

# Saving Energy, Saving Money:

Overview of Demand-Side Management by South Carolina  
Electric and Natural Gas Utilities

2010



A Report by the  
South Carolina Energy Office,  
South Carolina Budget and  
Control Board

SC ENERGY OFFICE  
  
SC BUDGET AND CONTROL BOARD

# **Saving Energy, Saving Money:**

## **Overview of Demand-Side Management by South Carolina Electric and Natural Gas Utilities**

**2010**

Prepared by Andrew Berger-Gross

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1200 Senate Street  
408 Wade Hampton Building  
Columbia, SC 29201  
(803) 737-8030  
(800) 851-8899  
<http://energy.sc.gov>

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## **Executive Summary**

Demand-side management (“DSM”) is a strategy that electric and natural gas utilities employ to decrease the demand for, and cost of, their energy services.

DSM directly benefits utilities by reducing the need for expensive investments in generation 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 utility bill and (in some cases) utility-provided incentive payments.

DSM in South Carolina hit a high-water mark in 2010 as an increasing number of utilities implemented measures to control peak energy demand and reduce the growth of overall energy demand.

South Carolina’s three large investor-owned electric utilities (Duke Energy Carolinas, Progress Energy Carolinas, and South Carolina Electric & Gas Company) and state-owned Santee Cooper all offered a broad range of DSM programs in 2010. South Carolina’s twenty electric cooperatives implemented a number of new pilot DSM initiatives. Nine of South Carolina’s municipal electric utilities also implemented DSM programs, including utilities serving cities as large as Rock Hill and as small as Abbeville. Together, these utilities provided 97% of the electricity purchased by South Carolina customers from electric utilities.

Both of South Carolina’s investor-owned natural gas distribution utilities (Piedmont Natural Gas Company and South Carolina Electric & Gas Company) operated DSM programs in 2010. In addition, five of South Carolina’s municipal natural gas utilities conducted DSM activities. Together, these utilities provided 91% of the natural gas purchased by South Carolina customers from natural gas utilities.

## **Definition of Terms Used in This Report**

**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.<sup>1</sup>

**Demand response**—(See “Load management”)

**Demand-side management (DSM)**<sup>2</sup>—The use of energy efficiency, conservation, and load management programs that help to reduce the demand for, and cost 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.<sup>1</sup>

**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.<sup>1</sup>

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

<sup>2</sup> Some utilities use the term “demand-side management” to specifically describe programs that reduce peak demand, using the terms “energy efficiency” and/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.

**Qualified Facilities (QF)** are defined by the Public Utilities Regulatory Policies Act of 1978 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 typically 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 reduce the demand for, and cost of, their energy services.

As fossil fuel combustion grows more expensive and the process of adding generation, transmission, and distribution capacity becomes increasingly difficult, many 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. It has been estimated that utility demand-reduction programs cost 2.5 cents per kWh saved and 37.0 cents per natural gas therm saved, which is less expensive at the margin than supplying additional energy resources<sup>3</sup>. Utilities have also been encouraged by state legislative and regulatory incentives and/or mandates to increase their adoption of DSM.

DSM programs generally fall under the following categories:

- Energy efficiency, which reduces the demand for energy without requiring customers to sacrifice the benefits received from energy (e.g.—installing building insulation, purchasing efficient appliances);
- Conservation, which reduces the demand for energy by requiring customers to decrease their utilization of energy-consuming devices (e.g.—reducing thermostat temperature, turning off lights)<sup>4</sup>;
- Load management, which reduces the 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 activities 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 volatile wholesale energy market.

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<sup>3</sup>American Council for an Energy-Efficient Economy. “Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility-Sector Energy Efficiency Programs”. <http://www.aceee.org/research-report/u092>

<sup>4</sup> In 2010, 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.

- 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.

Utilities may in turn pass these savings on to consumers, resulting in lower utility bills.

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 the DSM programs implemented by South Carolina's electric and natural gas utilities in 2010. This report is based 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 an electric or natural gas utility's DSM programs, please contact the customer services department of that particular utility for additional information.

## **Current and Projected Energy Savings from Demand-Side Management in South Carolina**

- **South Carolina Electric Cooperatives**'s ongoing load control program is estimated to reduce peak electricity demand by 100 MW.
- **Duke Energy Carolina**'s DSM programs were estimated to reduce electricity consumption between 120,000 and 140,000 MWh in 2010 and reduce peak demand between 800 and 880 MW in 2010. They are expected to reduce electricity consumption between 5,000,000 MWh and 13,730,000 MWh in 2030 and reduce peak electricity demand between 1,900 and 3,188 MW in 2030.<sup>5</sup>
- **Progress Energy Carolina**'s new DSM programs were estimated to reduce electricity consumption 182,380 MWh in 2010 and reduce peak demand 162 MW in 2010. They are expected to reduce electricity consumption 2,578,830 MWh in 2025 and reduce peak electricity demand 1,328 MW in 2025. (These savings are in addition to the impact of Progress's pre-existing DSM programs.)<sup>5</sup>
- **South Carolina Electric & Gas Company**'s DSM programs were estimated to reduce electricity consumption 103,000 MWh in 2010 and reduce peak electricity demand 220 MW in 2010. They are expected to reduce electricity consumption 1,285,000 MWh in 2025 and reduce peak electricity demand 435 MW in 2025.<sup>5</sup>
- **Santee Cooper**'s DSM programs were estimated to reduce electricity consumption 16,483 MWh in 2010 and reduce peak electricity demand 542 MW in 2010.
- **City of Rock Hill**'s load management programs were estimated to reduce peak electricity demand 6.1% in 2010.

Please see the sections below for more information about actual and projected energy savings and other benefits from utility DSM programs implemented in 2010.

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<sup>5</sup> 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 46 electricity distribution utilities in South Carolina, 33 conducted DSM activities in 2010. These utilities together represented 97% of retail electricity sales by electric utilities in 2009.<sup>6</sup>

In summary, their DSM activities consisted of—

### Energy Efficiency:

- Four electric utilities offered financial incentives (such as lower rates or rebates) to builders and/or building occupants to promote energy efficient new construction.
- Three electric utilities offered financial incentives (such as lower rates, bill credits, or financing) to building occupants to encourage energy efficiency improvements in existing structures.
- Four electric utilities offered on-site energy assessments to customers, providing trained personnel to evaluate facilities and suggest methods for improving energy efficiency.
- Two 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.
- Five electric utilities offered financial incentives (such as rebates or low-interest financing) for the purchase of energy efficient appliances, equipment, and/or lighting.

### Load Management:

- Twenty-three electric utilities offered financial incentives (such as bill credits) to customers that opted to allow utilities to curtail the operation of certain appliances or processes (such as climate control) during periods of peak demand.
- Six 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.

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<sup>6</sup> Source: United States Energy Information Administration, EIA-861 (2009):  
<http://www.eia.gov/cneaf/electricity/page/eia861.html>

- Two electric utilities had programs to purchase customer-generated electricity or provide incentives for customers to switch to on-site standby electricity generation during periods of peak demand.
- Two electric utilities offered financial incentives for the installation and/or 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.<sup>7</sup>

Public Information:

- Five 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.
- Two electric utilities offered in-home meters that displayed real-time information about customers' current and monthly electricity usage and cost.
- Three electric utilities communicated directly with customers through mailings and/or in-person assistance to offer energy efficiency and conservation tips and services.
- Three 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.
- Two electric utilities provided instructional programs and/or resources to K-12 schools to promote energy awareness.

Electric utilities reported operating the following DSM programs in 2010<sup>8</sup>:

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<sup>7</sup> Voltage reduction is unique among the listed measures in that it is implemented across an entire service area; utility customers are usually not able to opt out of voltage reduction events. Voltage reduction might be undesirable to customers who require high voltage levels and disadvantageous to utilities attempting to maximize revenue by delivering (and charging for) the highest allowable voltage. However, voltage is typically reduced to levels that are acceptably safe and conducive to the operation of most appliances, and utilities typically implement voltage reduction only as a last resort when facing temporary capacity constraints. Conservative application of voltage reduction using advanced grid technologies is growing increasingly accepted as a cost-effective way to reduce customer energy bills and lessen the need for new peaking power generation and distribution capacity.

<sup>8</sup> The programs in this table represent current and ongoing DSM programs by electric utilities. Pilot programs implemented in 2010 are not included.

**TABLE 1: Summary of Electric Utility Demand-Side Management, 2010**

Electric Utility Name	Ownership	Energy Efficiency						Load Management						Public Information					
		New Building	Existing Building	On-Site Energy Assessments	Low-Income Efficiency and Weatherization Assistance	Equipment and Lighting Incentives	Load Control	Interruptible Service	Time-of-Use on Seasonal Generation Rates	Standby Generation Rates	Thermal Storage Incentives	Voltage Reduction Incentives	In-Home Customer Tips and Tools	Web-Based Monitoring	Real-Time Energy Monitoring	Customer Communication	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 Member Coops)	Cooperative					✓													
Gaffney Board of Public Works	Municipal							✓											
City of Georgetown	Municipal																		
Greenwood Commission of Public Works	Municipal																		
Greer Commission of Public Works	Municipal																		
Laurens Commission of Public Works	Municipal																		
Lochlair Power Company	Investor-Owned																		
McCormick Commission of Public Works	Municipal																		
City of Newberry	Municipal																		
Orangeburg Department of Public Utilities	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 Company	Investor-Owned	✓	✓	✓															
City of Union	Municipal																		
Westminster Commission of Public Works	Municipal																		
Town of Winnsboro	Municipal																		

Electric utilities submitted narrative descriptions of their 2010 DSM activities in response to SCEO requests for information. These descriptions are as follows, categorized by utility ownership. (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):

## **Electric Cooperatives**

Central Electric Power Cooperative, Inc. (“Central”) is reporting on behalf of the 20 electric cooperative distribution companies in South Carolina, of their activities in 2010 regarding Demand Side Management, Energy Efficiency, and Renewable Resource development.

