

South Carolina Utility Demand-Side Management & System and Pricing Overview 2008

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

SC ENERGY OFFICE



SC BUDGET AND CONTROL BOARD

South Carolina Utility Demand-Side Management and System Overview 2008

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Executive Summary

Demand-side management (DSM) involves modifying energy use to maximize energy efficiency. In contrast to supply-side strategies, which increase energy supplies by, for example, building new power plants, DSM strives to get the most out of existing energy resources, thereby postponing the need for new power plants.

The South Carolina Energy Conservation and Efficiency Act of 1992 requires all utilities to report their demand-side activities. The relevant section of the S.C. Code of Laws can be found in Appendix A. The intent of the legislation was to encourage the implementation of additional DSM activities. The objective of this report is to summarize the DSM activities of those utilities that provided such information and to provide a basic system and pricing overview.

This year, methodology for receiving system information from utilities changed to make reporting easier for utilities. The SC Energy Office requested EIA-861 forms from electric utilities, which already have to be completed for submittal to the Energy Information Administration. SCEO requested four numbers from gas utilities, found in Appendix B: annual decatherm (DT) peak system demand excluding sales for re-sale, total annual system decatherm (DT) excluding sales for re-sale, total miles of distribution line in service area (in miles), and total number of customers (all classes).

Data submittals regarding DSM were received from 43 of the 46 electric utilities operating in South Carolina. Central Electric Power Cooperative, Inc. submitted a report on behalf of all 20 distribution electric cooperatives. These cooperatives, as well as the one state-owned electric utility and all four investor-owned electric utilities, are fully represented in this report. Thirty of the 46 electric utilities reported having active DSM programs: three investor-owned utilities, the state-owned Santee Cooper, six municipal utilities and all twenty cooperatives.

During the years between 2002 and 2008, the total annual system consumption of natural gas in decatherms (DT) dropped from a high of 94 million DT in 2002 to a low of just over 90 million DT in 2007, and then increased to over 101 million in 2008. The number of individual customers increased from 607,000 in 2007 to 622,023 in 2008. In 2008, SCE&G accounted for 47.4 percent of the total natural gas sold to customers of reporting entities, followed by Piedmont Natural Gas Company with 22.6 percent.

The DSM programs that were provided by the large utilities this year are generally similar to those included in the 2007 report, but Progress Energy submitted a number of new programs. Duke Energy and Progress Energy have already instituted new DSM programs for 2009, and other utilities are expected to follow suit. These new programs will be reported in the 2009 DSM report.

Definition of Terms Used in This Report

Cogeneration systems produce electricity and process steam or heat from a single fuel source. These systems are put in place to reduce the amount of energy that large consumers use. See **Qualified Facilities** below.

Demand-side management (DSM) refers to the use of cost-effective conservation, efficiency, and load management programs that help to reduce the demand for and cost of energy services. Demand-side management is a resource option that complements power supply. It not only saves the customer money, but also helps the utility achieve less pollution and avoid more costly supply-side investments.

Decatherm (DT) is a unit of measurement of natural gas, equal to 1,000,000 BTUs or 293 kWh.

Kilowatt (kW) is a measure of real power, equal to 1,000 watts. A common equivalent is that 3/4 kW is equal to one horsepower. Higher quantities are expressed in megawatts (MW), equal to one million watts. A typical coal-fired electric plant produces about 300 MW.

Kilowatt-hour (kWh) is a unit of electrical measurement indicating the expenditure of 1,000 watts for one hour. Higher quantities are expressed in megawatt-hours (MWh), or the expenditure of one thousand kilowatts for one hour.

Load management shifts demand for power from periods of peak demand to periods of less demand. Although this process may more efficiently utilize generation and transmission systems and thus reduce the need for construction of generation and transmission facilities, it does not necessarily decrease the overall use of energy.

Qualified Facilities (QF) are defined by the Public Utilities Regulatory Policies Act of 1978 as: industrial cogeneration facilities and independent power producers using renewable fuel sources, including wood wastes and other biomass, incinerated municipal solid waste and small-scale hydro-electricity. These facilities are used to offset the amount of power that large users purchase from the utility and in some circumstances the facility may sell power to the utility grid.

Status of Utility Demand-Side Management Activities in 2008

Introduction

The South Carolina Energy Conservation and Efficiency Act of 1992 requires all utilities to report their demand-side activities. The relevant section of the S.C. Code of Laws can be found in Appendix A. The objective of this report is to summarize the Demand-Side Management (DSM) activities of those utilities that provided such information and to present an overview of basic system information to provide a context for DSM activities.

DSM is the process of managing the consumption of energy through the use of cost-effective conservation, efficiency, and load management programs in order to reduce the demand for, and cost of, energy services. In contrast to "supply-side" strategies, which increase energy supplies (by building new power plants, for example), DSM strives to get the most out of existing energy resources, whether electric or gas. DSM involves utility consumers changing their energy use habits and using energy-efficient appliances, equipment, and buildings. DSM is a resource option that complements power supply. The goal of DSM is to reduce energy use and to smooth out the daily peaks and valleys in electric or gas energy demand to make the most efficient use of energy resources and to defer the need to develop new power plants. Additionally, cost savings to customers and reduction of pollution are indirectly achieved through DSM. Demand-side activities reshape energy use and demand and provide an important component of the energy resource mix. DSM refers only to energy and load-shape modifying activities undertaken in response to utility-administered programs. It does not refer to energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards.

Categories of Electricity Demand-Side Management Programs

CONSERVATION

Conservation programs are designed to entice consumers to use less electricity through changes in working and living habits, thereby reducing their need for electricity. Included in this category are public education and awareness programs that promote energy-reducing activities such as maintaining conservative thermostat settings, turning off appliances when not in use, and installing low-flow showerheads. It is difficult to quantify the results of any one program, but many electric suppliers continue to conduct energy awareness advertising campaigns, demonstrations and seminars for various classes of customers.

