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MEMORANDUM

To: Members of the South Carolina General Assembly

From: Marcia S. Adams, Executive Director

RE: Demand-Side Management Report

Date: December 20, 2013

Pursuant to Section 58-37-30 of the South Carolina Code of Laws, I am submitting the 2012 Demand-Side Management Report. The report gives details of the demand-side activities of gas and electronic utilities in the state.

If you have any questions regarding the report, please contact me at 734-2320.

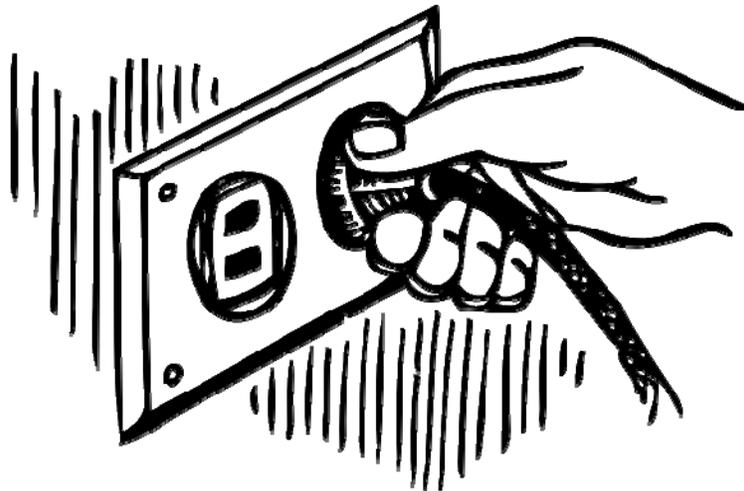
Thank you.

SOUTH CAROLINA ENERGY OFFICE
BUDGET AND CONTROL BOARD



Saving Energy, Saving Money: 2012

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



Published December 2013

Saving Energy, Saving Money:
How South Carolina's Electric and Natural Gas Utilities Are Using
Demand-Side Management to Help Customers Reduce Their Energy Bills
2012

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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.

DSM directly benefits utilities by reducing their need for wholesale energy resources, pollution controls, and/or and expensive investments in generation, transmission, and distribution infrastructure. These cost savings may be passed onto utility customers in the form of lower utility rates. In addition, utility customers directly benefit from DSM through reductions in their monthly energy consumption and cost, as well as (in most cases) utility-provided incentive payments. Utilities are also encouraged by state legislative and regulatory incentives and mandates to increase their adoption of DSM.

South Carolina's two large investor-owned electric utilities (Duke Energy Progress and South Carolina Electric & Gas Company) and state-owned Santee Cooper all offered a broad range of DSM programs in 2012. Eight of South Carolina's municipal electric utilities also conducted DSM activity, including utilities serving cities as large as Rock Hill and as small as Abbeville.

Both of South Carolina's investor-owned natural gas distribution utilities (Piedmont Natural Gas Company and South Carolina Electric & Gas Company) offered DSM programs in 2012. In addition, six of South Carolina's municipal natural gas utilities conducted DSM activities.

Glossary

Conservation—A reduction in energy consumption that corresponds with a reduction in service demand. Service demand can include buildings-sector end uses such as lighting, refrigeration, and heating; or industrial processes. Unlike energy efficiency, which is typically a technological measure, conservation is better associated with behavior. Examples of conservation include adjusting the thermostat to reduce the output of a heating unit and using occupancy sensors that turn off lights or appliances.¹

Cubic foot (CF)—A unit of natural gas volume equal to that contained at standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds standard per square inch) in a cube whose edges are one foot long.¹ Retail sales of natural gas are often measured in cubic feet.

Demand response—(See “Load management”)

Demand-side management (DSM)²—The use of energy efficiency, conservation, and load management programs/activities that help to decrease or defer consumption of energy services.

Energy efficiency—A reduction in the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall energy consumption, often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technologically more advanced equipment to produce the same level of end-use services (e.g. lighting, heating, motor drive) with less energy. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.¹

Gigawatt (GW)—One billion watts. (See “Watt”)

Gigawatt-hour (GWh)—One billion watt-hours. (See “Watt-hour”)

Kilowatt (kW)—One thousand watts. (See “Watt”)

Kilowatt-hour (kWh)—One thousand watt-hours. (See “Watt-hour”)

Load management—Utility demand management practices directed at reducing the maximum demand on a system and/or modifying the peak demand of one or more classes of service to better meet the utility system capability for a given hour, day, week, season, or year.¹

¹ These definitions were adapted from the United States Energy Information Administration:
<http://www.eia.gov/tools/glossary/>

² Some utilities use the term “demand-side management” to specifically describe programs that reduce peak demand, using the terms “energy efficiency” or “conservation” to specifically refer to programs which reduce overall energy use. For the purpose of this report, “demand-side management” refers to all programs that reduce consumption of utility-delivered electricity or natural gas, whether by reducing peak demand or reducing overall energy use.

Megawatt (MW)—One million watts. (See “Watt”)

Megawatt-hour (MWh)—One million watt-hours. (See “Watt-hour”)

Peak demand—The energy requirement of electric or natural gas customers at the point in the day, season, and/or year when need for energy is greatest. Utility generation, transmission, and distribution resources must be sufficient to accommodate peak demand requirements, making peak demand an important factor in utility resource planning

PURPA Qualifying Facilities (QF) are defined by the Public Utilities Regulatory Policies Act of 1978 (PURPA) as 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 qualified facilities at a price equivalent to the avoided cost of additional generation.

Therm—A unit of heat equal to 100,000 BTU. Retail sales of natural gas are often measured in therms.

Thermal envelope—An enclosure—such as the walls, windows, doors, ceiling, and floor of a building—that holds warm or cool air.

Volt—A measure of electric potential or electromotive force. The voltage of utility-delivered electricity is sometimes reduced to manage capacity constraints during periods of peak demand.

Watt—A unit of electrical power equal to one ampere under a pressure of one volt. A watt is equal to 1/746 horse power. Watts are used in the measurement of peak demand for electricity.

Watt-hour—A unit of work or energy, defined as one watt of power expended for one hour. (For example, a 60-watt light bulb operated for one hour consumes 60 watt-hours of electricity.) Watt-hours are used in the measurement of electricity consumption.

Introduction

Demand-side management (DSM) is a strategy that electric and natural gas utilities employ to help to decrease or defer consumption of their energy services.

As fossil fuel combustion grows more expensive and the process of adding generation, transmission, and distribution capacity becomes increasingly difficult, some utilities are finding that reducing the growth in demand for their services is more cost-effective at the margin than continuing to expand their supply capacity. Utilities have also been encouraged by state legislative and regulatory incentives and mandates to increase their adoption of DSM.

DSM activities generally fall under the following 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)³;
- Load management, which reduces customer demand for energy during periods of peak demand (such as daylight hours or summer months) when capacity is limited and the cost of energy provision is high; and
- Public information, which encourages customer participation in energy efficiency, conservation, and/or load management programs or behaviors through public campaigns, direct-to-customer communication, or increasing customer access to information about their consumption of energy services.

DSM directly benefits utilities in the following ways:

- Distribution-only utilities avoid having to purchase additional peaking and baseload energy resources from the wholesale energy market;
- Electricity-generating utilities avoid the cost of securing fuel and pollution abatement for peaking and baseload power plants, while deferring expensive investments in new power plants and their associated compliance costs;
- Both kinds of utilities avoid costly investments in new transmission and distribution infrastructure; and
- Utilities may in turn pass these savings on to consumers, resulting in lower utility bills.

³ In 2012, there were no active utility DSM programs in South Carolina that directly encouraged energy conservation. However, many utility public information programs had the effect of indirectly encouraging energy conservation.

In addition, DSM directly benefits utility customers in the following ways:

Many DSM programs provide financial incentives (such as rebates, bill credits, lower rates, or low-interest financing) to encourage customers to make choices that reduce their energy consumption overall or during periods of peak demand.

By encouraging customers to reduce their energy usage or to consume energy during times when energy services are less costly, DSM programs help customers to reduce their monthly utility bill.

The following report is intended to inform utility customers, consumer advocates, state and local policymakers, and energy market professionals about DSM activity undertaken by South Carolina's electric and natural gas utilities in 2012, the last year for which Energy Information Agency data are available. Descriptions of DSM programs are based entirely on utility responses to the South Carolina Energy Office's requests for information, as required by South Carolina Code of Laws Section 58-37-30 (see Appendix A). If you would like to learn more about a particular electric or natural gas utility's DSM programs, please contact the customer services department of that utility for additional information.

Current and Projected Energy Savings from Demand-Side Management by Utilities Operating in South Carolina

- **South Carolina Electric Cooperatives'** demand response program was estimated to reduce peak electricity demand by 100 MW during winter months and 40 MW during summer months in 2012.
- **Duke Energy Carolina's** DSM activity was estimated to reduce electricity consumption 875,000 MWh in 2012 and reduce peak demand 815 MW in 2012. They are expected to reduce electricity consumption 1,206,000 MWh by 2027 and reduce peak electricity demand between 1,642 and 2,448 MW by 2027.⁴
- **Progress Energy Carolina's** DSM programs initiated after 2007 were estimated to reduce electricity consumption 178,538 MWh in 2012 and reduce peak demand 49 MW in 2012. They are expected to reduce electricity consumption 3,184,503 MWh by 2027 and reduce peak electricity demand 1,681 MW by 2027. (These savings are in addition to the impact of Progress's pre-existing DSM activity.)⁵

Note: Duke Energy completed its corporate merger with Progress Energy on July 2, 2012. The merger, which was announced in early 2011, gained approval from both companies' shareholders and all necessary regulatory bodies. The companies are not yet operationally merged, so DSM measures were reported separately in 2012.

- **South Carolina Electric & Gas Company's** DSM activity was estimated to reduce electricity consumption 72,000 MWh in 2011 and reduce peak electricity demand 234 MW in 2011. (Estimates for 2012 were not provided.) They are expected to reduce electricity consumption 1,711,000 MWh in 2027 and reduce peak electricity demand 372 MW in 2027.⁵
- **Santee Cooper's** DSM activity was estimated to reduce electricity consumption 13,188 MWh in 2012.