### ***Current Programs***

There 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.

Also, Central and nine of its member distribution cooperatives are currently engaged in a research pilot that offers members low-interest loans for home weatherization utilizing the recently enacted South Carolina on-bill financing statute. 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, will observe and collect data. One hundred loans will be made to retail consumers by mid-October, with resulting measurement and verification (m&v) performed during 2012.

### ***Activities Since 2009***

Central’s member cooperatives undertook an energy efficiency residential pilot of site built homes in 2009, weatherizing and/or installing new HVAC in approximately 70 homes. On an overall average basis, energy use has declined by around 20 percent.

In the fall of 2009, Central applied for and was awarded a \$2.9M grant from the SC Energy Office to identify and install energy efficiency measures in manufactured homes. These measures included heat pump upgrades and ductwork improvement, replacing existing roofs with cool roofs, replacing older appliances with Energy Star new appliances and weatherization. For each measure, we were to identify 200 homes and make the improvements. This process was applied to all measures except weatherization, for which we used the local Community Action Agencies to perform the work. Seventy nine of the weatherized homes are included in our program. In addition to the above, in home displays, or energy monitors for the homeowner, were to be installed on 400 manufactured and stick built homes. The work was completed in early 2011. An outside consultant has been hired to install measurement and verification equipment, and we are currently monitoring these homes to track the energy savings over the year following the upgrades. The final report on this project will be available early 2012.

Central is also in the middle of a solar thermal water heater pilot program made possible by a grant from the SC Energy Office. Seventy homes across the state received a solar hot water heater upgrade in the fall of 2010. The energy and water use is being monitored by an outside contractor for a year following the upgrade. We are interested in the electric kWh savings generated by these solar systems as well as the electric demand reduction on our systems’ peaks. The final report will also be made available in the early part of 2012.

## **Investor-Owned Electric Utilities**

### **Duke Energy Carolinas**

In May 2007, Duke Energy Carolinas filed its application for approval of energy efficiency (“EE”) and demand-side management (“DSM”) programs under its save-a-watt initiative. These programs were approved by the Public Service Commission in February 2009. The company began implementation of the programs in June 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 frequency of customer participation. In general, programs include two primary categories: EE programs that reduce energy consumption (conservation programs) 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 in place in the Carolinas<sup>9</sup>:

#### ***Demand Response – 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 load control curtailment program is:

- PowerManager

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’ voluntary actions. Duke Energy Carolinas’ current interruptible and time of use curtailment programs include:

- PowerShare®

PowerShare® is a non-residential curtailable program consisting of three options, an Emergency Option for curtailable load, an Emergency Option for load curtailment using on-site generators, and a Voluntary Option.

- The Emergency Option customers will receive capacity credits monthly based on the amount of load they agree to curtail during utility-initiated emergency events. Customers enrolled in the Emergency Option may also be enrolled in the Voluntary Option and eligible to earn additional credits.
- Voluntary Option 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 nominate load for the event and will be paid the posted energy credit for load curtailed.

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<sup>9</sup> [Duke Energy Carolinas note:] The information represented in this document only includes commercialized programs and does not include approved pilots offered in South Carolina in 2010.

- Call Option customers receive monthly capacity credits based on the amount of load they agree to curtail during utility-initiated emergency or economic events. Customers choose from a few options (0, 5, 10 or 15) for the number of economic events that they can participate and receive day-ahead notification for economic events and 6 hour notification for emergency events.
- 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, conservation-oriented 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 conservation programs include:

- Residential Energy Star® rates for new construction  
This rate promotes the development of homes that are significantly more energy-efficient than a standard home. Homes are certified when they meet the standards set by the U.S. EPA and the U.S. DOE. To earn the symbol, a home must be at least 30 percent more efficient than the national Model Energy Code for homes, or 15 percent more efficient than the state energy code, whichever is more rigorous. Independent third-party inspectors test the homes to ensure they meet the standards to receive the Energy Star® symbol. The independent home inspection is the responsibility of the homeowner or builder. Electric space heating and/or electric domestic water heating are not required.
- Non-Residential Energy Assessments  
The purpose of this program is to assist non-residential customers in assessing their energy usage and to provide recommendations for more efficient use of energy. The program also helps identify those customers who could benefit from other Duke Energy Carolinas non-residential DSM programs. The types of available energy assessments are as follows:
  - Online Analysis:  
The customer provides information about its facility. Duke Energy Carolinas will provide a report including energy-saving recommendations.
  - Telephone Interview Analysis:  
The customer provides information to Duke Energy Carolinas through a telephone interview, after which billing data, and, if available, load profile data, will be analyzed. Duke Energy Carolinas will provide a detailed energy analysis report with an efficiency assessment along with recommendations for energy-efficiency improvements. A 12-month usage history may be required to perform this analysis.

- On-site Audit and Analysis:  
For customers who have completed either an Online Analysis or a Telephone Interview Analysis, Duke Energy Carolinas will cover 50% of the costs of an on-site assessment. Duke Energy Carolinas will provide a detailed energy analysis report with an efficiency assessment along with recommendations, tailored to the customer's facility and operation, for energy efficiency improvements. The Company reserves the right to limit the number of off-site assessments for customers who have multiple facilities on the Duke Energy Carolinas system. Duke Energy Carolinas may provide additional engineering and analysis, if requested, and the customer agrees to pay the full cost of the additional assessment.
- Residential Energy Assessments  
This program assists residential customers in assessing their energy usage and provides recommendations for more efficient use of energy in their homes. The program also helps identify those customers who could benefit most by investing in new demand-side management measures, undertaking more energy-efficient practices and participating in Duke Energy Carolinas programs. The types of available energy assessments and demand-side management products are as follows:
  - Mail-in Analysis. The customer provides information about their home, number of occupants, equipment, and energy usage on a mailed energy profile survey, from which Duke Energy Carolinas will perform an energy use analysis and provide a Personalized Home Energy Report including specific energy-saving recommendations.
  - Online Analysis. The customer provides information about their home, number of occupants, energy usage and equipment through an online energy profile survey. Duke Energy Carolinas will provide an Online Home Energy Audit including specific energy-saving recommendations.
  - On-site Audit and Analysis. Duke Energy Carolinas will perform one onsite assessment of an owner-occupied home and its energy efficiency-related features during the life of this program.
- Low Income Energy Efficiency and Weatherization Program  
The purpose of this program is to assist low income residential customers with demand side management measures to reduce energy usage through energy efficiency kits or through assistance in the cost of 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 two components – compact fluorescent light bulbs and high-efficiency air conditioning equipment.

This residential compact fluorescent light bulbs (CFLs) incentive program provides market incentives to customers and market support to retailers to promote use of CFLs. Special incentives to buyers and in-store support will increase demand for the products, spur store participation, and increase availability of CFLs to customers. Part of this program is to educate customers on the advantages (functionality and savings) of CFLs so that they will continue to purchase these bulbs in the future when no direct incentive is available.

The residential air conditioning program provides incentives to customers, builders, and heating contractors (Heating Ventilation & Air Condition (HVAC) dealers) to promote the use of high-efficiency air conditioners and heat pumps with electronically commutated fan motors (ECM). The program is designed to increase the efficiency of air conditioning systems in new homes and for replacements in existing homes.

- **Smart Saver® 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: high-efficiency lighting, high efficiency air conditioning equipment, high-efficiency motors, and high-efficiency pumps. Customer incentives may be paid for other high-efficiency equipment as determined by the Company to be evaluated on a case-by-case basis.

The projected impacts from these programs are as follows:

Conservation and Demand Side Management Programs								
	Conservation		Demand Response Peak MW				Total MW Impacts	
	MWh	MW	Summer Peak MW					
			IS	SG	PowerShare	PowerManager		
2010	120,000	15	218	75	192	300	785	
2011	330,000	42	218	75	347	321	961	
2012	660,000	81	218	75	494	380	1168	
2013	1,140,000	141	218	75	548	414	1255	
2014	1,620,000	201	218	75	548	426	1267	
2015	2,110,000	259	218	75	548	426	1267	
2016	2,590,000	317	218	75	548	426	1267	
2017	3,070,000	396	218	75	548	426	1267	
2018	3,550,000	457	218	75	548	426	1267	
2019	4,030,000	496	218	75	548	426	1267	
2020	4,520,000	553	218	75	548	426	1267	
2021	5,000,000	633	218	75	548	426	1267	
2022	5,000,000	633	218	75	548	426	1267	
2023	5,000,000	633	218	75	548	426	1267	
2024	5,000,000	633	218	75	548	426	1267	
2025	5,000,000	633	218	75	548	426	1267	
2026	5,000,000	633	218	75	548	426	1267	
2027	5,000,000	633	218	75	548	426	1267	
2028	5,000,000	633	218	75	548	426	1267	
2029	5,000,000	633	218	75	548	426	1267	
2030	5,000,000	633	218	75	548	426	1267	

