planning to move to LEDs in the near future.

While not constituting a specific “measure,” most programs also include an educational element, in addition to direct, energy-saving measures. This component promotes energy-saving behaviors and empowers residents to optimize their energy use.

F. Cost-Effectiveness Requirements

Regulatory requirements can be a significant factor in determining program design. In some cases, state regulators require low-income programs to pass cost-effectiveness tests; however, by and large, cost-effectiveness is not required, allowing for additional flexibility in program design and delivery. This reflects both the important policy benefits of low-income programs, as well as the non-energy benefits, including health and safety improvements, generated by low-income programs.

Table 8. Cost-Effectiveness Requirements for Low-Income Programs in Southeastern States

State	Program-Level Cost-Effectiveness Required?
Alabama	N/A[12]
Arkansas	No
Florida	No[13]
Georgia	N/A[14]
Kentucky	No
Louisiana	Yes
Mississippi	No[15]
North Carolina	No
South Carolina	No
Tennessee	N/A[16]
Virginia	No

Source: SEEA Analysis

In the Southeast, roughly half of the states allow for low-income programming that does not pass standard cost-effectiveness tests. However, Commission guidance regarding cost-effectiveness requirements for low-income programs is far from black and white. In most cases, there is a lack of clear statutory or regulatory language to articulate whether, and to what extent, flexibility exists for programs serving low-income customers. In some cases, this matter has essentially been decided by the state of practice for individual utilities, rather than formal guidelines.

In other instances, utility-specific cost recovery and incentive mechanisms are designed in such a way that they can accommodate low-income programs that may not pass cost-effectiveness tests, providing a de facto path forward for non-cost-effective programs. For example, in South Carolina, SCE&G, Duke Energy Carolinas and Duke Energy Progress all include regulatory cost recovery mechanisms that would function in the case of future low-income programs that do not pass cost-effectiveness tests.

[12] Alabama Power does not currently offer certified low-income programs.
[13] The majority of IOU-administered low-income programs in Florida pass both TRC and RIM cost-effectiveness tests; however, there are exceptions.
[14] Similarly, Georgia Power does not currently offer certified low-income programs.
[15] Mississippi utilities currently offer Quick Start programs, under which cost-effectiveness is not required for low-income programs. Specific requirements for the Comprehensive Portfolio phase will be determined at a late date.
[16] TVA, which serves nearly 100 percent of the state's electric load, only currently offers low-income pilots.

In Kentucky, requirements regarding low-income programming are similar to those governing other programmatic offerings, and were established by precedent in a 1997 proceeding surrounding the approval of LG&E's DSM program portfolio. In this proceeding, the Commission found that "If [a] filing fails any of the traditional [cost-effectiveness] tests, LG&E and its Collaborative may submit additional documentation to justify the need for the program (Kentucky Public Service Commission 1997)."

In Louisiana, cost-effectiveness requirements for low-income programs were established through an iterative process. Initial language in the Louisiana Public Service Commission's energy efficiency rules required Quick Start programs to meet cost-effectiveness under the Total Resource Cost (TRC) Test. In its original Quick Start portfolio filing, Entergy submitted an income-qualified program that did not pass TRC on the basis of its overall value, as well as its role in allowing low-income customers to participate in Quick Start programs that might otherwise be inaccessible. Commission staff expressed concern surrounding this program and suggested that Entergy consider removing it, leading Entergy to adjust the program to meet TRC cost-effectiveness requirements, amending its program plan and ultimately receiving Commission approval (Entergy 2015).

In Virginia, the General Assembly passed legislation in 2012 adding a definition of the phrase "in the public interest," allowing for utilities to deviate from cost-effectiveness requirements in limited circumstances. The legislation states that "a program or portfolio of programs shall not be rejected based solely on the results of a single [cost-benefit] test. In addition, an energy efficiency program may be deemed 'in the public interest' if the program provides measurable and verifiable energy savings to low-income customers or elderly customers (Virginia General Assembly 2012)."

G. Outreach and Engagement

In virtually every interview SEEA conducted, utility program managers referenced outreach and engagement as either significant challenges, or, alternatively, keys to program success. SEEA has included the following section to reflect specific points referenced in these interviews, or highlighted in evaluation reports.

WAP Coordination

The Weatherization Assistance Program (WAP), administered by the U.S. Department of Energy, provides funding for home weatherization throughout the country through a state-level allocation process. Often, states also transfer funding from the U.S. Department of Health and Human Services' Low-Income Home Energy Assistance Program, or LIHEAP, to further support weatherization services. On a local basis, WAP is administered primarily by community action agencies (CAAs).

As southeastern utilities ramp up their efforts in low-income energy efficiency, many have found the CAAs valuable partners, having close ties and trust-based relationships with low-income communities. Many of the utilities surveyed identified some level of difficulty initially gaining customer trust. Partnerships with CAAs have, in many cases, proven helpful in supporting initial engagement and intake. However, other utilities have reported that these partnerships can prove challenging from an administrative perspective, given the many constraints and qualifying criteria associated with the WAP.

Innovative Outreach Strategies

Numerous utilities reported successes on the marketing front. As programs mature, they may gain increased prominence through marketing or word of mouth. In addition, as they grow relationships with trusted community organizations, these organizations, in turn, become valuable program allies and can help to expand program pipelines. For instance, Entergy New Orleans reported that over time, the recruitment process has eased somewhat, requiring fewer staff resources.

A common theme among those surveyed was the importance of constant communication with partners. Specifically, programs that use community action agencies as program implementers or leverage them for outreach may find their resources stretched thin, compromising their ability to serve as effective program partners. One Kentucky utility noted the stark contrast between various community action agencies, where some may have more than adequate capacity and resources, and others may not.

One customer engagement approach that has been extremely popular in the Southeast is the neighborhood program model, sometimes also referred to as the "neighborhood sweeps" model. This approach involves the targeting of specific neighborhoods, subject to income qualification, and then focused outreach and retrofit opportunities. Originally piloted in Florida, this model now also exists in Kentucky, Mississippi, North Carolina and South Carolina.

Utilities leveraging the neighborhood sweeps model have encountered logistical challenges based on the block or neighborhood qualification process. For programs, such as Duke Energy Carolinas, where not all residents within a neighborhood may qualify, some residents may feel left out of the process. In addition, Mississippi Power Company reported problems in rural areas, where individual homes may qualify, but may not have the right density and supporting metrics to facilitate a neighborhood approach.