ENERGY EFFICIENCY

Energy efficiency programs reduce energy consumption by encouraging consumers to use energy more efficiently. There are many programs available, and each program is intended for a specific group of electricity users. Some of the targeted groups are newly built residences, existing residences, industry, commercial buildings, and agricultural users. These programs promote the use of more effective building insulation, high

efficiency industrial equipment, appliances, air conditioning equipment and lighting. Incentives consist of more favorable rate schedules, cash rebates, low interest loans, and technical assistance.

LOAD MANAGEMENT

Demand-side activities in this category reduce the instantaneous demand for electricity by limiting or discouraging use during periods of high demand. For many reasons, it typically costs more to supply power during peak periods. For example, some older, less efficient plants are only used to meet peak hour demand. Furthermore, other newer facilities are also only brought online during peak times because they use more expensive fuel (e.g., natural gas). Therefore, transferring the use of energy to periods of lower demand allows the energy to be generated and distributed using more efficient, base-load generating plants. Typical load management activities include allowing direct, remote control of air conditioners and water heaters, interruptible rate schedules for large customers, thermal energy storage systems using off-peak power, and time-of-use rates.

STANDBY GENERATION PROGRAMS

Standby generation programs provide incentives for customers owning standby generators to utilize them during periods of high demand, thereby reducing the system peak demand. This is a generation displacement program similar to cogeneration, although this category is not a qualified source as defined by the Public Utilities Regulatory Policies Act (PURPA) of 1978. The requirements for these programs vary, but there is usually a payment from the electric company for the amount of capacity that is displaced by the generator as well as a fuel supplement payment based on kWh. Most suppliers require participants to have a minimum size generator as well as an agreement regarding its operation.

VOLTAGE REDUCTION

Voltage reduction programs reduce the supplied voltage of electricity to all customers, usually between 2% and 5% percent. Lowering the supplied voltage has the overall effect of reducing the demand for electricity. There is some controversy concerning the effects of this practice, and as a result, it is used primarily as a last resort before interrupting the supply of electricity. Some municipalities employ this practice for reducing the load during critical periods, thereby reducing the peak demand and energy consumption for all customers in each sector.

Electric Utilities Participating in Demand-Side Management

According to EIA-861 forms submitted by electric utilities, the number of electricity-supplying utility companies reporting demand-side management activity was 11 out of 24. That indicates that fewer than half of the electricity-supplying utility companies (46%) practiced demand-side management in 2008, but all of the major electricity-suppliers did report DSM activity.

Table 1. Listing of DSM Activity for Electric Utilities, 2008

Electric Utilities Reporting DSM Activity	Electric Utilities Reporting No DSM Activity
City of Camden	City of Bennettsville
Easley Combined Utility System	City of Westminster
City of Union	City of Gaffney
City of Newberry	Greenwood Commission of Public Works
South Carolina Electric & Gas	Town of McCormick
Duke Energy Carolinas	City of Abbeville
City of Rock Hill	Bamberg Public Works
City of Clinton	Lockhart Power Company
Progress Energy Carolinas	Greer Commission of Public Works
Santee Cooper	City of Seneca
SC Electric Cooperatives	Laurens Commission of Public Works
	Town of Winnsboro
	City of Georgetown

Source: 2008 EIA-861 Forms submitted to SCEO
 Non-Respondent Utilities: City of Due West, City of Orangeburg, and Town of Prosperity

Natural Gas Utilities Participating in Demand-Side Management

According to the survey conducted by the SC Energy Office, the number of natural gas-supplying utility companies reporting demand-side management activity was 2 out of 16. That indicates that only one-eighth of the natural gas-supplying utility companies (12.5%) practiced demand-side management in 2008.

Table 2. Listing of DSM Activity for Natural Gas Utilities, 2008

Natural Gas Utilities Reporting DSM Activities	Natural Gas Utilities Reporting No DSM Activities
Clinton-Newberry Natural Gas Authority	Bamberg Public Works
South Carolina Electric & Gas	Chester County Natural Gas Authority
	City of Union
	Fort Hill Natural Gas Authority
	Fountain Inn Natural Gas System
	Orangeburg Department of Utilities
	Piedmont Natural Gas Company
	Town of Blacksburg
	Town of Winnsboro
	York County Natural Gas Authority

Source: Survey of Natural Gas Utilities by SCEO
 Non-Respondent Utilities: Greenwood Commission of Public Works, Greer Commission of Public Works, Laurens Commission of Public Works, and City of Bennettsville

Demand-Side Management Activities, 2008

Electric utilities were provided with their detailed DSM reports from 2007 and asked to submit changes for 2008. Natural gas utilities were asked to submit demand-side management activities descriptions for the first time by the SCEO. This section provides the DSM activities of the utilities that submitted such reports to the SCEO, and the following information was taken directly from those submissions. To maintain the objectivity of this report, minimal changes were made to the content or length of the responses.

Thirty of the 46 electric utilities reported having active DSM programs: three investor-owned utilities, the state-owned Santee Cooper, six municipal utilities and all twenty cooperatives.

Two of the 16 natural gas utilities reported having active DSM programs: Clinton-Newberry Natural Gas Authority and South Carolina Electric & Gas.

Electric Cooperatives

Central Electric Power Cooperative, Inc.

Central Electric Power Cooperative, Inc., is happy to report on behalf of the twenty electric cooperative distribution companies in South Carolina on their activities in 2008 regarding Demand Side Management, Energy Efficiency, and Renewable Resource development.*

The Electric Cooperatives have a long history in the area of demand side management as we have had programs to reduce peak demands for water heating and air conditioning since the early 1980's. These programs have historically been designed, not to save energy, but to reduce peak demands thereby making better use of existing generating resources. The economic benefits are obvious and these programs have well over one hundred thousand participants throughout the cooperative system. While these programs have been in effect for many years, we are constantly re-evaluating the programs to determine if additional efforts need to be made to expand or modify the programs, and if so, by what extent.

Changing system conditions and load shapes determine how well programs like this can be implemented effectively. We feel that as system growth makes the need for new generation greater, any measures to minimize that need through demand side management only becomes more valuable. By utilizing new technology such as "smart metering" or automated meter reading, these new methods of communicating with customers, or customer's individual appliances, enhances our opportunities to manage system load levels. We are working with our members to make these opportunities bear fruit in a manner that minimizes inconveniences to customers.