High EE Case Projected Load Impacts								
Conservation and Demand Side Management Programs								
	Conservation		Demand Response Peak MW				Total	Summer Peak MW Impacts
	MWh	MW	IS	SG	PowerShare	PowerManager		
	2010	140,000	18	245	84	215	318	862
2011	390,000	49	248	85	395	340	1068	1117
2012	770,000	95	249	86	565	402	1302	1397
2013	1,340,000	166	250	86	629	436	1401	1567
2014	1,910,000	236	251	86	630	450	1417	1653
2015	2,650,000	326	252	87	634	450	1424	1750
2016	3,390,000	415	254	87	637	451	1429	1845
2017	4,130,000	533	255	88	640	452	1434	1967
2018	4,870,000	626	256	88	642	454	1439	2066
2019	5,600,000	689	256	88	644	455	1444	2132
2020	6,340,000	777	257	88	646	457	1448	2225
2021	7,080,000	898	258	89	648	459	1453	2351
2022	7,820,000	990	259	89	650	461	1459	2449
2023	8,560,000	1,084	260	89	652	463	1464	2548
2024	9,300,000	1,137	260	90	654	466	1470	2606
2025	10,040,000	1,230	261	90	656	468	1475	2706
2026	10,780,000	1,321	262	90	658	471	1481	2802
2027	11,520,000	1,458	263	90	660	473	1487	2945
2028	12,260,000	1,547	264	91	662	476	1493	3040
2029	12,990,000	1,645	264	91	664	479	1499	3144
2030	13,730,000	1,683	265	91	666	482	1505	3188

## **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 six 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
- Residential Neighborhood Energy Saver (Low-Income)
- Residential Lighting Program
- Residential Appliance Recycling Program
- 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***

- Solar Water Heating Pilot Program

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#### ***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

In addition, PEC's previously existing Energy Efficiency Financing program was incorporated into this program in 2009 to connect customers with screened contractors who provide complete installation and financing on a range of energy-saving home improvements.

The Residential Home Energy Improvement program was launched in July 2009. Through July 31, 2010, there have been 25,746 participants contributing 11,510 MWh in net annualized energy savings and 8,776 kW in peak demand savings.

- Residential Home Advantage (New Construction) Program

The Residential Home Advantage New Construction 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. 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.

Since the launch of the Residential Home Advantage program in December 2008, there have been 1,608 participants through July 31, 2010, contributing 1,797 MWh in net annualized energy savings and 618 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 focuses on compact fluorescent light bulbs (CFLs), with the intent to add newer lighting technologies as they become available and cost-effective.

Through July 31, 2010, 1,760,541 CFLs have been sold through the Residential Lighting Program, contributing 38,605 MWh in net annualized energy savings and 3,665 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 Neighborhood Energy Saver (Low-Income) Program

PEC's Neighborhood Energy Saver Program was launched in October 2009 to assist low-income residential customers implement energy conservation measures which in turn lessen their household energy costs. The program provides assistance to low-income families by installing a comprehensive package of energy conservation measures that lower energy consumption at no cost to the customer. Prior to installing measures, an energy assessment is conducted on each residence to identify the appropriate measures to install. In addition to the installation of energy efficiency measures, an important component of the Neighborhood Energy Saver program is the provision for one-on-one energy education. Each resident receives education on energy efficiency techniques and is encouraged to make behavioral changes to help reduce and control their energy usage.

As of July 31, 2010, measures have been installed in 2,936 homes. These installed measures contributed 2,727 MWh in net annualized energy savings and 420 kW in peak demand savings.

- **Residential Appliance Recycling Program**

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 of \$50 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 July 31, 2010, there have been 1,711 participants contributing 1,078 MWh in net annualized energy savings and 125 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 July 31, 2010, there have been 905 participants contributing 32,203 MWh in net annualized energy savings and 7,014 kW in peak demand savings.

### ***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

For each of the control options above, an initial one-time bill credit of \$25 following the successful installation and testing of load control device(s) and annual bill credits of \$25 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 July 31, 2010, the Residential EnergyWise HomeSM Program has 32,189 participants contributing 36,642 kW of summer peak load reduction capability and 1,671 kW of winter peak load reduction capability. Since the time of PEC's last biennial resource plan<sup>10</sup> filing in September 2008, and extending through July 2010, there have been three Residential EnergyWise HomeSM Program activations. In addition, PEC has performed 17 test activations for M&V purposes in 2009 and 2010 to help estimate program impacts and identify opportunities to maximize program use while minimizing customer complaints that may cause them to drop out of the program.

- 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 July 31, 2010, there were 18 active installations in the program contributing 6,333 kW of available load reduction capability. From this program's inception through July 31, 2010, there have been two CIG Demand Response Automation Program control events.

- 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 Solar Water Heating Pilot Program  
This pilot program was launched in June 2009 and was designed to provide PEC with the ability to measure and validate the achievable energy savings and coincident peak impacts associated with implementing residential solar water heating in the PEC service territory. Results from the pilot program will enable PEC to determine whether it is cost effective to incorporate solar water heating as part of its least cost mix of demand reduction and generation measures to meet the

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<sup>10</sup> [Note: "biennial resource plan" refers to filings to the Public Service Commission]

electricity needs of its customers. The data from this pilot program will also enable PEC to form a validated foundation for determining the future value of energy efficiency rebates or potential REC values, and create a better database of operational characteristics that could be used by other stakeholders (i.e., vendors/installers, developers, homeowners, solar advocates, policymakers, regulators, etc.).

As of July 31, 2010, there are 104 customers participating in the Residential Solar Water Heating Pilot Program, which has a cap of 150 total participants in PEC's service area.

#### ***Summary of Prospective Program Opportunities***

PEC is considering the implementation of a new EE resource targeted to residential customers and 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. In addition to the household comparative analysis, the reports will provide specific recommendations to motivate participants to reduce their energy consumption. PEC is also considering expanding its Residential Home Energy Improvement program to include several new, additional EE measures.

#### ***DSM and EE Forecasts***

The tables below show the projected composite impacts of all new PEC DSM, EE, and DSDR programs, 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 or Voltage Control, which will be discussed later in this document.

**Peak MW Demand Savings (at generator)**

Year	Summer Peak MW Savings				Winter Peak MW Savings			
	DSM	EE	DSDR	Total	DSM	EE	DSDR	Total
2010	42	21	99	162	4	9	99	112
2011	102	41	111	253	14	19	111	144
2012	159	72	241	472	23	38	241	303
2013	211	110	249	570	32	61	249	342
2014	257	148	255	659	39	88	255	382
2015	296	180	261	737	46	109	261	416
2016	328	216	267	810	48	129	267	444
2017	352	255	272	879	49	152	272	474
2018	367	297	278	941	50	177	278	505
2019	375	344	283	1,002	50	204	283	538
2020	379	392	289	1,060	51	233	289	573
2021	381	436	295	1,112	51	259	295	605
2022	383	481	301	1,164	52	286	301	638
2023	385	529	307	1,220	52	316	307	674
2024	386	577	313	1,275	52	346	313	710
2025	387	622	319	1,328	52	375	319	746

**Annual MWh Energy Savings (at generator)**

Year	DSM	EE	DSDR	Total Savings
2010	1,155	152,381	28,845	182,380
2011	2,658	314,494	37,968	355,120
2012	4,104	462,716	48,327	515,147
2013	5,407	621,846	49,689	676,942
2014	6,569	770,106	50,552	827,227
2015	7,532	898,617	51,518	957,668
2016	8,264	1,049,971	52,389	1,110,624
2017	8,803	1,189,737	53,297	1,251,837
2018	9,127	1,341,482	54,240	1,404,849
2019	9,303	1,511,254	55,153	1,575,710
2020	9,398	1,653,810	56,089	1,719,297
2021	9,454	1,779,851	57,034	1,846,339
2022	9,501	1,966,779	57,994	2,034,274
2023	9,539	2,155,526	58,972	2,224,036
2024	9,569	2,335,892	59,967	2,405,428
2025	9,594	2,508,257	60,979	2,578,830

#### ***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 EE/DSM 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 2009, 282,504 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 76 MW. This level of reduction does not adversely impact customer equipment or operations.

### **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 2009, as well as load control activations since those enumerated in PEC's last biennial resource plan:

Program Description	Type	Capacity (MW)	Annual Energy (MWH)	Participants	Activations Since Last Biennial Report
Energy Efficiency Programs <sup>1</sup>	EE	494	NA	NA	NA
Large Load Curtailment	DSM	309	NA	79	0
Real Time Pricing (RTP) <sup>1</sup>	DSM	19	NA	100	NA
Commercial & Industrial TOU <sup>1</sup>	DSM	5	NA	23,345	NA
Residential TOU <sup>1</sup>	DSM	12	NA	28,833	NA
Voltage Control	DSM	76	NA	NA	89

Since PEC's last biennial resource plan report in September 2008, voltage reduction has been implemented on 89 occasions through July 2010.

The following table presents information on the two Large Load Curtailment activations that have occurred since PEC's last biennial resource plan report in September 2008 and extending through July 2010.

Large Load Curtailment		
Start Time	End Time	Duration (Minutes)
06/24/2010 13:00	06/24/2010 21:00	480
06/25/2010 11:00	06/25/2010 22:00	660

## ***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
- Energy Saving Tips
- Energy Resource Center
- CIG Account Management
- Save the Watts.com
- Wind For Schools
- Energy Efficiency World Website
- SunSense Schools Program
- Newspapers in Education
- Community Events

Since the time of the last biennial report, Contractor Training has been incorporated into PEC’s current set of energy efficiency offerings, so it is no longer being listed here as a stand-alone educational program.