Utilities have also refined marketing approaches over time. Gulf Power noted that neighborhood kickoff meetings did not deliver the anticipated "bang for buck," and were discontinued in favor of direct mail, door hangers, yard signs and strategic partnerships.

In its recently launched Residential Low-Income Weatherization Program, Appalachian Power Co. works through a well-established Virginia-based nonprofit community development corporation, Community Housing Partners, to administer the weatherization component of its program. In addition, the utility partners with local foodbanks to distribute CFLs to customers.

In Arkansas, the state's utility working group recently spearheaded the development of a consistent statewide approach to the weatherization programs administered by its investor-owned utilities and their partners. While no data are currently available on these programs, which have just re-launched under the Commission-approved, consistent approach, this model facilitates coordination and consistent messaging, which may prove a valuable approach for extending both program reach and impact (Johnson 2014).

Program Performance

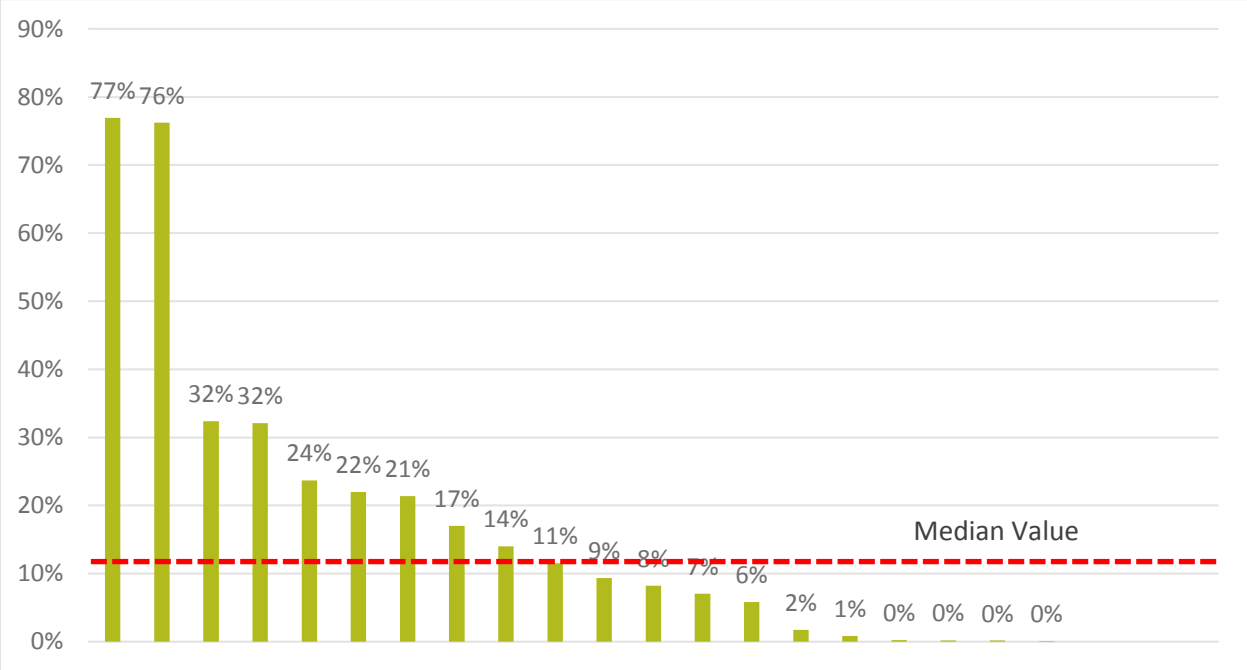
A. Share of Residential Portfolio Investment

SEEA measured the relative level of investment in low-income programs for each utility covered in this analysis, and for which this information was available (20 utilities). SEEA compared 2015 spending on low-income programs to 2015 spending on all residential energy efficiency programs. To calculate total residential spending, SEEA considered only energy efficiency programs, eliminating expenditures for both demand response and demand-side renewables. SEEA included all residential energy efficiency programs for which savings were claimed.

The Consortium for Energy Efficiency (CEE) calculates a similar figure on a national level. According to the 2014 State of the Efficiency Program Industry Report, of the total spending on residential energy efficiency programs in 2014, 18 percent of electric efficiency expenditures went toward low-income programs (CEE 2014).

SEEA's analysis found a lower median value, at 10.42 percent of residential expenditures, as seen below, indicating that southeastern utilities tend to invest less in low-income programs relative to their peers in other areas of the country.[17]

Figure 4. Low-Income Percentage of Residential Portfolio Spending



Source: SEEA Analysis

[17] Notably, the high outlying utilities shown on chart have relatively small overall budgets.

B. Cost

In general, low-income programs tend to carry a higher cost per unit of energy saved, relative to that of market-rate residential energy efficiency programs. This is, in part, a result of the increased incentive level often provided to low-income customers, as well as sub-par housing conditions that can require the installation of costly health and safety measures prior to the installations of energy efficiency measures.

On the other side of this equation, however, low-income programs tend to generate significant benefits, particularly in relation to both health and safety. While these benefits may be difficult to quantify, this perspective has gained traction within the energy policy space. This is reflected by the fact that many jurisdictions do not require low-income programming to pass standard cost-effectiveness tests, as noted above, understanding that the sometimes unquantifiable benefits tend to tip the scales in favor of low-income programs, and in many cases, may be more significant than the value of the energy savings achieved.

Next, SEEA determined the levelized cost of saved energy for southeastern low-income energy efficiency programs in each year assessed in this paper. In doing so, SEEA utilized the standard cost of saved energy calculation, also used by ACEEE and LBNL, which is as follows:

CSE in $/kWh = (C) x ((capital recovery factor)/D)

where

A = Real discount rate
B = Estimated measure life in years
C = Total annual program costs
D = Incremental net annual energy (kWh or therms) saved by energy efficiency programs
Capital recovery factor = [A*(1+A)^(B)]/[(1+A)^(B)-1]
SEEA used assumed discount rates of 3 percent and 6 percent, and a 10-year measure life, as simplifying assumptions.

Values in the table that follows are based on SEEA's analysis, compared to the 2009-2011 data in the LBNL DSM Program Impacts Database (Billingsley et al. 2014).