In 2007 the Board of Central Electric Power Cooperative began an effort to evaluate and quantify the potential of renewable resources and energy efficiency in South Carolina. The

Cooperatives recognize the importance these issues have upon the supply and demand for electricity in South Carolina, and we are keenly aware of our obligations to our Member / Owners to supply their electric power needs in as cost-effective manner as possible while maintaining a reliable generation, transmission, and distribution system. Also a part of that mandate is our obligation to also provide those services in a manner as to minimize the impacts upon the environment of those responsibilities. As a public recognition of that long-held belief, our Board of Directors made the following commitment:

ENERGY AND ENVIRONMENTAL COMMITMENT

Central is committed to meeting the needs of the Members, by maintaining and delivering a power supply which balances price, reliability, and environmental stewardship. Our actions will be guided by the following principles:

a.) As part of our power supply, we will seek renewable resources which are environmentally responsible, which offset or reduce CO2 and other emissions, and which are economically reasonable to our Members.

b.) We view conservations and energy efficiency as a resource equal to power generation, and we will offer conservation and energy efficiency programs designed to reduce the growth in demand and energy on our system.

c.) We will encourage partnerships which promote research to limit emissions from power generation, encourage conservation and enhance energy efficiency.

The first step in implementing this policy was to assess where we are today. To that end we commissioned two nationally known consultants, experts in the areas of renewable resource assessment and energy conservation, to perform two in-depth studies. The first study was to do an assessment of the potential for renewable resource development in South Carolina. What technologies are available, are they currently commercially viable, and are they technologically feasible given the conditions on the ground in South Carolina? Also, as a part of that study, what technologies are under development which might one day play a role? It is the position of the Cooperatives that all reasonably economic renewable resource technologies available to South Carolina should be developed. We do not expect that renewable resources will necessarily be available at a cost, at or below, the cost of traditional central station power. However, the Cooperatives are committed to renewable resource generation that is “reasonably economic”.

The results of that study indicate that biomass technology has the greatest potential for development in South Carolina today both in terms of absolute technical potential and reasonably economic potential. The Cooperatives are working with several individuals and companies to bring biomass generation to the marketplace. While biomass has the potential to bring the greatest benefit at the lowest potential cost, there are opportunities in wind, solar, and small scale hydropower, that also have development potential and we are committed to those technologies as well.

As a part of renewable resource development, we have not forgotten the potential for the development of renewable resources at the customer level. Many people have an interest in renewable resource development at their home or place of business. To facilitate this market for our customers, the Cooperatives have developed a Net Metering Pilot Program. The cooperative will purchase from customers any energy generated by the customer beyond his own need at a price reflective of the value of that power to the generating system. Distributed generation as it is sometimes called has benefits to the customer and to the transmission system as well. This pilot program is designed to facilitate integration of distributed generation onto the system by standardizing interconnection standards and by providing a “buy / sell” rate methodology fair to all parties.

While alternative generation technologies will help, perhaps the best kilowatt-hour produced is actually the one saved. The second study the Cooperatives commissioned dealt with energy conservation and energy efficiency. Reducing energy use is just as effective as building power plants in terms of meeting need, and in many cases may be less costly. The study shows in fact, that energy efficiency has a much greater potential impact in meeting energy needs in South Carolina than do alternative or renewable energy resources. Our analysis shows that energy efficiency will be the fastest, most economical, and customer friendly way to meet our goals.

While the renewable resources assessment focused on South Carolina as a state, the energy conservation and energy efficiency study looked at the customer base of the electric Cooperatives specifically. The Cooperatives serve a much different customer base than do the investor-owned utility companies. These differences pose some unique challenges to us, but conversely, they also provide us with some unique opportunities. Our Board has directed us to develop energy efficiency programs designed specifically for our customer base to deliver the greatest amount of energy savings as possible at the lowest possible cost to customers. We will begin essentially to “pick the lowest hanging fruit first,” and from those successes move forward. The work performed by our consultants essentially gave us a road map by which we can garner the greatest savings in the shortest period of time. No program can make our consumers, or anyone’s consumers for that matter, accept and participate in a program unless it makes sense to them, and is affordable to them. We are in the process of designing several programs which will have an appeal to a wide range of consumers. By creating a wide range of programs we hope there will be something for everyone, and something that everyone can participate in.

In 2008 the Cooperatives built on the efforts begun in 2007 by rolling out our first energy efficiency program. The CFL distribution program put over one million CFL light bulbs into the hands of cooperative members. The Board voted in 2008 to continue the program in 2009 and another distribution is currently underway. Also on 2008, we began looking at implementation of additional energy efficiency programs. By working through our member Cooperatives we have identified homes to be used as a pilot program for a weatherization program. By weatherizing and making improvements in the heating and cooling systems on a pilot basis, we will research those improvements which will have the greatest impact on energy use, while also improving the standard of living for those customers who need it the most.

Our net metering pilot rate has been used by just a handful of customers, but is operational and the Cooperatives are buying excess customer power from several sources. We continue to monitor the rate and are incorporating feedback from customers on how we may make the rate

easier to understand and implement. Cooperatives are also working with their power supplier, Santee Cooper, to bring renewable resource generation to South Carolina. We have signed agreements with producers and projects are underway. We are in negotiation with several more, mostly in the area of biomass production.

Having a statement of commitment and developing programs is just a start. In order to measure how effective we are, we have created an internal goal for meeting these challenges. We have committed to reducing our forecasted energy requirements over the next ten years by five percent. That reduction, while not sounding like much, is equivalent to the demand requirements of a base load generating facility. This goal will require a focused effort and a considerable financial commitment to make it happen. We have made that financial commitment and incorporated the anticipated savings into our future generation and transmission planning assumptions.