Please see the sections below for more information about actual and projected energy savings and other benefits from utility DSM activity undertaken in 2012.

⁴ These estimates were developed for annual Integrated Resource Plans submitted by investor-owned utilities to the Public Service Commission of South Carolina.

South Carolina Electric Utilities—Summary

Of the 44 electric utilities in South Carolina, 21 had ongoing DSM activity in 2012.⁵

In summary, their ongoing DSM activity consisted of:

Energy Efficiency

- Four electric utilities provided financial incentives (such as payments or lower rates) to builders and/or building occupants to promote energy efficient new construction.
- Five electric utilities offered financial incentives (such as lower rates, bill credits, or financing) to building occupants to encourage energy efficiency improvements in existing structures.
- Eight electric utilities offered on-site energy assessments to customers, providing trained personnel to evaluate facilities and suggest methods for improving energy efficiency.
- Four electric utilities implemented energy efficiency and weatherization programs targeting low-income customers, giving personalized assistance and financial support to enable these customers to make needed home improvements and lower their monthly electric bill.
- Eleven electric utilities offered financial incentives (such as lower rates, rebates, or low-interest financing) for the purchase and/or installation of energy efficient appliances, equipment, and/or lighting.

Load Management

- Four electric utilities offered financial incentives (such as bill credits) to customers that opted to allow utilities to control their peak load by curtailing the operation of certain appliances or equipment (such as water heaters or HVAC systems) during periods of peak demand.
- Nine electric utilities offered financial incentives (such as bill credits or lower rates) to customers that agreed to partially or completely halt electricity consumption, or allowed the utility to interrupt service, during periods of peak demand.
- Six electric utilities offered rates that reflected time-of-use, real-time, and/or seasonal capacity constraints and marginal generation costs during periods of peak demand.
- Three electric utilities provided incentives for customers to switch to on-site standby electricity generation during periods of peak demand.
- One electric utility offered lower rates for the operation of thermal storage equipment to enable shifting of thermal energy demand from peak to off-peak periods.
- Five electric utilities reduced the voltage of electricity delivered to customers during periods of peak demand.⁶

⁵ Information provided on this summary page does not include pilot projects.

⁶ 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

Public Information

- Eight electric utilities maintained websites that offered energy efficiency and conservation tips and/or web-based systems for viewing and analyzing monthly electricity usage and cost.
- One electric utility offered in-home meters that displayed real-time information about customers' current and monthly electricity usage and cost.
- Six electric utilities 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.
- Five electric utilities 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 electric utilities provided instructional programs and/or resources to K-12 schools to promote energy awareness.

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.

Electric utility DSM activity in 2012 is summarized on the following table:

South Carolina Electric Utilities: Summary of Demand-Side Management (2012)																		
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			✓														
Progress Energy Carolinas	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																	

Electric utilities submitted narrative descriptions of their 2012 DSM activity in response to SCEO requests for information. *The following descriptions are presented as submitted by each utility, with the exception of minor edits to ensure relevance to the scope of this report and consistency with its format*

Electric Cooperatives

Central Electric Power Cooperative is reporting on behalf of 20 electric cooperative distribution companies in South Carolina. Here is a summary of their DSM and energy efficiency programs for the year 2012.

DSM

There presently is an active demand response program whereby peak demands are minimized via electric water heater control. Central and its member cooperatives are conserving approximately 100 MW during winter months and 40 MW during summer months. This is a longstanding program, and was established almost 30 years ago. While most 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 recently finished reporting on a research pilot that offers retail members low-interest loans for home weatherization utilizing the recently enacted South Carolina on-bill financing statute. At the end of 2011, 125 homes had taken advantage of the pilot offering. Using a grant from the Doris Duke Charitable Foundation, the Washington, DC-based Environmental and Energy Study Institute, a bipartisan policy group that advises Congress on energy matters, observed and monitored the research pilot.

During 2012, the 125 homes saw a reduction in kWh usage of 34%, or 10,800 kWh per home, as a direct result of the efficiency measures installed in their residences. Central and its member distribution cooperatives are now considering ways in which to move this research project into a production mode.

Also during 2012, cooperative CFL programs reduced energy use by 140 MWh, remaining Goodcents customers reduced energy use by 36 MWh, and conservation pricing programs reduced energy use by 219 MWh.

Investor-Owned Electric Utilities

Duke Energy Carolinas

In May 2007, Duke Energy Carolinas filed its application for approval of Energy Efficiency and Demand Side Management programs under its save-a-watt initiative. The Company received the final order for approval for these programs from the North Carolina Utilities Commission in July 2010 and from the Public Service Commission of South Carolina in May 2009.

Duke Energy Carolinas uses EE and DSM programs to help manage customer demand in an efficient, cost-effective manner. 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 energy demand (demand-side management or demand response programs and certain rate structure programs).

The following are the current EE and DSM programs (including approved pilot programs) in place in the Carolinas:

Demand Response – Direct Load Control Curtailment Programs

These programs can be dispatched by the utility and have the highest level of certainty. Once a customer agrees to participate in a demand response load control curtailment program, the Company controls the timing, frequency, and nature of the load response. Duke Energy Carolinas' current direct load control curtailment programs are:

- Power Manager® - Power Manager is a residential load control program. Participants receive billing credits during the billing months of July through October in exchange for allowing Duke Energy Carolinas the right to cycle their central air conditioning systems and, additionally, to interrupt the central air conditioning when the Company has capacity needs.

Demand Response – Interruptible 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. Duke Energy Carolinas' current interruptible and time-of-use curtailment programs include:

- 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.
- PowerShare® Voluntary: Enrolled customers will be notified of pending emergency or economic events and can log on to a Web site 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.
- PowerShare® CallOption: This DSM program offers a participating customer the ability to receive credits when the customer agrees, at the Company'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.
- Rates using price signals
 - Residential Time-of-Use (including a Residential Water Heating rate): This category of rates for residential customers incorporates differential seasonal and time-of-day pricing that encourages customers to shift electricity usage from on-peak time periods to off-peak periods. In addition, there is a Residential Water Heating rate for off-peak water heating electricity use.
 - General Service and Industrial Optional Time-of-Use rates: This category of rates for general service and industrial customers incorporates differential seasonal and time-of-day pricing that encourages customers to use less electricity during on-peak time periods and more during off-peak periods.
 - Hourly Pricing for Incremental Load: This category of rates for general service and industrial customers incorporates prices that reflect Duke Energy Carolinas' estimation of hourly marginal costs. In addition, a portion of the customer's bill is calculated under their embedded-cost rate. Customers on this rate can choose to modify their usage depending on hourly prices.

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. All effects of these existing programs are reflected in the customer load forecast. Duke Energy Carolinas' existing EE programs include:

- Residential Energy Assessments: The Residential Energy Assessments program includes two separate measures: 1) Personalized Energy Report (PER) and 2) Home Energy House Call.
 - The PER program is a residential energy efficiency program that provides single family home customers with a customized report about their home and family and how they use energy. In addition, the customer receives CFLs as an incentive to participate in the program.

The PER program requires customers to provide information about their home, number of occupants, equipment and energy usage and has two variations:

- Mailed offers where customers are asked to complete an included energy survey and mail it back to Duke Energy or complete the same survey online. Customers mailing the energy survey receive their PER in the mail and those completing it online receive their PER online as a printable PDF document.
 - Online offers to our customers that have signed into Duke Energy's Services (OLS) bill pay and view environment. Online participants complete their energy survey online get their PER online as a printable PDF.
- Home Energy House Call (HEHC) is a free in-home assessment designed to help our customers learn about home energy usage and how to save on monthly bills. The program provides personalized information unique to the customer's home and energy practices. An energy specialist visits the customer's home to analyze the total home energy usage and to pinpoint energy saving opportunities. An energy specialist will also explain how to improve the heating and cooling comfort levels, check for air leaks, examine insulation levels, review appliances, help the customer preserve the environment for the future and keep electric costs low. A customized report is prepared, explaining the steps the customer can take to increase efficiency. As a part of the Home Energy House Call program, customers receive an Energy Efficiency Starter Kit. At the request of the customer, the energy specialist can install the efficiency items to allow the customer to begin saving immediately.
- Low Income Energy Efficiency and Weatherization Program: The purpose of this program is to assist low income residential customers with energy efficiency measures to reduce energy usage through energy efficiency kits or through assistance in the cost of energy efficient equipment or weatherization measures.
 - Energy Efficiency Education Program for Schools: The purpose of this program is to educate students about sources of energy and energy efficiency in homes and schools through a curriculum provided to public and private schools. This curriculum includes lesson plans, energy efficiency materials, and energy audits.

- Residential Smart \$aver® Energy Efficient Products Program: The Smart \$aver® Program provides incentives to residential customers who purchase energy-efficient equipment. The program has three components – CFLs, high-efficiency air conditioning equipment and tune and seal measures.
 - CFLs: The CFL program is designed to offer incentives to customers and increase energy efficiency by installing CFLs in high use fixtures in the home. The incentives have been offered in a variety of ways. The first deployment of this program distributed free coupons to be redeemed by the customer at a variety of retail stores. Later deployments used business reply cards and a web-based on-demand ordering tool where CFLs were shipped directly to the customer's home.
 - Heating Ventilation and Air Conditioning (HVAC) and Heat Pump: The residential air conditioning program provides incentives to customers, builders, and heating contractors (HVAC dealers) to promote the use of high-efficiency air conditioners and heat pumps. The program is designed to increase the efficiency of air conditioning systems in new homes and for replacements in existing homes.
 - Tune and Seal Measures: Partnering with HVAC dealers, the program pays incentives to partially offset the cost of air conditioner and heat pump tune ups and duct sealing. This is a new program and has not been previously offered in any of Duke Energy's jurisdictions. Projected impacts of this program were included in the analysis of generation needs.
- Residential Neighborhood Program: Program that targets low income neighborhoods providing high impact direct install measures (CFLs, pipe and water heater wrap, low flow aerators and showerheads, HVAC filters and air infiltration sealing) and energy efficiency education.
- Appliance Recycling Program: This is a program to incentivize households to remove old inefficient refrigerators and freezers and have those units properly recycled. Projected impacts of this program were included in the analysis of generation needs.
- My Home Energy Report: The purpose of this program is to provide comparative usage data for similar residences in the same geographic area to motivate customers to better manage and reduce energy usage. The 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 to identify those customers who could benefit most by investing in new energy efficiency measures, undertaking more energy efficient practices and participating in Duke Energy programs.
- Smart \$aver® for Non-Residential Customers: The purpose of this program is to encourage the installation of high-efficiency equipment in new and existing non-residential establishments. The program provides incentive payments to offset a portion of the higher cost of energy-efficient equipment. The following types of equipment are eligible for incentives as part of the Prescriptive program: high-efficiency lighting, high-efficiency air conditioning equipment, high-efficiency motors, high-efficiency pumps, variable frequency drives, food services and process equipment. Customer incentives may be paid for other high-efficiency equipment as determined by the Company to be evaluated on a case-by-case basis through the Custom program.