Table 9. Program Administrator Cost of Saved Energy for Southeastern Low-Income Programs (2012$)

Year	Median Levelized Cost of Saved Energy (3% Discount Rate)	Median Levelized Cost of Saved Energy (6% Discount Rate)
2012	$0.06	$0.07
2013	$0.07	$0.08
2014	$0.07	$0.08
2015	$0.08	$0.09
National Value: $0.13 (2012$, 6% discount rate)		

Source: SEEA analysis; national value from Hoffman et al. 2015

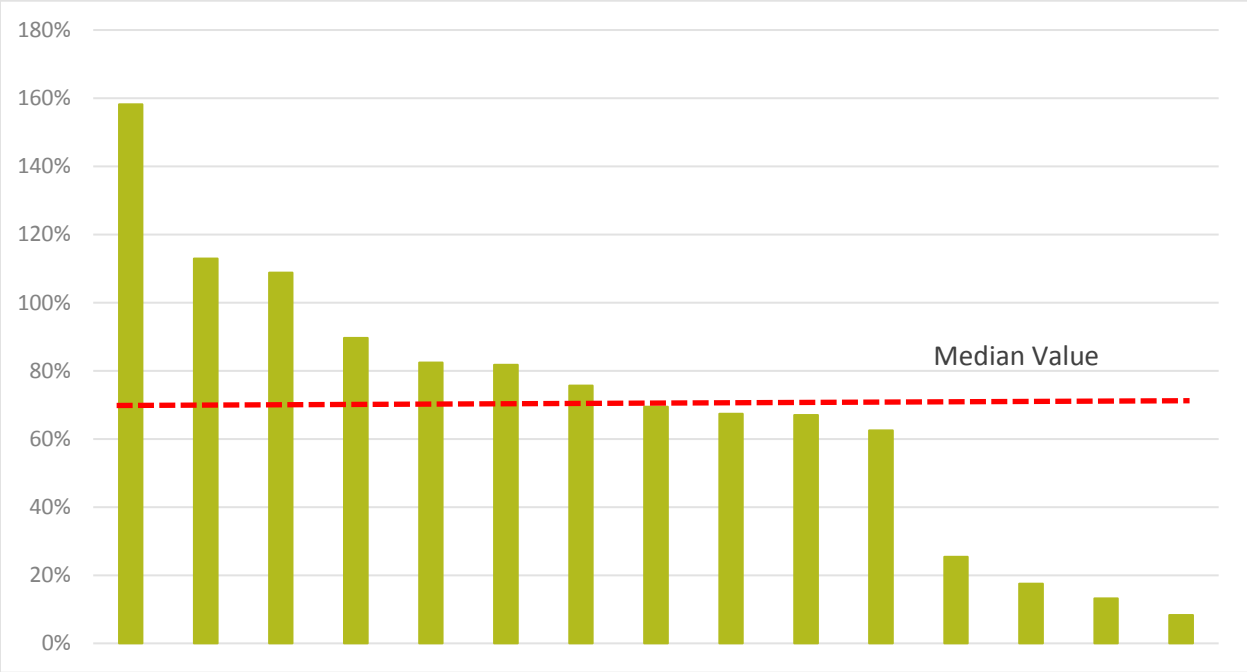
While it appears that the cost of saved energy for low-income programs operating in the Southeast has risen over time, it is important to put this finding in context on a national level. Hoffman et al. (2015) reviewed a national data set that included data from only three southeastern states. Of the low-income

programs surveyed, the authors found a median program administrator cost of $0.13 per kWh saved (measured in 2012 dollars, using a 6 percent discount rate)– much higher than the southeastern programs assessed in this paper. In other words, southeastern program administrators appear to be providing energy savings for low-income customers more cheaply than their peers in other regions. This may be a product of the nature of the programs, which are more heavily weighted toward direct install, versus weatherization approaches.

C. Share of As-Filed Participation

Low-income programs have generally been classified as addressing a "hard to reach" market. To determine how effective the programs reviewed were at meeting participation goals, SEEA collected as-filed goals and 2015 evaluated participation levels for the 15 programs for which this information was available, and then compared the two values. The share of participation goals achieved by these programs ranged from 8 percent on the low end, to 158 percent on the high end, with a median value of 69 percent.

Figure 5. Share of As-Filed Participation Achieved

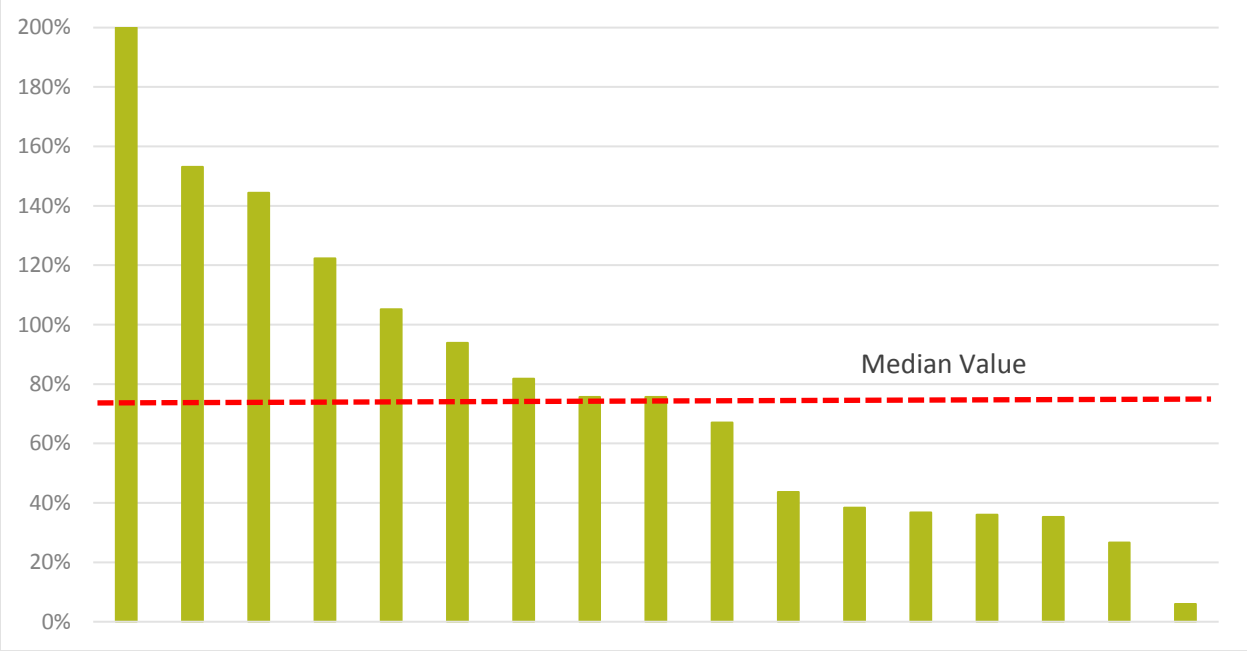


Source: SEEA Analysis

D. Share of As-Filed Energy Savings

Similarly, SEEA analyzed the energy savings for a single year (2015) reported by program administrators, relative to as-filed values. This information was available for 17 of the programs surveyed. Overall, SEEA found a fairly wide range, with a median value of 76 percent, as shown below.

