

# Saving Energy: 2015

*How South Carolina's Electric and Natural Gas Utilities are Using Demand-Side Management to Help Customers Reduce Their Energy Bills*

Published December 2015



**ENERGY  
OFFICE**

# **Saving Energy: 2015**

***How South Carolina's Electric and Natural Gas Utilities Are Using Demand-Side Management to Help Customers Reduce Their Energy Bills***

**Contact:** Jacob Scoggins, Energy Specialist  
*jscoggins@regstaff.sc.gov*


*Published December 2015 by the State Energy Office,  
a division of the South Carolina Office of Regulatory Staff*

**1401 Main Street  
Suite 900  
Columbia, SC 29201  
(803) 737-0800  
[www.energy.sc.gov](http://www.energy.sc.gov)**

This material is based upon work supported by the Department of Energy under Award Number(s) DE-EE0006996.

Disclaimer: The South Carolina Restructuring Act of 2014 dissolved the Budget and Control Board (Board) and created the State Energy Office within the Office of Regulatory Staff (ORS). This report reflects the format previously issued under the Board and may change in the future to reflect an ORS report format.

Disclaimer: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.



# Table of Contents

Executive Summary .....	i
South Carolina Electric Distribution Utilities .....	iii
South Carolina Natural Gas Distribution Utilities .....	vi
Introduction.....	1
Investor-Owned Electric Utilities .....	2
Duke Energy Carolinas .....	2
Energy Efficiency Programs .....	3
Load Management Programs .....	10
Duke Energy Progress .....	13
Energy Efficiency Programs .....	14
Load Management Programs .....	18
Public Information Programs .....	19
Lockhart Power Company .....	22
South Carolina Electric & Gas Company .....	23
Energy Efficiency .....	23
Load Management Programs .....	24
State-Owned Electric Utility.....	27
Santee Cooper .....	27
Energy Efficiency Programs .....	27
Load Management Programs .....	30
Public Information Programs .....	31
Electric Cooperatives .....	34
Municipal Electric Utilities.....	35
City of Abbeville.....	35
City of Bennettsville.....	36
City of Camden.....	36
City of Clinton .....	36
Easley Combined Utility System .....	36
Laurens Commission of Public Works .....	36
City of Rock Hill .....	37
City of Union .....	37
City of Westminster .....	38
Investor-Owned Natural Gas Utilities.....	39
Piedmont Natural Gas Company .....	39
South Carolina Electric & Gas Company .....	42
Municipal Natural Gas Utilities .....	43
Chester County Natural Gas Authority.....	43
Clinton-Newberry Natural Gas Authority.....	43
Fort Hill Natural Gas Authority.....	44
Orangeburg Department of Public Utilities.....	44
York County Natural Gas .....	44
APPENDIX A.....	a
APPENDIX B.....	d
APPENDIX C.....	g

## Executive Summary

Demand Side Management (DSM) is a strategy that electric and natural gas utilities employ to decrease or defer demand for their energy services. The State Energy Office, a division of the South Carolina Office of Regulatory Staff (ORS), is submitting this report pursuant to S.C. Code Ann § 58-37-30 (C) (Supp. 2014). This report is intended to summarize DSM activities deployed by South Carolina's electric and natural gas utilities as reported in 2015 and to provide data regarding the purchase of power from qualifying facilities under the Public Utilities Regulatory Policies Act of 1978 (PURPA). Data used to create this report was taken from utility Integrated Resource Plans (IRPs) submitted during 2015 and utility responses to information requests. As such, the data and program descriptions represent the utilities' descriptions, goals, and objectives for their DSM activities. These IRPs include data from prior periods as well as future projections.

Utilities are encouraged by state legislative and regulatory incentives to adopt and implement DSM programs, which directly benefit utilities by reducing their need for wholesale energy purchases and potentially deferring infrastructure investments. Some examples of infrastructure investments that may be minimized or deferred include the installation of pollution controls, the construction of new generation, and the construction of new transmission and distribution infrastructure. Customers can also directly benefit from DSM through reductions in their monthly energy consumption.

For the purposes of this report, DSM programs are defined, pursuant to S.C. Code Ann § 58-37-10 (Supp. 2014), as activities conducted by electric and natural gas utilities for the reduction or more efficient use of energy in the following four (4) major categories:

- **Energy Efficiency**, which reduces energy consumption without requiring customers to sacrifice the benefits received from energy (e.g., installing building insulation, purchasing efficient appliances);
- **Conservation**, which reduces energy consumption by requiring customers to decrease their utilization of energy-consuming devices (e.g., reducing thermostat temperature, turning off lights);
- **Load Management**, which reduces customer demand for energy during periods of peak demand when capacity is limited and the cost of energy provision is high; and
- **Public Information**, which encourages customer participation in energy efficiency, conservation, or load management programs and seeks to change behaviors through public campaigns, direct-to-customer communication, or increasing customer access to information about their consumption of energy services.



In 2015, 41 of 61 South Carolina electric and natural gas distribution utilities offered DSM programs. The widest variety of DSM programs were available from Duke Energy Carolinas, LLC (“Duke Energy Carolinas”), Duke Energy Progress, LLC (“Duke Energy Progress”), and South Carolina Electric & Gas Company, which are investor-owned electric utilities, and the South Carolina Public Service Authority (“Santee Cooper”), the state-owned electric utility offered a variety of DSM programs covering all of the major categories.

Central Electric Cooperative, reporting for the twenty (20) member electric distribution cooperatives, has a longstanding load-control program that has been in effect for more than thirty (30) years. Several electric cooperatives also offer low-interest loans for home weatherization through on-bill financing. Seven (7) South Carolina municipal electric utilities, the largest being Rock Hill and the smallest being Abbeville, also maintain DSM programs. South Carolina’s fourth investor-owned electric utility, Lockhart Power Company, has one primary DSM program through its Industrial Interruptible Service Rate.

Dennis Schroeder / NREL



Piedmont Natural Gas Company, one of South Carolina’s two (2) investor-owned natural gas distribution utilities, also offered DSM programs. In addition, six (6) of South Carolina’s municipal natural gas utilities maintain DSM programs.

# South Carolina Electric Distribution Utilities

The following electric utilities have demonstrated notable impacts from their DSM programs<sup>1</sup>:

- **Duke Energy Carolinas'** Vintage Year 2015 DSM activity is projected to reduce electricity consumption by more than 2,500,000 megawatt-hours (MWh) over the lifetime of the installed measures and will provide the capability to reduce the one-hour peak usage by 895 megawatts (MW).<sup>2</sup> Furthermore, Duke Energy Carolinas projects that the measures installed in Vintage 2016 will reduce electric usage over the lifetime of the installed measures by more than 3,600,000 MWh and will provide capability to reduce the annual one-hour peak usage by 929 MW.<sup>3</sup>



Dennis Schroeder / NREL

- **Duke Energy Progress'** DSM programs were projected to reduce electricity consumption by a cumulative 1,062,285 MWh and will have the capability to reduce the annual one-hour peak usage by 369 MW by the end of 2014.<sup>4</sup> Furthermore, Duke Energy Progress projects that by the end of 2016 the DSM programs will have reduced annual electric usage by a cumulative 1,615,589 MWh and will have the capability to reduce the one-hour peak usage by 555 MW.<sup>5</sup>
- **South Carolina Electric & Gas Company's** DSM activity was projected to reduce electricity consumption 84,627 MWh in 2014<sup>6</sup> and by 71,307 MWh in 2015<sup>7</sup>.

<sup>1</sup> These impact numbers reflect the data as reported in the utilities' 2015 Integrated Resource Plans and utility responses to information requests. As these plans are filed at different times during the year and encompass different reporting periods. Direct comparisons of electricity consumption savings among utilities are not appropriate.

<sup>2</sup> "South Carolina Office of Regulatory Staff's Review of Duke Energy Carolinas, LLC Application for Approval of Rider 6" Docket No. 2014-334-E.

<sup>3</sup> "The Office of Regulatory Staff's Review of Duke Energy Carolinas, LLC Application for Approval of Rider 7" Docket No. 2015-89-E.

<sup>4</sup> "South Carolina Office of Regulatory Staff's Review of Duke Energy Progress, Inc.'s 2014 Annual Update on Demand Side Management and Energy Efficiency Rider" Docket No. 2014-89-E.

<sup>5</sup> "The Office of Regulatory Staff's Review of Duke Energy Progress, LLC Application for Approval of Rider DSM/EE-7" Docket No. 2015-323-E.

<sup>6</sup> "South Carolina Office of Regulatory Staff's Review of South Carolina Electric & Gas Company's 2014 Annual Update on Demand Side Management Programs and Petition for an Update to Rate Rider" Docket No. 2014-44-E.

<sup>7</sup> "South Carolina Office of Regulatory Staff's Review of South Carolina Electric & Gas Company's 2015 Annual Update on Demand Side Management Programs and Petition to Update Rate Rider" Docket No. 2015-45-E.

- ***Santee Cooper's*** DSM activity was estimated to reduce electricity consumption 105,200 MWh cumulatively to 2014 and is projected to reduce consumption by 209,000 MWh by 2020.
- ***South Carolina Electric Cooperatives'*** load control program, managed by Central Electric Cooperative, were estimated to reduce peak electricity demand by 100 MW during winter months and 40 MW during summer months in 2014.

Of the forty-six (46) electric distribution utilities (EDUs) in South Carolina, thirty-three (33) had ongoing DSM activities in 2015.<sup>8</sup> Their ongoing activities are discussed below. Due to their similarities and the way that the programs overlap, energy efficiency and conservation programs have been grouped together. See Appendix B for a listing of program types offered by each utility.

### **Energy Efficiency and Conservation**

- Four (4) EDUs provided financial incentives to builders and/or building occupants to promote energy efficient new construction.
- Four (4) EDUs offered financial incentives to building occupants to encourage energy efficiency improvements in existing structures. Several electric cooperatives also offered assistance through on-bill financing.
- Five (5) EDUs offered on-site energy assessments to customers, providing trained personnel to evaluate facilities and suggest methods for improving energy efficiency.
- Three (3) EDUs implemented energy efficiency and weatherization programs targeting low-income customers, giving personalized assistance and financial support to enable those customers to make needed home improvements and lower their monthly electric bill.
- Five (5) EDUs offered financial incentives for the purchase and/or installation of energy efficient appliances, equipment, and lighting.

### **Load Management**

- Twenty-four (24) EDUs offered financial incentives to customers that opted to allow utilities to control their peak load by curtailing the operation of certain appliances or equipment during periods of peak demand.
- Six (6) EDUs offered financial incentives to customers that agreed to partially or completely halt electricity consumption, or allowed the utility to interrupt service, during periods of peak demand.
- Five (5) EDUs offered rates that reflected time-of-use, real-time, and/or seasonal capacity constraints and marginal generation costs during periods of peak demand.

---

<sup>8</sup> Information provided on this summary page does not include pilot projects.

- Two (2) EDUs provided incentives for customers to switch to on-site standby electricity generation during periods of peak demand.
- One (1) EDU offered lower rates for the operation of thermal storage equipment to enable shifting of thermal energy demand from peak to off-peak periods.
- Six (6) EDUs reduced the voltage of electricity delivered to customers during periods of peak demand.<sup>9</sup>

## Public Information

- Six (6) EDUs maintained websites that offered energy efficiency and conservation tips and/or web-based systems for viewing and analyzing monthly electricity usage and cost.
- One (1) EDU offered in-home meters that displayed real-time information about customers' current and monthly electricity usage and cost.
- Six (6) EDUs communicated directly with customers through mailings and/or in-person assistance to publicize utility DSM programs and to offer energy efficiency and conservation tips and services.
- Four (4) EDUs conducted public outreach campaigns through advertising and/or presence at community events to publicize utility DSM programs and offer energy efficiency and conservation tips.
- Three (3) EDUs provided instructional programs and/or resources to K-12 schools to promote energy awareness.

---

<sup>9</sup> Voltage reduction is unique among the listed measures in that it is implemented across an entire service area; utility customers are usually not able to opt out of voltage reduction events. Voltage reduction might be undesirable to customers who require high voltage levels and disadvantageous to utilities attempting to maximize revenue by delivering (and charging for) the highest allowable voltage. However, voltage is typically reduced to levels that are acceptably safe and conducive to the operation of most appliances, and utilities typically implement voltage reduction only as a last resort when facing temporary capacity constraints. Conservative application of voltage reduction using advanced grid technologies is growing increasingly accepted as a cost-effective way to reduce customer energy bills and lessen the need for new peaking power generation and distribution capacity.



# South Carolina Natural Gas Distribution Utilities

*Of the fifteen (15) natural gas utilities (NGU) in South Carolina, eight (8) had ongoing DSM activities in 2015. Their ongoing activities are discussed below. See Appendix B for a list of program types offered by each utility.*

## Energy Efficiency and Conservation

- One (1) NGU provided payments to builders to promote energy efficient new construction.
- Two (2) NGUs offered on-site energy assessments to customers, providing trained personnel to evaluate facilities and suggest methods for improving energy efficiency.
- One (1) NGU implemented an energy efficiency and weatherization program targeting low-income customers, providing personalized assessments and home improvements to enable these customers to lower their monthly natural gas bills.
- Six (6) NGUs offered financial incentives for the purchase and/or installation of newer, more efficient natural gas appliances or equipment.

## Load Management

- Two (2) NGUs offered financial incentives to customers that allowed utilities to cut off or reduce their natural gas deliveries during periods of peak demand. Interruptible customers are typically commercial or industrial entities that have the ability to switch from utility natural gas to another energy source or are willing to suspend operations during fuel curtailment periods.

## Public Information

- Three (3) NGUs maintained websites that offered energy efficiency and conservation tips and/or web-based tools for viewing and analyzing monthly natural gas usage and cost.
- Two (2) NGUs communicated directly with customers through mailings and/or in-person assistance to publicize utility DSM programs and offer energy efficiency and conservation tips and services.
- One (1) NGU conducted public outreach campaigns through advertising and presence at community events to publicize utility DSM programs and offer energy efficiency and conservation tips.

# Introduction

The ORS is submitting this report pursuant to S.C. Code Ann § 58-37-30 (C) (Supp. 2014). It summarizes Demand-Side Management (DSM) activities deployed by South Carolina’s electric and natural gas utilities and provides the status of the purchase of power from qualifying facilities under the Public Utilities Regulatory Policies Act of 1978 (PURPA). Appendix A shows the status of purchased power from PURPA qualified facilities in South Carolina.