These remain transformative times in the electric utility industry. Forces beyond our control will shape the landscape and we will react to those changes in the best interests of our customers. As member-owned companies existing solely for the benefit of our customers, we are committed to bringing value to our customers and to our communities. The electric Cooperatives have a role to play in this changing environment and we look forward to participating in moving South Carolina forward toward a cleaner, and more energy efficient future.

**Distribution Electric Cooperatives: Aiken, Berkeley, Black River, Blue Ridge, Broad River, Coastal, Edisto, Fairfield, Horry, Laurens, Little River, Lynches, Marlboro, Mid-Carolina, Newberry, Palmetto, Pee Dee, Santee, Tri-County, and York.*

Electric Municipalities

There were six municipal utilities that reported the use of DSM programs in 2008. Twelve reported no DSM programs. Three did not report at all.

City of Abbeville

The City of Abbeville continued to operate the “Power Partners” Program which is a demand-side peak reduction program that is run by the City of Abbeville along with the Piedmont Municipal Power Agency (PMPA). The program has installed radio operated controllers to cycle air conditioners and electric hot water heaters off and on during peak electric load periods. The system is for peak reduction only and resulted in no reduction in energy (kWh) use but provided us a reduction of approximately 0.30 kW in demand during peak periods.

City of Greer

The Greer Commission of Public Works demand side management practices include the operation of 2.5 MW of stand-by/peaking generation used during the peak demand periods on our system. We also accomplish another 1 MW of demand side management with the efforts of our wholesale power provider’s, PMPA (Joint Action Agency), demand side management practices. In addition to this, the Commission has installed 3 MW of additional standby-generation capability that is being during the demand peaks on our system.

City of Rock Hill

Rock Hill purchases their power through Piedmont Municipal Power Agency and a large portion of their power is considered as Green, namely through Nuclear (approximately 90%) and Hydro (4-6%) generation. Their cost of Green Power is embedded in their current rate structure so there is no extra charge for this as a City of Rock Hill customer. Rock Hill supports and administers many energy conservation programs such as Rock Hill's Smart Choice program. This program offers financial incentives to their customers to install high efficiency electric heat pumps and electric water heaters. With the customer's permission, Rock Hill installs Load Management devices on their customer's A/C and electric water heaters to reduce electric loads during peak times. This helps to reduce the need for additional generation capacity. Rock Hill participates in Earth Day Birthday and various energy expos where they pass out high efficiency light bulbs, weather-stripping, and energy conservation literature. Rock Hill will soon complete installation of an Automatic Metering Infrastructure pilot project for roughly 7,000 electric and water customers. Full deployment is anticipated by early 2010. These meters will provide real time data that will allow the utility and the customer to better manage their energy usage.

City of Camden

The City of Camden, South Carolina, Electric Department uses a radio based load management system to operate voltage reduction at their substations, two small generators, air conditioner

switches, and water heater switches. The voltage reduction is 5% on most circuits, and 2% on a few longer feeders. The generators are for stand-by operation but are dispatched during peaks. The City has not offered new air conditioner or water heater switches in a few years and has discontinued giving credit for those installed. There are still a few in place that are dispatched when the radio signal is sent. Essentially, they have the ability to shed about 5% of their peak load.

The City has purchased a SCADA system (Supervisory Control and Data Acquisition) to perform demand side management. SCADA has been implemented in one of their three substations and should be fully functional by the summer of 2010.

City of Newberry

The City of Newberry has Standby Generation capacity of 10MW that it uses to supply itself during annual peak hours thereby reducing wholesale demand purchases and cost.

Investor-Owned Electric Utilities

The three major investor-owned utilities all reported having DSM activities in 2008. Lockhart power reported no programs. Note that significant additional DSM activities were offered by some utilities during 2009; these activities will be reported next year.

Additional activities related to renewable energy or sustainability are listed by each company.

Duke Energy Company

Current Energy Efficiency and Demand-Side Management Programs

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 response programs and certain rate structures).

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 programs include:

Residential Air Conditioning Direct Load Control

Participants receive billing credits during the billing months of July through October in exchange for allowing Duke Energy Carolinas the right to interrupt electric service to their central air conditioning systems.

Residential Water Heating Direct Load Control

Participants receive billing credits for each billing month in exchange for allowing Duke Energy Carolinas the right to interrupt electric service to their water heaters. Water heating load control was closed in 1993 to new customers in North Carolina and South Carolina.

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:

- *Programs using utility-requested curtailment signal*
 - *Interruptible Power Service*

- Standby Generator Control
- Rates using price signals
 - Residential Time-of-Use (including a Residential Water Heating rate)
 - General Service and Industrial Optional Time-of-Use rates
 - Hourly Pricing for Incremental Load

On September 1, 2006, firm wholesale agreements became effective between Duke Energy Carolinas and three entities, Blue Ridge Electric Membership Cooperative, Piedmont Electric Membership Cooperative and Rutherford Electric Membership 25 Cooperative. These contracts added approximately 48 MW of demand response capability to Duke Energy Carolinas.

Interruptible Power Service

Participants agree contractually to reduce their electrical loads to specified levels upon request by Duke Energy Carolinas. If customers fail to do so during an interruption, they receive a penalty for the increment of demand exceeding the specified level.

Standby Generator Control

Participants agree contractually to transfer electrical loads from the Duke Energy Carolinas source to their standby generators upon request by Duke Energy Carolinas. The generators in this program do not operate in parallel with the Duke Energy Carolinas system and therefore, cannot “backfeed” (i.e., export power) into the Duke Energy Carolinas system. Participating customers receive payments for capacity and/or energy, based on the amount of capacity and/or energy transferred to their generators.

Residential Time-of-Use

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 Time-of-Use

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
- Existing Residential Housing Program
- Special Needs Energy Products Loan Program
- Energy Efficiency Kits for Residential Customers
- Energy Efficiency Video for Residential Customers
- Large Business Customer Energy Efficiency Assessments
- Large Business Customer Energy Efficiency Tools

The Company currently has on file in both North and South Carolina requests to restructure the current regulatory approach for investing in EE and DSM programs and to significantly expand the EE and DSM program offerings to customers. The Company's proposals could significantly increase the level of EE and DSM program contributions to Duke Energy Carolinas' supply portfolio.