Figure 6. Share of As-Filed Savings Achieved



Source: SEEA Analysis

Clean Energy Incentive Program

As noted previously, the EPA's Clean Energy Incentive Program (CEIP) within the Clean Power Plan provides early-action incentives for investments in energy efficiency, in addition to qualifying renewable resources, within low-income communities. Under the CEIP, as currently proposed, EPA will make available 300 million allowances, or 375 million emission rate credits, as match to any state CEIP set aside established up to this size. EPA will match state investments in qualified renewables one for one, and for low-income solar and energy efficiency investments, one allowance will be available at the state level, and one from EPA, for an overall two-to-one match. In general, there is an open question within the energy efficiency community as to whether current investments in low-income energy efficiency will allow states and utilities to fully leverage these incentives. SEEA undertook the following analysis to determine how current energy efficiency investments in low-income communities measure up to the incentive value available through state and EPA incentive pools.

The following table assumes that states establish a CEIP set-aside equal in size to that established by EPA, with a 50-50 split between a Renewable Energy Reserve and a Low-Income Community Reserve. SEEA further assumed a 50 percent share of allowances for qualifying low-income energy efficiency projects (versus allowances for qualifying low-income renewable projects) within the Low-income Community Reserve and a $4 per ton market allowance value. According to these estimates, more than $150 million will be available to qualified low-income energy efficiency projects under the CEIP in 2020 and 2021, or roughly $75 million per year (U.S. Environmental Protection Agency 2016).

Table 10. Estimated CEIP Allowances and Dollars Available to Southeastern States

State	Assumed Total State CEIP Set-Aside	State Renewable Energy Reserve (50% of Total State Set-Aside)	State Low-Income Community Reserve (50% of Total State Set-Aside)	State Set-Aside for Energy Efficiency (50% of Low-Income Community Reserve)	EPA Low-Income Energy Efficiency Match	Total Low-Income Energy Efficiency Allowances Available	Value of Allowances at $4/ton
Alabama	9,366,916	4,683,458	4,683,458	2,341,729	2,341,729	4,683,458	$18,733,832
Arkansas	6,561,688	3,280,844	3,280,844	1,640,422	1,640,422	3,280,844	$13,123,376
Florida	9,690,744	4,845,372	4,845,372	2,422,686	2,422,686	4,845,372	$19,381,488
Georgia	8,266,868	4,133,434	4,133,434	2,066,717	2,066,717	4,133,434	$16,533,736
Kentucky	14,858,584	7,429,292	7,429,292	3,714,646	3,714,646	7,429,292	$29,717,168
Louisiana	4,492,282	2,246,141	2,246,141	1,123,071	1,123,071	2,246,141	$8,984,564
Mississippi	1,071,918	535,959	535,959	267,980	267,980	535,959	$2,143,836
North Carolina	8,023,768	4,011,884	4,011,884	2,005,942	2,005,942	4,011,884	$16,047,536
South Carolina	4,958,404	2,479,202	2,479,202	1,239,601	1,239,601	2,479,202	$9,916,808
Tennessee	6,534,250	3,267,125	3,267,125	1,633,563	1,633,563	3,267,125	$13,068,500
Virginia	4,159,638	2,079,819	2,079,819	1,039,910	1,039,910	2,079,819	$8,319,276
						Southeast Total	**$155,970,120**
						Southeast Total per Year	**$77,985,060**

Source: U.S. Environmental Protection Agency 2016. CEIP Design Details: Proposed State and Tribal Shares of Matching Pool

While recognizing that utility-administered low-income programs do not represent the full spectrum of energy efficiency serving low-income customers, SEEA investigated the level of investment in these programs in 2015.[18] Across the programs reviewed in this paper, a total of $23,196,253.18 was invested in 2015, or only approximately 30 percent of what will be available per year through the CEIP.[19]

[18] Note that spending is not available for either Dominion program operating in 2015.

[19] As originally proposed, the CEIP contained a 50-50 split between renewable projects and low-income energy efficiency. With the addition of select qualifying renewable project within the Low-income Reserve, with fewer credits available for energy efficiency. This relative allocation is subject to change, however, as the CEIP re-proposal is currently out for public comment.

SEEA also reviewed the most recent Weatherization Assistance Program (WAP) allocations for southeastern states for this analysis, since many of the programs assessed in this paper leverage or otherwise coordinate with WAP.