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.

Progress Energy Carolinas

New (post-2007) Demand Side Management (DSM) and Energy Efficiency (EE) Programs

Progress Energy Carolinas, Inc. (PEC) 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 demand side management (DSM) and energy efficiency (EE) programs, investments in renewable and emerging energy technologies, and state-of-the-art power plants and delivery systems. PEC currently has the following seven EE programs, three DSM programs and one pilot program that have been approved by both the North Carolina Utilities Commission and the Public Service Commission of South Carolina:

Energy Efficiency Programs

- Residential Home Energy Improvement
- Residential Home Advantage (Closed to new participants)
- Residential Neighborhood Energy Saver (Low-Income)
- Residential Lighting Program
- Residential Appliance Recycling Program
- Residential Energy Efficient Benchmarking Program
- Residential New Construction
- Small Business Energy Saver
- Commercial, Industrial, and Governmental (CIG) Energy Efficiency

Demand Response Programs

- Residential EnergyWise HomeSM
- CIG Demand Response Automation Program
- Distribution System Demand Response (DSDR) Program

Pilot Programs

- Residential Prepay Pilot Program

Energy Efficiency Programs

- Residential Home Energy Improvement Program: The Residential Home Energy Improvement Program offers PEC 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 Testing & Repair
 - HVAC Tune-up
 - Insulation Upgrades/Attic Sealing
 - Window Replacement
 - High Efficiency Room Air Conditioners
 - Efficient Heat Pump Water Heater

The Residential Home Energy Improvement program was launched in July 2009. Through June 30, 2012, there have been 66,061 participants contributing 16,302 MWh in net annualized energy savings and 15,373 kW in peak demand savings.

- Residential New Construction Program: (Approved in SC on August 1, 2012)
The Residential New Construction program serves as a replacement for the Residential Home Advantage Program which was closed to new applications effective March 1, 2012. The Residential New Construction Program offers incentives to both single family builders and multi-family developers who install energy efficient equipment or build to the energy efficient standards required by the program. Builders and Developers may elect to receive incentives for the installation of heat pump water heaters and/or high efficiency HVAC equipment. They also have the option to receive incentives for the equipment measures implemented or the whole house measures implemented, but not both. 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 Home Advantage (New Construction) Program: The Residential Home Advantage Program offers developers and builders the potential to maximize energy savings in various types of new residential construction. The program utilizes a prescriptive approach for developers and builders of projects for single-family, multi-family (three stories or less), and manufactured housing units (SC only). The program is also available to high rise multi-family units that are currently not eligible for ENERGY STAR® as long as each unit meets the intent of the ENERGY STAR® builder option package for their climate zone and the Home Advantage Program criteria.

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 DSM and 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. This program has been closed to new participants since March 1, 2012.

Since the launch of the Residential Home Advantage program in December 2008, there have been 6,871 participants through June 30, 2012, contributing 8,253 MWh in net annualized energy savings and 2,656 kW in peak demand savings.

- Residential Neighborhood Energy Saver (Low-Income) Program: PEC's Neighborhood Energy Saver Program was launched in October 2009 to assist low-income residential customers with the implementation of energy conservation. 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 physical installation of measures, an important component of the Neighborhood Energy Saver program is the provision for one-on-one energy education. Each household receives education on energy saving techniques that encourage behavioral changes to help reduce and control their energy usage.

As of June 30, 2012, measures have been installed in 12,506 homes. These installed measures contributed 11,620 MWh in net annualized energy savings and 1,791 kW in peak demand savings.

- Residential Lighting Program: PEC has partnered with various manufacturers and retailers across its entire service territory to offer ENERGY STAR[®] qualified lighting products to its customers. PEC's Residential Lighting Program was launched in January 2010 to provide both customer incentives, in the form of reduced pricing, and marketing support to retailers in order to encourage a greater adoption of ENERGY STAR[®] qualified or other high efficiency lighting products. The program promotes the purchase of these products using in-store and on-line promotions. PEC is also promoting a greater awareness of these products using special retail and community events. The early years of the program focus on compact fluorescent light bulbs (CFLs), with the intent to add newer lighting technologies as they become available and cost-effective.

Through July 31, 2011, 7,668,680 CFLs have been sold through the Residential Lighting Program, contributing 179,146 MWh in net annualized energy savings and 17,200 kW in peak demand savings. Prior to implementation of the Residential Lighting Program, PEC ran a CFL Buy-Down Pilot during the last quarter of 2007 which accounted for 203,222 bulbs sold and contributed 6,706 MWh in annualized net energy savings and 630 kW in peak demand savings.

- Residential Appliance: The Appliance Recycling Program is designed to reduce energy usage by removing less efficient refrigerators and freezers that are operating within residences across the PEC service territory. The program provides residential customers with free pick-up and an incentive for allowing PEC to collect and recycle their less efficient refrigerator or freezer and permanently remove the unit from service.

The Residential Appliance Recycling Program was launched in April 2010. As of June 30, 2012, there have been 17,274 participants contributing 12,624 MWh in net annualized energy savings and 1,462 kW in peak demand savings.

- Residential Energy Efficient Benchmarking Program: The Residential Energy Efficient Benchmarking Program is designed to reduce residential electrical consumption by applying behavioral science principals in which eligible customers receive reports that compare their energy use with neighbors in similar homes. Participants will be periodically mailed the individualized reports and can elect to switch to on-line reports at any time during the duration of the program. In addition to the household comparative analysis, the reports will provide specific recommendations for reducing energy consumption.

The Residential Energy Efficient Benchmarking Program was launched in July 2011. As of June 30, 2012, there have been 46,228 participants contributing 13,314 MWh in net annualized energy savings and 2,390 kW in peak demand savings.

- Commercial, Industrial, and Governmental (CIG) Energy Efficiency Program: The CIG Energy Efficiency Program is available to all CIG customers interested in improving the energy efficiency of their new construction projects or 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 energy saving opportunities for CIG customers with older, energy inefficient electrical equipment. The program includes prescriptive incentives for measures that address the following major end-use categories:
 - HVAC
 - Lighting
 - Motors & Drives
 - 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. 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.

The CIG Energy Efficiency program was launched in April 2009. As of June 30, 2012, there have been 2,413 participants contributing 109,718 MWh in net annualized energy savings and 25,108 kW in peak demand savings.

- Small Business Energy Saver Program (approved on August 1, 2012): 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 within an annual energy demand of less than 100 kW.

The program provides a complete energy assessment and installation of measures on a turn-key basis. The program was designed to minimize financial barriers by incorporating aggressive incentives and providing payment options for the remainder of the participant costs.

Demand Response Programs

- Residential EnergyWise HomeSM Program: The Residential EnergyWise HomeSM Program is a direct load control program that allows PEC, 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 Electric Pumps
 - Electric Water Heaters

For each of the control options above, an initial one-time bill credit following the successful installation and testing of load control device(s) and annual bill credit will be provided to program participants in exchange for allowing PEC to control the listed appliances.

The program provides PEC 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 PEC in exchange for allowing PEC to control their electric equipment.

Through June 30, 2012, the Residential EnergyWise HomeSM Program has 87,416 participants contributing 98,380 kW of summer peak load reduction capability and 5,370 kW of winter peak load reduction capability.

PEC has also initiated an investigation into the potential use of its residential load control program for the purposes of generating fuel savings. To accomplish this, PEC is leveraging the equipment and data collection activities associated with the measurement and verification (M&V) for this program being deployed during the summer of 2011 and winter 2011/12. Additionally, information is being collected regarding program overrides, drop-outs, and customer complaints in attempt to help understand the potential downside customer risks associated with dispatching the program for various purposes. Results from these analyses will be addressed in PEC's 2012 IRP filing.

- Commercial, Industrial, and Governmental (CIG) Demand Response Automation Program: The CIG Demand Response Automation Program allows PEC 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 resources. This program utilizes customer education, enabling two-way communication technologies, and an event-based incentive structure to maximize load reduction capabilities and resource reliability.

The primary objective of this program is to reduce PEC's need for additional peaking generation by reducing PEC's seasonal peak load demands, primarily during the summer months, through deployment of load control and data acquisition technologies.

The CIG Demand Response Automation Program was launched in October 2009. As of June 30, 2012, there were 31 active installations in the program contributing 13,468 kW of available load reduction capability.

- Distribution System Demand Response Program (DSDR): PEC and other utilities have historically utilized conservation voltage reduction (CVR) to reduce peak demand for short periods of time by lowering system voltage. This practice has been used in a limited fashion due to concerns that some customers could experience voltages below the lowest allowable level. DSDR is a program that enables PEC to increase peak load reduction capability and displace the need for additional future peaking generation capacity by investing in a robust system of advanced technology, telecommunications, equipment, and operating controls. This increased peak load reduction is accomplished while maintaining customer delivery voltage above the minimum requirements. The DSDR Program enables PEC to implement a least cost mix of demand reduction and generation resources that meet the electricity needs of its customers.

Pilot Programs

Residential Prepay Pilot Program

The primary objectives of the Prepay Pilot are to measure and validate the achieved energy and capacity savings resulting from offering customers a prepaid payment option, and to better understand the drivers and persistence behind the associated energy savings. Similar programs report energy savings from 10%-15%. All participants would have access to multiple communication channels including phone, email, and text messaging.