- **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](http://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.
- **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 RValues, Air Conditioning, Appliances and Pools, Attics and Roofing, Building/Additions, Ceiling Fans, Ducts, Fireplaces, Heating, Hot Water, Humidistats, Landscaping, Seasonal Tips, Solar Film, and Thermostats.

- **Energy Resource Center**  
In 2000, 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 electrical demand and overall energy costs. Through its Energy Resource Center, located on the PEC web site, PEC provides newsletters, online tools and information which cover a variety of energy efficiency topics such as electric chiller operation, lighting system efficiency, compressed air systems, motor management, variable speed drives and conduct an energy audit.
- **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.
- **SavetheWatts.com**  
In 2007, Progress Energy Carolinas launched "Save the Watts," a customer education and engagement campaign primarily targeted to PEC's residential customers. Its goal was to help customers understand not only how to use energy wisely, but to also provide them with specific tools and tips to help them save energy and money. At Progress Energy's customized, interactive website, [www.savethewatts.com](http://www.savethewatts.com), customers can find energy-efficiency tips, calculators to help identify potential savings and information about PEC's energy-efficiency and demand-side management programs.
- **Wind for Schools**  
PEC is a partner in a North Carolina's first-ever Wind for Schools program in Madison County. This program involves a regional partnership providing for the installation of a small wind turbine at Hot Springs Elementary School in Madison County. The partnership also includes development of a K-12 alternative-energy curriculum as part of an effort to introduce wind power to rural communities and initiate community discussions around the benefits and challenges of alternative-energy resources. The program is modeled after the U.S. Department of Energy's (DOE) Wind for Schools initiative. The intent of the program, as defined by DOE, is to provide students and teachers with a physical example of how communities can take part in providing for the economic and environmental security of the nation while allowing exciting, hands-on educational opportunities.
- **Energy Efficiency World Website**  
PEC is offering a new educational online resource for teachers and students in our service area called Energy Efficiency World. 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 [www.progress-energy.com/shared/eew](http://www.progress-energy.com/shared/eew). PEC also distributes workbooks for kids that accompany the website experience.
- **SunSense Schools Program**  
The SunSense Schools program was launched by PEC in March 2009. This solar education program is the first of its kind in the Carolinas, and is designed to give middle and high school students and faculty a unique, hands-on opportunity to learn more about solar energy. Five

winning schools received a two-kilowatt solar photovoltaic system installed on their campus along with internet-based tracking equipment that shows the real-time energy output. Progress Energy is proud to bring this exciting opportunity to local schools. Program details are available at [www.progress-energy.com/sunsense](http://www.progress-energy.com/sunsense).

- Newspapers in Education

During 2009 and 2010, PEC designed and authored an educational newspaper insert geared toward K-12 students, which included information about energy efficiency and renewable energy. This insert was distributed to customers via the Raleigh News & Observer and was provided cost-free to more than 15,000 students in the PEC service area.

- 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 electricity. 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, Energy Conservation and the newly offered Demand Side Management programs. A description of each follows:

- **Annual Energy Campaigns:** In 2010, SCE&G continued to proactively educate its customers and create awareness on issues related to energy efficiency and conservation.
    - Customer Outreach Marketing and Communications  
Two residential surveys were distributed in 2010 which provided SCE&G valuable insight on customer perceptions about how the company communicates its energy efficiency programs and services. These two vehicles included the annual Brand Health Study and Voice of the Customer Panel. Customer feedback was evaluated thoroughly and implemented as appropriate to ensure we are communicating in a consistent manner that customers will understand.
    - Brand/Mass Advertising and Fall Energy Campaign  
Brand advertising for 2010 featured members of the SCE&G Energy Team in a series of print advertising in The State Newspaper and Aiken Standard, driving customers online to [www.sceg.com/energywise](http://www.sceg.com/energywise) to learn more about SCE&G's energy saving programs and services. The company continued to air a series of 30-second educational promotions on TV stations throughout its service territory to include targeted cable channels and network TV in Columbia and Charleston during local news programming. Radio continues to be included in the channel mix to ensure a fully integrated approach to reaching customers with practical savings tips to help save energy and money. Radio advertising directed customers to [www.sceg.com](http://www.sceg.com) for additional information and resources.
- A continuation of the ongoing brand/mass advertising efforts on energy efficiency communications, SCE&G launched its annual Fall Energy Campaign in October (Energy Awareness Month) providing customers with education and updates about SCE&G's special offers to include the free Home Energy Check-up. Also included was a reminder about the final December 31st deadline for federal tax credits available for qualified energy efficient home upgrades. Channels of communication included major daily newspapers and their respective web sites for The State Newspaper and Aiken Standard. Weekly publications included SC Black News, The Charleston Chronicle, The Gullah Sentinel, The Carolina Panorama and The Community Times. The call-to-action for all print advertising included a drive-to-web for [www.sceg.com/energywise](http://www.sceg.com/energywise). In addition to print, placement with TV and radio continued throughout year-end to support ongoing communications about saving energy and money.

- [South Carolina Appliance Rebate Program](#)  
In March 2010, SCE&G collaborated alongside the South Carolina Energy Office, offering in-kind services to help educate SCE&G residential customers about the South Carolina Energy Office Appliance Rebate Program. The program, which offered SC residents access to federal funds awarded to the State of South Carolina for approved, energy efficient appliance upgrades, was promoted through SCE&G's web site and blog, as well as through bill inserts, bill messaging and print advertising. A designated vanity URL ([www.sceg.com/rebates](http://www.sceg.com/rebates)) was developed to ensure updated information about the program was available to customers with a direct link to the South Carolina Energy Office web site for further details about the program.
- [SCE&G Business Offices \(37 locations within service territory\)](#)  
Energy savings promotions implemented in all Business Office locations, included posters and distribution of "Top 10 Energy Savings Tips" via drive-through envelopes.
- [EnergyWise Newsletters \(Print and new E-Newsletter\)](#)  
Provided energy efficiency and conservation information for all customer classifications. The print version of the newsletter is mailed twice annually, with 2010 editions being distributed during the winter/spring and fall seasons. In addition, we continued to e-mail the EnergyWise e-newsletter (based on customer demand/online requests for energy savings information) to approximately 1300 residential customers in 2010.
- [SCE&G/EnergyWise Blog](#)  
SCE&G continued to promote its blog in 2010 ([www.sceg.com/energywise](http://www.sceg.com/energywise)) for customers to learn more about energy efficiency programs/services offered by the company. Topics of interest have included a broad range of energy efficiency messaging, seasonal in nature, and highlighting practical savings tips about thermostats, water heaters, household appliances, insulation and air filters, as well as information about SCE&G rebates/incentives and reminders about the deadline for federal tax credits for approved home efficiency upgrades.
- [News Releases](#)  
Distributed to print and broadcast media throughout SCE&G's service territory on a variety of energy savings programs and services, seasonal energy efficiency communications and the collaboration with the South Carolina Energy Office regarding the Appliance Rebate Program offered through the federal government stimulus funds.
- [Speakers Bureau](#)  
Representatives from SCE&G made presentations on energy efficiency and conservation programs to several organizations in 2010 including church groups, senior citizen and low-income housing communities, civic organizations, builder groups and homeowner associations.
- **Web-Based Information and Services Programs:** SCE&G's online offerings can be broken into four components: the Energy Analyzer tool, the online Energy Audit tool, Customer Awareness Information and EnergyWise Blog/E-Newsletter. Altogether there were more than 2.96 million visits to SCE&G's website in 2010 and feedback has been positive. Customers must be registered to use the interactive tools: Energy Analyzer and Energy Audit. There are over 276,000 customers registered for this access. Following is a description of these components:
  - [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 90,000 visits to the Energy Analyzer tool in 2010.

- **Energy Audit**

The 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 4,800 customers who used the Energy Audit tool in 2010.

- **Customer Awareness Information**

The SCE&G Web site supports all communication efforts to promote energy savings tips through a section of the website called "Save Energy & Money" and through the Energy Audit library. Energy savings information includes how-to videos on insulation, thermostats and door and windows. Information on the latest tax credits offered by the American Recovery and Reinvestment Act of 2009 is also available, including links to help customers explore and learn how they can take advantage of these credits. For business customers, online information also includes: power quality technical assistance, conversion assistance, new construction information, expert energy assistance and more (2010 traffic greater than 60,000).

- **SCE&G EnergyWise Blog and E-Newsletter**

SCE&G's web-based information and services included ongoing management of two tools/resources in 2010: the Company's blog on energy efficiency at [www.sceg.com/energywise](http://www.sceg.com/energywise) (2010 traffic was 2,300) and an EnergyWise e-newsletter to support customer demand for additional information on ways to help them save energy. (3,400 e-newsletters in 2010).

- **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**

Rate 6 (Energy Saver / Conservation) rewards homeowners and home builders 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 as 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.

- **In-Home Energy Consultation**

This program continued through October 2010 and was gradually phased out after the approval of the new Demand Side Management programs. This free, in-home energy consultation was designed for residential customers who wanted to be proactive in

managing their energy consumption. An Energy Services Representative would complete a walk-through of a customer's home inspecting windows & doors, caulking, weather stripping, insulation levels, appliances, water heaters and HVAC, and assess the home's thermal efficiency. Information about this program was provided on our website, through bill inserts, and through numerous media outlets (newspaper, television, internet, radio, etc.).