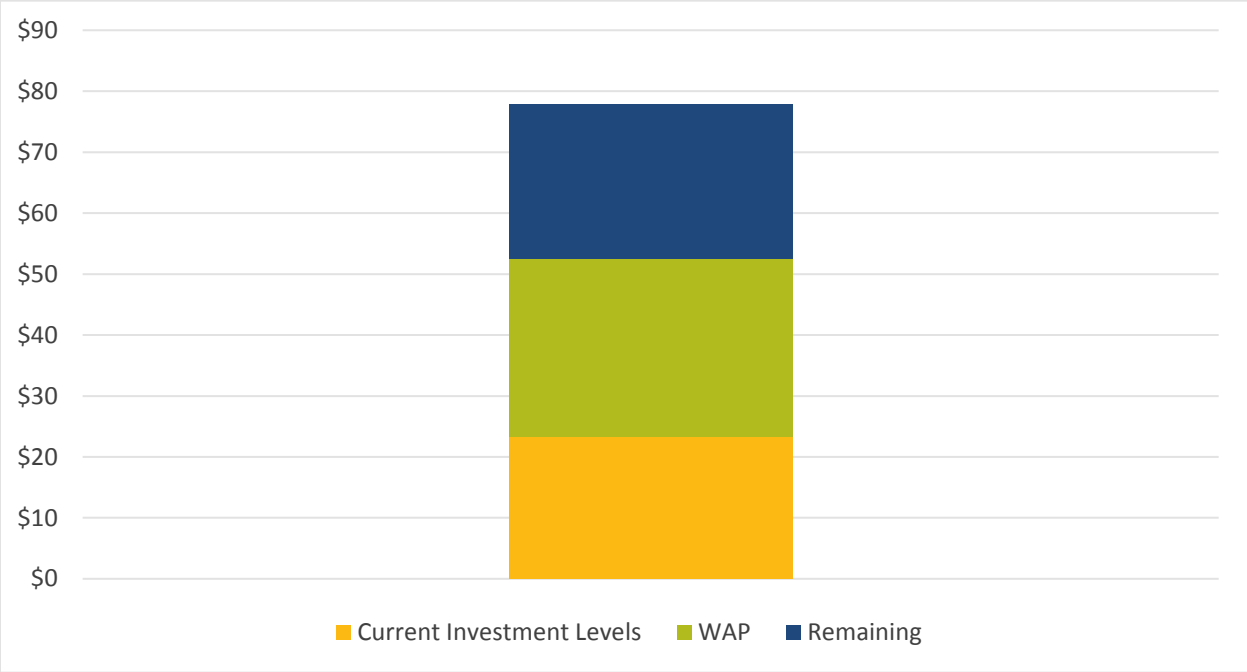
Table 11. Southeastern State WAP Allocations

State	FY 2016 Total Allocation
Alabama	$2,277,174
Arkansas	$1,868,107
Florida	$1,886,281
Georgia	2,829,878
Kentucky	$4,260,696
Louisiana	$1,345,356
Mississippi	$1,499,412
North Carolina	$3,916,921
South Carolina	$1,666,574
Tennessee	$4,036,524
Virginia	$3,761,099
Annual Total	$29,348,022
Two-Year Total	$58,696,044

Source: Garcia 2016

SEEA found that the addition of WAP dollars – roughly $30 million per year – brings the total regional investment in low-income programming to approximately 67 percent of available dollars from the CEIP. While additional low-income energy efficiency efforts may be credited under the CEIP, this analysis demonstrates that southeastern states and utilities do not currently have the level of documented investment in low-income energy efficiency programs to fully leverage dollars available through the CEIP.

Figure 7. Southeastern Program Investment as a Share of Clean Energy Incentive Program Funds Available (Million Dollars)



Source: SEEA Analysis

Findings and Recommendations for Future Research

Historically marked by high poverty rates, the Southeast continues to advance in its pursuit of comprehensive, programmatic offerings to effectively serve low-income ratepayers. In recent years, utility regulators have established specific policy directives to support this goal, and investment in energy efficiency programming targeted at low-income customers has grown substantially. SEEA has produced this landscape assessment in hopes of providing a snapshot of the current state and identifying clear trends and opportunities as the region moves forward with these programs. An overview of key takeaways from this assessment is provided below.

Generally, SEEA understands these findings as indicating that low-income energy efficiency in the Southeast has a strong foundation in current efforts. Continuous incorporation of lessons learned, coupled with the piloting of new concepts and strategies, can establish the momentum to help these programs scale up in the long term.

A. Assessment Findings

SEEA's analysis identified 28 electric, utility-administered low-income energy efficiency programs in the Southeast reported on to state utility regulators.

Program Design

- The majority of the region's largest utilities offer such programs, and the majority of the Southeast's largest MSAs are served by them. Data for rural communities is less readily available. Of the southeastern MSAs having the largest percent of residents earning below the poverty level, about half are served by low-income programs.
- Southeastern utilities largely qualify participants for these programs based on a reference to either federal poverty guidelines or state agency criteria, while a few rely on other criteria.
- The majority of programs have been launched within the past decade, with a handful that have a much longer track record.
- Per-unit investment caps range from $1,105 to $4,000, with a median value of $2,000.
- Most programs rely on a direct-install approach, and the most common measures offered through the programs analyzed are typical direct-install measures, such as light bulbs and low-flow showerheads.
- Roughly half of southeastern public service commissions do not require low-income programs to pass cost-effectiveness tests, although in some cases, there is a lack of clarity regarding these requirements.
- Utilities' experiences with marketing and outreach approaches differ substantially. For instance, some identified partnerships with community action agencies as critical, while others saw them as a potential roadblock. Frequently cited success factors include constant communication with partners and allies, as well as the flexibility to evolve these approaches over time.

Program Impacts

- Southeastern programs invest slightly less in low-income programs as a share of their residential portfolios than do their national peers, with a median value of 10.42 percent of residential expenditures, compared to 18 percent nationally.
- Southeastern low-income programs are typically expensive relative to the energy savings they achieve. However, taken as a whole, these programs are less expensive than those calculated for the nation as a whole, with a median levelized value of $0.09, versus $0.13 nationally.
- While the level of participation achieved relative to as-filed values ranges substantially across programs, the programs analyzed achieved a median value of 69 percent of as-filed participation goals and 76 percent of as-filed energy savings.

Clean Energy Incentive Program

While EPA's Clean Power Plan is currently stayed, some southeastern states are evaluating strategies to leverage the incentives available through the Clean Energy Incentive Program (CEIP). By aggregating the level of investment in the low-income programs reviewed in this paper, SEEA found that current investment levels will only account for about 30 percent of the available funding. With the addition of WAP programming, this number roughly doubles, but still leaves a significant amount of CEIP dollars on the table. This suggests that southeastern states with an interest in accessing these funds have an opportunity to ramp up in the future.

B. Recommendations for Future Research

SEEA considers this assessment a "first step" in better understanding the opportunities to advance energy savings for low-income residents and hopes that it will build momentum for future research in this area. Recommendations for future research are provided below.

As noted earlier, this assessment covers only electric utility-administered, low-income energy efficiency programs that report savings data to state utility regulators. Pending data availability, future research may focus more closely on the following:

- Municipal and cooperative programs;
- Natural gas programs;
- State and local programs;
- Multifamily programs; and
- Manufactured housing programs.