DSM and EE Forecasts

On March 16, 2009, a DSM Potential Study Final Report for PEC was completed and issued by ICF International. The primary objective of this study was to characterize the realistically achievable potential for a variety of DSM and EE programs in the PEC service territory under a specific set of assumptions, which included the significant effect of certain large commercial and industrial customers "opting-out" of the programs, thereby reducing the amount of potential that could be developed by PEC. In August 2010, ICF International updated that forecast of PEC's DSM/EE potential based on updated avoided cost projections and the addition of several measures that were not part of the original study.

While these estimates are suitable for use in long-range system planning models and integrated resource planning, the study did not attempt to closely forecast DSM/EE achievements in the short-term or from year to year. Such an annual accounting is highly sensitive to the nature of programs adopted, the timing of the introduction of those programs, and other factors. In contrast, this study illustrates the approximate DSM/EE impacts that may be possible over an extended time period if the study assumptions hold, as well as the approximate cost of those impacts.

PEC's forecast of DSM/EE program savings for integrated resource planning purposes are based on the results of the updated potential study. The tables below show the projected

composite impacts of all DSM, EE, and DSDR programs implemented since the adoption of North Carolina Senate Bill 3 (SB-3) in 2007, including the expected potential from program growth, program enhancements and future new programs. The tables do not include savings from previously existing programs, such as large load Curtailment Rates or Voltage Control, which will be discussed later in this document.

Peak MW Demand Savings for New Post SB-3 DSM/EE (at generator)

Year	Summer Peak MW Savings				Winter Peak MW Savings			
	DSM	EE	DSDR	Total	DSM	EE	DSDR	Total
2013	143	100	236	479	7	55	236	299
2014	164	127	240	530	9	77	240	326
2015	183	154	244	581	9	97	244	351
2016	201	182	249	632	10	116	249	375
2017	217	206	253	676	11	133	253	397
2018	232	227	257	717	12	147	257	416
2019	247	251	261	759	13	164	261	438
2020	260	278	265	803	13	182	265	461
2021	273	306	269	848	14	203	269	485
2022	286	334	273	891	14	222	273	509
2023	297	361	276	934	15	240	276	531
2024	308	386	280	974	15	258	280	553
2025	318	409	284	1,010	16	274	284	573
2026	327	428	288	1,043	16	287	288	591
2027	336	444	292	1,073	16	299	292	608

Annual MWh Energy Savings (at generator)

Year	DSM	EE	DSDR	Total Savings
2013	3,086	626,090	49,563	678,740
2014	3,487	794,297	50,348	848,132
2015	3,854	975,246	51,035	1,030,135
2016	4,195	1,166,761	51,937	1,222,894
2017	4,509	1,319,801	52,787	1,377,097
2018	4,798	1,493,989	53,598	1,552,385
2019	5,087	1,687,953	54,429	1,747,461
2020	5,333	1,894,711	55,239	1,955,283
2021	5,587	2,108,341	55,985	2,169,913
2022	5,815	2,315,124	56,768	2,377,706
2023	6,035	2,514,951	57,534	2,579,520
2024	6,230	2,707,038	58,302	2,771,570
2025	6,418	2,859,983	59,031	2,925,431
2026	6,605	2,997,047	59,872	3,063,524
2027	6,773	3,117,012	60,719	3,184,503

Previously Existing Demand Side Management and Energy Efficiency Programs

Prior to the passage of North Carolina Senate Bill 3 in 2007, PEC had a number of DSM/EE programs in place. These programs are available in both North and South Carolina and include the following:

Existing Energy Efficiency Programs

- Energy Efficient Home Program: PEC introduced in the early 1980's an Energy Efficient Home program. This program provides residential customers with a 5% discount of the energy and demand portions of their electricity bills when their homes met certain thermal efficiency standards that were significantly above the existing building codes and standards. Homes that pass an ENERGY STAR[®] test receive a certificate as well as a 5% discount on the energy and demand portions of their electricity bills. Through December 2011, 281,213 dwellings system-wide qualified for the discount.
- Energy Efficiency Financing: PEC began offering energy efficiency financing for its residential customers through its "Home Energy Loan Program" in 1981. Since the last biennial report, energy efficiency financing options have now been integrated within PEC's Residential Home Energy Improvement program.

Existing Demand Response (DR) Programs

- Time-of-Use Rates: PEC has offered voluntary Time-of-Use (TOU) rates to all customers since 1981. These rates provide incentives to customers to shift consumption of electricity to lower-cost off-peak periods and lower their electric bill.

- **Thermal Energy Storage Rates:** PEC began offering thermal energy storage rates in 1979. The present General Service (Thermal Energy Storage) rate schedule uses two-period pricing with seasonal demand and energy rates applicable to thermal storage space conditioning equipment. Summer on-peak hours are noon to 8 p.m. and non-summer hours of 6 a.m. to 1 p.m. weekdays.
- **Real-Time Pricing:** PEC's Large General Service (Experimental) Real Time Pricing tariff was implemented in 1998. This tariff uses a two-part real time pricing rate design with baseline load representative of historic usage. Hourly rates are provided on the prior business day. A minimum of 1 MW load is required. This rate schedule is presently fully subscribed.
- **Curtailable Rates:** PEC began offering its curtailable rate options in the late 1970s, and presently has two tariffs whereby industrial and commercial customers receive credits for PEC's ability to curtail system load during times of high energy costs and/or capacity constrained periods.
- **Voltage Control:** This procedure involves reducing distribution voltage during periods of capacity constraints, representing a potential system reduction of approximately 75 MW. This level of reduction does not adversely impact customer equipment or operations.

Projected summer peak demand savings for all PEC existing and new DSM/EE programs not embedded in the load forecast are presented in the table below:

Summer Peak MW Demand Savings for All DSM/EE (at generator)

Year	Pre SB-3 Programs		Post SB-3 Programs	All DSM-EE Programs
	Curtailable Rates	Voltage Control	DSM/EE/DSDR	
2013	275	74	479	828
2014	275	76	530	881
2015	275	77	581	933
2016	275	79	632	985
2017	275	80	676	1,031
2018	275	81	717	1,073
2019	275	82	759	1,116
2020	275	84	803	1,162
2021	275	85	848	1,208
2022	275	86	892	1,253
2023	275	87	934	1,297
2024	275	89	974	1,338
2025	275	90	1,010	1,375
2026	275	91	1,043	1,409
2027	275	93	1,073	1,441

Summary of Available Existing Demand-Side and Energy Efficiency Programs

The following table provides current information available at the time of this report on PEC's existing DSM/EE programs (i.e., those programs that were in effect prior to January 1, 2007). This information, where applicable, includes program type, capacity, energy, and number of customers enrolled in the program as of the end of 2010, as well as load control activations since those enumerated in PEC's last biennial resource plan. The energy savings impacts of these existing programs are embedded within PEC's load and energy forecasts.

Program Description	Type	Capacity (MW)	Annual Energy (MWH)	Participants	Activations Since Last Biennial Report
Energy Efficiency Programs	EE	484	NA	NA	NA
Real Time Pricing (RTP)	DSM	22	NA	100	NA
Commercial & Industrial TOU	DSM	5	NA	23,708	NA
Residential TOU	DSM	12	NA	29,685	NA
Curtailable Rates	DSM	275	NA	86	1
Voltage Control	DSM	75	NA	NA	93

There were no Large Load Curtailment activations during the August 2010 through July 2011 period since PEC's last biennial resource plan. Voltage reduction was activated 62 times from August 2010 through July 2011.

Current and Anticipated Consumer Education Programs

In addition to the DSM/EE programs previously listed, PEC also has the following informational and educational programs:

- Customized Home Energy Report
- On Line Account Access
- "Lower My Bill" Toolkit
- Online Energy Saving Tips
- CIG Account Management
- eSMART Kids Website
- SunSense Schools Program
- Community Events

- Customized Home Energy Report: During 2009, PEC launched a new educational tool available to all residential customers called the Customized Home Energy Report. This free tool educates customers about their household energy usage and how to save money by saving energy. The customer answers a questionnaire either online via www.progresscher.com or through the mail, and then receives a report that details their energy usage and educates them on specific ways to reduce their energy

consumption. Additionally, the report provides specific information about energy efficiency programs and rebates offered by Progress Energy that are uniquely applicable to the customer based on data obtained within the questionnaire.

- On Line Account Access: 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: This tool, 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: PEC has been providing tips on how to reduce home energy costs since approximately 1981. PEC’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.
- CIG Account Management: All PEC commercial, industrial, and governmental customers with an electrical demand greater than 200 kW (approximately 4,800 customers) are assigned to a PEC 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 PEC’s new DSM and EE program offerings and to help ensure the customers are aware of the latest energy improvement and system operational techniques.
- e-SMART Kids Website: PEC 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/>.
- Energy Resource Center: In 2000, PEC 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 electric demand and overall energy costs. Through its Energy Resource Center, located on the PRC website, PEC provided 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.
- Community Events: PEC representatives participated in community events across the service territory to educate customers about PEC’s energy efficiency programs and

rebates and to share practical energy saving tips. PEC 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 DSM/EE energy saving programs.

South Carolina Electric & Gas Company (SCE&G)

Demand-Side Management (DSM) can be broadly defined as the set of actions that can be taken to influence the level and timing of the consumption of energy. There are two common subsets of Demand Side Management: Energy Efficiency and Load Management (also known as Demand Response). Energy Efficiency typically includes actions designed to increase efficiency by maintaining the same level of production or comfort, but using less energy input in an economically efficient way. Load Management typically includes actions specifically designed to encourage customers to reduce usage during peak times or shift that usage to other times.

Energy Efficiency

SCE&G's Energy Efficiency programs include Customer Information Programs, Web-based Information and Services Programs, Energy Conservation and the Demand Side Management programs. A description of each follows:

- Customer Information Programs: SCE&G's customer information programs fall under two headings: the Annual Energy Efficiency Campaigns and Web-based Information Initiatives. The following is an overview of each.
 - Annual Energy Efficiency Campaigns

- Customer Insights and Analysis: In 2012, SCE&G continued to proactively educate its customers and create awareness on issues related to energy efficiency and conservation. To help maximize the effectiveness of our campaigns, ongoing customer feedback is used to ensure marketing and communications efforts are consistent with what customers value most. Key insights gained through SCE&G's Brand Health Study and Voice of the Customer Panels are integrated to ensure we are communicating in a consistent manner that customers will understand.