Energy Efficiency and Demand-Side Management Programs

The following demand response programs are designed to provide a source of interruptible capacity to Duke Energy Carolinas:

Conservation Programs

Residential Energy Star® Rates

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. Department of Energy (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.

Existing Residential Housing Program

This residential program encourages increased energy efficiency in existing residential structures. The program consists of loans for heat pumps, central air conditioning systems, and energy-efficiency measures such as insulation, HVAC tune-ups, duct sealant, etc.

Special Needs Energy Products Loan Program

This residential program encourages increased energy efficiency in existing residential structures for low-income customers. The program consists of loans for heat pumps, central air conditioning systems and energy-efficiency measures such as insulation, HVAC tune-ups, duct sealant, etc.

The Commission's May 22, 2006 Order Approving the Joint Recommendation of Duke Energy Carolinas, the Public Staff, and the Attorney General for Conservation and Energy Efficiency Programs approved the programs and required Duke Energy Carolinas to file a status report as to the funding and implementation of the programs on or before July 2, 2007.

Greenville Gas Producers

Entered into 10-year contract for the purchase of Renewable Energy Certificates (“RECs”) from Greenville Gas Producers LLC 3.2 MW landfill gas facility. Duke also executed a separate contract for the energy from the facility at the standard SC avoided cost tariff schedule PP-SC on a five year fixed rate. Landfill gas facilities deliver low cost renewable energy to its customers, enable compliance with RPS laws and destroy methane which is a harmful pollutant in terms of its lifecycle in the atmosphere.

Co-firing of woody biomass at Lee Steam Station

Co-firing of woody biomass produces cost-effective renewable energy offsets to coal use, and reduces sulfur dioxide and carbon dioxide emissions. Duke Energy Carolinas conducted a successful test burn in 2007. Phase 1 feasibility studies have been performed in 2009. Three methods are being considered: co-milling, direct injection, and gasification. Upcoming Phase 2 studies in 2009 will better define the technical and economic viability of the project which will allow selection of the most cost-effective technology. An extended trial burn will be proposed for 2010. Phase 2 studies will be completed in 2010.

South Carolina Wind Working Group

Duke Energy Carolinas will become an active member of the South Carolina Wind Working Group and seek to help explore responsible wind development in the Carolinas.

American College & University Presidents Climate Agreement

Duke Energy Carolinas is working with a number of colleges and universities in the Carolinas to help determine ways to achieve sustainability goals through the deployment of renewable energy technology such as solar power.

Research and Development of Renewable Energy Technologies

Duke Energy Carolinas will continue to explore a number of renewable energy technologies that will enable the Company to develop renewable energy resources in South Carolina. The Company has been approached by several companies that have proposed a number of different renewable energy technologies, including: Biogas digestion of agricultural, food, and animal wastes and gasification of refuse derived fuel (RDF) from municipal solid waste (MSW) for co-firing with coal.

South Carolina Electric & Gas

The Demand-Side Management Programs at SCE&G can be divided into three major categories: Customer Information Programs, Energy Conservation Programs and Load Management Programs.

CUSTOMER INFORMATION PROGRAMS

SCE&G’s customer information programs fall under two headings: the annual energy campaigns and the web-based information initiative. Following is a brief description of each.

1. The 2007 Energy Campaigns: In 2007 SCE&G continued to proactively educate its customers and create awareness of issues related to energy efficiency and conservation.

- *Weatherline* – energy saving tips promoted on the Weatherline.
- *Bill Inserts* – bill insert issued to targeted customers promoting the Low-Income Home Energy Assistance Program (LIHEAP).
- *Brochures/Printed Materials* – energy saving tips available on various printed materials in business offices.
- *News Releases* – distributed to print and broadcast media throughout SCE&G's service territory.
- *Featured News Guests* – SCE&G energy experts conducted several interviews with the media regarding energy conservation and useful tips.
- *Web site* – energy saving tips and other conservation information placed on the company's Web site. The address for the Web site was promoted in most of the communication channels mentioned above.
- *Weatherization Project* – SCE&G partners targeted low-income homes in Florence, Myrtle Beach, Bluffton and Columbia for weatherization. SCE&G employees volunteer their time to assist the effort.
- *Speakers Bureau* – Representatives from SCE&G talked to local organizations about energy conservation.
- *Energy Awareness Month* – company used the month as an opportunity to send information to the media discussing energy costs and savings tips.
- *Energy Wise Newsletter* – provides energy conservation information for all customer classifications. Direct mailed to more than 500,000 customers in November 2007.

2. *WEB-Based Information and Services Programs*: SCE&G has available a Web-based tool which 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. Feedback on this tool has been positive, with more than 97,000 visits received in 2007. The SCE&G Web site supports all communication efforts to promote energy savings tips. The "Manage Energy Use" section of the SCE&G Web site, which features an interactive bill estimator tool, video instruction on weatherization and other useful content, is currently averaging more than 9,000 visits per year. For business customers, online information includes: power quality technical assistance, conversion assistance, new construction information, expert energy assistance and more.

ENERGY CONSERVATION PROGRAMS

There are three energy conservation programs: the Value Visit Program, the Conservation Rate and our use of seasonal rate structures. A description of each follows:

1. *Value Visit Program*: The Value Visit Program is designed to assist residential electric customers who are considering an investment in upgrading their home's energy efficiency. We speak with the customer either by phone, through email or by visiting the customer's home and guide them in their purchase of energy related equipment and materials such as heating and cooling systems, duct insulation, attic insulation, storm windows, etc. Our representative explains the benefits of upgrading different areas of the home and what affect upgrading these areas will have on energy bills and comfort levels as well as informing the customer on the many rebates we offer for upgrading certain areas of the home (see rebate schedule below). We also offer financing for qualified

customers which makes upgrading to a higher energy efficiency level even easier. There is a \$25 charge for the program, but this charge is reimbursed if the customer implements any suggested upgrade within 90 days of the visit. Information on this program is available on our website and by brochure.

0 to R30 attic insulation - \$6.00 per 100 sq. ft.