Data used to create this report was taken from utility Integrated Resource Plans (IRP) submitted during 2015 and utility responses to information requests. As such, the data and program descriptions represent the utilities’ descriptions, goals, and objectives for their DSM activities. These IRPs include data from prior periods as well as future projections. For the purposes of this report, DSM programs are defined, pursuant to S.C. Code Ann § 58-37-10 (Supp. 2014), as activities conducted by electric and natural gas utilities for the reduction or more efficient use of energy in the following four (4) major categories:

- **Energy Efficiency:** reduces energy consumption without requiring customers to sacrifice the benefits received from energy (e.g., installing building insulation, purchasing efficient appliances);
- **Conservation:** reduces energy consumption by requiring customers to decrease their utilization of energy-consuming devices (e.g., reducing thermostat temperature, turning off lights);
- **Load Management:** reduces customer demand for energy during periods of peak demand when capacity is limited and the cost of energy provision is high; and
- **Public Information:** encourages customer participation in DSM programs and seeks to change behaviors through public campaigns, direct-to-customer communication, or increasing customer access to information about their consumption of energy services.

The following sections of this report provide a description of the DSM programs offered by the investor-owned utilities, Santee Cooper, electric cooperatives, and municipalities. Data used to create this report was taken from utility IRPs submitted during 2015<sup>10</sup> and utility responses to information requests received during the same period (“Review Period”). These plans were submitted between February and October of 2015 and cover both activities undertaken in the previous year and activities planned for the future. Due to their similarities and the way that the programs overlap, energy efficiency and conservation programs have been grouped together.

---

<sup>10</sup> Docket Nos. 2015-8-E, 2015-9-E, 2015-10-E, and 2015-11-E.

## Investor-Owned Electric Utilities

### ***Duke Energy Carolinas***

In 2013, Duke Energy Carolinas (DEC) filed its application for approval of DSM programs under South Carolina Docket 2013-298-E. This new portfolio was a replacement for the save-a-watt programs approved in 2009/2010. DEC received the final order for approval for these programs from the Public Service Commission of South Carolina (“Commission”) in December 2013.



On March 2, 2015, DEC filed its annual application with the Commission for approval of its retail rate rider to recover \$73,644,327 in DSM costs. DEC is requesting the updated Rider DSM/EE-7 be effective for bills rendered on and after January 1, 2016. On June 26, 2015, the Commission approved DEC’s request, subject to ORS adjustments. DEC’s application and the corresponding ORS reports are available from the Commission.<sup>11</sup>

DEC’s Vintage Year 2015 DSM activity is projected to reduce electricity consumption by more than 2,500,000 MWh over the lifetime of the installed measures and will provide the capability to reduce the one-hour peak usage by 895 MW.<sup>12</sup> Furthermore, DEC projects that the measures installed in Vintage 2016 will reduce electric usage over the lifetime of the installed measures by more than 3,600,000 MWh and will provide capability to reduce the annual one-hour peak usage by 929 MW.<sup>13</sup>

DEC uses programs in its IRP to efficiently and cost-effectively alter customer demands and reduce the long-run supply costs for energy and peak demand. These programs can vary greatly in their dispatch characteristics, size and duration of load response, certainty of load response, and level and frequency of customer participation. Following are the DSM programs currently available through DEC:

### **Residential Customer Programs**

- Appliance Recycling Program
- Energy Assessments Program
- Energy Efficiency Education Program
- Energy Efficient Appliances and Devices

---

<sup>11</sup> 2014 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/115162>

2015 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/115399>

<sup>12</sup> “South Carolina Office of Regulatory Staff’s Review of Duke Energy Carolinas, LLC Application for Approval of Rider 6” Docket No. 2014-334-E.

<sup>13</sup> “The Office of Regulatory Staff’s Review of Duke Energy Carolinas, LLC Application for Approval of Rider 7” Docket No. 2015-89-E.

- Heating, Ventilation and Air Conditioning (HVAC) Energy Efficiency Program
- Multi-Family Energy Efficiency Program
- My Home Energy Report
- Income-Qualified Energy Efficiency and Weatherization Program
- Power Manager

## Non-Residential Customer Programs

- Non-Residential Smart \$aver® Energy Efficient Food Service Products Program
- Non-Residential Smart \$aver® Energy Efficient HVAC Products Program
- Non-Residential Smart \$aver® Energy Efficient IT Products Program
- Non-Residential Smart \$aver® Energy Efficient Lighting Products Program
- Non-Residential Smart \$aver® Energy Efficient Process Equipment Products Program
- Non-Residential Smart \$aver® Energy Efficient Pumps and Drives Products Program
  - Non-Residential Smart \$aver® Custom Program
  - Non-Residential Smart \$aver® Custom Energy Assessments Program
  - PowerShare®
  - PowerShare® CallOption

## Pilot Program

- Energy Management and Information Services Program

## Energy Efficiency Programs

*These programs are typically non-dispatchable education or incentive programs. Energy and capacity savings are achieved by changing customer behavior or through the installation of more energy-efficient equipment or structures. The following provides more detail on DEC's existing EE programs:*

## Residential Programs

**Appliance Recycling Program** promotes the removal and responsible disposal of older, inefficient appliances. Currently, the program provides incentives to customers targeting the removal of old inefficient operating refrigerators and freezers from DEC's residential customers. After collection of the appliances, approximately 95% of the material is recycled from the harvested appliances. This program is available to customers who own operating

refrigerators and freezers used in individually-metered residences. The refrigerator or freezer must have a capacity of at least 10 cubic feet but not more than 30 cubic feet.

**Energy Assessments Program** assists residential customers in assessing their energy usage and provides recommendations for more efficient use of energy in their homes. The program also helps identify those customers who could benefit most by investing in new EE measures, undertaking more EE practices and participating in other DEC DSM programs. This program includes Home Energy House Call, which provides eligible customers with a free in-home assessment designed to help customers reduce energy usage and save money. A Building Performance Institute-certified energy specialist completes a 60 to 90 minute walk-through assessment of the home and analyzes energy usage to identify energy saving opportunities. The specialist discusses behavioral and equipment modifications that can save energy and money with the customer and provides a customized report to the customer that identifies specific actions the customer can take to increase their home efficiency. Participating customers will also receive an Energy Efficiency Starter Kit with a variety of measures that can be directly installed by the energy specialist.

**Energy Efficiency Education Program** is designed to educate students in grades K-12 about energy and the impact they can have by becoming more energy efficient and using energy more wisely. In conjunction with teachers and administrators, DEC will provide educational materials and curriculum for targeted schools and grades that meet grade-appropriate state education standards. The curriculum and engagement method may vary over time to adjust to market conditions, but



Joe Ryan

currently utilizes theatre to deliver the program into the school. Enhancing the message with a live theatrical production truly captures the children's attention and reinforces the classroom and take-home assignments. Students learn about EE measures in the Energy Efficiency Starter Kit and then implement these energy saving measures in their homes. Students are sharing what they have learned with their parents and helping their entire households learn how to save more energy.

**Energy Efficient Appliances and Devices Program** provides incentives to residential customers for installing energy efficient appliances and devices to drive reductions in energy usage. The program includes the following measures:



- **Energy Efficient Pool Equipment:** This measure encourages the purchase and installation of energy efficient equipment and controls. Initially, the measure will focus on variable speed pumps, but the pool equipment offerings may evolve with the marketplace to include additional equipment options and control devices that reduce energy consumption and/or demand.
- **Energy Efficient Lighting:** This measure encourages the installation of energy efficient lighting products and controls. The product examples may include, but are not limited to the following: standard CFLs, specialty CFLs, A lamp LEDs, specialty LEDs, CFL fixtures, LED fixtures, 2X incandescent, LED holiday lighting, motion sensors, photo cells, timers, dimmers and daylight sensors.
- **Energy Efficient Water Heating and Usage:** This measure encourages the adoption of heat pump water heaters, insulation, temperature cards and low flow devices.
- **Other Energy Efficiency Products and Services:** Other cost-effective measures may be added to in-home installations, purchases, enrollments and events. Examples of additional measures may include, without limitation, outlet gaskets, switch gaskets, weather stripping, filter whistles, fireplace damper seals, caulking, smart strips and energy education tools/materials.



**Heating, Ventilation, and Air Conditioning (HVAC) Energy Efficiency Program** provides residential customers with opportunities to lower their home's electric use through maintenance and improvements to their central HVAC system(s) as well as the structure of their home's building envelope and duct system(s). This program reaches DEC customers during the decision-making process for measures included in the program. Each measure offered through the program will have a prescribed incentive associated with successful completion by an approved contractor. The prescriptive and a-la-carte design of the program allows customers to implement individual, high priority measures in their homes without having to commit to multiple measures and higher price tags. The measures eligible for incentives through the program are:

- Central Air Conditioner
- Heat Pump
- Attic Insulation and Air Sealing

**DISCLAIMER:** The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

- Duct Sealing
- Duct Insulation
- Central Air Conditioner Tune Up
- Heat Pump Tune Up

**Multi-Family Energy Efficiency Program** provides energy efficient technologies to be installed in multi-family dwellings, which include, but are not limited to, the following:

- Energy Efficient Lighting
- Energy Efficient Water Heating Measures
- Other cost-effective measures may be added to in-home installations, purchases, enrollments and events. Examples of additional measures may include, without limitation, outlet gaskets, switch gaskets, weather stripping, filter whistles, fireplace damper seals, caulking, smart strips and energy education tools/materials.

### **My Home Energy Report Program**

provides residential customers with a comparative usage report up to twelve times a year that engages and motivates customers by comparing energy use to similar residences in the same geographical area based upon the age, size and heating source of the home.

The report also empowers customers to become more efficient by providing them with specific energy saving recommendations to improve the efficiency of their homes. The actionable energy savings tips, as well as measure-specific coupons, rebates or other Company program offers that may be included in a customer's report are based on that specific customer's energy profile.



**Income-Qualified Energy Efficiency and Weatherization Program** consists of two distinct components designed to provide EE to different segments of its low income customers:

- The Residential Neighborhood Program (“RNP”) is available only to individually-metered residences served by DEC in neighborhoods selected by the Company, which are considered low-income based on third party and census data, which includes income level and household size. Neighborhoods targeted for participation in this program will typically have approximately 50% or more of the households with income up to 200% of the poverty level established by the U.S. Government. This approach allows the Company to reach a larger audience of low income customers than traditional government agency flow-through methods. The program provides customers with the

direct installation of measures into the home to increase the EE and comfort level of the home. Additionally, customers receive EE education to encourage behavioral changes for managing energy usage and costs.

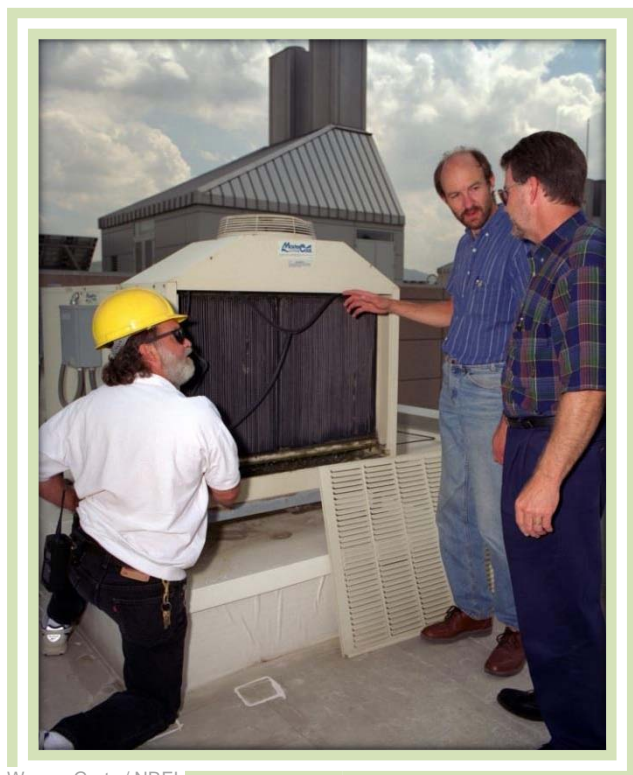
## **Non-Residential**

**Non-Residential Smart \$aver® Energy Efficient Food Service Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency food service equipment in new and existing non-residential establishments and repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, commercial refrigerators and freezers, steam cookers, pre-rinse sprayers, vending machine controllers, and anti-sweat heater controls.

**Non-Residential Smart \$aver® Energy Efficient HVAC Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficient HVAC equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, chillers, unitary and rooftop air conditioners, programmable thermostats, and guest room energy management systems.

**Non-Residential Smart \$aver® Energy Efficient IT (Information Technologies) Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of high efficiency new IT equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance efficiency levels in currently-installed equipment. Measures include, but are not limited to, Energy Star-rated desktop computers and servers, PC power management from network, server virtualization, variable frequency drives (“VFD”) for computer room air conditioners and VFD for chilled water pumps.

**Non-Residential Smart \$aver® Energy Efficient Lighting Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency lighting equipment in new and existing non-residential establishments and the efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, interior and exterior LED lamps and fixtures, reduced wattage and high performance T8 systems, T8 and T5 high bay fixtures, and occupancy sensors.



Warren Gretz / NREL

**Non-Residential Smart \$aver® Energy Efficient Process Equipment Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency equipment in new and existing nonresidential establishments and efficiency-directed repairs to maintain or enhance high efficiency levels in currently installed equipment. Measures include, but are not limited to, VFD air compressors, barrel wraps, and pellet dryer insulation.

**Non-Residential Smart \$aver® Energy Efficient Pumps and Drives Products Program** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency equipment in new and existing nonresidential establishments and

efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, pumps and VFD on HVAC pumps and fans.

**Non-Residential Smart \$aver® Custom Program** provides custom incentive payments to nonresidential customers to encourage and partially offset the cost of the installation of new high efficiency equipment in new and existing non-residential establishments. This program allows for eligible customers to apply for and the Company to provide custom incentives in the amount up to 75% of the installed cost difference between standard equipment and new higher efficiency equipment or efficiency-directed repair activities in order to cover measures and efficiency driven activities that are not offered in the various Non-Residential Smart \$aver prescriptive programs.

**Non-Residential Smart \$aver® Custom Energy Assessments Program** provides customers who may be unaware of EE opportunities at their facilities with a custom incentive payment in the amount up to 50% of the costs of a qualifying energy assessment. The purpose of this component of the program is to overcome financial barriers by off-setting a customer's upfront costs to identify and evaluate EE projects that will lead to the installation of energy efficient measures. The scope of an energy assessment may include but is not limited to a facility energy audit, a new construction/renovation energy performance simulation, a system energy study and retro-commissioning service. After the energy assessment is complete, program participants may receive an additional custom incentive payment in the amount of up



to 75% of the installed cost difference between standard equipment and higher efficiency equipment or efficiency-directed repair activities.