As a result, SCE&G continues to highlight programs/services that reflect three main categories identified by our customers as offering the best opportunity to save energy and money. These areas include rebates and incentives, in-home services, and education.

- Media/Channel Preferences: Placement of all marketing and advertising is carefully considered, taking into account customers' preferred methods of communicating information about SCE&G's energy efficiency programs and services. Priority channels include television (local news and select cable stations); online banner advertising, radio, electronic/print

newsletters, direct mail, bill inserts and newspaper (major dailies and weekly minority publications). SCE&G's statewide business office locations also serve as a distribution point for sharing information with customers. In addition, SCE&G has also incorporated social media, e.g. Twitter and Facebook, into its communications strategy. Key South Carolina markets covered with all marketing communications include Columbia, Charleston, Aiken and Beaufort.

- Public Affairs/News Media/Speakers Bureau: Furthermore, SCE&G understands the value of public affairs as an integral part of well-rounded energy efficiency, communication strategy and actively engages news media (broadcast and print) for coverage with key programs and services that will benefit our customers now and in the future. Public Affairs and marketing staff also provide support with securing company experts to address a variety of organizations through a formal Speakers' Bureau, extending our outreach to church groups, senior citizen and low-income housing communities, civic organizations, builder groups and homeowner associations.
- Special Events: Another key component to SCE&G's annual marketing initiatives include participation in a variety of events that offer the opportunity to further extend customer education and outreach for energy information. SCE&G's 2012 schedule included a solid mix of special events to include the Home Builders Association ("HBA") Home Improvement Show and Tour of Homes in Columbia and Black Expos in Columbia and Charleston. The Company also organized an Energy Day sponsorship with the University of South Carolina.
- EnergyWise Communications: Brand positioning of SCE&G's energy efficiency programs and services with all marketing and advertising initiatives falls under the EnergyWise umbrella – an SCE&G registered trademark in South Carolina and encompassing general awareness education as well as program specific offerings.
 - General Awareness Education: Last year's advertising included messaging on a wide range of topics such as year-round and seasonal energy efficiency tips that are practical for customers to manage on their own or that have a no-cost, low-cost factor to them. Examples include thermostat settings, checking air filters monthly, water heater settings and unplugging appliances that are sometimes perceived to be "energy vampires" (lights, TV's, computers, cell phone chargers, etc.).
 - Program Specific Offerings: In 2012, SCE&G continued to heavily promote its portfolio of residential electric rebate/incentive programs under its Demand Side Management (DSM) department – many of which were featured in our general awareness advertising schedule. Specific programs included ENERGY STAR Lighting, our free Home Energy Check-up, Home Performance with ENERGY STAR and Residential Heating & Cooling and Water Heating Equipment.

- Web-Based Information and Services Programs: SCE&G's online offerings can be broken into four components: Customer Awareness Information, the Energy Analyzer, free online Energy Audit and EnergyWise e-newsletter. Altogether, there have been more than 4.1 million visits to SCE&G's website in 2012. Customers must be registered to use the interactive tools: Energy Analyzer and Energy Audit. There are over 325,000 customers registered for this access. Descriptions of the four categories listed above follows:
 - Customer Awareness Information: The SCE&G website supports all communication efforts to promote energy savings information - both general awareness tips and program-specific profiles, tools and resources - all through a section called "Be EnergyWise and Save". Energy savings information includes detailed information on each of the Demand Side Management programs for residential and commercial/industrial customers, as well as how-to videos on insulation, thermostats and door and windows. Details on the latest tax credits offered by the American Recovery and Reinvestment Act of 2009 are also available, including links to help customers explore and learn how they can take advantage of these credits.
 - Energy Analyzer: The Energy Analyzer, in use since 2004, is a 24-month bill analysis tool. It uses complex analytics to identify a customer's seasonal usages and target the best ways to reduce demand. This Web-based tool allows customers to access their current and historical consumption data and compare their energy usage month-to-month and year-to-year -- noting trends, temperature impact and spikes in their consumption. There were a little over 101,705 visits to the Energy Analyzer tool in 2012.
 - Online Energy Audit: The Online Energy Audit tool leads customers through the process of creating a complete inventory of their home's insulation and appliance efficiency. The tool allows customers to see the energy and financial savings of upgrades before making an investment. There were 6,579 customers who used the Energy Audit tool in 2012.
 - SCE&G EnergyWise E-Newsletter: SCE&G's web-based information and services included ongoing management of its EnergyWise e-newsletter to support customer demand for additional information on ways to help them save energy. A total of 2,346 customers registered for the e-newsletters distributed in 2012.

Energy Conservation

Energy conservation is a term that has been used interchangeably with energy efficiency. However, energy conservation has the connotation of using less energy in order to save rather than using less energy to perform the same or better function more efficiently. The following is an overview of each SCE&G energy conservation offering:

- Energy Saver / Conservation Rate: The Rate 6 (Energy Saver / Conservation) rewards homeowners and homebuilders who upgrade their existing homes or build their new homes to a high level of energy efficiency with a reduced electric rate. This reduced rate, combined with a significant reduction in energy usage, provides for considerable savings for our customers. Participation in the program is very easy since the requirements are prescriptive, which is beneficial to all of our customers and trade allies. Homes built to this standard have improved comfort levels and increased re-sale value over homes built to the minimum building code standard, which is also a significant benefit to participants. Information on this program is available on our website and by brochure.
- Seasonal Rates: Many of our 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.

Demand Side Management Programs

In 2012, the Demand Side Management portfolio included nine programs, seven targeting SCE&G's residential customer classes and two targeting SCE&G's commercial and industrial customer classes. A description of each program follows:

- Residential Home Energy Reports provides customers with comparisons of their monthly energy consumption with benchmarks showing average energy consumption by similarly situated energy users. The monthly benchmarking information is provided free of charge to customers who elect to participate in the program.
- Residential Energy Information Display provides customers with an in-home display that shows information from the customer's meter regarding a home's current energy use and cost, and the use and cost to date for the month. The displays were distributed to targeted customers at a discounted price.
- Residential Home Energy Check-up and Home Performance with ENERGY STAR® encourages customers to have an assessment done of the energy efficiency of their homes. It includes two tiers of home energy review and assessment.
 - As a first tier, the Home Energy Check-up program was offered to customers. This visual checkup and "check-off" audit is performed by SCE&G staff at the customer's home. As a direct incentive for customers to participate in the program, customers were 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.
 - The Home Performance with ENERGY STAR® program goes a step further and provides a comprehensive audit with diagnostic testing of the energy efficiency of the home by trained contractors. SCE&G promotes these audits by independent providers and subsidizes the cost of the audit and specific measures undertaken by customers based on the audit findings.

- The Residential ENERGY STAR® Lighting program provides residential customers with incentives for purchasing and installing high-efficiency and ENERGY STAR® qualified lighting.
- The Residential Heating & Cooling and Water Heating Equipment program provides incentives for high efficiency HV AC units and water heaters installed in new and existing homes.
- The Residential Heating & Cooling Efficiency Improvements program provides residential customers with incentives for investing in a comprehensive system optimization and other improvements to their HV AC systems.
- Customers and builders willing to commit to overall high standards of energy efficiency in new construction may receive incentives under the Residential ENERGY STAR® New Homes program. This program provides incentives based on a comprehensive analysis of the energy efficiency of new homes reflecting both the construction techniques used and the appliances installed.
- The Commercial and Industrial Prescriptive program provides lighting 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 measures and incentive levels that are easily accessible to commercial and industrial customers on the website.
- Commercial and Industrial Custom program provides tailored 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.

Load Management Programs

The primary goal of SCE&G's load management programs is to reduce the need for additional generating capacity. There are four load management programs: Standby Generator Program, Interruptible Load Program, Real Time Pricing Rate and the Time of Use Rates. A description of each follows:

- 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 a contractual arrangement is made available to SCE&G dispatchers. SCE&G has a retail version of its standby generator program but because of recent environmental regulations, it is unclear whether this program can survive. On March 3, 2010, the United States Environmental Protection Agency ("EPA") published regulations restricting the operation of certain reciprocating internal combustion engines ("RICE"). These RICE regulations restrict the operation of the generators in our retail standby generator program and require that a system emergency be declared before they operate. SCE&G is working with customers who participate in this program to see if the program can be continued. Until there is a resolution the approximately 16 megawatts of capacity in the program has been removed from the Company's resource plan.
- 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 (RTP) 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: Our 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.
- Demand Response Technologies: With the retirement of coal capacity and the increased reserve margin target, the Company's resource plan reflects that SCE&G will require additional capacity in order to continue providing reliable electric service to its customers. As SCE&G evaluates how to satisfy this need, the Company will consider, among other things, demand response technologies.

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. They 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 our wholesale energy supplier’s (PMPA) call for load control. Typically this occurs 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). We occasionally participate with MECO on local activities but we have no additional DSM activity.

City of Camden

The City of Camden Electric Department has purchased and implemented a SCADA system (Supervisory Control and Data Acquisition) 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.

Easley Combined Utilities

Easley Combined Utilities conducted voltage reduction during peak time to reduce electrical demand. It also ran utility-owned generation to reduce energy purchases at peak times.

Greer Commission of Public Works

The Greer Commission of Public Works ("Greer CPW") offers energy saving tips to our customers that will promote energy efficiency and conservation on our website, www.greercpw.com. The website includes a section for energy saving tips, water efficiency and conservation, and a set of online tools and resources, called the Energy Depot, which allows the customer to better understand and manage energy cost within their home or business.

Greer CPW offers in-house energy audits provided by trained Greer CPW staff. The staff will conduct an inspection of the home, which includes thermal imaging, and make recommendations for changes to help with energy efficiency.

Greer CPW offers time-of-use rates to a select group of commercial customers that meet the requirements for this rate. This helps to promote off-peak energy use.

Greer CPW also conducts energy reduction during peak times to reduce the electrical demand from our customers by using peak shaving equipment, such as diesel generators.