R11 to R30 attic insulation - \$3.00 per 100 sq. ft.

Storm windows - \$30.00 per house

Duct insulation - \$60.00 per house

Wall Insulation - \$80.00 per house

2. *Rate 6 Energy Saver / Energy Conservation Program: The Rate 6 Energy Saver / Energy Conservation Program 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, provide for considerable savings for our customers. Participation in the program is very easy as the requirements are prescriptive and do not require a large monetary investment which is beneficial to all of our customers and trade allies. Homes built to this standard also have improved comfort levels and increased re-sale value over homes built to the minimum building code standards which are also a significant benefit to our customers. Information on this program is available on our website and by brochure.*
3. *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.*

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:

1. *Standby Generator Program: The Standby Generator I Program for retail customers was introduced in 1990 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. The Standby Generator II Program for retail customers was developed in 2000, authorizing standby generator runs both when reserve margins are stressed and when market prices are very high. 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.*

2. *Interruptible Load Program: SCE&G has over 200 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.*
3. *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.*
4. *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.*

Progress Energy Carolinas

Progress Energy Carolinas, Inc. (PEC) has a number of conservation and energy efficiency, load management, cogeneration, and renewable energy programs in effect. These include the following programs:

Energy Efficiency Programs

On Line Account Access

Energy analysis graphs allow customers to compare their electric usage in the current and previous year to the average temperature by month; compare past 12 months electric usage to the high, low and average temperature for the same period; and compare average monthly temperatures for the past 24 months. The energy analysis details allow customers to view their past 24 months of electric usage including date the bill was mailed; number of days in billing cycle; kWh (kilowatt hour) usage per month; daily kWh usage; average, low and high temperature for the month; click on a month and get daily temperature information for the month. These tools assist customers with understanding their energy usage patterns and identifying opportunities to reduce energy consumption. 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 determine actions to reduce energy consumption and lower utility bills. The suggestions range from relatively simple no-cost steps to more extensive actions involving insulation and heating and cooling equipment, as well as payment options.

Energy Saving Tips

PEC has been providing tips on how to reduce home energy costs since approximately 1981. This information is now available on-line. The site includes information on the typical biggest

household energy wasters and how a few simple actions can increase efficiency. Topics include: Energy Efficient Heat Pumps, Mold, Insulation R-Values, Air Conditioning, Appliances and Pools, Attics and Roofing, Building/Additions, Ceiling Fans, Ducts, Fireplaces, Heating, Hot Water, Humidistats, Landscaping, Seasonal Tips, Solar Film, and Thermostats.

Home Energy Check (Mail-In)

PEC's Home Energy Check, implemented in 2002, is a comprehensive residential energy evaluation program designed to help customers identify the best ways to save energy in their home and find the resources to achieve those savings. The program provides customers with an analysis of energy consumption and recommendations on energy efficiency improvements. The Home Energy Check helps customers identify and evaluate cost-effective energy-saving measures for their homes.

Online Home Energy Check

This Web-based energy check, which began in 2002, enables customers to quickly answer common questions regarding energy usage and provides a full range of personalized recommendations for managing home energy costs. Customers receive specific recommendations for their household with detailed approaches for better managing energy use and saving money. The analysis also includes an automatic download of the customer's actual electric bill history.

Energy Efficient Home Program

PEC introduced in the early 1980's the 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 meet certain thermal efficiency standards that are significantly above the existing building codes and standards. Through December 2008, 278,838 dwellings system-wide qualify for the discount.

Currently, PEC utilizes the Energy Star standard for new applications for the energy conservation discount. Energy Star is the national symbol for energy efficiency. It is a partnership between the DOE, the U.S. Environmental Protection Agency (EPA), local utilities, product manufacturers, and retailers. Homes built with this label are at least 15% more efficient than the national Model Energy Code, have greater value, lower operating costs, increased durability, comfort, and safety. Features of an Energy Star Home include:

- Improved Insulation*
- Advanced Windows*
- Tightly-sealed Ducts*
- High-Efficiency Heating and Cooling*
- Reduced Air Infiltration*

Homes that pass an Energy Star test receive a certificate as well as a 5% discount on energy and demand portions of their electric bills. Builders receive training in building energy efficient homes, and a means of differentiating their product on the market place.

Contractor Training

PEC began sponsoring training in 2000 for home builders on Energy Star® standards in order to promote more energy efficient building practices, and has provided this training to more than 2000 participants system wide since then. Energy Star® certified homes qualify for PEC's 5% energy conservation discount. PEC also sponsors training for heating, ventilation, and air conditioning (HVAC) contractors on sizing and proper installation of energy efficient HVAC systems. Properly sized and installed HVAC systems utilize less energy and provide increased home comfort.

Energy Efficiency Financing

PEC began offering energy efficiency financing with its "Home Energy Loan Program" in 1981. In 2002 PEC contracted with an outside vendor to provide financing with rates set by Fannie Mae. More than 500 loans system wide have been made since that time. This program connects customers with screened contractors who provide complete installation and financing on a range of energy-saving home improvements.

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. Customers can see 24 months of actual bills initial to the mailed bills. Through its Energy Resource Center, located on the PEC Web site, PEC provides newsletters, online tools and information which cover energy efficiency topics such as:

- *Electric chiller operation*
- *Lighting system efficiency*
- *Compressed air systems*
- *Motor management*
- *Variable speed drives*
- *How to conduct an energy audit*

Also located on the Energy Resource Center website is PEC's Energy Profiler Online tool. Through this service, customers can analyze their electrical usage to gain an in-depth understanding of when and how they are using electrical energy. This detailed data is essential for identifying potential energy savings opportunities.

CIG Account Management

All PEC commercial, industrial, and governmental customers with an electrical demand greater than 200 kW (approximately 4800 customers) are assigned to a PEC Account Executive (AE). The AEs work hand-in-hand with their assigned customers to help them manage their energy usage and costs and to assist them in developing energy efficiency solutions. The AEs go onsite with the customer to better know and understand their customer's business operation and energy needs. The AEs provide informational and educational opportunities to help ensure the customers are aware of the latest energy improvement and system operational techniques.