**Small Business Energy Saver Program (SBES)** is modeled after the SBES program offered by DEP. The primary objective of the program is to reduce energy usage by improving energy efficiency through the offer and installation of eligible energy efficiency measures. Program measures will address major end-uses in lighting, refrigeration, and HVAC applications. The Program is available to existing non-residential establishments served on a DEC general service or industrial rate schedule from the DEC retail distribution system that are not opted-out of the EE portion of Rider EE. Program participants must have an average annual demand of 100 kW or less per active account. Participants may be owner-occupied or tenant facilities with owner permission.

**Smart Energy in Offices Program** is designed to increase the energy efficiency of targeted customers by engaging building occupants, tenants, property managers and facility teams with information, education, and data to drive behavior change and reduce energy consumption. This Program will leverage communities to target owners and managers of potential participating accounts by providing participants with detailed information on the account/building's energy usage, support to launch energy saving campaigns, information to make comparisons between their building's energy performance and others within their community and actionable recommendations to improve their energy performance. The Program is available to existing non-residential accounts located in eligible commercial buildings served on a DEC general service rate schedule from the DEC retail distribution system that are not opted out of the EE portion of the Rider EE.

Dennis Schroeder / NREL



## Pilot

**Energy Management and Information Services Pilot** is designed to test providing qualified commercial or institutional customer facilities with a systematic approach to reduce energy and persistently maintain the savings over time. The Company will provide the customer with an



energy management and information system (EMIS) Software-as-a-Service (SaaS) and perform a remote or light on-site energy assessment focused on low-cost operational EE measures. The EMIS SaaS will use interval meter data from the customer's meter to give valuable insights into areas where efficiency has been gained as well as additional opportunities for efficiency. The customer will also implement a bundle of low cost operational and maintenance-based energy efficient measures that meet certain financial investment criteria.

*This Pilot was never implemented and was removed from the EE portfolio in 2015.*

## Load Management Programs

### Demand Response – Direct Load Control Programs

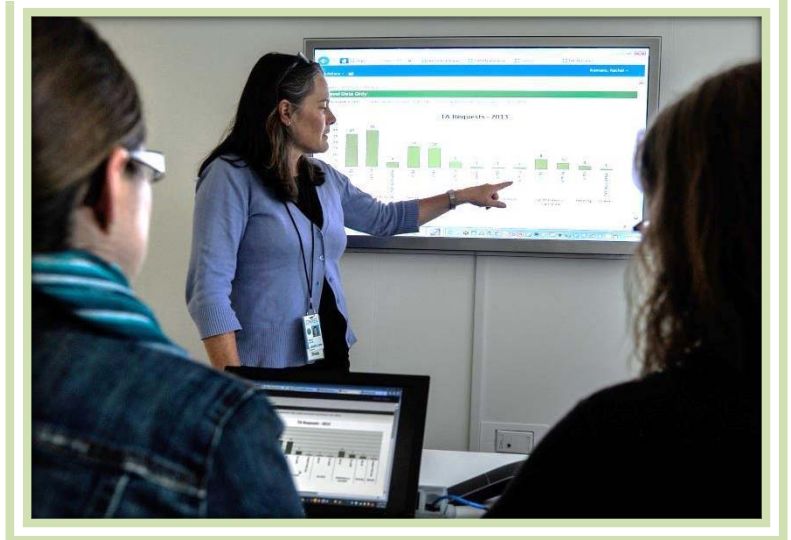
*These programs can be dispatched by the utility and have the highest level of certainty due to the participant not having to directly respond to an event. DEC's current direct load control programs are:*

#### Residential

**Power Manager®** provides residential customers a voluntary demand response program that allows DEC to limit the run time of participating customers' central air conditioning (cooling) systems to reduce electricity demand. Power Manager may be used to completely interrupt service to the cooling system when the Company experiences capacity problems. In addition, DEC may intermittently interrupt (cycle) service to the cooling system. For their participation in Power Manager, customers receive bill credits during the billing months of June through September.

Power Manager provides DEC with the ability to reduce and shift peak loads, thereby enabling a corresponding deferral of new supply-side peaking generation and enhancing system reliability.

Dennis Schroeder / NREL

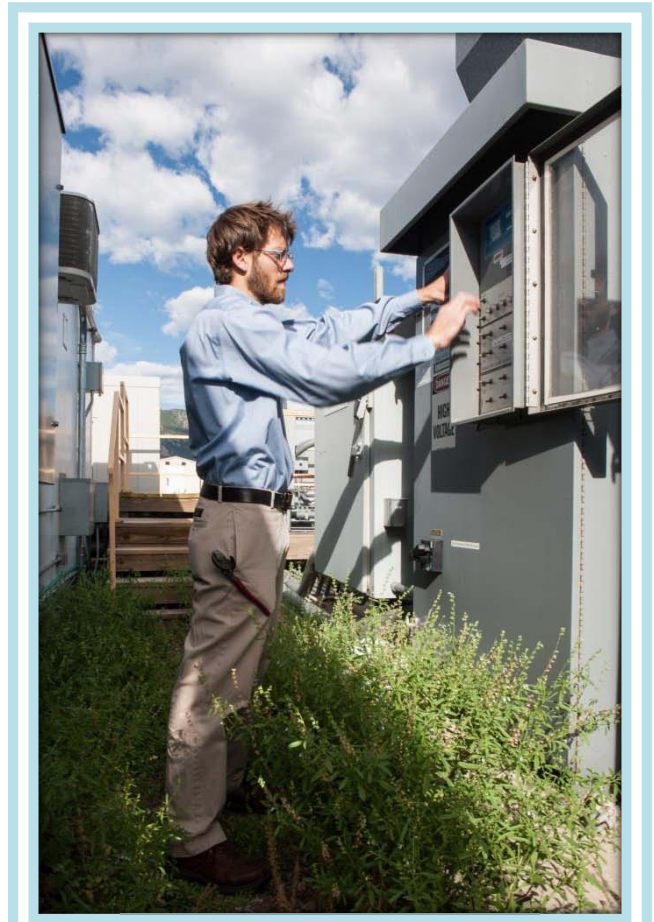


Participating customers are impacted by (1) the installation of load control equipment at their residence, (2) load control events which curtail the operation of their air conditioning unit for a period of time each hour, and (3) the receipt of bill credits from DEC in exchange for allowing DEC the ability to control their electric equipment.

## Non-Residential

### Demand Response – Interruptible Programs and Related Rate Structures

*These programs rely either on the customer's ability to respond to a utility-initiated signal requesting curtailment, or on rates with price signals that provide an economic incentive to reduce or shift load. Timing, frequency, and nature of the load response depend on customers' actions after notification of an event or after receiving pricing signals. DEC's current interruptible and time-of-use rate programs include:*



Dennis Schroeder / NREL

**PowerShare®** is a non-residential curtailment program consisting of four options: an emergency only option for curtailable load (PowerShare® Mandatory), an emergency only option for load curtailment using on-site generators (PowerShare® Generator), an economic based voluntary option (PowerShare® Voluntary) and a combined emergency and economic option that allows for increased notification time of events (PowerShare® CallOption).

**PowerShare® Mandatory:** Participants in this emergency only option will receive capacity credits monthly based on the amount of load they agree to curtail during utility-initiated emergency events. Participants also receive energy credits for the load curtailed during events. Customers enrolled may also be enrolled in PowerShare® Voluntary and eligible to earn additional credits.

**PowerShare® Generator:** Participants in this emergency only option will receive capacity credits monthly based on the amount of load they agree to curtail (i.e. transfer to their on-site

generator) during utility-initiated emergency events and their performance during monthly test hours. Participants also receive energy credits for the load curtailed during events.

In response to EPA regulations finalized January 2013, the manner in which PowerShare Generator is dispatched was modified to allow customers with emergency generators to continue participation in demand response programs. To comply with the new rule, dispatch of the PowerShare Generator program must be limited to NERC Level II except for the monthly readiness tests. More recently, on May 1, 2015, the DC Circuit Court of Appeals entered a decision against the EPA questioning the merits of portions of the generator regulations including allowance of 100 hours of annual participation in demand response. Vacatur of the 100-hour provision could result in the inability of DEC to offer a cost-effective emergency generator program because the original rule only allowed for 12 hours of DR participation annually. Therefore, DEC will continue to monitor the impact of court proceedings on the regulations and will make appropriate adjustments to program offerings.

**PowerShare®Voluntary:** Enrolled customers will be notified of pending emergency or economic events and can log on to a website to view a posted energy price for that particular event. Customers will then have the option to participate in the event and will be paid the posted energy credit for load curtailed. Since this is a voluntary event program, no capacity benefit is recognized for this program and no capacity incentive is provided.

**PowerShare®CallOption:** This program offers a participating customer the ability to receive credits when the customer agrees, at DEC's request, to reduce and maintain its load by a minimum of 100 kW during Emergency and/or Economic Events. Credits are paid for the load available for curtailment, and charges are applicable when the customer fails to reduce load in accordance with the participation option it has selected. Participants are obligated to curtail load during emergency events. CallOption offers four participation options to customers: PS 0/5, PS 5/5, PS 10/5 and PS 15/5. All options include a limit of five Emergency Events and set a limit for Economic Events to 0, 5, 10 and 15 respectively.

**PowerShare®CallOption 200:** This new, high involvement CallOption is targeted at customers with very flexible load and curtailment potential of up to 200 hours of economic load curtailment each year. This option will function essentially in the same manner as DEC's other CallOption offers. However, customers who participate will experience considerably more requests for load curtailment for economic purposes. Participants will remain obligated to curtail load during up to 5 emergency events. The program was not available for customer participation until January 1, 2014.

## ***Duke Energy Progress***

Duke Energy Progress' (DEP) original DSM mechanism was established in the stipulation filed on January 23, 2009 and approved by the Commission on June 26, 2009. In 2015, the Commission approved a new cost recovery and incentive mechanism for DEC's DSM programs. DEP continues to pursue a long-term, balanced capacity and energy strategy to meet the future electricity needs of its customers. This balanced strategy includes a strong commitment to DSM programs, investments in renewable and emerging energy technologies, and state-of-the art power plants and delivery systems.

On September 1, 2015, DEP filed its annual application with the Commission for approval of its retail rate rider to recover \$32,671,456 in DSM costs. DEP requested the updated Rider DSM/EE-7 be effective for bills rendered on and after January 1, 2016. At the time of this report, the Commission has not issued an order regarding DEP's request. DEP's application and the corresponding ORS reports are available from the Commission.<sup>14</sup>



DEP's DSM programs were projected to reduce electricity consumption by a cumulative 1,062,285 MWh and will have the capability to reduce the annual one-hour peak usage by 369 MW by the end of 2014.<sup>15</sup> Furthermore, DEP projects that by the end of 2016 the DSM programs will have reduced annual electric usage by a cumulative 1,615,589 MWh and will have the capability to reduce the one-hour peak usage by 555 MW.<sup>16</sup>

DEP DSM programs in its IRP to efficiently and cost-effectively alter customer demands and reduce the long-run supply costs for energy and peak demand. These programs can vary greatly in their dispatch characteristics, size and duration of load response, certainty of load response, and level and frequency of customer participation. In general, programs are offered in two primary categories: EE programs that reduce energy consumption and DSM programs that reduce peak demand (demand-side management or demand response programs and certain rate structure programs).

<sup>14</sup> 2014 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/114917>

2015 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/115633>

<sup>15</sup> "South Carolina Office of Regulatory Staff's Review of Duke Energy Progress, Inc.'s 2014 Annual Update on Demand Side Management and Energy Efficiency Rider" Docket No. 2014-89-E.

<sup>16</sup> "The Office of Regulatory Staff's Review of Duke Energy Progress, LLC Application for Approval of Rider DSM/EE-7" Docket No. 2015-323-E.



DEP's DSM portfolio currently consists of the following programs, as approved by the Commission.

- Residential Home Energy Improvement
- Residential New Construction
- Residential Neighborhood Energy Saver (Low-Income)
- Residential Appliance Recycling Program
- Residential My Home Energy Report
- Energy Efficiency Education
- Residential Multi-Family Energy Efficiency
- Energy Efficient Lighting Program
- Commercial, Industrial, and Governmental (CIG) Energy Efficiency
- Small Business Energy Saver
- Distribution System Demand Response (DSDR) Program
- Residential EnergyWise HomeSM
- CIG Demand Response Automation Program

Hidden Springs Community, LLC



## Energy Efficiency Programs

**Residential Home Energy Improvement Program** offers DEP customers a variety of energy conservation measures designed to increase energy efficiency for existing residential dwellings that can no longer be considered new construction. The prescriptive menu of energy efficiency measures provided by the program allows customers the opportunity to participate based on the needs and characteristics of their individual homes. Financial incentives are provided to participants for each of the conservation measures promoted within this program. The program utilizes a network of pre-qualified contractors to install each of the following energy efficiency measures:

- High-Efficiency Heat Pumps and Central A/C
- Duct Repair
- Level-2 HVAC Tune-up
- Insulation Upgrades/Attic Sealing
- High Efficiency Room Air Conditioners
- Heat Pump Water Heater



**Residential New Construction Program** offers single family builders and multi-family developers equipment incentives for installing high efficiency HVAC and/or heat pump water heating equipment in new residential construction; or whole house incentives for meeting or exceeding the 2012 North Carolina Energy Conservation Code High Efficiency Residential Option (HERO).

The primary objectives of this program are to reduce system peak demands and energy consumption within new homes. New construction represents a unique opportunity for capturing cost effective EE savings by encouraging the investment in energy efficiency features that would otherwise be impractical or more costly to install at a later time. These are often referred to as lost opportunities.

**Residential Neighborhood Energy Saver (Low-Income) Program** assists low-income residential customers with energy conservation efforts which will in turn lessen their household energy costs. The program provides assistance to low-income families by installing a comprehensive package of energy conservation measures that lower energy consumption at no cost to the customer. Prior to installing measures, an energy assessment is conducted on each residence to identify the appropriate measures to install. In addition to the installation of energy efficiency measures, an important component of the Neighborhood Energy Saver program is the provision for one-on-one energy education. Each household receives information on energy efficiency techniques and is encouraged to make behavioral changes to help reduce and control their energy usage. The Neighborhood Energy Saver program is being implemented utilizing a whole neighborhood, door-to-door delivery strategy.

**Energy Efficient Lighting Program** is designed to reduce energy consumption by providing incentives and marketing support through retailers to encourage greater customer adoption of high efficiency lighting products. DEP partners with various manufacturers and retailers across its entire service territory to offer in-store discounts on a wide selection of CFLs, LEDs, and energy-efficient fixtures. The program also targets the purchase of these products through in-store and on-line promotions, while promoting greater awareness through special retail and community events.



**Residential Appliance Recycling Program** is designed to reduce energy consumption and provide environmental benefits through the proper removal and recycling of older, less efficient refrigerators and freezers that are operating within residences across the DEP service territory. The program includes scheduling and free appliance pick-up at the customer's location, transportation to a recycling facility, and recovery and recycling of appliance materials. On an annual basis, customers

**DISCLAIMER:** The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

receive free removal and recycling of up to two appliances, as well as an incentive for participation.