Laurens Commission of Public Works

The Laurens CPW is planning a demand-side management pilot program for residential and qualifying commercial customers. An energy efficiency rate will be offered to incentivize the controlling of air conditioning and pool pumps.

Orangeburg Department of Public Utilities

Orangeburg Department of Public Utilities has a rebate program that includes rebates for tankless water heaters and high efficiency heaters. Orangeburg DPU offers favorable rates for interruptible customers.

City of Rock Hill Conservation

The City of Rock Hill ("City") is currently involved in an Automated Metering Infrastructure (AMI) Pilot project. Over 7,000 new solid-state electric meters have been installed. As part of this project, the City is evaluating Meter Data Management Systems (MDMS). 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

The City 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. The City participates in the York County Green Business Conference, York County Earthday Birthday, and City of 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

The City 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

The City also offers our commercial & industrial customers, who can shed 100 kW or more during requested times, credits for the kW reduction. In 2012, the City was able to reduce its annual peak demand by an estimated 7.1%

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 City of Westminster is relatively small which accounts for the City having very little in the way of Demand-Side Management (DSM) activities. The Utilities Department of the City does offer an interruptible electric rate but currently does not have any customers on this particular

rate. The one 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. Our times of load management occur when our provider, PMPA, indicates the system is nearing peak electrical usage.

Other than the occasional offering of tips for conservation whenever a customer should ask, the City does not have any other formal DSM activities.

State-Owned Electric Utility

Santee Cooper

Residential Programs

- **Smart Energy Existing Homes Program:** The Smart Energy Existing Homes Program is an integral part of Santee Cooper's program and offers home energy evaluations and financial assistance for energy efficiency improvements that are designed to improve the affordability of your home year-round. Santee Cooper provides rebates and low-interest financing for qualifying energy efficiency improvements. There were 994 customers participating for a savings of 1,087 MWh. The total incentive cost was \$146,180.

<u>Measure</u>	<u>Customer</u>	<u>Incentive</u>
Individual Water Heater	15	\$35.00
Duct Sealing and Testing	2	\$200.00
Individual 15 SEER Heat Pump	356	\$300.00
Heat Pump Tune Up	741	\$50.00
Building Envelope	4	\$155.00 to \$400.00

- **Refrigerator Rebate Program:** The Refrigerator Rebate Program offers customers rebates for the purchase and installation of ENERGY STAR® refrigerators between 10-30 cubic feet in size. It also offers customers rebates for surrendering their older, inefficient units within the same size range to be recycled by Santee Cooper's recycling contractor. These rebates are intended to reduce the customers' incremental cost of upgrading to higher efficiency appliances, as well as get the less efficient refrigerators off the grid.

Rebates include:

- \$35 Rebate towards the recycling of a working pre-1993 refrigerator
- \$40 Rebate towards the purchase of a new ENERGY STAR® refrigerator
- \$75 Rebate towards the purchase of a new ENERGY STAR refrigerator plus recycling of one working refrigerator
- \$110 Rebate for purchasing a new ENERGY STAR refrigerator and recycling of two working refrigerators⁷

Program participation in 2012 resulted in 172 old refrigerators being recycled and 852 new ENERGY STAR refrigerators being purchased with an estimated annual energy savings of 128 MWh. Total rebates for the Refrigerator Rebate program incurred through Santee Cooper in 2012 were \$14,540.

- **Smart Energy New Homes Program:** The Smart Energy New Home Program began on November 1, 2009. The Smart Energy New Homes Program is comprised of two tiers of energy efficiency standards, and it offers incentives to builders to facilitate and

⁷ [Santee Cooper footnote]: At least one must be a pre-1993 model

encourage their participation. ENERGY STAR® New Home performance standards require that homes be 15% more efficient than the requirements of 2006 International Energy Efficiency Code (IECC). Smart Energy New Home performance standards require that homes be 10% more efficient than the requirements of 2006 IECC. The rebate for Smart Energy New Homes ENERGY STAR® is \$1,600 and the rebate for the Smart Energy New Homes is \$1,000, both of which are payable to the homebuilder. There were 25 new homes built that qualified as Smart Energy homes for a savings of 38 MWh. The incentive cost was \$55,400.

- On-site Energy Assessments: Santee Cooper offers free energy assessments to residential customers upon request.
- Low Income Weatherization Program: The Low-Income Weatherization Program incorporates a comprehensive approach to building energy retrofits; encouraging not only high efficiency equipment acquisition but also proper unit sizing, installation, operation, interaction, and reducing overall home infiltration. Many Weatherization programs focus on simple high efficiency installations only, which captures a fraction of the savings. Industry research and contractor interviews show that there are significant additional savings opportunities when comprehensively addressing the needs of low income housing.

In addition to bringing awareness to customers about home weatherization and the long-term operational savings they will experience through their high-efficiency retrofits, proper installation, and/or maintenance of the system, the purpose of the Program also is to promote market transformation through increasing customer awareness in the marketplace. There were 6 projects completed in 2012.

- Equipment and Lighting Incentives: Residential CFL's: CFL's can save about \$30 or more electricity costs over each bulb's lifetime. The Residential CFL's program gave out 23,358 bulbs to 1,948 customers saving 681 MWh. The incentive cost was \$1.45 per bulb for a total bulb cost of \$33,869.

Commercial Programs

- Commercial Prescriptive Program: The types of measures that qualify are Lighting, HVAC, Building Envelope, and Refrigeration. There were 244 customers that participated for a savings of 6,254 MWh. These savings come from several different measures that are implemented as an individual project or in combination with other measures. The incentive cost was \$485,320.
- Commercial Custom Program: Custom rebates are tailored specifically to provide unique energy saving initiatives on a business-by-business basis. The rebate is based on \$0.10 for every kWh saved during first-year, not to exceed 50% of the qualifying measure's incremental cost. Customers will be subject to a maximum rebate of \$200,000 per facility per calendar year for the Commercial Custom Program 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. Nineteen customers participated for a savings of 1,061 MWh. The incentive cost was \$88,949.

- Commercial Direct Install Lighting Program: Santee Cooper's Direct Install Program is an energy efficiency program designed to help business owners make energy saving lighting upgrades. These days money is tight, especially for small business owners, and we recognize that. That is why Santee Cooper is offering this rebate to its eligible customers. There were 281 customers that participated for a savings of 1,768 MWh. The incentive cost was \$563,284.
- 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. There were 8,394 High Use bulbs given to 67 customers saving 1,989 MWh and 3,496 Low Use bulbs given to 13 customers saving 182 MWh. The total incentive cost for Commercial CFL's was \$17,241.

Load Management

- 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: Santee Cooper does not offer an incentive but facilitates its availability through a standby generator lease program.
- Thermal Energy Storage: Thermal Energy Storage was discontinued in August 2011.

Public Information

- Web-Based Customer Tips & Tools: Santee Cooper offers online energy saving tips for residential and commercial customers and has a Residential Online Energy Audit. The online energy audit helps customers discover how to reduce their energy consumption and lower their utility bills.

Santee Cooper customers have two choices when completing the Online Energy Audit:

- A Full Audit to get the most detailed and accurate online analysis which takes only 20-40 minutes.
- An EZ-Audit which takes less than half the time but will make general assumptions to provide you with a full energy analysis.
- 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

2012 that opt-in program included more than 30,000 customers, and our direct mail numbers vary according to the target audience for each. We also communicate to customers through Facebook, Twitter and YouTube; we have more than 1,400 followers on Twitter and more than 18,300 fans on Facebook, both areas of steady growth in 2012. We have more than 30,000 views on our YouTube videos.

- Public Campaigns: Santee Cooper is increasingly using advertising and communications vehicles that target specific customers and customer groups, moving away from the more mass-media advertising of old. 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. It also allows us to quickly adjust promotions to achieve better results with our customers and other public stakeholders. We still use press releases and press conferences to round out our public communications. And 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 1,800 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 23 middle schools in South Carolina. Teachers are trained each summer (102 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 lifestyles that embrace the efficient use of energy.
 - 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 35,000 in 2012) 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.

South Carolina Natural Gas Utilities—Summary

Of the 15 natural gas utilities in South Carolina, 8 had ongoing DSM activity in 2012. Their ongoing DSM activity consisted of:

Energy Efficiency

- One natural gas utility provided payments to builders to promote energy efficient new construction.
- Two natural gas utilities offered on-site energy assessments to customers, providing trained personnel to evaluate facilities and suggest methods for improving energy efficiency.
- One natural gas utility 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 bill.
- Five natural gas utilities offered financial incentives (such as rebates or discounts) for the purchase and/or installation of newer, more efficient natural gas appliances or equipment.

Load Management

- Two natural gas utilities offered financial incentives (such as bill credits or lower rates) to customers that volunteered to allow 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 instantaneously switch from utility natural gas to another energy source or are willing to suspend operations during fuel curtailment periods.)

Public Information

- Three natural gas utilities 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 natural gas utilities 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 natural gas utility conducted public outreach campaigns through advertising and presence at community events to publicize utility DSM programs and offer energy efficiency and conservation tips.

Natural gas utility DSM activity in 2012 is summarized in the following table:

South Carolina Natural Gas Utilities: Summary of Demand-Side Management (2012)									
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						✓		

Natural gas utilities submitted narrative descriptions of their 2012 DSM activity in response to SCEO requests for information. *The following descriptions are presented as submitted by each utility, with the exception of minor edits performed to ensure relevance to the scope of this report and consistency with its format*

Chester County Natural Gas Authority

Chester County Natural Gas Authority's view on Demand-Side Management is customer-focused. If we are able to reduce customers' net energy usage (including electricity), with natural gas, then we 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.

Demand-Side Management for natural gas utilities is based on the increased efficiency of new natural gas appliances which reduces demand on the gas system.

The Chester County Natural Gas Authority employs the following Demand–Side Programs:

1. Appliance Program: Allow customer to purchase natural gas appliances from Chester County Natural Gas Authority (new appliances are much more efficient than older appliances). This results in savings for the customer and acts as Demand-Side Management for Chester County Natural Gas because of the reduction in gas consumption.
2. Natural gas tankless water heater: Provide credit for and sell natural gas tankless 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 acts as Demand-Side Management for Chester County Natural Gas because of the reduction in gas consumption.