As articulated above, this paper has identified a number of trends among the programs reviewed. Many of these findings raise questions that may inform future research.

- Some areas of the Southeast are not currently served by low-income programming. What are the barriers to developing offerings to serve these communities? How can they be overcome?
- Among the areas that are served by low-income programs, is investment most heavily concentrated in jurisdictions with higher levels of poverty? If not, why?
- What is the impact of various qualification approaches? Is one approach more conducive for achieving program success?
- Do programs with higher per-unit investment caps achieve higher levels of savings? What are the relative outcomes of programs that incorporate financing in addition to rebated measures?
- Are there improvements to the cost-effectiveness requirements that could aid utilities offering low-income programs?
- Why are southeastern low-income programs less expensive than their national peers? Does the relative level of expense impact these programs' ability to achieve their goals?
- In the cost-effectiveness testing framework, what non-energy benefits do southeastern utilities count for low-income programs?
- What are the major barriers to meeting participation and savings targets? How can these be overcome?
- What impacts do these programs have on overall customer energy usage and bills? Are the savings sustained over time?
- Are there limitations to utility-administered low-income programs, relative to programs provided by partners or community organizations? How might they be addressed?

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Appendix A

Table A1. A Utility Program Descriptions

Utility	Program Name	Program Description
Entergy Arkansas	Arkansas Weatherization Program	AWP assistance is available to customers of AWP Utilities whose homes are severely energy inefficient. To qualify for the AWP, the customer's home must meet certain specified criteria related to age of the home and energy inefficiency. Through a computerized energy audit of the home and advanced diagnostic technology, appropriate energy-efficiency measures are determined that can provide cost-effective energy savings. The Weatherization Network provider installs the approved measures in the home.
SWEPCO	Arkansas Weatherization Program	
OG&E	Arkansas Weatherization Program	
Empire	Arkansas Weatherization Program	
OG&E	OG&E Weatherization Program	Designed to target residential customers and allow them to participate in the program at no cost, this program provides customers the opportunity to actively manage their energy costs. The program targets residential single-family homes which were built before 1997, specifically those that are severely energy inefficient. Homes that meet these criteria begin with an energy audit utilizing blower door technology on the structure to capitalize on specific weatherization techniques. The program is designed to upgrade and improve the thermal envelope of the dwelling.
Empire	Residential Weatherization Program	This program … will be targeted to acutely energy inefficient homes. It will provide energy efficiency improvements to participants, thereby decreasing demand and energy usage for those customers. The program will improve residents' comfort and reduce energy costs by upgrading the thermal envelope and appliances in targeted households.
Florida Power & Light	Residential Low-Income Weatherization	This program is targeted to assist low income customers. Delivery will be provided through two channels. First, is through state Weatherization Assistance Provider ("WAP") agencies to which FPL will provide rebates for certain energy measures as part of the total assistance they provide to their selected low income customers. Second, is through FPL conducting Energy Retrofits in selected neighborhoods. FPL Energy Retrofits will include promotional events followed by concentrated

		installations of DSM measures. FPL will conduct an Energy Survey for each customer and install, as appropriate, measures which address the main areas of energy use: weatherization (caulking, weather stripping and door sweeps); air conditioning (duct testing and repair, air conditioning unit maintenance and outdoor unit coil cleaning); and water heating (low flow showerheads, faucet aerators and pipe wrap).
Duke/Progress Energy Florida	Low-Income Weatherization Assistance	The Low-Income Weatherization Assistance program is designed to leverage working relationships with weatherization providers to integrate Demand Side Management measures and offer energy efficiency with an education component. The Low-Income Weatherization Assistance program combines weatherization provider partnerships with energy education and energy efficiency improvements to benefit low-income families.
Duke/Progress Energy Florida	Neighborhood Energy Saver	DEF ’s Neighborhood Energy Saver (NES) program is a custom energy conservation program designed to assist selected neighborhoods where approximately 50% of the households have incomes equal to or less than 200% of the poverty level established by the U.S. Government. Duke Energy or a third party contractor will directly install energy conservation measures (ECM) identified through an energy assessment into the customer’s home to increase their energy efficiency. Additionally, customers will receive a comprehensive package of energy education materials which will educate them on ways to better manage their energy usage. The energy conservation measures installed and energy efficiency education provided will be at no cost to the participants.
Gulf Power	Residential Community Energy Saver	The Community Energy Saver Program will assist low-income families with escalating energy costs which are often a higher percentage of their household income. Low-income customers present unique challenges for adoption of energy efficiency measures because of the higher initial cost of energy efficient equipment as well as a lack of awareness of energy efficiency opportunities. The Community Energy Saver Program will implement a comprehensive package of electric conservation measures at no cost to the customer. In addition to direct installation of the conservation measures,

		the program will educate families on energy efficiency techniques and behavioral changes to help customers control their energy use and reduce their utility operating costs.
OUC	Efficiency Delivered (Formerly Home Energy Fix-up)	What was once referred to as the home energy fix-up program has now been revamped and expanded to allow for any OUC customer both Energy and Water to participate and renamed as the Efficiency Delivered program. The program is available to residential customers (single family homes) and provides up to $2,000 of energy and water efficiency upgrades based on the needs of the customer's home. A Conservation Specialist from OUC performs a survey at the home and determines which home improvements have the potential of saving the customer the most money. The program is an income based program which is the basis for how much OUC will help contribute toward the cost of improvements.
JEA	Neighborhood Efficiency Program	JEA offers a two-phase program for low income customers. Phase 1 provides installation of 15 electric and water conservation products as well as the energy education package of printed material and consultation with an energy audit on a door-to-door basis in targeted neighborhoods identified by the City as having more than 50% of the neighborhood population at or below 150% of the Federal Poverty Guidelines, and further identified by JEA as having high winter peak consumption. Approximately 1,000 homes are completed per year. Phase 2 provides an Energy Efficient Home Maintenance kit of 12 electric and water conservation products for participants in a Housing Counseling workshop required for first time home buyers involved in the City's loan assistance programs for low to moderate income residents.
Tampa Electric	Residential Weatherization and Agency Outreach	The Energy Education, Awareness and Agency Outreach Program is comprised of three distinct initiatives: 1) Public energy education 2) Energy awareness 3) Agency outreach … This portion of the program is designed to establish opportunities for engaging groups of customers and students in energy-efficiency related discussions in an organized setting. Tampa Electric recognizes the importance of educating students and motivating customers through participation in its energy audits, and this program will provide the opportunity to accomplish