**Residential My Home Energy Report (MyHER) Program** was designed to help customers better understand their energy usage. The report informs customers about their energy use with simple and easy to understood graphics. The report also compares customers' energy use with similar homes in their area based on home size, age and heating source and motivates customers to change behavior and reduce their energy use by presenting them with timely tips and program offers. Customers receive up to eight paper reports a year. My Home Energy Interactive is a website that complements the report.

MyHER received regulatory approval during the second half of 2014 and eligible customers received their first report during the first quarter of 2015.

**Energy Efficiency Education Program** is an EE program available to students in grades K-12 enrolled in public and private schools who reside in households served by DEP. The Program provides an important message about energy efficiency through a live theatrical production performed by two professional actors. Teachers receive supportive educational material for classroom and student take home assignments, such as school posters, teacher guides, and classroom and family activity books. The current curriculum is administered by The National Theatre for Children and targets grade K-8 students.

Following the performance, students are encouraged to complete a home energy survey with their family (included in their classroom and family activity book) to receive an Energy Efficiency Starter Kit. The kit contains specific energy efficiency measures to reduce home energy consumption. The kit is available at no cost to all student households at participating schools, including customers and non-customers. The program launched in January 2015 after receiving regulatory approval late in 2014.



**Multi-family Energy Efficiency Program** was approved in 2014 and allows DEP to target energy efficiency measures specifically for multi-family apartment complexes. The program is designed to help property managers upgrade lighting with energy efficient CFLs and also save energy by offering water measures such as bath and kitchen faucet aerators, water saving showerheads and pipe wrap. The Program also offers properties the option of direct install

**DISCLAIMER:** The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

service by a third-party vendor or to use their own property maintenance crews to complete the installations. Post-installation Quality Assurance inspections by an independent third-party are conducted on 20 percent of properties that completed installations in a given month. The program launched in January 2015 after receiving regulatory approval late in 2014.

**Commercial, Industrial, and Governmental (CIG) Energy Efficiency Program** is available to all CIG customers interested in improving the energy efficiency of their new construction projects or within their existing facilities. New construction incentives provide an opportunity to capture cost effective energy efficiency savings that would otherwise be impractical or more costly to install at a later time. The retrofit market offers a potentially significant opportunity for savings as CIG type customers with older, energy inefficient electrical equipment are often under-funded and need assistance in identifying and retrofitting existing facilities with new high efficiency electrical equipment. The program includes prescriptive incentives for measures that address the following major end-use categories:

- HVAC
- Lighting
- Refrigeration

In addition, the program offers incentives for custom measures to specifically address the individual needs of customers in the new construction or retrofit markets, such as those with more complex applications or in need of energy efficiency opportunities not covered by the prescriptive measures.

Dennis Schroeder / NREL



The program also seeks to meet the following overall goals:

- Educate and train trade allies, design firms and customers to influence selection of energy efficient products and design practices.
- Educate CIG customers regarding the benefits of energy efficient products and design elements and provide them with tools and resources to cost-effectively implement energy-saving projects.
- Obtain energy and demand impacts that are significant, reliable, sustainable and measurable.
- Influence market transformation by offering incentives for cost effective measures.

**The Small Business Energy Saver Program** is a new direct-install type of program designed to encourage the installation of energy efficiency measures in small, "hard to reach"

commercial facilities with an annual demand of 100 kW or less. The program provides a complete energy assessment and installation of measures on a turn-key basis. In addition, the program was designed to minimize financial barriers by incorporating aggressive incentives as well as providing payment options for the remainder of participant costs.

**Distribution System Demand Response Program (DSDR)** is an application of Smart Grid technology that provides the capability to reduce peak demand for four to six hours at a time, which is the duration consistent with typical peak load periods, while also maintaining customer delivery voltage above the minimum requirement when the program is in use. The increased peak load reduction capability and flexibility associated with DSDR will result in the displacement of the need for additional peaking generation capacity. This capability is accomplished by investing in a robust system of advanced technology, telecommunications, equipment, and operating controls. The DSDR Program helps DEP implement a least cost mix of demand reduction and generation measures that meet the electricity needs of its customers.

## Load Management Programs

**Residential EnergyWise HomeSM Program** is a direct load control program that allows DEP, through the installation of load control switches at the customer's premise, to remotely control the following residential appliances.

- Central air conditioning or electric heat pumps
- Auxiliary strip heat on central electric heat pumps (Western Region only)
- Electric water heaters (Western Region only)

For each of the control options above, an initial one-time bill credit is provided to program participants in exchange for allowing DEP to control the listed appliances. The program provides DEP with the ability to reduce and shift peak loads, thereby enabling a corresponding deferral of new supply-side peaking generation and enhancing system reliability. Participating customers are impacted by (1) the installation of load control equipment at their residence, (2) load control events which curtail the operation of their air conditioning, heat pump strip heating or water heating unit for a period of time each hour, and (3) the receipt of an annual bill credit from DEP in exchange for allowing DEP to control their electric equipment.

**Commercial, Industrial, and Governmental (CIG) Demand Response Automation Program** allows DEP to install load control and data acquisition devices to remotely control and monitor a wide variety of electrical equipment capable of serving as a demand response resource. The goal of this program is to utilize customer education, enabling two-way communication technologies, and an event-based incentive structure to maximize load



**DISCLAIMER:** The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

reduction capabilities and resource reliability. The primary objective of this program is to reduce DEP's need for additional peaking generation. This will be accomplished by reducing DEP's seasonal peak load demands, primarily during the summer months, through deployment of load control and data acquisition technologies.

In response to EPA regulations finalized January 2013, a new Emergency Generator Option was implemented effective January 1, 2014, to allow customers with emergency generators to continue participation in demand response programs. To comply with the new rule, dispatch of the Emergency Generator Option must be limited to NERC Level II (EEA2) except for an annual readiness test. More recently, on May 1, 2015, the DC Circuit Court of Appeals entered a decision against the EPA questioning the merits of portions of the generator regulations including allowance of 100 hours of annual participation in demand response. Vacatur of the 100-hour provision could result in the inability of DEP to offer a cost-effective emergency generator program because the original rule only allowed for 12 hours of DR participation annually. Therefore, DEP will continue to monitor the impact of court proceedings on regulations and will make appropriate adjustments to program offerings. The original DR program design, now referred to as the Curtailable Option, continues to be dispatched as it has historically without NERC level restrictions.



Warren Gretz / NREL

## **Public Information Programs**

DEP also has the following informational and educational programs.

- On Line Account Access
- “Lower My Bill” Toolkit
- Online Energy Saving Tips
- Energy Resource Center
- Large Account Management
- eSMART Kids Website
- Community Events



**On Line Account Access** provides energy analysis tools to assist customers in gaining a better understanding of their energy usage patterns and identifying opportunities to reduce energy consumption. The service allows customers to view their past 24 months of electric usage including the date the bill was mailed; number of days in the billing cycle; and daily temperature information. This program was initiated in 1999.

**Lower My Bill Toolkit**, implemented in 2004, provides on-line tips and specific steps to help customers reduce energy consumption and lower their utility bills. These range from relatively simple no-cost steps to more extensive actions involving insulation and heating and cooling equipment.

### **Online Energy Saving Tips**

DEP has been providing tips on how to reduce home energy costs since approximately 1981. DEP's web site includes information on household energy wasters and how a few simple actions can increase efficiency. Topics include: Energy Efficient Heat Pumps, Mold, Insulation R-Values, Air Conditioning, Appliances and Pools, Attics and Roofing, Building/Additions, Ceiling Fans, Ducts, Fireplaces, Heating, Hot Water, Humidistats, Landscaping, Seasonal Tips, Solar Film, and Thermostats.

### **Energy Resource Center**

In 2000, DEP began offering its large commercial, industrial, and governmental customers a wide array of tools and resources to use in managing their energy usage and reducing their electrical demand and overall energy costs. Through its Energy Resource Center, located on the DEP web site, DEP provides newsletters, online tools and information, which cover a variety of energy efficiency topics such as electric chiller operation, lighting system efficiency, compressed air systems, motor management, variable speed drives and conduct an energy audit.

### **Large Account Management**

All DEP commercial, industrial, and governmental customers with an annual electric bill greater than \$250,000 are assigned to a DEP Account Executive (AE). The AEs are available to personally assist customers in evaluating energy improvement opportunities and can bring in other internal resources to provide detailed analyses of energy system upgrades. The AEs provide their customers with a monthly electronic newsletter, which includes energy efficiency topics and tips. They also offer numerous educational opportunities in group settings to provide information about DEP's new DSM and EE program offerings and to help ensure the customers are aware of the latest energy improvement and system operational techniques.

DISCLAIMER: The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

### **e-SMART Kids Website**

DEP is offering an educational online resource for teachers and students in our service area called e-SMART Kids. The web site educates students on energy efficiency, conservation, and renewable energy and offers interactive activities in the classroom. It is available on the web at <http://progressenergy.e-smartonline.net/index.php>.

### **Community Events**

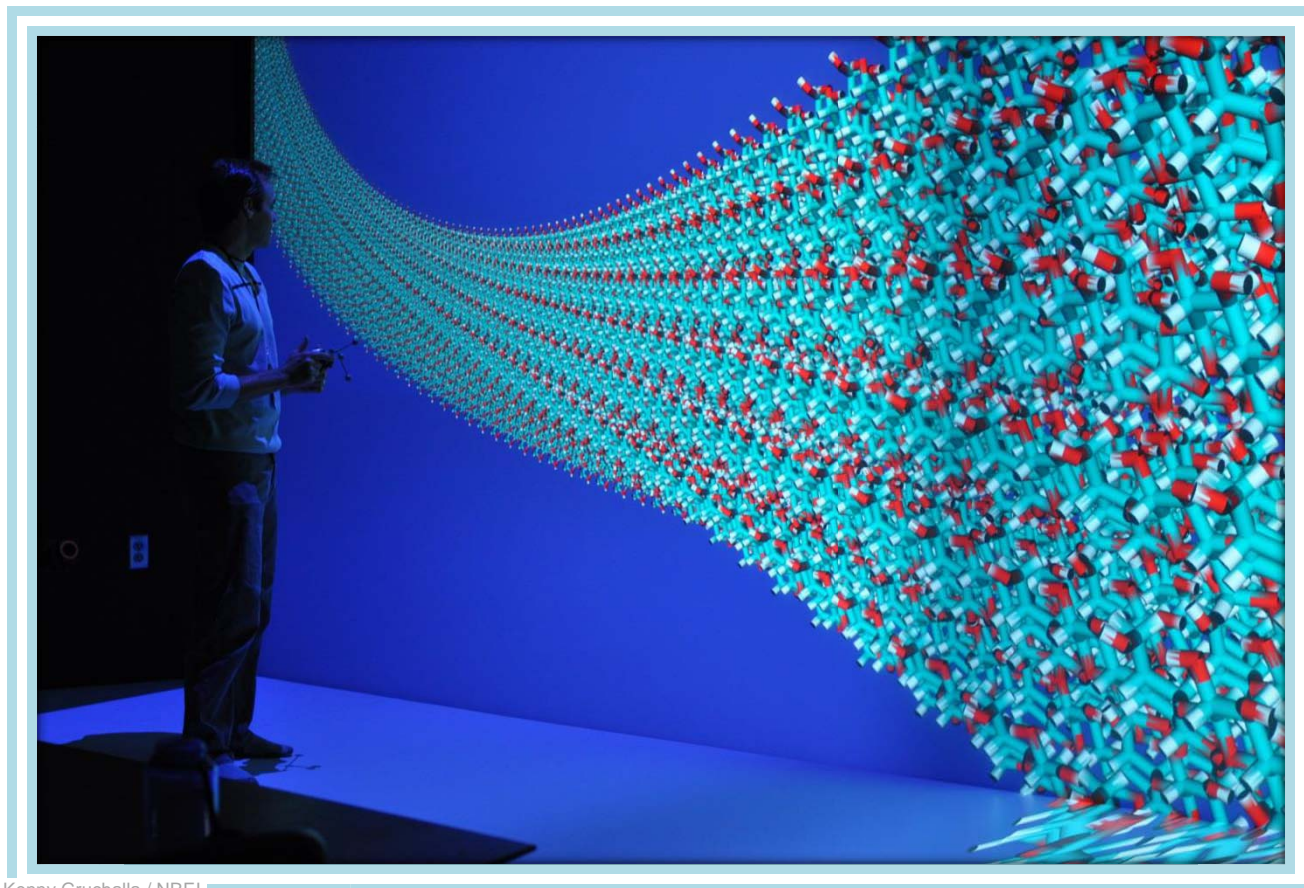
DEP representatives participated in community events across the service territory to educate customers about DEP's energy efficiency programs and rebates and to share practical energy saving tips. DEP energy experts attended events and forums to host informational tables and displays, and distributed handout materials directly encouraging customers to learn more about and sign up for approved energy saving programs.

DISCLAIMER: The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

## ***Lockhart Power Company***

Lockhart Power Company's primary demand-side program is its Industrial Interruptible Service Rate (IS-1), available only to industrial customers receiving concurrent service from the Company under Schedule I, with a metered demand of 750 kilowatts or more served from the Company's transmission system. Under this Rider the Customer agrees, at the Company's request, to reduce and maintain its load at or below the level specified in the individual contract. The Company's request to interrupt service may be at any time the Company or its power supplier has capacity problems.

In addition, the standard residential rate (R) has an inclining feature, i.e. Lockhart charges a somewhat higher rate for all usage above 1,000 kWh each month. This provides incentives to customers to reduce their consumption of electricity.



Kenny Gruchalla / NREL

## ***South Carolina Electric & Gas Company***

South Carolina Electric and Gas Company (SCE&G) filed a request for approval of its DSM programs with the Commission in Docket No. 2009-261-E on June 30, 2009 consisting of nine (9) programs. SCE&G's request was approved by the Commission in July 2010.

On January 30, 2015, SCE&G filed its annual application with the Commission for approval of its retail rate rider to recover \$33,029,199 in DSM program costs. On April 30, 2015, the Commission approved SCE&G's request, subject to ORS adjustments. SCE&G's application and the corresponding ORS reports are available from the Commission.<sup>17</sup>

SCE&G's DSM activity was projected to reduce electricity consumption 84,627 MWh in 2014<sup>18</sup> and by 71,307 MWh in 2015<sup>19</sup>.



### **Energy Efficiency**

**Customer Education and Outreach** includes a wide variety of communication vehicles to help customers become more energy efficient. Two key components, customer insights/analysis and media/channel placement, are summarized below:

**Customer Insights and Analysis:** Key insights gained through SCE&G's annual Voice of the Customer panels and customer perception surveys are carefully evaluated to ensure customer communications are consistent, easy to understand and include information about what they value most — rebates/incentives, education and in-home services.