Clinton-Newberry Natural Gas Authority

Clinton-Newberry Natural Gas Authority (CNNGA) is promoting energy efficient natural gas tankless 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 2012 CNNGA replaced 114 tanked natural gas water heaters and electric water heaters with natural gas tankless water heaters. The energy consumed by the energy efficient natural gas tankless water heater is about half the energy consumed by a standard tank natural gas water heater.

Fort Hill Natural Gas Authority

Our demand-side management activities for 2012 included interruptible sales contracts for our larger customer accounts and rebates for customers switching to certain new natural gas appliances.

Greer Commission of Public Works

Greer CPW's DSM programs did not specifically target natural gas usage, some of their programs—particularly energy audits and public information activities—had the effect of encouraging natural gas efficiency, conservation, and/or reduction of peak natural gas demand.

Orangeburg Department of Public Utilities

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

Piedmont Natural Gas Company

Piedmont Natural Gas (“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. We 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.

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 energy efficiency 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 ⁸
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)

⁸ [Piedmont Natural Gas Company note:] EF is the Energy Factor; AFUE is the Annual Fuel Utilization Efficiency

Commercial Equipment Rebate Summary

	Rebate Amount	Minimum Required Efficiency ⁹
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.

South Carolina Electric & Gas Company (SCE&G)

SCE&G's DSM programs did not specifically target natural gas usage, many of their 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 their combined gas-electric service area.

York County Natural Gas

The following link directs to our residential appliance rebate program (www.getgassc.com). This is a secondary website we maintain to educate our residential customers on energy efficiency and conservation.

⁹ [Piedmont Natural Gas Company note:] EF is the Energy Factor

Appendix A

South Carolina State Statute Authorizing DSM Report

South Carolina Code of Laws, Section 58-37-30:

Reports on demand-side activities of gas and electric utilities; forms.

(A) The South Carolina Public Service Commission must report annually to the General Assembly on available data regarding the past, on-going, and projected status of demand-side activities and purchase of power from qualifying facilities, as defined in the Public Utilities Regulatory Policies Act of 1978, by electrical utilities and public utilities providing gas services subject to the jurisdiction of the Public Service Commission.

(B) Electric Cooperatives providing resale or retail services, municipally-owned electric utilities, and the South Carolina Public Service Authority shall report annually to the State Energy Office on available data regarding the past, on-going, and projected status of demand-side activities and purchase of power from qualifying facilities. For electric cooperatives, submission to the State Energy Office of a report on demand-side activities in a format complying with the current Rural Electrification Administration regulations constitutes compliance with this subsection. An electric cooperative providing resale services may submit a report in conjunction with and on behalf of any electric cooperative which purchases electric power and energy from it. The State Energy Office must compile and submit this information annually to the General Assembly.

(C) The State Energy Office may provide forms for the reports required by this section to the Public Service Commission and to electric cooperatives, municipally-owned electric utilities, and the South Carolina Public Service Authority. The office shall strive to minimize differing formats for reports, taking into account the reporting requirements of other state and federal agencies. For electrical utilities and public utilities providing gas services subject to the jurisdiction of the commission, the reporting form must be in a format acceptable to the commission.

Appendix B: 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 3 below, qualifying facilities in South Carolina had the capacity to provide 156,320 kW of power as of February 2011.

See Table of PURPA Qualifying Facilities, provided by the Office of Regulatory Staff, on the following page.

SOUTH CAROLINA INVESTOR OWNED UTILITIES
COGENERATION/SMALL POWER PRODUCERS

UTILITY	PLANT NAME	PLANT OWNER	LOCATION	TYPE FUEL	CAPACITY KW	RATE SCHEDULE	PURCHASE/ DISPLACE	PLANNED/ OPERATE
DEP	SMURFIT-STONE CONTAINER*	SMURFIT-STONE CONTAINER	FLORENCE	W/C	25000	CONTRACT	PURCHASE	OPERATING
DEP	INVISTA SARL	INVISTA SARL	CAMDEN	COAL	28000	N/A	DISPLACE	OPERATING
DEP	SONOCO PRODUCTS CO	SONOCO PRODUCTS	HARTSVILLE	W/C	27000	N/A	DISPLACE	OPERATING
DEP	LANEY DEVELOPMENT, INC	LANEY DEVELOPMENT, II	FLORENCE	PV	11	CONTRACT	PURCHASE	OPERATING
DEP	DARLINGTON COUNTY SCHOOLS	DARLINGTON COUNTY SCHOOLS	DARLINGTON	PV	4	CSP	PURCHASE	OPERATING
DEP	JAMES ANDERSON	JAMES ANDERSON	NICHOLS	PV	5	CSP	PURCHASE	OPERATING
DEP	JAMES ANDERSON	JAMES ANDERSON	NICHOLS	PV	6	CSP	PURCHASE	OPERATING
TOTAL					30026			
DEC	PIEDMONT*	AQUENERGY SYSTEMS,	PIEDMONT	HYDRO	1050	PP	PURCHASE	OPERATING
DEC	WARE SHOALS*	AQUENERGY SYSTEMS,	WARE SHOALS	HYDRO	6300	PP	PURCHASE	OPERATING
DEC	CHEROKEE FALLS*	AQUENERGY SYSTEMS,	CHEROKEE FALLS	HYDRO	4140	CONTRACT	PURCHASE	OPERATING
DEC	BMW*	BMW MFG CORP.	GREER	GAS	10000	HPX	DISPLACE	OPERATING
DEC	HAYGOOD SOLAR INSTALLATION*	BETTY HAYGOOD	FOUNTAIN INN	PV	5	PP	PURCHASE	OPERATING
DEC	GAFFNEY*	CHEROKEE COUNTY COGENERATION PARTNE	GAFFNEY	GAS	100000	CONTRACT	PURCHASE	OPERATING
DEC	MIZELL PV INSTALLATION*	CLARK H. MIZELL	GRAY COURT	PV	6	PP	PURCHASE	OPERATING
DEC	CLIFTON 3*	CONVERSE ENERGY	CLIFTON	HYDRO	1250	PP	PURCHASE	OPERATING
DEC	ENOREE LFG*	GREENVILLE GAS PRODUCERS, LLC	GREER	LFG	3200	PP	PURCHASE	OPERATING
DEC	RIVERDALE*	INMAN MILLS (RIVERDALE DEVELOPMENT)	ENOREE	HYDRO	1600	PP	PURCHASE	REHAB
DEC	ITRON PV INSTALLATION*	ITRON	WEST UNION	PV	48	PP	PURCHASE	OPERATING
DEC	FINE PV INSTALLATION*	JODY FINE	WARE SHOALS	PV	1.9	PP	PURCHASE	OPERATING
DEC	BALES PV INSTALLATION*	LAMAR BALES	WALHALLA	PV	4	PP	PURCHASE	OPERATING
DEC	MILLER PV INSTALLATION*	LAWRENCE B. MILLER	ANDERSON	PV	3	PP	PURCHASE	OPERATING
DEC	LOWER PACOLET HYDRO*	LOCKHART POWER CO	PACOLET	HYDRO	800	CONTRACT	PURCHASE	OPERATING
DEC	UPPER PACOLET HYDRO*	LOCKHART POWER CO	PACOLET	HYDRO	1100	CONTRACT	PURCHASE	OPERATING
DEC	LOCKHART MINIMUM FLOW HYDRO*	LOCKHART POWER CO	LOCKHART	HYDRO	850	CONTRACT	PURCHASE	OPERATING
DEC	WELLFORD RENEWABLE ENERGY FACILITY*	LOCKHART POWER CO	WELLFORD	LFG	1600	CONTRACT	PURCHASE	OPERATING
DEC	BOYD'S MILL*	NORTHBROOK CAROLINA HYDRO, L.L.C.	WARE SHOALS	HYDRO	1500	PP	PURCHASE	OPERATING
DEC	HOLLIDAY'S BRIDGE*	NORTHBROOK CAROLINA HYDRO, L.L.C.	BELTON	HYDRO	3500	PP	PURCHASE	OPERATING
DEC	SALUDA*	NORTHBROOK CAROLINA HYDRO, L.L.C.	GREENVILLE	HYDRO	2400	PP	PURCHASE	OPERATING
DEC	UPPER PELZER*	PELZER HYDRO CO. #	PELZER	HYDRO	2020	PP	PURCHASE	OPERATING
DEC	LOWER PELZER*	PELZER HYDRO CO. #	WILLIAMSTON	HYDRO	3300	PP	PURCHASE	OPERATING
DEC	R.B. SIMMS FILTRATION PLANT*	THE CPW OF THE CITY O	CHESNEE	HYDRO	1000	PP	PURCHASE	OPERATING
DEC	BATES PV INSTALLATION*	THOMAS W. BATES	SIMPSONVILLE	PV	5.2	PP	PURCHASE	OPERATING
TOTAL					145683.1			
SCE&G	INTERNATIONAL PAPER	INTERNATIONAL PAPER CORP.	EASTOVER	W/C	97500	CONTRACT	PUR / DISP	OPERATING
SCE&G	MARINE CORPS RECRUIT DEPOT-PARRIS ISLAND	DEPT. DEFENSE	PARRIS ISLAND	GAS	3000	N/A	DISPLACE	OPERATING
TOTAL					100500			
TOTAL FOR 23 STATIONS					326209.1			

* denote PURPA QF

denote SUB OF CHI ENERGY, INC. (Consolidated Hydro Southeast, Inc.)