		both initiatives for large groups in one setting. ... This portion of the program will allow for delivery of energy efficiency kits that will help educate agency clients on practices that help to reduce energy consumption. The suggested practices will mirror the recommendations provided to customers who participate in a free energy audit.
LG&E/KU	Residential Low-Income Weatherization (WeCare)	The WeCare Program is an education and weatherization program designed to reduce energy consumption of LG&E and KU's low-income customers. The program is designed to provide energy audits, energy education, perform blower door tests, and install weatherization and energy conservation measures on qualified houses. The marketing and recruitment process identifies low-income households through LMEAP programs at Community Action Agencies in our service territory. Potential participants are pro-actively contacted for participation in the program. Alternatively, customers who feel they qualify for the program who have not applied for LIHEAP may request to go through an intake process to be qualified. These customers frequently enter the program through word- of-mouth or referral by churches and other community organizations.
Kentucky Power	Targeted Energy Efficiency	The Kentucky Power Targeted Energy Efficiency (TEE) program is designed to improve energy efficiency for low-income customers through energy audits coupled with installation of various energy conservation measures. The program specifically targets electric space heating and electric water heating measures, although other types of savings measures are utilized as well.
Duke Energy Kentucky	RCEE/Low Income Services Program	Residential Conservation and Energy Education. This program specifically focuses on Low Income Home Energy Assistance Program customers that meet the income qualification level, income below 130 percent of the federal poverty level. The program provides direct installation of weatherization and energy efficiency measures and educates customers about their energy usage and other opportunities to reduce energy consumption and lower their costs.
Duke Energy Kentucky	Low Income Neighborhood Program	The Duke Energy Kentucky Neighborhood Program takes a non-traditional approach to serving income-qualified areas of the Duke Energy Kentucky service territory. The program engages targeted customers

		with personal interaction in a familiar setting while ultimately reducing energy consumption by directly installing measures and educating the customer on better ways to manage their energy bills. Examples of direct installed measures include CFLs, water heater and pipe wrap, low flow shower heads/faucet aerators, window and door air sealing and HV AC filter replacements. Targeted low income neighborhoods qualify for the program if at least 50% of the households are at or below 200% of the federal poverty guidelines. Duke Energy Kentucky analyzes electric usage data and previous program participation to prioritize neighborhoods that have the greatest need and propensity to participate.
EGSL/ELL	Income Qualified	The objective of the Income Qualified Program is to target and significantly weatherize income Qualified single-family homes and low-rise multi-family dwellings. The program will: Achieve electricity savings by working with participating trade allies; make energy efficiency upgrades available and accessible to qualifying customers; help qualifying customers understand how they are using energy, identify opportunities for energy savings specific to their home, and prioritize a wide range of energy conservation measures; educate qualifying customers so they can begin saving energy and money immediately; and develop educational and supporting services for customers and trade allies to promote the implementation of energy efficiency measures.
SWEPCO	Income Qualified	The SWEPCO Low Income Program targets and offers comprehensive weatherization services to qualified low-income single-family homes and low-rise multi-family dwellings. The Program will be primarily implemented through local participating trade allies who will provide energy efficiency upgrades available to income qualifying customers. The Program's objective is to educate customers on how they are using energy, identify opportunities for energy savings specific to their home and prioritize a wide range of energy conservation measures that will allow them to save energy immediately.
Entergy New Orleans	Income Qualified	This program targets a hard to reach income qualified segment of the market. The implementation contractor will work with Entergy to set criteria to identify and qualify targeted

		homes for participation in the program. The approach is to conduct the program with audit and installation practices similar to national public weatherization grant programs. The audit will use software to assess the building state, collect data and generate an energy efficiency improvement report.
Mississippi Power	Neighborhood Efficiency	The Neighborhood Efficiency Program is intended to promote energy efficiency and conservation by offering home energy assessments and direct install measures to MPC's lower income customers. The program provides for a residential energy audit, energy education, installation of energy efficient light bulbs, and in a large number of homes, an increased level of insulation, and/or HVAC tune-up, and/or duct sealing.
Dominion North Carolina Power	Low Income	The purpose of this program is to provide energy audits to qualified low income residential customers as an incentive to assist customers in identifying and making simple home improvements which would improve the EE of customers' homes and potentially lower their monthly energy bills. For this program, low income customers are defined as those with family income below 200% of the federal poverty guidelines.
Duke Energy Carolinas	Low-Income Energy Efficiency and Weatherization Assistance	The purpose of the Low Income Energy Efficiency and Weatherization Assistance Program ("Program") is to assist low income customers with energy efficiency measures in their homes to reduce energy usage. There are three offerings currently in the Program: The Residential Neighborhood Program ("RNP"), the Weatherization and Equipment Replacement Program ("WERP"), and the Refrigerator Replacement Program ("RRP").
Duke Energy Progress	Neighborhood Energy Saver	The Neighborhood Energy Saver Program ("NES" or "Program") was launched in October 2009 in North and South Carolina to reduce energy usage through the direct installation of energy efficiency measures within the households of income-qualified residential customers. The Company uses a third-party vendor: (1) to provide an on-site energy assessment of the residence to identify appropriate energy conservation measures, (2) to install a comprehensive package of energy conservation measures at no cost to the customer, and (3) to provide one-on-one energy education. Program

		measures address end uses in lighting, refrigeration, air infiltration and HVAC applications.
South Carolina Electric & Gas Co. (SCE&G)	Residential Neighborhood Energy Efficiency Program (NEEP)	The Residential Neighborhood Energy Efficiency (NEEP) program provides qualifying customers energy education, an on-site energy survey of the dwelling, and direct installation of low-cost energy saving measures at no additional cost to the customer. The program is delivered in a neighborhood door-to-door sweep approach and offers customers who are eligible and wish to participate a variety of direct installation energy efficiency measures.
Dominion Virginia Power	Low Income Program (2009-2014)	This program provides low income homeowners with a free energy audit that identifies certain areas within their residences where they can save money in monthly energy bills. The energy auditor should identify simple measures that homeowners can take to improve the homes' energy efficiency. If homeowners approve, auditors may immediately make certain improvements while a homes.
Dominion Virginia Power	Income and Age-Qualified EE Program (2015)	Provides income- and age-qualifying residential customers with energy assessments and direct install measures at no cost to the customer
Appalachian Power Co.	Residential Low-Income Weatherization Program	The RLIWP provides weatherization products and services to residential customers to help reduce their energy bills and improve their homes' comfort. The Company provides funding for this Program through Community Housing Partners (CHP) to help supplement the State and Federal income qualified Weatherization Programs. The regional Weatherization Assistance Program (WAP) providers use the Weatherization Assistant National Energy Audit Tool (NEAT), to calculate savings for the program...In addition to the weatherization measures component of the program, the Company incorporated a compact fluorescent light (CFL) distribution component.