**Media/Channel Placement:** SCE&G is committed to customer education about available programs and services designed to help them be more energy efficient. To reach as many customers as possible, a diverse mix of channels is used, including both paid and earned media. Direct mail, bill inserts, TV, radio, online and community events continue to prove successful with engaging customers. In 2014, SCE&G launched a new website designed to give customers easier access to the many tools and resources available to manage their energy use. Extensive outreach via social media continues to provide maximum

<sup>17</sup> 2014 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/114872>

2015 Docket: <https://dms.psc.sc.gov/Web/Dockets/Detail/115355>

<sup>18</sup> "South Carolina Office of Regulatory Staff's Review of South Carolina Electric & Gas Company's 2014 Annual Update on Demand Side Management Programs and Petition for an Update to Rate Rider" Docket No. 2014-44-E.

<sup>19</sup> "South Carolina Office of Regulatory Staff's Review of South Carolina Electric & Gas Company's 2015 Annual Update on Demand Side Management Programs and Petition to Update Rate Rider" Docket No. 2015-45-E.



coverage and the opportunity to inform customers. A steady increase in customer engagement with Facebook and Twitter has resulted in nearly 30,000 likes and about 5,200 followers respectively. Year-round news coverage is equally important and is consistently integrated into the media mix, particularly during peak winter and summer months when usage is high.

**Energy Saver/Conservation Rate 6** rewards homeowners and homebuilders with a reduced electric rate when they upgrade existing homes or build new homes to a high level of energy efficiency. This reduced rate, combined with a significant reduction in energy usage, provides for considerable savings to customers. Participation in the program is easy as the requirements are prescriptive which is beneficial to all customers and trade allies.

**Seasonal Rates** are designed with components that vary by season. Energy provided in the peak usage season is charged a premium to encourage conservation and efficient use.

## Load Management Programs

In 2014, SCE&G's load management portfolio included nine (9) programs targeting its residential customer classes and two programs targeting commercial and industrial customer classes. A description of each program follows:

**Residential Home Energy Reports** provides customers with free monthly/bimonthly reports comparing their energy usage to a peer group and providing information to help identify, analyze and act upon potential energy efficiency measures and behaviors.

**Residential Home Energy Check-up** provides customers with a visual energy assessment performed by SCE&G staff at the customer's home. At the completion of the visit, customers are offered an energy efficiency kit containing simple measures, such as compact fluorescent light bulbs ("CFL"), water heater wraps and/or pipe insulation. The Home Energy Check-up is provided free of charge to all residential customers who elect to participate.

**Residential ENERGY STAR® Lighting** incentivizes residential customers to purchase and install high-efficiency ENERGY STAR® qualified lighting products by providing discounts to the manufacturers and retailers.

**Residential Heating & Cooling and Water Heating Equipment** provides incentives to customers for purchasing and installing high efficiency HVAC equipment and non-electric resistance water heaters in new and existing homes. Additionally, the program provides

residential customers with incentives to improve the efficiency of existing AC and heat pump systems through complete duct replacements, duct insulation and duct sealing. During 2014, SCE&G discontinued offering residential customers incentives for non-electric resistance water heaters.

**Residential ENERGY STAR® New Homes** provides incentives to customers and builders who are willing to commit to ENERGY STAR® standards in new home construction.

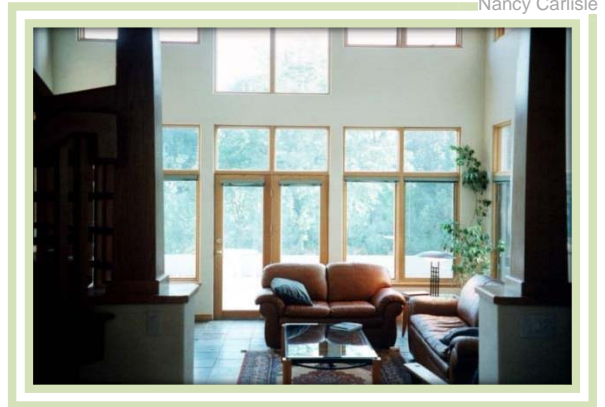
**Neighborhood Energy Efficiency Program** provides income qualified customers energy efficiency education, an in-home energy assessment and direct installation of low-cost energy saving measures as part of a neighborhood door-to-door sweep approach. In 2014, neighborhoods in Aiken, Columbia, Charleston and Beaufort have taken part in the program.

**Appliance Recycling Program**, first offered to electric customers in 2014, provides incentives for allowing SCE&G to collect and recycle less-efficient, but operable, secondary refrigerators, and/or standalone freezers, permanently removing the units from service.

**EnergyWise for Your Business Program** provides incentives to non-residential customers to invest in high-efficiency lighting and fixtures, high efficiency motors and other equipment. To ensure simplicity, the program includes a master list of prescriptive measures and incentive levels that are easily accessible to commercial and industrial customers on the website. Additionally, a custom path provides incentives to commercial and industrial customers based on the calculated efficiency benefits of their particular energy efficiency plans or construction proposals. This program applies to technologies and applications that are more complex and customer-specific. All aspects of this program fit within the parameters of both retrofit and new construction projects.

**Small Business Energy Solutions Program** is a turnkey program, tailored to help owners of small businesses manage energy costs by providing incentives for energy efficiency lighting, electric water heaters and refrigeration upgrades. The program is available to SCE&G's small business and small nonprofit customers with an annual energy use of 100,000 kWh or less, and five or fewer SCE&G electric accounts.

**Standby Generator Program:** The Standby Generator Program for wholesale customers provides about 25 megawatts of peaking capacity that can be called upon when reserve capacity is low on the system. This capacity is owned by our wholesale customers and through



Nancy Carlisle

a contractual arrangement is made available to SCE&G dispatchers. SCE&G has a retail version of its standby generator program in which SCE&G can call on participants to run their emergency generators. This retail program provides about 17 megawatts of additional capacity as needed.

**Interruptible Load Program:** SCE&G has over 150 megawatts of interruptible customer load under contract. Participating customers receive a discount on their demand charges for shedding load when SCE&G is short of capacity.

**Real Time Pricing Rate:** A number of customers receive power under our real time pricing rate. During peak usage periods throughout the year when capacity is low in the market, the RTP program sends a high price signal to participating customers which encourages conservation and load shifting. Of course during low usage periods, prices are lower.

**Time of Use Rates** contain higher charges during the peak usage periods of the day and lower charges during off-peak periods. This encourages customers to conserve energy during peak periods and to shift energy consumption to off-peak periods. All SCE&G customers have the option of purchasing electricity under a time of use rate.

*For more information regarding the DSM programs offered by the investor-owned utilities, the IRP's for each utility can be viewed at <http://energy.sc.gov/utilities>.*

## State-Owned Electric Utility

### *Santee Cooper*

For over 20 years, Santee Cooper has offered DSM programs. These programs have measures that save energy and/or demand. The energy and/or demand impacts of the actual and projected participation of Santee Cooper's directly served retail customers are considered when updating the energy and/or demand needs in the generation plan.



In the fall of 2007, Santee Cooper established a Conservation and Renewable Energy Department. The purpose of this department is to develop new energy efficiency and conservation programs and to obtain renewable generation resources. Santee Cooper launched its "Reduce the Use South Carolina" energy efficiency effort in September 2009. The goal of this 10-year-long effort is to substantially reduce the use of electricity and improve energy efficiency among its 171,000 direct served residential and commercial customers through rebate programs. The comprehensive "Reduce the Use South Carolina" energy efficiency effort includes energy efficiency initiatives to help achieve an annual savings of 209 million kilowatt hours by 2020.

Santee Cooper's DSM activity reduced electricity consumption by 105,200 MWh cumulatively through 2014 and is projected to reduce consumption by 209,000 MWh by 2020.

### *Energy Efficiency Programs*

#### **Residential Programs**

**Smart Energy Existing Homes Program** offers home energy evaluations, incentive rebates and financial assistance for residential energy efficiency improvements that are designed to improve the energy efficiency of customers' homes year-round.

Santee Cooper provides rebates and low-interest financing for qualifying energy efficiency improvements. In 2014, there were 1330 customers who participated in rebates for a savings of 1,604 MWh. The total incentive cost was \$264,856.



DISCLAIMER: The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

Measure	Customers	Incentive
Air Infiltration	45	\$38 - \$370
Ceiling Insulation	33	\$20 - \$390
Duct Improvement	78	\$30 - \$2030
Heat Pump Install	500	\$100 - \$1040
Heat Pump Tune Up	618	\$50
*Nest Thermostat	35	\$125
Heat Pump Water Heater	19	\$400
Solar Water Heater	2	\$700

*\*Starting in 2015 Santee Cooper will offer rebates for multiple Smart thermostats including the Nest thermostat.*

### Equipment and Lighting Incentives: Residential CFL's

CFLs can save about \$30 or more each in electricity costs over each bulb's lifetime. The Residential CFL program ended in 2014. There were 18,378 bulbs given out to 1,644 customers saving 524 MWh in 2014. The incentive cost was \$1.45 per CFL for a total CFL cost of \$26,648.

### Residential LED Giveaway

There were 14,359 residential customers who received 2 LED bulbs each for a total for 28,718 bulbs given out through our retail offices. The energy savings was 2,935 MWh. As prices continue to drop, LEDs are quickly becoming a great lighting solution. LEDs last 20 times longer than incandescent bulbs, produce over 75% less heat, use over 75% less energy and are available in different sizes and shapes to fit in almost any fixture.

### Smart Energy New Homes Program

The Smart Energy New Home Program offers rebate to homebuilders who construct homes that meet Santee Cooper's eligibility requirements and either meet Smart Energy New Home performance path criteria or include qualifying equipment. There are three tiers of energy efficiency standards for the Single Family (SF) performance pathway and two tiers for multi-family (MF).

- **Tier 1:** Achieve a HERS Index of 65 or below which require that homes be 35% more energy efficient than a standard new home. The rebate for this tier is \$3,000 for single family (SF) homes and \$1,400 per unit for multi-family (MF) homes.
- **Tier 2:** Achieve a HERS Index of 75 or below which require that homes be 25% more energy efficient than a standard new home. The rebate for this tier is \$1,600 for single family (SF) homes and \$400 per unit for multi-family (MF) homes.

- **Tier 3:** There were 14 SF new homes built that qualified under Tier 1 for a savings of 68 MWh. There were 47 SF new homes built that qualified under Tier 2 for a savings of 132 MWh. There were 107 SF new homes built that qualified under Tier 3 for a savings of 171 MWh. There were no qualifying equipment rebates paid out for neither SF nor MF in 2014. There were no qualifying performance pathway rebates paid out for MF in 2014. The total combined incentive cost was \$202,800.

## On-site Energy Assessments

Santee Cooper offers free energy assessments to residential customers upon request.

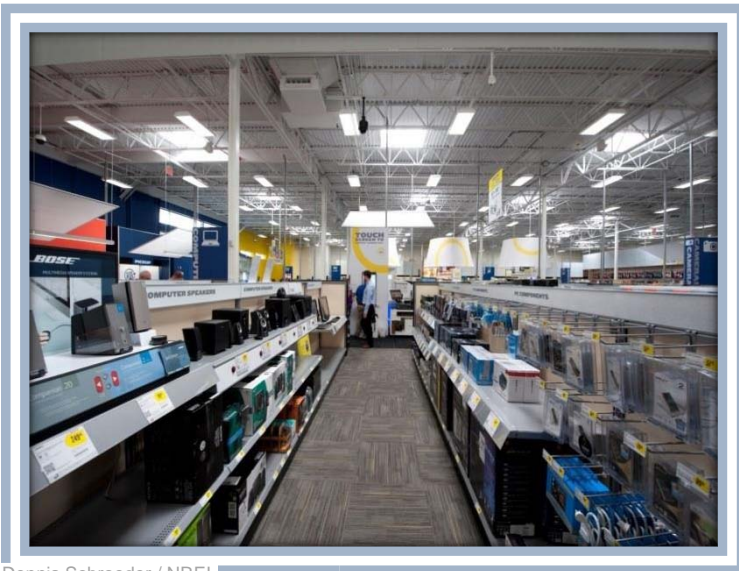
## Commercial Programs

### Commercial Prescriptive Program

Projects with qualify lighting, HVAC, building envelope, or refrigeration components are eligible for rebates under the Commercial Prescriptive Program. There were 319 participating projects in 2014 for a savings of 14,448 MWh. These savings come from several different measures that are implemented as an individual project or in combination with other measures. The total combined incentive cost was \$1,087,700.

### Commercial Custom Program

Custom rebates are tailored specifically to provide unique energy saving initiatives on a business-by-business basis. The rebate is \$0.10 for every kWh saved during first-year, not to exceed 50% of the qualifying measure's incremental cost. Customers are subject to a maximum rebate of \$200,000 per facility per calendar year and an overall rebate cap of \$300,000 per facility, per calendar year for participation in multiple energy efficiency programs offered by Santee Cooper. For the purposes of Santee Cooper's energy efficiency programs, a customer facility is defined as one or several adjacent buildings owned or operated by a single customer. In 2014, there were 44 customers who participated with a combined savings of 1,897 MWh. The combined incentive cost was \$182,924.



Dennis Schroeder / NREL

## Commercial Direct Install Lighting Program

Santee Cooper's Direct Install Program covers up to 65% of the installation cost of qualifying lighting upgrades for small businesses. The Commercial Direct Install program ended in 2014. There were 81 customers who participated for a savings of 976 MWh. The combined incentive cost was \$232,820.

## On-site Energy Assessments

Santee Cooper offers free energy assessments to commercial customers upon request.

## Commercial CFL's

Commercial CFL's are classified as either High Use or Low Use based on the number of hours they are used in an average week. The Commercial CFL program ended in 2014. There were 900 High Use bulbs given to 1 customer saving 213 MWh and 978 Low Use bulbs given to 3 customers saving 51 MWh. The total incentive cost for Commercial CFL's was \$2,723.

## Load Management Programs

### Interruptible Service Incentives

Santee Cooper does not offer any interruptible service incentives, but the GL rate is designed with an interruptible service clause.

### Time-of-Use or Seasonal Rates

Santee Cooper offers time-of-use rates for commercial and residential respectively for the following rates: GT & RT. The GV rate is a seasonal rate for commercial customers.

### Standby Generation Incentives

There are no incentives for standby generators, but we did offer a generator lease program. The lease program will end after 2014.

### Thermal Energy Storage

Thermal Energy Storage was discontinued in August, 2011.