SOURCE: South Carolina Office of Regulatory Staff

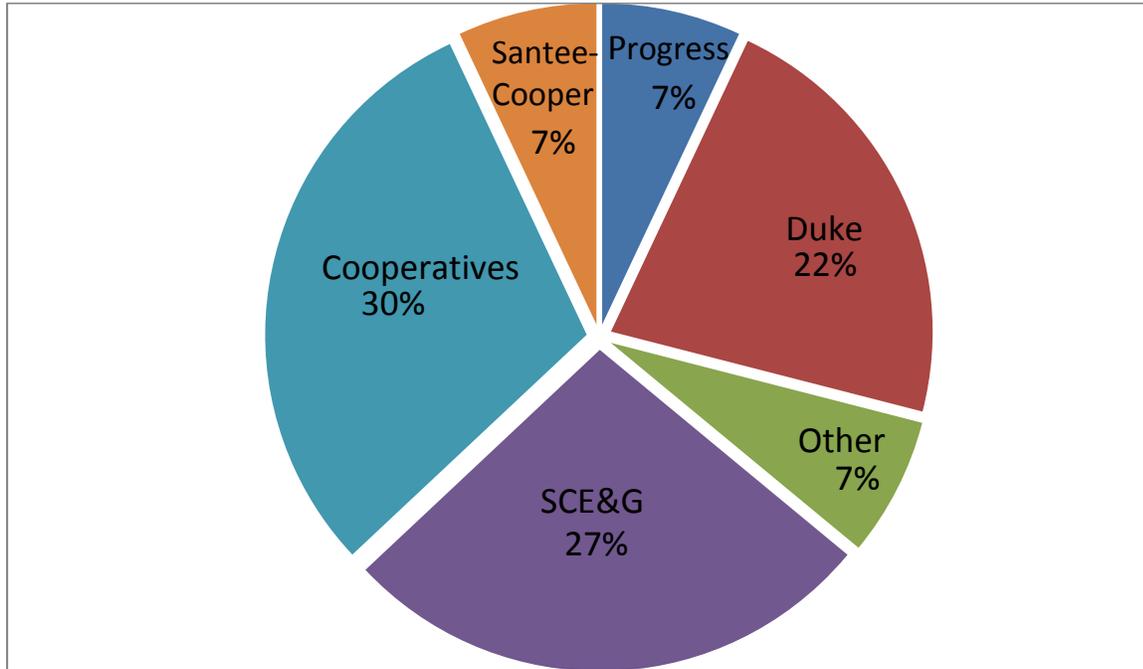
UPDATED 12/17/13

Saving Energy, Saving Money: How South Carolina's Electric and Natural Gas Utilities Are Using Demand-Side Management to Help Customers Reduce Their Energy Bills (2012)

Appendix C

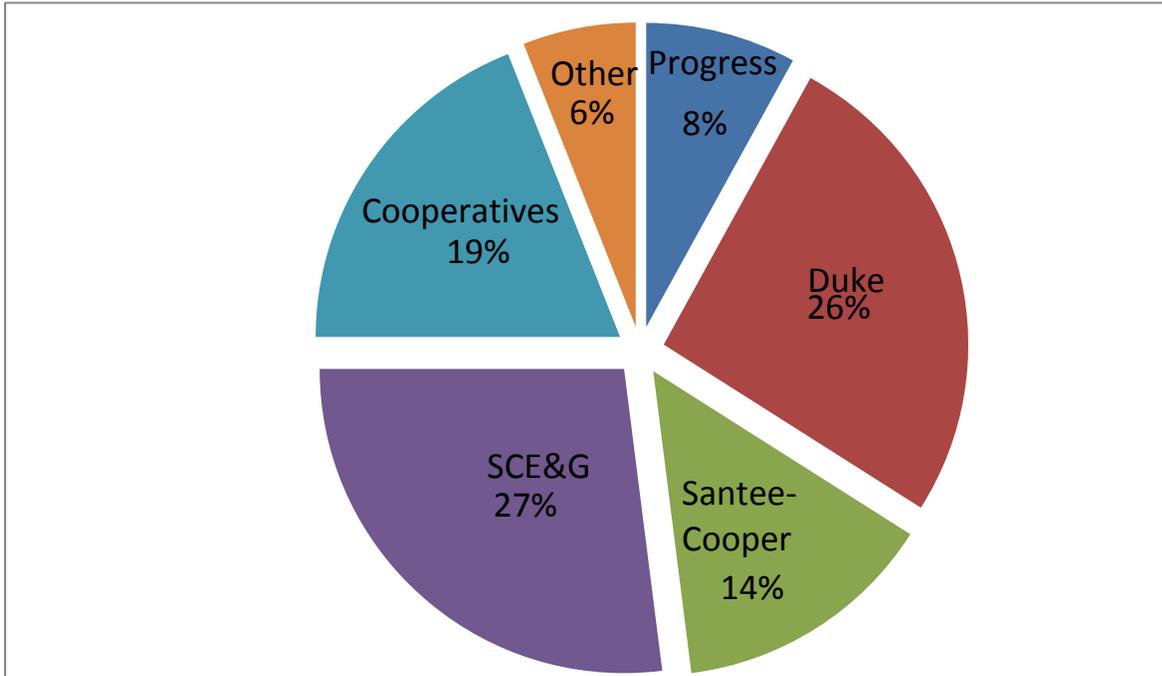
South Carolina Electric and Natural Gas Utility Market Share¹⁰

South Carolina Electric Utility Market Share (by # Customers), 2012

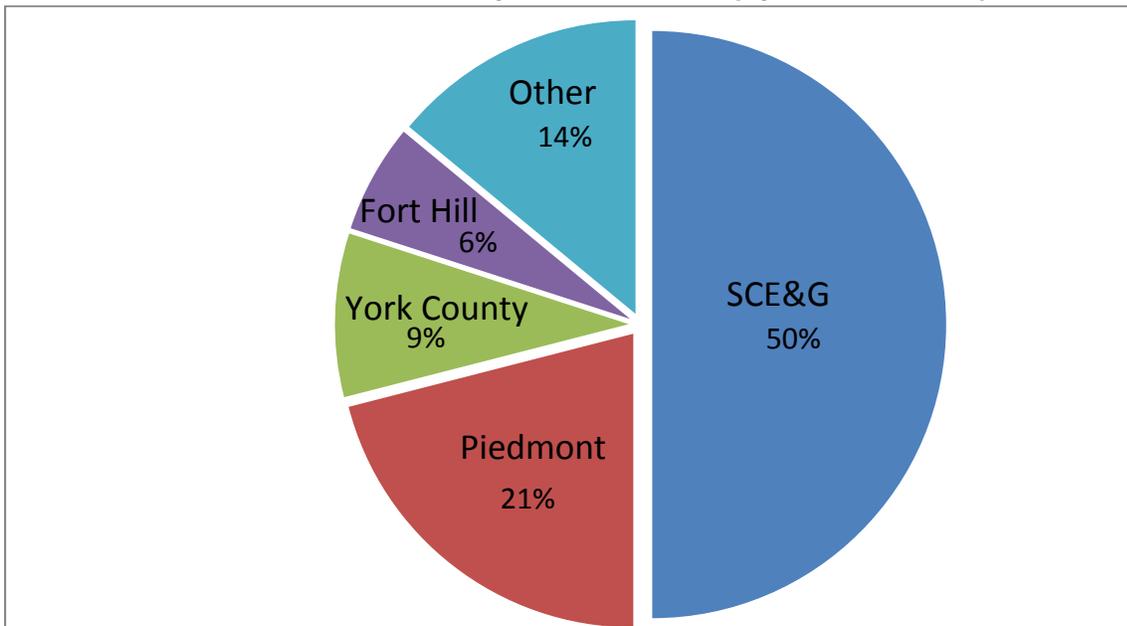


¹⁰ Sources: U.S. Energy Information Administration, Forms EIA-861 and EIA-176 (2010)

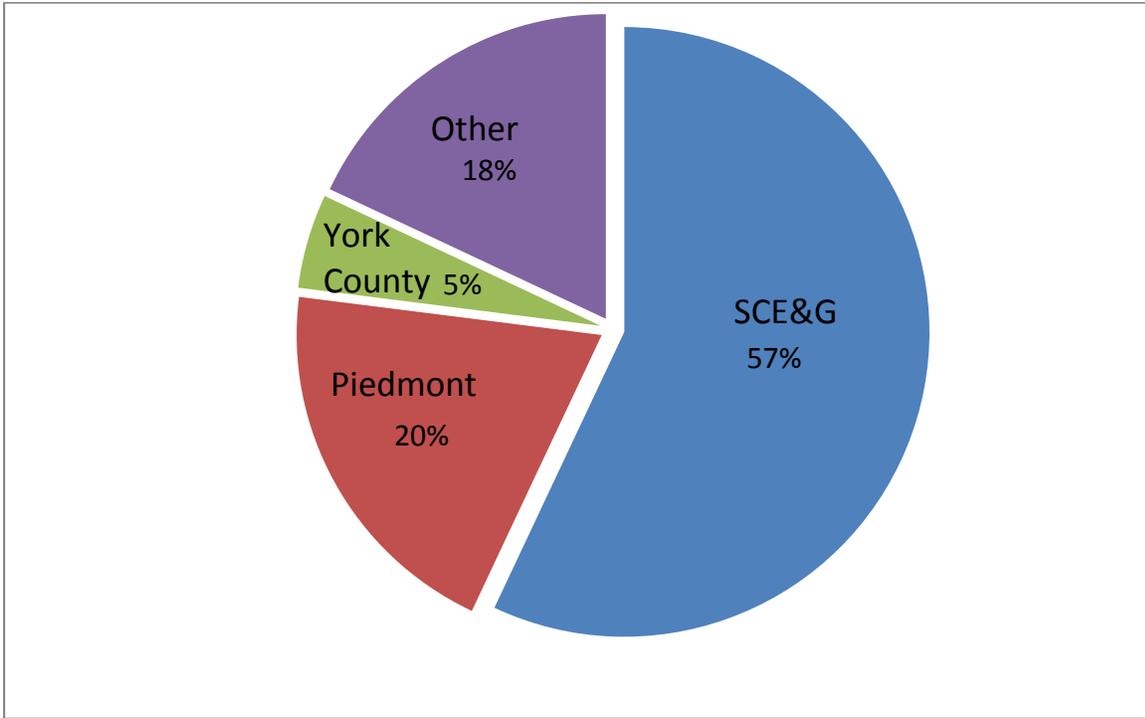
South Carolina Electric Utility Market Share (by kWh Sales), 2012



South Carolina Natural Gas Utility Market Share (by # Customers), 2012



South Carolina Natural Gas Utility Market Share (by CF Sales), 2012



SC ENERGY OFFICE



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