CFL Pilot Program

PEC implemented a pilot program in the fall of 2007 to increase the use of compact fluorescent light bulbs (CFLs) among residential customers in its service territory. PEC designed the CFL buy-down pilot to increase consumer awareness of the benefits of ENERGY STAR® compact fluorescent lamps by providing educational materials and a discounted bulb price to customers. Bulb prices were reduced by \$1 per bulb for four different types of multi-pack packages of CFL bulbs. The pilot promotion started on October 1, 2007 and ran for ten weeks. The promotion was limited to approximately 200,000 bulbs, and 203,222 bulbs were actually sold at the discounted price. The primary purpose of this study was to estimate the net changes in electricity usage and electricity demand that were a result of the program.

[Program Implemented Fall 2007]

Residential Home Energy Improvement (HEIP) Program

Under the Residential Home Energy Improvement Program, customers are offered a variety of energy conservation measures designed to increase energy efficiency for existing residential dwellings that can no longer be considered new construction. This program utilizes a network of pre-qualified contractors to install energy efficiency measures.

The program utilizes a prescriptive menu of measures for each participant depending on the needs and characteristics of the individual homes. The program will be available to all residential customers that meet the Home Energy Improvement Program eligibility criteria.

[Program Pending]

Residential Solar Water Heating Pilot Program

This pilot program provides PEC with the ability to measure and validate the achievable energy savings and coincident peak impacts associated with implementing residential solar water heating in its service territory.

PEC will offer an incentive of \$1,000 per eligible participant (up to 150 participants) to encourage consumer investment in solar water heating, for permission to install measurement equipment on the customers' premise, and to receive participating customers' commitment to respond to surveys before, during and after the measurement and analysis phase of the pilot.

[Program Pending]

Residential Home Advantage

The Residential Home Advantage Program offers developers and builders the potential to maximize energy savings in various types of new residential construction. The program utilizes a prescriptive approach for developers and builders of projects for single-family, multi-family (three stories or less), and manufactured housing units. The program is also available to high rise multi-family units (greater than three stories) 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.

[Program Implemented Winter 2008]

Neighborhood Energy Saver (NES) Program

The Neighborhood Energy Saver (NES) Program will assist low-income residential customers with the installation of energy efficiency and conservation efforts that will reduce their overall energy use and household energy costs. The goal of the program is to install a comprehensive package of energy conservation measures (ECM's) at no cost to the customer, utilizing a third party administrator. Prior to installing measures, an auditor will conduct an energy assessment on each residence to identify the appropriate ECM's to install. In addition to the installation of the ECM's, an important component of the NES program is the provision of one-on-one energy education. Each resident will receive education on energy efficiency techniques and will be encouraged to make behavioral changes that will help them reduce and control their energy usage. The program will be implemented utilizing a whole neighborhood, door-to-door delivery strategy.

[Program Pending]

Commercial, Industrial, and Governmental (CIG) Energy Efficiency

The CIG EE Program is available to all CIG customers for both new construction and retrofit applications. Pre-defined prescriptive measures apply to a large number of customers in both applications and fall under the categories of HVAC, lighting, refrigeration, motors and drives.

Custom measures are designed specifically in response to a customer's individual needs in new construction or retrofit and generally correspond to more complex applications or those not covered by the prescriptive measures. A design incentive is also offered which pertains to new buildings and major renovations that pursue energy efficiency on an integrated whole building basis.

[Program Pending]

Demand response 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 2-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.

Curtable Rates

PEC began offering its curtable rate options in the late 1970s, and presently offers two tariffs whereby industrial and commercial customers receive discounts 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 by up to 5% during periods of capacity constraints, representing a potential system reduction of 59 MW. This level of reduction does not adversely impact customer equipment or operations.

Residential EnergyWise™ Program

The Residential EnergyWise™ Program allows PEC to install load control switches at a participating customer's premise to remotely control central electric air conditioning or electric heat pumps, the auxiliary strip heat on central electric heat pumps, and electric water heaters.

The program provides the ability to reduce and shift peak loads, thereby reducing system peak demands and providing for a deferral of new supply-side peaking generation and enhancing system reliability. In exchange for annual bill credits participating customers will allow the curtailment of controlled devices for intervals within hours exhibiting peak system demands.
[Program Implemented Spring 2009]

CIG Demand Response Automation Program

The Commercial, Industrial and Governmental (CIG) Demand Response Automation Program allows PEC to install load control and data acquisition devices at participating CIG customer facilities to remotely control and monitor a wide variety of electrical equipment capable of serving as a demand response resource. This program is currently planned for CIG customers with at least 200 kW in peak demand and a minimum of 75 kW in curtable load.

The goal is to utilize education, enabling two-way communication technologies, and an event-based incentive structure to maximize load reduction capabilities and resource reliability. The program provides the ability to reduce and shift peak loads, thereby reducing system peak demands and providing for a deferral of new supply-side peaking generation and enhancing system reliability.
[Program Pending]

Distribution System Demand Response (DSDR)

The DSDR Program is a system of electric equipment and operating controls that enables the Company to reduce peak load using the distribution system in a way that meets the requirements for sustainability, duration, stability, and responsiveness to effectively reduce the need for new generation.

PEC has utilized conservation voltage reduction (CVR) for short periods of time to meet system contingencies and operating requirements. However, this practice is limited to short time periods because under current system design criteria, some customers could experience voltages below the lowest allowable level. In contrast, the DSDR Program will provide the ability to reduce peak demand for 4 to 6 hours at a time, which is the duration consistent with typical peak load periods, while maintaining customer delivery voltage above the minimum requirement. [Program Hardware Implementation Spring 2008]

Renewables:

PEC purchases electricity from ninety-three (93) cogenerators or small power producers, including residential solar, in the two Carolinas. Eighty-eight (88) of these utilize renewable resources to produce all or a part of the energy sold to PEC. These renewable resources include solar, landfill natural gas, wood biomass, hydro, wood, and refuse.