## Voltage Reduction

N/A

## Public Information Programs

### Web-Based Customer Tips & Tools

Santee Cooper offers online energy saving tips for residential and commercial customers. We have a partnership with EnergyEarth to offer residential customers a free, online home energy audit. The online, personalized energy audit helps customers identify places to be more energy efficient in their homes, which can reduce energy consumption and lower utility bills. The process is easy, progress and results can be saved, and when the audit is finished, suggested products that can help lower energy use are made available for customers to purchase. There is no purchase required to complete the audit and get personalized energy-saving tips.

### Direct-to-Customer Communications and Public Campaigns

- **Direct-to-customer:**

Santee Cooper communicates directly to customers to support all of our energy-efficiency, conservation and DSM activities and programs. Our monthly bill inserts highlight new programs and include clear, measurable calls to action. We also utilize direct mail promotions and communication, and email customers through our opt-in program with monthly information and links to sign up or have questions answered. In 2014 the opt-in email program included more than 62,000 customers, and our direct mail numbers vary according to the target audience for each specific program. We also communicate to customers through Facebook, Twitter and YouTube. We have more than 2,400 followers on Twitter our Facebook fans grew to more than 60,000 and YouTube videos were viewed more than 117,800 times. All of these avenues of communication saw substantial growth in the last year.

- **Public Campaigns:**

Santee Cooper continues to use advertising and communications vehicles that target specific customers and customer groups. We advertise and promote our programs through digital advertising on the web and through Facebook, which is highly measurable and lets us know who we are reaching and how they are responding. We analyze and measure performance of communications, allowing us to quickly adjust promotions to achieve better results with our customers and other public stakeholders. We also promote programs through press releases and press conferences, if warranted,



to round out our public communications. In addition, we are partnering with customers who can help spread the word, such as large property managers who help us include energy efficiency promotions to their property owners.

## School Programs & Resources

Through educational initiatives Santee Cooper has established a strong, collaborative network with school districts in the state to provide educators and students with a real-world understanding of the power and purpose of electricity as well as the importance of conserving and using that power efficiently. Through our business and education partnerships Santee Cooper is continually supporting the needs of students, teachers and parents. The following describes the programs in place for ongoing community education and involvement in the energy efficiency and conservation aspects of Santee Cooper's operations.

- **Energy Educators Institute.** Each summer Santee Cooper sponsors the Energy Educators Institute, a graduate level course for certified South Carolina K-12 teachers and administrators. Ninety educators explore the scientific concepts of energy, its sources, use and impact on the environment, economy and society. Since 1988 over 1,950 South Carolina educators have attended the Institute and have received relevant curriculum based materials to enhance their teaching in areas such as energy efficiency and conservation.
- **Educational Publications.** Approximately 25,000 curriculum-based environmental energy conservation publications (K-12) are sent to teachers in the state each year. These publications educate teachers and students about environmental issues such as the importance of Reduce, Reuse, and Recycle, how renewable resources can play a part in the generation of power as well as the need to develop life-long practices to conserve energy wisely.
- **Solar Schools' Project/Conservation of Energy Curriculum.** Santee Cooper's Solar Schools Initiative in 2007 lead to the development of the Conservation of Energy science curriculum kit now being taught to all sixth grade students in 32 middle schools in South Carolina. Teachers are trained each summer (135 to date) on the Conservation of Energy curriculum equipping them with the scientific knowledge needed to understand the opportunities and limitations associated with renewable power sources as well as the need for societies to develop life styles that embrace the efficient use of energy.

DISCLAIMER: The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

- **E-SMART Kids.** This interactive website is a tool to inspire teachers, students and parents to be “green.” The intent of the website is to bring awareness and understanding about the need to be energy efficient and the steps each individual can take to prevent energy waste. Also available on this site is a link for teachers and parents to learn how Santee Cooper’s “green initiatives” can help make homes, schools and businesses operate in a more energy efficient manner.



**Environmental Bookmarks.** Santee Cooper’s energy conservation message is also delivered through the distribution of bookmarks, Live the Good Life and Make an Impact, (over 55,000 through 2015) at educational and community venues, such as career day events, classroom presentations and environmental fairs. The “green” tips shared on the bookmarks are a daily reminder to students, parents and community members on the actions they can take every day to use energy more wisely.

Dennis Schroeder / NREL

*For more information regarding the DSM programs offered by Santee Cooper, its IRP can be viewed at <http://energy.sc.gov/utilities>.*

## Electric Cooperatives

*Central Electric Power Cooperative is reporting on behalf of the 20 distribution electric cooperatives in South Carolina. Here is a summary of their DSM and energy efficiency programs for the year 2014.*



### DSM

There presently is an active demand response program whereby peak demands are reduced via electric water heater control, air conditioner control, and interrupted loads. Central and its member cooperatives are reducing peak loads approximately 100 MW during winter months and 40 MW during summer months. These are longstanding programs beginning 30 years ago. While many of the switches are controlled via a radio signal, South Carolina distribution cooperatives are increasingly turning to smart-grid applications, using power line carrier technology in order to communicate.

### Energy Efficiency

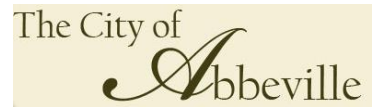
Several electric power cooperatives offer retail members low-interest loans for home weatherization utilizing the South Carolina on-bill financing statute. Through 2014, over 400 homes have participated in the weatherization programs offered.

In addition to on-bill weatherization programs, some South Carolina distribution cooperatives offer on-bill heat pump replacement programs and special rates for members whose homes meet certain energy efficiency requirements.

## Municipal Electric Utilities

### *City of Abbeville*

**On Line “Energy Depot” Toolkit:** Abbeville Public Utilities offers customers Energy Depot®, which is a set of online tools and resources to help them better understand and manage their home energy use and costs. Energy Depot is a free resource for energy information. Customers can use Energy Depot to:



- Receive a personalized energy profile with an estimate of their energy costs for each home energy system/appliance group
- Learn specific things they can do to reduce energy use and how much they can save
- Complete a do-it-yourself home energy audit and receive a report online
- Quickly estimate the annual energy use and cost of home energy systems and appliances
- Compare heating and cooling systems or water heater to a range of new systems
- Learn how soon they can pay for a new more efficient heating or cooling system or water heater through lower energy bills
- Use the Energy Library to answer energy questions
- Get answers to the most frequently asked questions regarding home energy use

**Booklet (“Energy Matters in Your Home”):** This guidebook is produced by the American Public Power Association and is designed to give residential customers practical, energy-saving advice. Along with top tips for saving energy, the booklet highlights key areas including home weatherization, heating and cooling, lighting and appliances. “Energy Matters in Your Home” also contains references to other resources that customers can access to obtain additional information. It is available in our lobby or mailed to customers upon request.

**Home Energy Review:** Upon request from our customers, local staff examines both the interior and exterior of the home with the customer to look for obvious but often overlooked ways to reduce energy consumption. We take digital and thermal photos of the home then provide a written report to the customer with energy saving suggestions.

**Peak Shaving:** The City of Abbeville currently has approximately 3 MW of peak shaving capacity. This is in the form of two hydro generators and one diesel generator units at our Rocky River generating facility. The units are operated in accordance with Piedmont Municipal Power Agency’s (“PMPA’s”) call for load control. PMPA is an entity formed by ten municipal electric utilities in northwest South Carolina that provides wholesale electric services to its

members. Typically these calls for load control occur during the months of June, July, and August.

### ***City of Bennettsville***

The City of Bennettsville purchases power exclusively from a Central Electric Cooperative distribution cooperative, Marlboro Electric (MECO). The city occasionally participates with MECO on local activities but has no additional DSM programs at this time.



### ***City of Camden***

The City of Camden Electric Department has purchased and implemented a Supervisory Control and Data Acquisition (SCADA) system to perform demand side management. The SCADA system replaces a radio based load management system and reduces peak demands through voltage reduction at their substations. With the SCADA system implemented, Camden has the ability reduce peak loading by approximately 5%.

### ***City of Clinton***

The City of Clinton is in the initial phases of implementing a DSM program using fiber/radio controlled switches on pools and air conditioners. These should be active for winter 2015 or summer 2016.



### ***Easley Combined Utility System***

Easley Combined Utilities DSM activities consisted of filling elevated water storage tanks with water prior to periods of peak demand to prevent the pumps from running during those periods. Easley also undertook voltage reduction in their substations.



### ***Laurens Commission of Public Works***

The Laurens CPW has a DSM program for residential and qualifying commercial customers. An EE rate is currently offered to incentivize the use of switches to control air conditioning and pool pumps during high electricity demand periods.



## **City of Rock Hill**



### **Conservation**

The City of Rock Hill (Rock Hill) is currently involved in an Automated Metering Infrastructure Pilot project. Over 7,000 new solid-state electric meters have been installed. As part of this project, Rock Hill is evaluating Meter Data Management Systems. These systems would provide an opportunity for utilization of the collected data and on-line customer access to load profile data & real-time data to monitor & control their power consumption & peak demands.

### **Energy Efficiency**

Rock Hill has developed its Smart Choice program to encourage energy efficiency for our residential customers. This program provides either rebates for installation of high efficiency heat-pumps & water heaters or low-interest financing. Customers participating in the Smart Choice program are also available for the City's lowest cost residential electric rate schedule. Rock Hill participates in the York County Green Business Conference, York County Earth day Birthday, and the Rock Hill Operation Center Open House offering free CFLs, low-flow showerheads, and weather stripping, along with brochures providing energy efficiency ideas & suggestions for homes or businesses, to all interested participants.

### **Load Management**

Rock Hill operates an annual Load Management program through three defined programs:

- Load Control Devices on Residential A/C and Electric Water Heaters (2,150 units)
- Operation of Standby Generation during select periods (15 MW)
- Voltage Reduction
- Net Metering (4 Residential & 1 Commercial)

Rock Hill also offers our commercial & industrial customers, who can shed 100 kW or more during requested times, credits for the kW reduction. In 2014, the City was able to reduce its annual peak demand by an estimated 8.3%.

## **City of Union**

The City of Union has three (3) substations and through voltage reduction shaves peak by lowering the voltage from 124.6 volts to 118.9 volts during high demands.



## ***City of Westminster***



The Utilities Department offers an interruptible electric rate but currently does not have any customers on this particular rate. The customer that was previously on this rate is a lumber mill and, due to the economy, is no longer in operation. When operating, that customer would receive a billing benefit in exchange for not operating during times of load management. Times of load management occur when our provider, PMPA, indicates the system is nearing peak electrical usage.

## Investor-Owned Natural Gas Utilities

### ***Piedmont Natural Gas Company***

*Piedmont Natural Gas Company (“Piedmont”) administers the following Energy Efficiency programs to customers in our South Carolina service territory:*



- **Customer Education Program** – a targeted marketing approach within Piedmont’s South Carolina service territory to provide customer energy education, efficiency and conservation messages.
- **Low-Income Energy Efficiency Program** – provides energy efficiency measures and weatherization assistance to existing low-income residential customers.
- **High-Efficiency Equipment Rebate Program** – provides rebates to Piedmont’s residential and commercial customers who purchase and install qualifying high-efficiency natural gas equipment to replace existing natural gas equipment.

### **Customer Education Program**

This program funds a communications campaign focusing on customer energy education, efficiency and conservation messages. Piedmont communicates these messages to customers through various means such as bill inserts, other print advertisements, and/or other available media. Piedmont also encourages customers to take advantage of potential tax credits and other incentives available for installing high-efficiency natural gas equipment, such as for water heating and space heating. Some of the energy efficiency themes used in this campaign are based on the following:

- How saving energy also saves customers money
- How to save energy through equipment and system high-efficiency upgrades
- Education on what makes high-efficiency natural gas equipment more efficient
- Energy saving tips and simple steps for residential customers to save energy at home
- How to save energy through behavioral changes

Although not funded through EE program funds, Piedmont offers energy efficiency and conservation tips on our website. Piedmont also provide customers with web-based tools for viewing and analyzing their monthly natural gas usage and costs.

## Residential Low-Income Energy Efficiency Program

The primary purpose of this program is to provide energy efficiency measures and weatherization assistance, through a third-party, to low-income residential customers in Piedmont's service territory. The program helps to create a more energy efficient and comfortable home environment for the customers served. In addition to the actual energy savings, there can be additional benefits to the low-income customer including improved health and safety conditions, and increased comfort for residents.



Dennis Schroeder / NREL

The target population for this program is low-income customers dwelling in single-family homes that are served under Piedmont's residential rate schedules. Where applicable, priority is placed on providing assistance to those eligible elderly individuals with disabilities and/or eligible families with children. There is no direct charge to the participating low-income customers for the services provided. Program funds are primarily used to pay a third-party energy organization to administer the program.

The primary EE measures provided to each program participant are based on a comprehensive in-home energy audit. The measures offered and performed to each program participant may include:

- Sealing major air leaks in floors and ceilings (penetrations, bypasses, chases)
- Insulating attic, side wall, and/or floors
- Sealing and insulating ducts
- Installing programmable/setback thermostat
- Evaluating, cleaning and tuning heating systems
- Installing general heat waste measures (furnace filters, water heater insulation wrap, piping insulation, water-saving devices, and weather-stripping)

## High Efficiency Equipment Rebate Program

This program provides rebates to Piedmont's residential and commercial customers who purchase and install qualifying high efficiency natural gas equipment. The residential rebates are limited to high efficiency water and space heating equipment only, since water heating and space heating constitutes a large portion of residential energy usage. Commercial customers are offered a rebate to purchase and install a high efficiency water heater. This program enables customers to help offset some of the higher cost of choosing a more efficient piece of equipment. An upgrade to a higher efficiency water heater or furnace, given consistent usage patterns, can help the program participant achieve recognizable energy savings. The following summarizes the equipment rebates that are offered and the corresponding equipment efficiency requirements.

### *Residential Equipment Rebate Summary*

	Rebate Amount	Minimum Required Efficiency <sup>20</sup>
Natural Gas Storage Tank Water Heater	\$ 50	EF = 0.62 (or greater)
Natural Gas Tankless Water Heater	\$ 250	EF = 0.82 (or greater)
Natural Gas Forced Air Furnace	\$ 300	AFUE = 90% (or greater)

### *Commercial Equipment Rebate Summary*

	Rebate Amount	Minimum Required Efficiency <sup>21</sup>
Natural Gas Tankless Water Heater	\$ 250	EF = 0.82 (or greater)

Each customer is required to submit a rebate application, along with proof of purchase and installation of the qualifying equipment. Upon approval of the application, the rebate is mailed as a check to the customer. In addition to the rebate check, each customer that installed qualified equipment under the program receives an energy efficiency kit that includes items to help the customer further reduce their natural gas energy usage.

<sup>20</sup> EF is the Energy Factor; AFUE is the Annual Fuel Utilization Efficiency

<sup>21</sup> EF is the Energy Factor



## ***South Carolina Electric & Gas Company***

SCE&G's DSM programs do not specifically target natural gas usage; many of its programs – particularly efficient new home incentives, energy assessments, and public information activities – had the effect of encouraging natural gas efficiency, conservation, and/or reduction of peak demand within its combined gas-electric service area.