- Value Visit Program continued through October 2010 and was gradually phased out after the new Demand Side Management programs were approved. The program was designed to assist residential electric customers who are considering an investment in upgrading their home's thermal efficiency.
- **Demand Side Management Programs:** On July 15, 2010, SCE&G received an Order from the Public Service Commission approving its portfolio of DSM programs. The 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 with the customer friendly renaming, if applicable, follows:
  - Residential Home Energy Reports (previously Benchmarking) will provide consumers with comparisons of their monthly energy consumption with benchmarks showing average energy consumption by similarly situated energy users. The monthly benchmarking information will be provided free of charge to customers who elect to participate in the program. The full offering of this program will occur in the 2nd quarter of 2011.
  - Residential Energy Information Display will provide 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 will be made available to customers at a discounted price. After review of the initial implementation phase, the full offering of this program will occur in the 2nd quarter of 2011.
  - Residential Home Energy Check-up and Home Performance with ENERGY STAR® encourages customers to have a specific assessment of the energy efficiency of their homes performed. It will include two tiers of home energy review and assessment.

Beginning in October 2010, 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 are offered an energy efficiency kit containing simple measures, such as CFLs, 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 will go a step further and provide a comprehensive audit with diagnostic testing of the energy efficiency of the home by trained contractors. SCE&G will promote these audits by independent providers and will subsidize the cost of the audit and specific measures undertaken by customers based on the audit findings. The full offering of this program will occur in the 1st quarter of 2011.

These two DSM programs, as listed above, replaced the previously listed Value Visit and In-Home Energy Consultation programs.

- Residential ENERGY STAR® Lighting program will provide residential customers with incentives for purchasing and installing high-efficiency and ENERGY STAR® qualified lighting. Beginning in the 1st quarter of 2011, all SCE&G customers will be eligible to participate.
- The Residential Heating & Cooling and Water Heating Equipment (previously New High Efficiency HVAC and Water Heater) program will provide incentives for high efficiency HVAC units and water heaters installed in new and existing homes. The full offering of this program will occur in the 1st quarter of 2011.
- The Residential Heating & Cooling Efficiency Improvements (previously named Existing HVAC Efficiency) program will provide residential customers with incentives for investing in efficiency tune-ups and other improvements to their HVAC systems. The full offering of this program will occur in the 1st quarter of 2011.
- 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 will provide incentives based on a comprehensive analysis of the energy efficiency of new homes reflecting both the construction techniques used and the appliances installed. The full offering of this program will occur in the 2nd quarter of 2011.
- Beginning in October 2010, the Commercial and Industrial Prescriptive program began providing lighting incentives to non-residential customers to invest in high-efficiency lighting and fixtures. Beginning the 1st quarter of 2011, SCE&G will go beyond these incentives to include energy efficient measures like high efficiency motors and other equipment. To ensure simplicity, the program will involve a master list of measures and incentive levels which will be easily accessible to commercial and industrial customers on the website.
- Commercial and Industrial Custom program will provide tailored incentives to commercial and industrial customers based on the calculated efficiency benefits of their particular energy efficiency plans or construction proposals. This program is intended to apply to technologies and applications that are more complex and customer-specific. All aspects of these commercial and industrial programs will apply to both retrofit and new construction projects. The full offering of this program will occur in the 1st quarter of 2011.

### ***Load Management Programs***

SCE&G's load management programs have as their primary goal the reduction of 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 retail customers was revamped in 2009 to serve as a load management tool. General guidelines authorize SCE&G to initiate a standby generator run request when reserve margins are stressed due to a temporary reduction in system generating capability or high customer demand. Through consumption avoidance, customers who own generators release capacity back to SCE&G where it is then used to satisfy system demand. Qualifying customers (able to defer a minimum of 200 kW) receive financial credits determined initially by recording the customer's demand during

a load test. Future demand credits are based on what the customer actually delivers when SCE&G requests them to run their generator(s). This program allows customers to reduce their monthly operating costs, as well as earn a return on their generating equipment investment. There is also a wholesale standby generator program that is similar to the retail programs.

- 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 discounted charges during off-peak periods. This encourages customers to conserve energy during peak periods and to shift energy consumption to off-peak periods. All our customers have the option of a time of use rate.

The following table shows a forecast of territorial energy sales, including a baseline projection and adjustments for energy efficiency programs:

	Baseline Sales (GWH)	Energy Efficiency			Territorial Sales (GWH)
		SCE&G Programs (GWH)	Federal Mandates (GWH)	Total EE Impact (GWH)	
2011	23,024	-72	0	-72	22,952
2012	23,534	-160	-213	-373	23,161
2013	24,100	-263	-286	-549	23,551
2014	24,695	-377	-327	-704	23,991
2015	25,190	-508	-629	-1,137	24,053
2016	25,683	-627	-673	-1,300	24,382
2017	26,189	-765	-719	-1,484	24,705
2018	26,687	-924	-764	-1,688	24,999
2019	27,210	-1,105	-810	-1,915	25,295
2020	27,759	-1,285	-1,062	-2,347	25,412
2021	28,270	-1,285	-902	-2,190	26,084
2022	28,798	-1,285	-924	-2,209	26,590
2023	29,317	-1,285	-945	-2,230	27,087
2024	29,833	-1,285	-967	-2,252	27,581
2025	30,377	-1,285	-989	-2,274	28,103

The following table shows the impacts of energy efficiency from the Company's DSM programs and from federal mandates as well as the impact from the Company's demand response programs on the firm peak demand projections:

Territorial Peak Demands (MWs)							
		Energy Efficiency					
Year	Baseline Trend	SCE&G Programs	Federal Mandates	Total EE Impact	System Peak Demand	Demand Response	Firm Peak Demand
2011	4,961	-9	-1	-10	4,951	-225	4,726
2012	5,056	-21	-3	-24	5,032	-225	4,807
2013	5,178	-36	-23	-59	5,119	-225	4,894
2014	5,310	-53	-43	-96	5,214	-225	4,989
2015	5,419	-74	-58	-132	5,287	-225	5,062
2016	5,524	-94	-67	-161	5,363	-225	5,138
2017	5,638	-117	-76	-193	5,445	-225	5,220
2018	5,746	-144	-86	-230	5,516	-225	5,291
2019	5,858	-175	-96	-271	5,587	-225	5,362
2020	5,980	-210	-106	-316	5,664	-225	5,439
2021	6,090	-210	-119	-329	5,761	-225	5,536
2022	6,205	-210	-129	-339	5,866	-225	5,641
2023	6,322	-210	-139	-349	5,973	-225	5,748
2024	6,436	-210	-149	-359	6,077	-225	5,852
2025	6,554	-210	-160	-370	6,184	-225	5,959

## **Municipal Electric Utilities**

### **City of Abbeville**

#### *Energy Efficiency Programs*

- **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 APPA 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.
- **Eco@home Newsletter**  
Eco@home Newsletter is a quarterly consumer publication produced by APPA that communicates energy efficiency tips and information to customers of public power utilities. The digest-sized 12-page piece encourages readers to consume energy more efficiently-saving money and benefiting our environment. They are mailed directly to the customer.
- **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.

### **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 uses voltage reduction on 5 of 6 circuits, from 125 volts to 120 volts.

## **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.

## **Easley Combined Utilities**

Easley Combined Utilities (ECU) operates a total of 9.2 MW of consumer owned generation to offset grid usage during peak demand times. ECU also has a net metering policy which allows for customers to install customer owned generation.

## **Gaffney Board of Public Works**

The Gaffney Board of Public Works website is at the core of our energy conservation and energy efficiency. On our home page we have a link to Energy Depot which is a set of online tools and resources to help our customers better understand and manage their home energy use and cost. We also have an entire page on our website that addresses water and energy conservation and again a link to Energy Depot.

We have on and off peak pricing for a select group of industrial customers but these customers must meet certain load requirements and time constraints.

## **Greer Commission of Public Works**

We offer a set of online tools and resources that allows the customer to better understand and manage energy costs within their home or business. The link provided enables the customer to complete a do-it-yourself energy audit, the benefits of energy efficiency and how to realize savings on their utility bills by making some improvements to their homes. Contains a complete energy library to help the customer get answers to their energy questions.

We offer in-house energy audits provided by Greer CPW staff. The staff will conduct an inspection of the home and make recommendations for changes to help with energy efficiency.

On our website, [www.greercpw.com](http://www.greercpw.com), we offer energy saving tips to the customers that will promote energy efficiency and conservation.

We offer Time-of-Use rates to some of our commercial customers, which help to promote off-peak energy use.

## **City of Rock Hill**

### **Conservation**

The City of Rock Hill (“City”) is currently involved in an Automated Metering Infrastructure (AMI) Pilot project. Over 14,000 new solid-state electric meters have been installed. As part of this project, the City is evaluating the market and public interest for in-home displays and/or on-line customer access to load profile data and real-time data to monitor and 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 (12 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 2010, the City was able to reduce its annual peak demand by an estimated 6.1%

## **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 has only one customer on this particular rate. That customer receives 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**

For over 20 years, Santee Cooper has offered demand-side management (“DSM”) programs. These programs have measures that save energy and/or demand. The energy and/or demand impacts of the actual and projected participation of Santee Cooper’s directly served retail customers are considered when updating the energy and/or demand needs in the Generation Plan.

In the fall of 2007, Santee Cooper established a Conservation and Renewable Energy (C&RE) Department. The purpose of this department is to develop new energy efficiency and conservation programs and to obtain renewable generation resources.

In 2009, C&RE launched several new energy efficient programs that added to Santee Cooper’s conservation efforts. Some of these programs replaced older energy efficient programs causing these older programs to be closed to new participation. C&RE will continue to launch new energy efficient programs throughout 2011.