Appendix B

Southeastern Low-Income Energy Efficiency Program Survey

Thank you for taking the time to complete this survey. Your input will shape the development of a forthcoming regional analysis of low-income energy efficiency programs in the Southeast. It is our hope that this analysis will add to the growing body of knowledge around trends and best practices in expanding cost-effective, energy-saving opportunities for low-income customers.

Please provide responses to the following items, and submit them to Abby Fox, SEEA Policy Manager at afox@seealliance.org by April 15, 2016. Alternatively, please reach out to schedule a call if you'd prefer to talk through these questions (404-602-9665).

1. What is the name of the low-income program (or programs) your utility currently operates? Please provide a link to the description of the programs if it is available online.

2. When was this program established? Why was this program established (e.g., Commission order, Company interest, customer demand, etc.)?

3. Was the program modeled off an existing one? If so, please explain.

4. What are the eligibility criteria for this program?

5. What types of measures does this program focus on?

6. Who implements this program? Please provide contact information.

7. Is this program required to pass a cost-effectiveness test?

8. Is this program evaluated differently than others in the portfolio? Please explain.

9. Does the program leverage funding or resources from federal, state or NGO programs?

10. In what ways has this program achieved its goals?

11. How has the program design or implementation evolved over time? How do you expect the program to change in the future?

12. What have been the biggest challenges to achieving success?

13. What have been the most significant "lessons learned" from the program over time?

14. Please cite any relevant docket numbers (program filings, evaluations, relevant Commission guidance).

15. Please provide the following data points for as many years as you have available:

	2011	2012	2013	2014	2015*
Low-income program expenses (actual, nominal $)					
Low-income program share of residential EE portfolio spending (excluding DR and demand-side renewables)					
Annual incremental savings (at the meter, indicate net or gross)					
Penetration rate (percentage of eligible customers participating in a program year)					
Cost-effectiveness scores, if applicable (specify test)					

*Please indicate whether these figures are projected or evaluated.

Appendix C

Utility Program Dockets

Arkansas

Utility	Program	Reference	Content
Entergy, SWEPCO, OG&E, Empire	Arkansas Weatherization Program	Docket No. 07-079-TF	Program plan/cost recovery
OG&E	OG&E Weatherization Program	Docket No. 07-075-TF	Program plan/cost recovery
Empire	Residential Weatherization Program	Docket No. 07-076-TF	Program plan/cost recovery

Florida[20]

Utility	Program	Reference	Content
Florida Power & Light	Residential Low-Income Weatherization	Docket No. 150085	Plan
Duke/Progress Energy Florida	Low-Income Weatherization Assistance	Docket No. 150083	Plan
	Neighborhood Energy Saver		
Gulf Power	Residential Community Energy Saver	Docket No. 150086	Plan
OUC	Efficiency Delivered (Previously Home Energy Fix-up)	Docket No. 150088	Plan
JEA	Neighborhood Efficiency Program	Docket No. 150087	Plan
Tampa Electric	Residential Weatherization and Agency Outreach	Docket No. 150081	Plan

[20] Cost recovery information is available for these utilities annually in PSC Docket No. xx0002, where "xx" are the last two digits of the year.

Kentucky

Utility	Program	Reference	Content
LG&E/KU	Residential Low-Income Weatherization (WeCare)	Case No. 2011-00134/ 2014-00003	Plan (through 2014)/plan (2015-2018);
Kentucky Power	Targeted Energy Efficiency	Case No. 2011-00300; Case Nos. 2012-00367/2013-00138/2013-00487/2015-00271	Reauthorization; cost recovery
Duke Energy Kentucky	RCEE/Low Income Services Program	Case No. 2012-00085 Case No. 2013-00395 Case No. 2014-00388	Plan/cost recovery; cost recovery
	Low Income Neighborhood Program		

Louisiana/New Orleans

Utility	Program	Reference	Content
Entergy Gulf States Louisiana/Energy Louisiana LLC[21]	Income Qualified	Docket No. R-31106	Plan/reporting
SWEPCO	Income Qualified		
Entergy New Orleans	Income Qualified	Docket No. UD-08-02	All filings

Mississippi

Utility	Program	Reference	Content
Mississippi Power	Neighborhood Efficiency	Docket No. 2014-UN-10	Plan/cost recovery

[21] Entergy Gulf States Louisiana and Entergy Louisiana LLC merged in 2015, but their energy efficiency programs were originally filed separately.

North Carolina and South Carolina

Utility	Program	Reference	Content
Dominion North Carolina Power	Low Income	Docket No. E-22 Sub 463; Docket No. E-22 Sub 524	Plan; reporting
Duke Energy Carolinas	Low-Income Energy Efficiency and Weatherization Assistance	Docket No. E-7 Sub 1032; E-7 Sub 1073	Plan; cost recovery through 2014
Duke Energy Progress	Neighborhood Energy Saver	SC PSC Docket No. 2011-181-E; NCUC Docket No. E-2 Sub 1070/Docket No E-2 Sub 1108	Plan; cost recovery through 2014/cost recovery 2015
SCE&G	Residential Neighborhood Energy Efficiency Program (NEEP)	2013-208-E	Plan; reporting

Virginia

Utility	Program	Reference	Content
Dominion Virginia Power	Low Income Program (2012-2014)	Case No. PUE-2009-00081; Case No. PUE-2012-00100; Case No. PUE-2013-00072	Plan; extension; reporting
Dominion Virginia Power	Income and Age-Qualified EE Program (2015)	Case No. PUE-2014-00071	Plan; reporting
Appalachian Power	Residential Low-Income Weatherization Program	Case No. PUE 2014-00026; Case No. PUE-2014-00039	Plan; reporting