## Municipal Natural Gas Utilities

### ***Chester County Natural Gas Authority***

Chester County Natural Gas Authority's (CCNGA) view on DSM is customer-focused. By reducing customers' net energy usage (including electricity), with natural gas, CCNGA can provide economic development and net demand reduction to that customer. A customer will then have more disposal income because his or her total energy usage has been reduced.

DSM for natural gas utilities is based on the increased efficiency of new natural gas appliances which reduces demand on the gas system.



The CCNGA employs the following DSM Programs:

- 1. Appliance Program:** Allow customer to purchase natural gas appliances from CCNGA (new appliances are much more efficient than older appliances). This results in savings for the customer and provides DSM benefits for CCNGA via the reduction in gas consumption.
- 2. Natural gas tank-less water heater:** Provide credit for and sell natural gas tank-less water heater to customers, which is more efficient than natural gas tank water heaters. Savings = \$50.00 per year. This results in savings for the customer and provides DSM benefits for CCNGA via the reduction in gas consumption.

### ***Clinton-Newberry Natural Gas Authority***

Clinton-Newberry Natural Gas Authority (CNNGA) is promoting energy efficient natural gas tank-less water heaters to all of the customers served by CNNGA by issuing a rebate of \$100 to replace a regular tanked natural gas water heater or any electric water heater. In 2013,



CNNGA replaced 106 tanked natural gas water heaters and electric water heaters with natural gas tank-less water heaters. The energy consumed by the energy efficient natural gas tank-less water heater is about half the energy consumed by a standard tank natural gas water heater.

In 2014, CNNGA continued the rebate program on natural gas tank-less water heaters and replaced 76 electric or tanked natural gas water heaters. The tank-less consumes energy only on demand so no energy is wasted in keeping a tank of water heated.

DISCLAIMER: The program descriptions on this page are taken directly from utility Integrated Resource Plans and responses to information requests.

## **Fort Hill Natural Gas Authority**

Fort Hill Natural Gas demand-side management activities for 2014 included interruptible sales contracts for our larger volume customer accounts and rebates for customers purchasing new natural gas appliances.



## **Orangeburg Department of Public Utilities**

The Orangeburg Department of Public Utilities (ODPU) has a rebate program that includes rebates for tank-less water heaters and high efficiency heaters. The ODPU offers favorable rates for interruptible customers.

## **York County Natural Gas**

York County Natural Gas offers a rebate program for customers converting appliances to natural gas. Details regarding what appliances are eligible, rebate amounts and the rebate request form can be found at

<https://www.ycnga.com/index.php/residential/conservation-rebates>.



# APPENDIX A

## Appendix A: PURPA Qualifying Facilities

The Public Utilities Regulatory Policies Act of 1978 (PURPA) enables end users who generate power for their facilities to make any excess power available to the electric utilities supplying those users. PURPA also allows private companies to generate and to supply electricity to utilities if that power is generated using approved energy resources. “Qualifying facilities”, as defined by PURPA, include both 1) small power production facilities using renewable fuel sources, such as wind, solar, hydroelectric, biomass, waste, or geothermal; and 2) cogeneration facilities that produce both electricity and thermal energy in a way that is more efficient than the separate production of both forms of energy. Utility companies are required to purchase power from qualifying facilities at a price equivalent to the avoided cost of additional generation. The purchase of electricity from qualifying facilities and other customer-owned generation helps utilities to offset growth in overall and peak demand.

Qualifying facilities are classified into two categories: 1) purchase, meaning that utilities purchase the power generated; and 2) displace, meaning that the power is used by the facility itself, displacing power that would otherwise be drawn from the electrical grid. As shown in Table 1 below, qualifying facilities in South Carolina had the capacity to provide 327,375 kW of power as of November 2015.



**SOUTH CAROLINA INVESTOR OWNED UTILITIES**  
**COGENERATION/SMALL POWER PRODUCERS**

Utility	Project (formerly Plant Name)	Owner (formerly Plant Owner)	Location	Type Fuel	Rate Schedule	Purchase/Displace	Planned/ Operate	Capacity kW
DEP	Invista Sarl	Invista Sarl	Camden	Coal	N/A	Displace	Operating	28,000
DEP	Sonoco Products Co	Sonoco Products	Hartsville	W/C	N/A	Displace	Operating	27,000
DEP	Rock Tenn CP, LLC (Smurfit-Stone Container)*	Rock Tenn CP, LLC (Smurfit-Stone Container)	Florence	W/C	Contract	Purchase	Operating	25,000
DEP	Sumter Heat and Power, LLC - Solar*	Sumter Heat and Power, LLC	Sumter	Biogas	CSP	Purchase	Operating	1,546
DEP	Laney Development, Inc. - Solar	Laney Development, Inc.	Hartsville	Solar	Contract	Purchase	Operating	9
DEP	Eva Grey & James Anderson-Solar*	Eva Grey & James Anderson	Nichols	Solar	CSP	Purchase	Operating	6
DEP	Lloyd Fitzwater - Solar*	Lloyd Fitzwater	Mc Bee	Solar	CSP	Purchase	Operating	5
DEP	Eva Grey & James Anderson-Solar*	Eva Grey & James Anderson	Nichols	Solar	CSP	Purchase	Operating	5
DEP	Darlington County Schools-Solar*	Darlington County Schools	Darlington	Solar	CSP	Purchase	Operating	4
<b>Total</b>								<b>81,575</b>
DEC	Cherokee County Cogeneration Partners LP - Other	Cherokee County Cogeneration Partners LP	Gaffney	Natural Gas	Contract	Purchase	Operating	100,000
DEC	BMW	BMW Mfg Corp	Greer	Gas	HPX	Displace	Operating	10,000
DEC	Aquenergy Systems LLC-Ware Shoals-Hydroelectric	Aquenergy Systems, LLC - Ware Shoals	Ware Shoals	Hydroelectric	PP	Purchase	Operating	6,300
DEC	Cherokee Falls Hydroelectric, LLC- Hydro	Cherokee Falls Hydroelectric, LLC	Blacksburg	Hydroelectric	PP	Purchase	Operating	4,140
DEC	Northbrook Carolina Hydro - Holliday's Bridge	Northbrook Carolina Hydro, LLC - Belton	Belton	Hydroelectric	PP	Purchase	Operating	3,500
DEC	Pelzer Hydro Company Hydroelectric, LLC- Lower - Hydroelectric	Pelzer Hydro Company, LLC	Williamston	Hydroelectric	PP	Purchase	Operating	3,300
DEC	Greenville Gas Producer LLC-Landfill Gas	Greenville Gas Producer, LLC	Greer	Landfill Gas	PP	Purchase	Operating	3,200
DEC	Northbrook Carolina Hydro - Saluda	Northbrook Carolina Hydro, LLC - Greenville	Greenville	Hydroelectric	PP	Purchase	Operating	2,400
DEC	Pelzer Hydro Company,LLC-Hydroelectric-Upper	Pelzer Hydro Company,LLC	Anderson	Hydroelectric	PP	Purchase	Operating	2,020
DEC	Inman Mills LLC-Hydroelectric*	Inman Mills, LLC	Enoree	Hydroelectric	PP	Purchase	Operating	1,600
DEC	Lockhart Power Company - Landfill	Lockhart Power Company	Wellford	Landfill Gas	Contract	Purchase	Operating	1,600
DEC	Northbrook Carolina Hydro - Boyd's Mill	Northbrook Carolina Hydro, LLC - Laurens	Laurens	Hydroelectric	PP	Purchase	Operating	1,500
DEC	Converse Energy Incorporated-Hydroelectric*	Converse Energy Incorporated	Spartanburg	Hydroelectric	PP	Purchase	Operating	1,250
DEC	Upper Pacolet Hydro	Lockhart Power Co	Pacolet	Hydroelectric	Contract	Purchase	Operating	1,100
DEC	Spartanburg Water System- Hydro	Spartanburg Water System	Chesnee	Hydroelectric	PP	Purchase	Operating	1,000
DEC	Lockhart Minimum Flow Hydro	Lockhart Power Co	Lockhart	Hydroelectric	Contract	Purchase	Operating	850
DEC	Lower Pacolet Hydro	Lockhart Power Co	Pacolet	Hydroelectric	Contract	Purchase	Operating	800
DEC	Aquenergy Systems, LLC-Piedmont-Hydroelectric	Aquenergy Systems, LLC- Piedmont - Hydroelectric	Piedmont	Hydroelectric	PP	Purchase	Operating	600
DEC	Itron Inc.-Solar*	Itron Inc. - NM	West Union	Solar	PP	Purchase	Rehab	57
DEC	Clover School District 2- Solar*	Clover School District 2	Clover	Solar	PP	Purchase	Operating	27
DEC	Greenville County Schools dba Roper MTN Science CNTR Park- Solar*	Greenville County Schools	Greenville	Solar	PP	Purchase	Operating	24
DEC	Clark H. Mizell-Solar*	Clark H. Mizell	Gray Court	Solar	PP	Purchase	Operating	6
DEC	Karen Sturgis- Solar*	Karen Sturgis	Greenville	Solar	PP	Purchase	Operating	6
DEC	Thomas W. Bates-Solar*	Thomas W. Bates	Simpsonville	Solar	PP	Purchase	Operating	5
DEC	Betty Haygood - Solar*	Betty Haygood	Fountain Inn	Solar	PP	Purchase	Operating	5
DEC	Good Solar Electric LLC- Solar*	Good Solar Electric LLC	Greenville	Solar	PP	Purchase	Operating	5
DEC	Lawrence B. Miller-Solar*	Lawrence B Miller	Anderson	Solar	PP	Purchase	Operating	3
DEC	Jody Fine-Solar*	Jody Fine	Ware Shoals	Solar	PP	Purchase	Operating	2
<b>Total</b>								<b>145,300</b>
SCE&G	International Paper	International Paper Corp	Eastover	W/C	Contract	Purchase	Operating	97500
SCE&G	Marine Corps Recruit Depot-Parris Island	Dept of Defense	Parris Island	Gas	N/A	Displace	Operating	3000
<b>Total</b>								<b>100,500</b>
<b>Total for 39 stations</b>								<b>327,375</b>

\* denotes PURPA QF  
Updated 11/24/15

Table 1

# APPENDIX B

# Appendix B: Summary of DSM Activities for Electric and Natural Gas Utilities

South Carolina Electric Utilities: Summary of Demand-Side Management																	
Electric Utility Name	Ownership	Energy Efficiency						Load Management						Public Information			
		New Building Efficiency Incentives	Existing Building Retrofit Incentives	On-Site Energy Assessments	Low-Income Efficiency and Weatherization Assistance	Equipment and Lighting Incentives	Load Control Incentives	Interruptible Service Incentives	Time-of-Use or Seasonal Rates	Standby Generation Incentives	Thermal Storage Incentives	Voltage Reduction	Web-Based Customer Tips and Tools	In-Home Real-Time Energy Monitoring	Direct-to-Customer Communication	Public Campaigns	School Programs & Resources
City of Abbeville	Municipal			✓										✓			
Bamberg Board of Public Works	Municipal																
City of Bennettsville	Municipal																
City of Camden	Municipal																
City of Clinton	Municipal																
Town of Due West	Municipal																
Duke Energy Carolinas	Investor-Owned	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Easley Combined Utility System	Municipal																
Electric Cooperatives (20 Co-ops)	Cooperative		✓*														
Gaffney Board of Public Works	Municipal																
City of Georgetown	Municipal																
Greenwood CPW	Municipal																
Greer CPW	Municipal																
Laurens CPW	Municipal																
Lockhart Power Company	Investor-Owned									✓							
McCormick CPW	Municipal																
City of Newberry	Municipal																
Orangeburg DPU	Municipal																
Duke Energy Progress	Investor-Owned	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Town of Prosperity	Municipal																
City of Rock Hill	Municipal																
Santee Cooper	State-Owned	✓	✓	✓		✓											
Seneca Light & Water Plant	Municipal																
South Carolina Electric & Gas Co.	Investor-Owned	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City of Union	Municipal																
Westminster CPW	Municipal																
Town of Winnsboro	Municipal																

Source: Office of Regulatory Staff, Energy Office annual survey of utilities  
 Note: This table does not include pilot projects.  
 \*Available from select Co-ops

Table 1

## South Carolina Natural Gas Utilities: Summary of Demand-Side Management

Natural Gas Utility Name	Ownership	Energy Efficiency				Load Management		Public Information			
		New Building Efficiency Incentives	On-Site Energy Assessments	Low-Income Efficiency and Weatherization Assistance	Efficient Appliance or Equipment Incentives	Interruptible Service Incentives	Web-Based Customer Tools and Tips	Direct-to-Customer Communication	Public Campaigns		
Bamberg Board of Public Works	Municipal										
City of Bennettsville	Municipal										
Chester County Natural Gas Authority	Municipal				✓						
Clinton-Newberry Natural Gas Authority	Municipal				✓						
Fort Hill Natural Gas Authority	Municipal				✓		✓				
Fountain Inn Natural Gas	Municipal										
Greenwood Commission of Public Works	Municipal										
Greer Commission of Public Works	Municipal		✓						✓		
Laurens Commission of Public Works	Municipal										
Orangeburg Department of Public Utilities	Municipal							✓			
Piedmont Natural Gas Company	Investor-Owned										✓
South Carolina Electric & Gas Company	Investor-Owned	✓								✓	✓
City of Union	Municipal										
Town of Winnsboro	Municipal										
York County Natural Gas Authority	Municipal									✓	

Source: Office of Regulatory Staff- Energy Office annual survey of utilities.

Note: This table does not include pilot projects.