#### ***Existing Energy Efficiency Programs***

- **Commercial Good Cents**

Commercial Good Cents is offered to commercial customers building new facilities that improve the efficiency in the building thermal envelope, heating and cooling equipment, and lighting. Commercial customers that meet program standards are given an up-front rebate to encourage participation in the program.

Program participation through 2010 resulted in an estimated demand savings of 1,270 kW and an estimated energy savings of 1,785,000 kWh. Total expenditures for the Commercial Good Cents Program incurred through Santee Cooper in 2010 were \$4,804.77

- **Thermal Storage Cooling Program**

The Thermal Storage Cooling Program shifts energy used by commercial customers for air conditioning from peak to off-peak hours by utilizing thermal energy stored in a medium such as ice or water. Rebates are offered to customers who install this type of equipment. There is currently one active participant in this program and an estimated demand reduction of 203 kW.

- **Interruptible / Economy Power Pricing Rates**

Santee Cooper has developed and offers time-of-use, non-firm, and off-peak rates to its direct-served residential, large commercial and industrial customers to encourage them to reduce their peak demand. The use of these rates is taken into account when developing the Load Forecast and Generation Plan.

An “economy power” rate is available to industrial customers, which is based on an hourly incremental energy rate. This is a real time pricing rate; the price for energy changes each hour. Customers must schedule their usage each hour. Service under this Rider is curtailable in emergency situations by Santee Cooper. Pricing alternatives are available under this rate where the energy price is fixed during certain hours. There are also supplemental curtailable and interruptible rates available to industrial customers which allow for curtailment under certain circumstances.

As part of Santee Cooper's demand control program, currently there are over 540 MW's of load taking service under interruptible and economy power schedules. The portion of this load estimated to be on the system at the peak is excluded from the peak demand calculations for generation planning and reserves resource planning.

### ***Energy Efficiency Programs Being Discontinued***

- **Good Cents New and Improved Home Program**

The Good Cents Program was developed to provide residential customers an incentive to build new homes to higher levels of energy efficiency and improve existing homes by correctly sizing heating and air conditioning equipment and installing equipment more efficient than federal minimum standards. Homes were evaluated to determine if they met the standards set for the program. Inspections were completed throughout construction of the new homes and at the completion of construction for improved homes. This program was closed to new customers as of November 1, 2009 except for any customer who applied for the Good Cents Program prior to that date and whose home was already certified under Santee Cooper's Good Cents Home Program prior to November 1, 2010.

Program participation through 2010 resulted in an estimated demand savings of 19,319 kW and estimated energy savings of 23,913,000 kWh. Total expenditures for the Good Cents Program incurred through Santee Cooper in 2010 were \$1,335,905.14.

- **H2O Advantage Water Heating Program**

H2O Advantage was a storage water heating program designed to shift the demand related to water heating off-peak. This was accomplished with the installation of an electronic timer or radio controlled switch on an 80 gallon water heater. This program began in 1990. This program was closed to new participation in 2000. The contract spans 10 years so this program will no longer be impacting the system after 2010.

Total expenditures for the H2O Advantage Program incurred through Santee Cooper in 2010 for existing participants were \$11,290.37

- **Energy Efficient Lighting**

Santee Cooper offered twelve free CFL bulbs to every residential customer as part of a "Switch and Save" energy efficient lighting effort in 2008. The objective was to encourage residential customers to change their light bulb buying and usage habits for greater energy conservation. Customers received a voucher for twelve ENERGY STAR® 75-watt equivalent CFLs that were redeemable by visiting any of Santee Cooper's Customer Service offices.

In 2008, 781,000 CFLs were distributed to 65,083 residential customers.

### ***New Energy Efficiency Programs***

Santee Cooper launched its "Reduce the Use South Carolina" energy efficiency effort in September 2009. The goal of this 10-year-long effort is to substantially reduce the use of electricity and improve energy efficiency among its 163,000 direct serve residential and commercial customers through rebate programs. The comprehensive "Reduce the Use South Carolina" energy efficiency effort includes a total of 42 energy efficiency initiatives to help achieve an annual savings of 209 million kilowatt hours, by 2020. In the first 12-months, Santee Cooper has launched the following rebate programs:

- **Smart Energy Existing Homes Program**

The Smart Energy Existing Home Program began on November 1, 2009. Smart Energy Existing Homes are certified by a Santee Cooper Energy Advisor to meet minimum energy performance

guidelines. A home can receive the Smart Energy Home certificate by achieving an energy performance target or installing a specific number of eligible energy efficiency upgrades. The rebate for Smart Energy Existing Home is \$600 and is payable to the homeowner.

Program participation in 2010 resulted in an estimated demand savings of 192.76 kW and estimated energy savings of 1,148,028 kWh. Total expenditures for the Smart Energy Existing Homes program incurred through Santee Cooper in 2010 were \$360,501.48.

- 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 encourage their participation. ENERGY STAR® New Home performance standards require that homes be 15% more efficient than the requirements in 2006 International Energy Efficiency Code (IECC). Smart Energy New Home performance standards require that homes be 10% more efficient than the requirements of 2006 IEEC. 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.

Program participation in 2010 resulted in an estimated demand savings of 32.68 kW and estimated energy savings of 47,500 kWh. Total expenditures for the Smart Energy New Homes program incurred through Santee Cooper in 2010 were \$248,404.35.

- Heat Pump Program

The Heat Pump Program began on September 16, 2010. The heat pump program is for residential customers and offers rebates of up to \$700. When customers participate in the Smart Energy Existing Homes program (\$600 rebate), and choose to add a 15 SEER heat pump with quality installation, they will receive an additional rebate of \$50. They may receive the rebate for up to two heat pumps, bringing the total rebate to \$700. For customers who choose to only install the 15 SEER heat pump with quality installation, they will receive a rebate of \$150. They may receive the rebate for up to two heat pumps, bringing the total rebate to \$300.

Program participation in 2010 resulted in an estimated demand savings of 22.8 kW and estimated energy savings of 39,495 kWh.

- Refrigerator Rebate Program

The Refrigerator Rebate Program began on September 1, 2009. 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. To participate in the Refrigerator Rebate Program, the refrigerator must be installed in and/or removed from a residence or business receiving electric service from Santee Cooper.

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 refrigerators.<sup>11</sup>

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<sup>11</sup>[Santee Cooper note:] At least one must be a pre -1993 model

Program participation in 2010 resulted in 475 old refrigerators being recycled and 1,119 new ENERGY STAR refrigerators being purchased with an estimated annual energy savings of 303 MWh. Total expenditures for the Refrigerator Rebate program incurred through Santee Cooper in 2010 were \$129,576.05.

- Energy Efficient Lighting

Santee Cooper is targeting residential, as well as, commercial customers in getting them to switch out incandescent light bulbs with energy efficient CFL bulbs.

New residential customers receive a coupon for twelve (12) 20-Watt CFLs to be picked up from any of Santee Cooper's customer service offices. At the time of pick up, a brochure is given to each customer. This provides an educational component regarding the energy savings to be achieved just by switching from traditional incandescent bulbs to CFLs. This brochure explains that CFLs use up to 75 percent less energy than incandescent light bulbs and that CFLs last up to 10 times longer. Educational brochures will also be developed with information on what to look for in a quality CFL bulb, choices of color renderings, choices of bulb shapes, availability of specialized application bulbs, and proper disposal of CFL bulbs.

Commercial CFL distribution is split into the categories of High-Use Sockets and Low-Use Sockets. Commercial customers receive CFLs for the greatest of either 100% of their high use sockets or 50% of their total sockets - only sockets not already using CFLs and those able to utilize a 20W screw-in CFL (equivalent to a 75W incandescent bulb) qualify for this program.

In 2010, Residential CFL Program participation resulted in an estimated annual energy savings of 1,108 MWh. CFLs were distributed to commercial customers for high-use applications yielding an estimated annual energy savings of 9,176 MWh. CFLs were distributed to commercial customers with residential-type, low usage applications. The low usage applications yielded an estimated energy savings of 1,272 MWh. Total expenditures for the Energy Efficiency Lighting program incurred through Santee Cooper in 2010 were \$131,305.38.

- Commercial Prescriptive Pilot Program

This program provides rebates for multiple efficiency measures related to the commercial building envelope, lighting, HVAC, and refrigeration.

This Pilot participation in 2010 resulted in an estimated demand savings of 63 kW and an estimated energy savings of 1,603,981 kWh. Total expenditures for the Commercial Prescriptive Pilot program incurred through Santee Cooper in 2010 were \$918,336.64.

## **South Carolina Natural Gas Utilities—Summary**

Of the 15 natural gas distribution utilities in South Carolina, 7 conducted DSM activities in 2010. These utilities together represented 91% of retail natural gas sales by natural gas distribution utilities in 2009.<sup>12</sup>

In summary, their DSM activities consisted of—

### Energy Efficiency:

- One natural gas utility 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.
- Four natural gas utilities offered financial incentives (such as rebates) for the purchase and/or installation of newer, more efficient natural gas appliances.

### Load Management:

- Six 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:

- One natural gas utility maintained websites that offered energy efficiency and conservation tips and web-based systems 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 offer energy efficiency and conservation tips and services.

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<sup>12</sup> Source: United States Energy Information Administration, EIA-176 (2009)  
<http://www.eia.gov/cfapps/ngas/nggs.cfm>

- One natural gas utility conducted public outreach campaigns through advertising and/or presence at community events to publicize utility DSM programs and offer energy efficiency and conservation tips.
- One natural gas utility provided instructional programs to K-12 schools to promote energy awareness.