Table 2

# APPENDIX C



# Appendix C: South Carolina Electric and Natural Gas Distribution Utility Market Share<sup>22</sup>

## South Carolina Electric Utility Market Share - Number of Customers

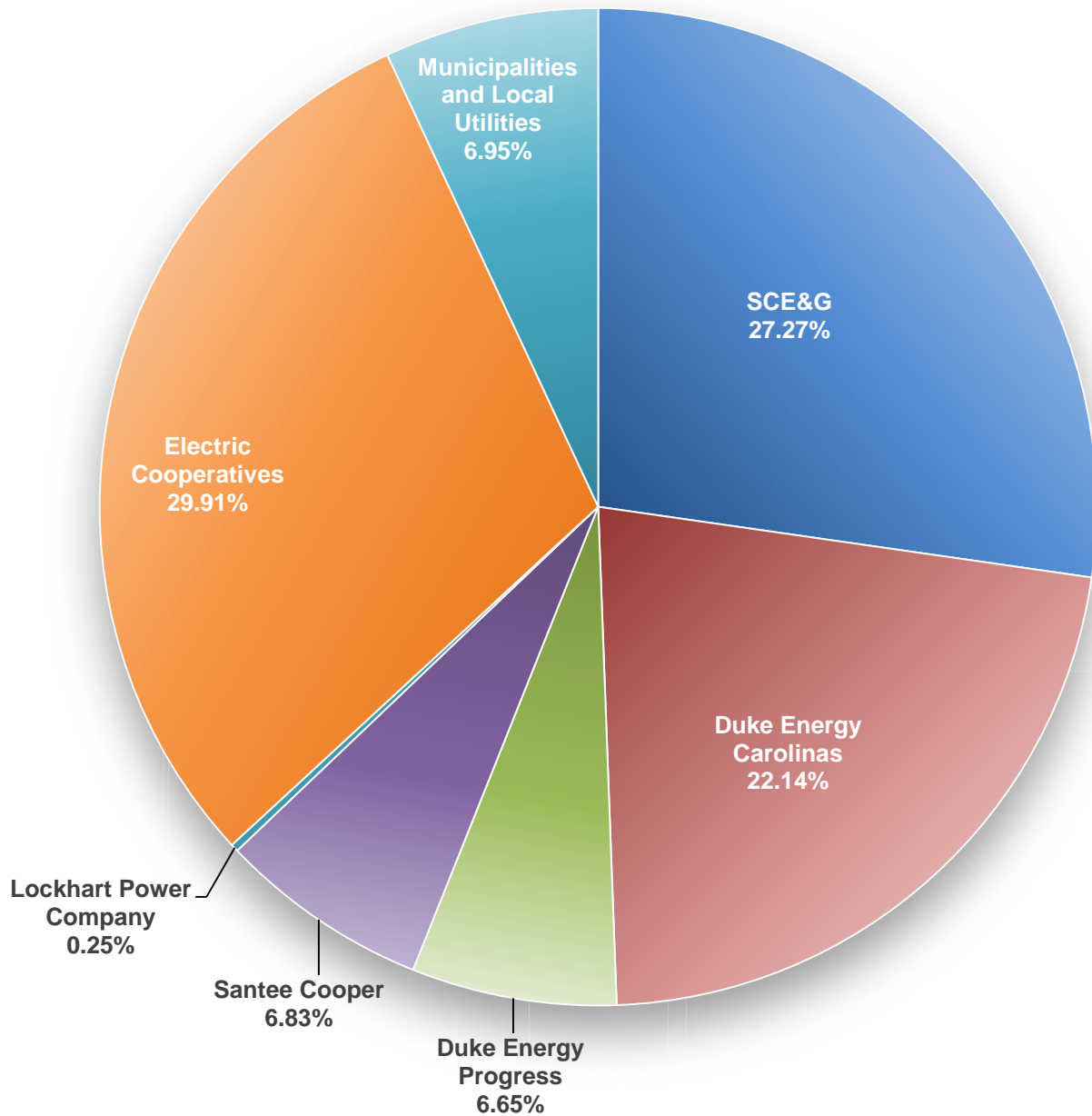


Figure 1<sup>23</sup>

<sup>22</sup> Sources: U.S. Energy Information Administration, Forms EIA-861 and EIA-176 (2014)

# South Carolina Electric Utility Market Share - Sales, in Megawatt-hours

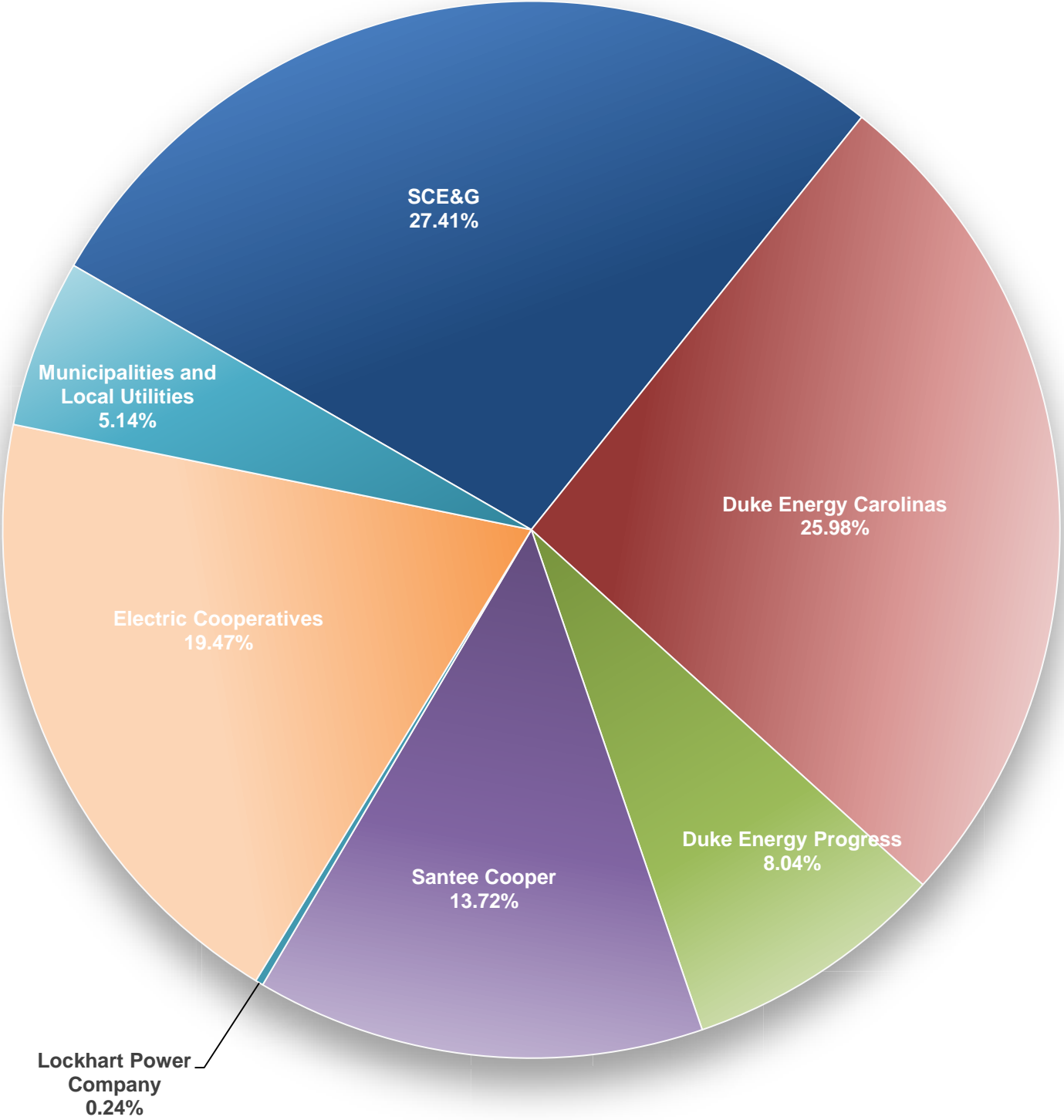


Figure 2

# South Carolina Natural Gas Utility Market Share - Number of Customers

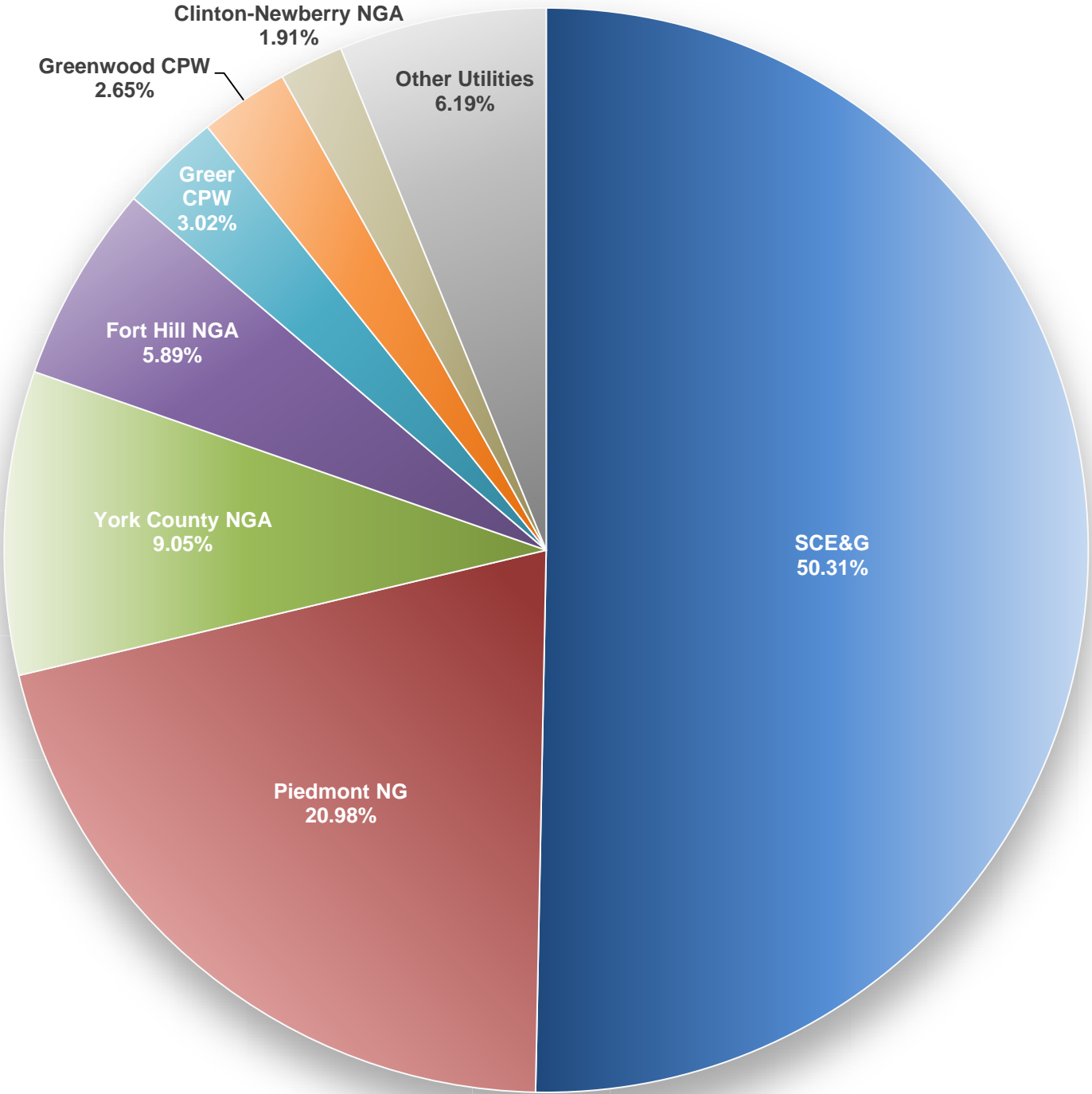


Figure 3

# South Carolina Natural Gas Utility Market Share - Sales, in Thousand Cubic Feet

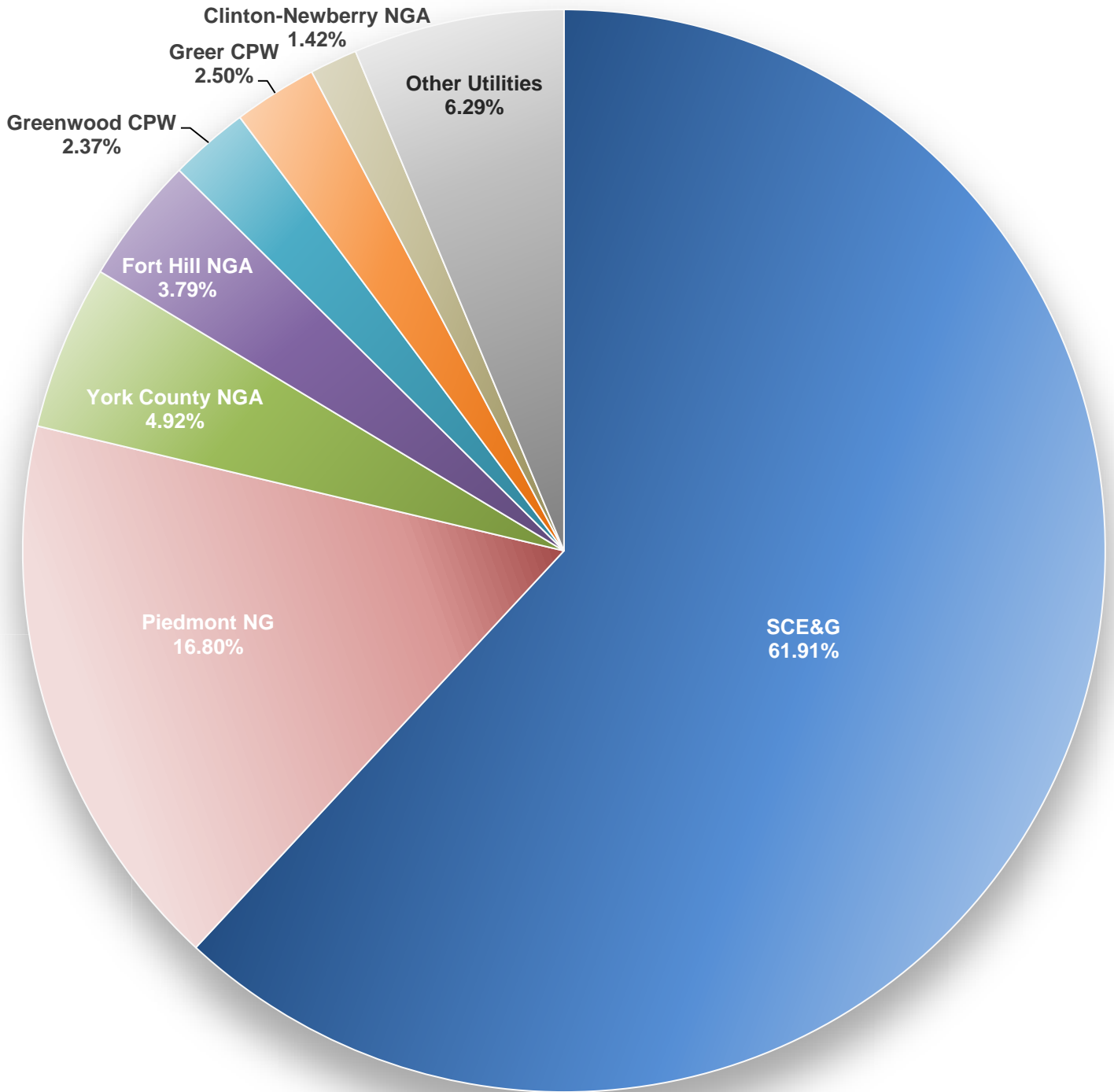


Figure 4