Natural gas utilities reported operating the following DSM programs in 2010:

**Table 2: Summary of Natural Gas Utility Demand-Side Management, 2010**

Natural Gas Utility Name	Ownership	Energy Efficiency			Load Management			Public Information			School Programs	
		On-Site Energy Assessments	Low-Income Efficiency and Weatherization Assistance	Efficient Appliance Incentives	Interruptible Service Incentives	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 Wimberlee	Municipal											
York County Natural Gas Authority	Municipal											

Natural gas utilities submitted narrative descriptions of their 2010 DSM activities in response to SCEO requests for information. These descriptions are as follows. (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):

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

Clinton-Newberry Natural Gas Authority (CNNGA) is promoting the energy efficient natural gas tankless water heater to all of the customers served by CNNGA by issuing a rebate of \$100 to replace a regular tanked natural gas water heater.

Clinton-Newberry Natural Gas Authority (CNNGA) provides interruptible rates to 15 industrial customers at the present time. The rates are priced monthly to be competitive to the industrial customer's alternate fuel. CNNGA has a total of 44 industrial customers.

### **Fort Hill Natural Gas Authority:**

Fort Hill Natural Gas Authority offers favorable rates for interruptible customers and does interrupt service to them during times of peak demand.

### **Greenwood Commission of Public Works:**

Greenwood Commission of Public Works provides favorable rates to interruptible customers.

### **Orangeburg Department of Public Utilities:**

Orangeburg Department of Public Utilities has a rebate program that includes rebates for tankless water heaters.

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

*[Note: the following is a proposal that was approved by the South Carolina Public Service Commission in 2009 and implemented in 2010.]*

Piedmont Natural Gas plans to spend \$350,000 on an annual basis supporting energy efficiency programs for customers within the Company's South Carolina service territory. During the first year, Piedmont plans to implement a Customer Education Program, Low-Income Energy Efficiency Program and a High Efficiency Equipment Rebate Program.

#### Customer Education Program

Piedmont will implement a communications campaign focusing on customer energy education, efficiency and conservation messages. Piedmont will spend approximately \$50,000 per year on this program, using a

targeted marketing approach within our service territory. Piedmont will communicate the messages to customers through various means such as bill inserts, other print advertisements, radio and/or other available media. Piedmont will also encourage customers to take advantage of the federal tax credits and other incentives available for installing high-efficiency natural gas equipment, such as for water heating and space heating. Some program funding may also be used to sponsor energy efficiency and energy conservation education sessions in local schools.

#### 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 is intended to create a more energy efficient and comfortable home environment for the customers served. Piedmont will spend approximately \$150,000 per year on this program. Piedmont has modeled this program after the Federal Weatherization Assistance program which has been in operation since 1976 and has weatherized over 6.2 million homes with DOE Funds. According to the Department of Energy's Weatherization Assistance Program, the weatherization program, on average, reduces heating bills by up to 32% and overall energy bills by about \$350 per year. 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. Piedmont anticipates that the program participants in South Carolina will experience reduced energy usage due to the energy efficiency measures installed in their homes under this program. Based on Piedmont's own experience providing a similar program in North Carolina and the success of the Federal Weatherization Assistance program, these types of programs have been shown to be cost-effective and provide a direct benefit to low-income households.

The target population for this program will be low-income customers dwelling in single-family houses that are served under Piedmont's residential rate schedules (Rate Schedules 201 and 221). Customers who rent single-family homes will be allowed to participate in the program if the homeowner also consents. For the purposes of this program, Piedmont will consider a customer to be "low-income" if their household income is within 200% of the 2009 federal poverty income guidelines as established for the Federal Weatherization Assistance Program. Priority will be placed on providing assistance to those eligible elderly individuals with disabilities, and eligible families with children.

Piedmont will coordinate with the state/local agency who administers the Federal Weatherization Program, to assist us in finding local energy contractors and/or local community action agencies that can help administer this program. Program funds will primarily be used to pay third-party energy contractors and/or local community action agencies to administer the program. In the event that local energy contractors and community agencies are not able to assist, Piedmont will assess the need for modifications to this low-income program.

Program funds may also be used for program development, administration, and for an independent third-party to perform program evaluation, measurement and verification. Direct advertising and customer communications for this program will be handled primarily by the third-party energy contractor administering the program. It is anticipated that only a small amount of the funding will be spent on program advertising and communications, since the third-party energy contractors and local community action agencies are expected to work with local assistance agencies and other organizations in identifying eligible applicants for the program.

The primary energy efficiency measures provided to each program participant will be based on a comprehensive in-home energy audit. The measures to be 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)

Due to safety concerns, a carbon monoxide detector will be installed inside the participant's home if one is not currently installed. An in-home energy education session will also be provided in homes where energy efficiency measures were installed. In the event that an unsafe and un-repairable piece of natural gas equipment is identified within the participant's house, the third-party energy contractor will work with Piedmont to evaluate and determine the best solution. In some cases, the best solution may be to replace the natural gas equipment.

The energy contractor decides, primarily guided by the results of the in-home energy audit, which energy saving measures to install at the participant's home. The energy audit helps the energy contractor determine which energy saving measures would provide the greatest benefit to the participant. Since each home is unique, the energy contractor must also use his/her best judgment, based on their knowledge and experience, to effectively prioritize the needs for that home and the measures to be installed. The estimated number of annual program participants is between 40 to 60 customers. The amount of energy efficiency measures provided to each participant may range from \$1,500 to \$3,500, and Piedmont anticipates the average cost to be around \$3,000 per home. There will be no direct charge to the participating low-income customers for the services provided.

#### High Efficiency Equipment Rebate Program

This program will provide rebates to Piedmont's residential and commercial customers who purchase and install qualifying high efficiency natural gas equipment<sup>13</sup>. 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 will be offered a rebate to purchase and install a high efficiency water heater. This program will enable customers to help offset some of the higher cost of choosing a more efficient piece of equipment. This program is intended to help influence a customer to choose a more energy efficient piece of equipment. An upgrade to a higher efficiency water heater or furnace, given consistent usage patterns, will help the program participant achieve recognizable energy savings. The extent of the energy savings will vary for each participant, depending on a variety of factors including their current energy efficiency. Piedmont may, at its discretion, lower the rebate amounts offered for each category depending upon the extent of customer participation, timing of implementation, and available funding. The flexibility to adjust incentive levels will allow Piedmont to better maximize the results of the program to promote conservation. In developing the program efficiency requirements, Piedmont chose the same minimum required efficiency standards as those set by Energy Star for the corresponding natural gas equipment.

The following summarizes the equipment rebates that will be offered and the corresponding equipment efficiency requirements:

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<sup>13</sup> [Piedmont Natural Gas Company note:] Inasmuch as this program is available only to current Piedmont customers who are replacing existing natural gas equipment, it will not be available for use in the context of new construction.

## Residential Equipment Rebate Summary

	Initial (Maximum) Rebate Amount	Minimum Required Efficiency <sup>2</sup>
Natural Gas Storage Tank Water Heater	\$ 50	EF = 0.62 (or higher)
Natural Gas Tankless Water Heater	\$ 250	EF = 0.82 (or higher)
Natural Gas Forced Air Furnace	\$ 300	AFUE = 90% (or higher)

## Commercial Equipment Rebate Summary

	Initial (Maximum) Rebate Amount	Minimum Required Efficiency <sup>3</sup>
Natural Gas Tankless Water Heater	\$ 250	EF = 0.82 (or higher)

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The anticipated total annual cost of this program is approximately \$ 150,000. The following is an estimate of the costs involved with implementing this program.

Program Development and Administration	\$12,500
Communications	\$10,000
Rebates	\$112,500
Evaluation, Measurement & Verification	\$15,000
<b>TOTAL</b>	<b>\$150,000</b>

Piedmont plans to communicate the program to its customers through the use of bill inserts, bill messages, and advertising on its website. Piedmont may also contact equipment manufacturers, distributors, and installers about the program. This program will be available to customers under Piedmont's residential rate schedules (Rate Schedules 201 and 221). Each customer will be required to submit a rebate application, along with proof of purchase and installation of the qualifying equipment. Upon approval of the application, the rebate will be mailed as a check to the customer. In addition to the rebate check, each customer that installed qualified equipment under the program will receive an energy efficiency kit that includes items to help the customer further reduce their natural gas energy usage.

<sup>14</sup> [Piedmont Natural Gas Company note:] EF is the Energy Factor; AFUE is the Annual Fuel Utilization Efficiency

<sup>15</sup> [Piedmont Natural Gas Company note:] EF is the Energy Factor

In determining whether this program is cost-effective, Piedmont followed the protocols set by the California Standard Practice Manual, which outlines the benefit-cost tests that are used in evaluating energy efficiency programs. The Total Resource Cost Test and the Utility Cost Test are commonly used by utilities to demonstrate the cost-effectiveness of their programs. The Total Resource Cost Test (TRC), which is typically used by utilities for regulatory program approval, measures the net costs of the energy efficiency program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The Utility Cost Test (UCT), also known as the Program Administrator Cost Test, measures the net costs of the energy efficiency program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant.

The benefit-cost tests for Piedmont's proposed energy efficiency programs were performed by a third-party consultant. They used an analytical model to estimate the cost-effectiveness pursuant to the California Standard Practice Manual. A test with a value greater than 1.0 demonstrates that, based on the analytical model, the program would be an effective program.

The test results for the Equipment Rebate program are as follows:

Total Resource Cost Test:	1.24
Utility Cost Test:	1.97

## **South Carolina Electric & Gas Company (SCE&G)**

*[Note: SCE&G submitted a description of DSM programs implemented in 2010. This description is included in the "Electric Utilities" section of this report. While SCE&G's DSM programs did not specifically target natural gas usage, many of their programs—particularly energy assessments and public information activities—had the effect of encouraging natural gas efficiency, conservation, and/or reduction of peak natural gas demand.]*

## **York County Natural Gas**

York County Natural Gas maintains a secondary website ([www.getgassc.com](http://www.getgassc.com)) and conducts local advertising campaigns to promote the use of efficient natural gas appliances and educate our residential customers on energy efficiency and conservation. One area of concentration has been in the promotion of tankless water heaters. During fiscal year 2009-10 (Sept-Aug), 286 tankless water heaters were sold. 94 were sold between September 1<sup>st</sup>, 2010 and December 22<sup>nd</sup>, 2010.

## **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.

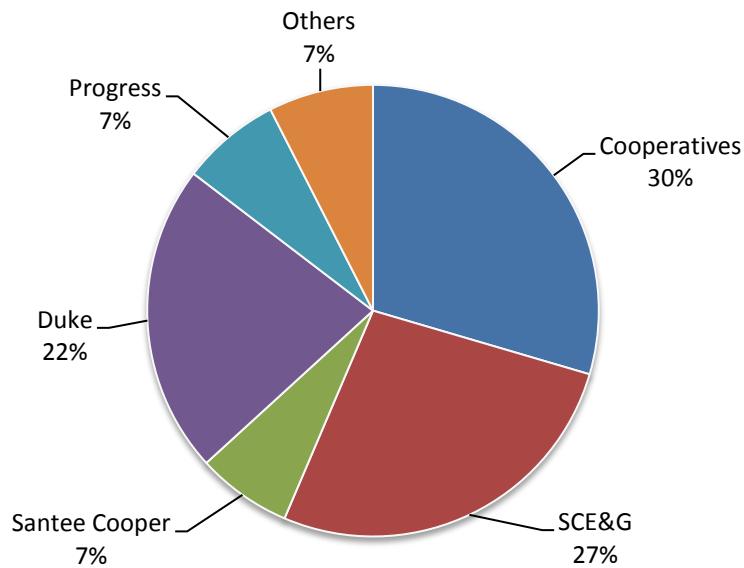
Qualifying facilities are classified into two categories: 1) purchase, meaning that utilities purchase the power generated; and 2) displace, meaning that the power is used by the facility itself, displacing power that would otherwise be drawn from the electrical grid. As shown in Table 3 below, qualifying facilities in South Carolina had the capacity to provide 156,320 kW of power as of February 2011.

**Table 3—PURPA Qualifying Facilities, February 2011**

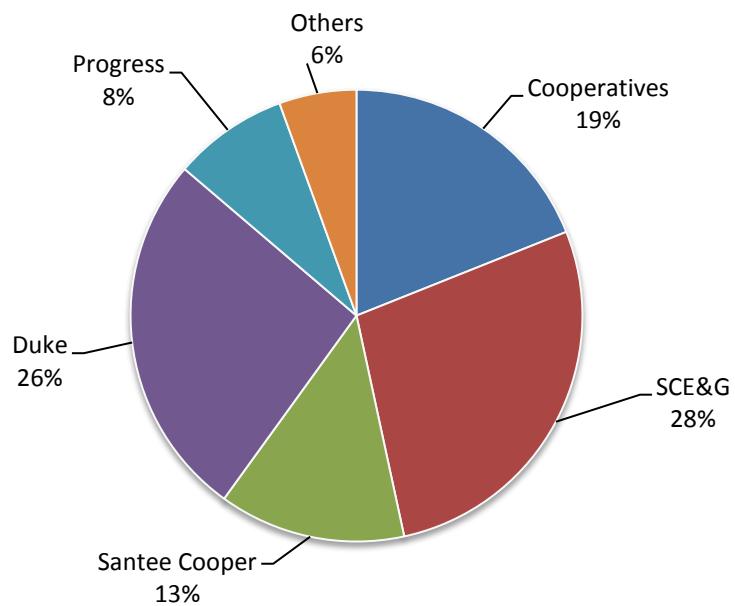
Utility	Plant Owner / Name	Location	Fuel Type	Capacity (kW)	Purchase/Displace
Progress Energy Carolinas	Smurfit-Stone Container	Florence	Wood/Coal	25,000	PURCHASE
Duke Energy Carolinas	Aquenergy / Piedmont	Piedmont	Hydro	1,050	PURCHASE
Duke Energy Carolinas	Aquenergy / Ware Shoals	Ware Shoals	Hydro	6,300	PURCHASE
Duke Energy Carolinas	BMW Mfg Corp.	Greer	Landfill Gas	10,000	DISPLACE
Duke Energy Carolinas	Cherokee County Cogeneration / Gaffney	Gaffney	Natural Gas	100,000	PURCHASE
Duke Energy Carolinas	Converse Energy / Clifton 3	Clifton	Hydro	1,250	PURCHASE
Duke Energy Carolinas	Northbrook Carolina Hydro, L.L.C. / Boyd's Mill	Ware Shoals	Hydro	1,500	PURCHASE
Duke Energy Carolinas	Northbrook Carolina Hydro, L.L.C. / Holliday's Bridge	Belton	Hydro	3,500	PURCHASE
Duke Energy Carolinas	Northbrook Carolina Hydro, L.L.C. / Saluda	Greenville	Hydro	2,400	PURCHASE
Duke Energy Carolinas	Pelzer Hydro Co. / Upper Pelzer	Pelzer	Hydro	2,020	PURCHASE
Duke Energy Carolinas	Pelzer Hydro Co. / Lower Pelzer	Williamston	Hydro	3,300	PURCHASE
<b>TOTAL</b>				<b>156,320</b>	

## Appendix C: S.C. Electric and Natural Gas Utility Market Share<sup>16</sup>

**Figure 1. South Carolina Electric Utility Market Share (by # Customers), 2009**

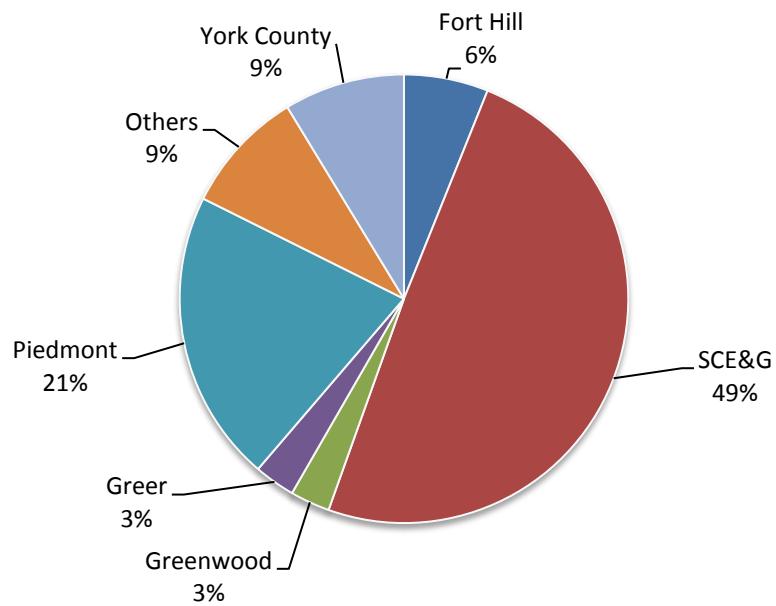


**Figure 2. South Carolina Electric Utility Market Share (by kWh Sales), 2009**

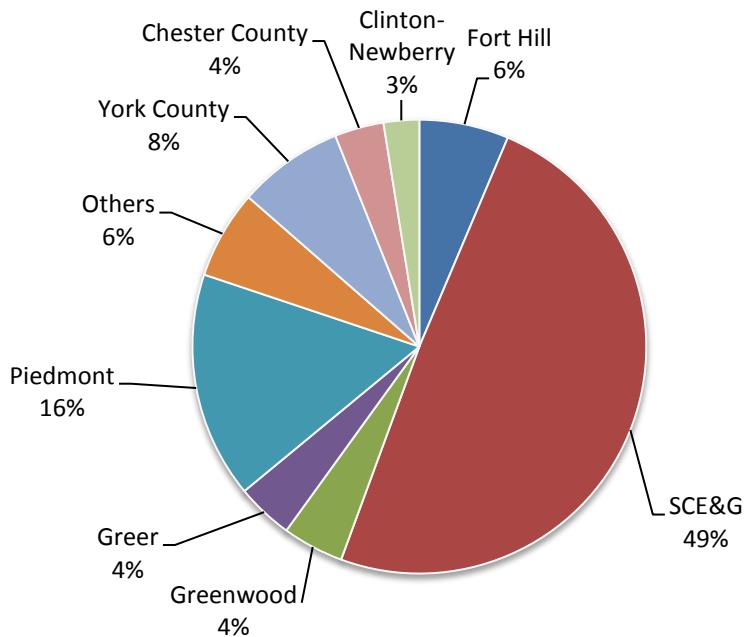


<sup>16</sup> Sources: U.S. Energy Information Administration, Forms EIA-861 and EIA-176 (2009)

**Figure 3. South Carolina Natural Gas Utility Market Share (by # Customers), 2009**



**Figure 4. South Carolina Natural Gas Utility Market Share (by Therm Sales), 2009**



SC ENERGY OFFICE



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