State-Owned Electric Utility

Santee Cooper (South Carolina Public Service Authority)

1. 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 upgrading heating and air conditioning equipment and the thermal envelope to high energy efficiency standards. All homes are evaluated to determine if they meet the standards set for the program. Inspections are completed during construction for new homes and at the completion of construction for new and improved homes.

Program participation in 2008 resulted in an estimated demand savings of 18,923 kW and estimated energy savings of 23,348,000 kWh. Total expenditures for the Good Cents Program incurred through Santee Cooper in 2008 were \$1,569,070.55. (Demand savings are based on summer peak demand reduction of 1.05 kW).

2. H₂O Advantage Water Heating Program

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

Program participation in 2008 resulted in an estimated demand savings of 1,017 kW. Total expenditures for the H₂O Advantage Program incurred through Santee Cooper in 2008 for existing participants were \$41,032.47.

3. 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 in 2008 resulted in an estimated demand savings of 30 kW and estimated energy savings of 44,769 kWh. Total expenditures for the Commercial Good Cents Program incurred through Santee Cooper in 2008 were \$9,410.

4. 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.

As part of Santee Cooper's demand control program, currently there are approximately 500 MW of load taking service under interruptible and economy power schedules. This load is excluded from the peak demand calculations for generation planning and reserves resource planning.

5. Compact Fluorescent Lights (CFLs)

This program, new in 2008, encourages the use of compact fluorescent lights (CFLs) in homes served by Santee Cooper as a way to conserve energy. Customers receive a voucher for twelve Energy Star, 75-watt equivalent CFLs that were redeemable by dropping by any of Santee Cooper's Customer Service offices. With more than 135,000 direct serve residential customers, the potential number of CFLs to be given away will be 1.6 million bulbs. This would equate to over 68,000 MWh per year in total energy savings. CFLs use up to 75 percent less energy than incandescent light bulbs, last up to 10 times longer, and provide a quick return on investment.

Program participation in 2008 resulted in 771,502 CFLs being distributed. There were a total of 65,298 customers participating, resulting in an estimated demand savings of 32.38 GWh's.

Natural Gas Utilities

There were two natural gas utilities that reported the use of DSM programs in 2008. Ten reported no DSM programs. Four did not report at all.

Clinton-Newberry Natural Gas Authority

The Authority sells appliances and is running a program with tankless water heaters. The tankless water heater is proven to save on consumption year round. The Authority issues a rebate for the water heater once the water heater is paid for and installed. The rebate at present is \$100.00.

South Carolina Electric and Gas

SCE&G has four DSM programs that support its gas customers. All four programs are energy efficiency programs that fall under the general umbrella of customer education and outreach. Three of the programs are web-based and have almost 219,000 customers registered. The programs are:

- **Energy Analyzer:** *Energy Analyzer, added in 2004, is a 24 month bill analysis tool to identify a customer's seasonal usages and target the best ways to reduce demand. There were almost 100,000 visits to the Energy Analyzer tool in 2008.*
- **Energy Audit:** *The Energy Audit tool leads customers through the process of creating a complete inventory of their home's insulation and appliance efficiency and allows customers to see the energy and financial savings of upgrades before making an investment. Since August 2008, almost 3,700 customers have used the Energy Audit tool.*
- **Customer Awareness Information:** *The SCE&G Web site supports all communication efforts to promote energy savings tips through a new section called "Save Energy & Money" and through the Energy Audit library. Information is also provided on the latest tax credits offered by the Emergency Economic Stabilization Act of 2008, 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.*
- **Annual Energy Campaign:** *Each year SCE&G designs a collection of methods to proactively educate its customers and create awareness of issues related to energy efficiency and conservation. Among the methods used are the following:*
 - *Bill Inserts/Messages*
 - *SCE&G Business Offices literature*
 - *Project Share – On October 8, 2008, SCE&G also announced a corporate gift of \$250,000 to Project SHARE and provided a dollar-for-dollar match on customer and employee donations up to \$100,000 through the end of 2008.*
 - *Weatherization projects for combined electric/gas customers*
 - *Speakers Bureau*
 - *Energy Awareness Month (October)*
 - *Public Service Announcements*

In addition, it is important to note that SCE&G is a combination utility which provides both electric and gas services to its customers. As a combination utility, the programs stated-above also support the demand-side management efforts of the Company which focus on SCE&G's electric customers. Likewise, in instances where SCE&G provides both electric and natural gas services to a customer, the benefits derived from demand-side management programs focusing on electric service also provide ancillary benefits concerning natural gas service.

Brief System and Pricing Overview

The full impact of DSM programs cannot be determined without an understanding of the size and customer base of each utility offering such programs. System information is reported in two sections: electricity, beginning on this page, and natural gas, beginning on page 33. Information about electricity was obtained by requesting copies of EIA Form 861, which utilities are already required to submit to the Energy Information Agency. The summary below includes information about number of customers, sales and revenue, and average retail price charged for each class of customer. Not surprisingly, the largest share of customers belongs to the South Carolina Electric Cooperatives, followed by SCE&G and Duke Energy Carolinas. Natural gas information was obtained via a questionnaire, and includes information about peak and total system demand, numbers of customers and miles of distribution lines.

Electricity Results and Findings

Data submittals were received from 43 of the 46 electric utilities operating in South Carolina. Central Electric Power Cooperative, Inc. submitted a report on behalf of all 20 distribution electric cooperatives. These cooperatives, as well as the one state-owned electric utility and all 4 investor-owned electric utilities, are fully represented in this report. Three municipal electric utilities (City of Due West, City of Orangeburg, and Town of Prosperity) did not report.

QUALIFIED FACILITIES

PURPA allows end users who need to 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 public utilities if that power is generated using approved energy resources. A qualified facility, as defined by PURPA, includes industrial cogeneration facilities and small scale independent power producers using PURPA approved fuel sources, including wood wastes, incinerated municipal solid waste, small-scale hydro-electricity and renewable sources. Qualified facilities reduce the need for new power plants just as load management does, by reducing the demand on utilities' systems at peak times. There were 14 PURPA qualified facilities with the capacity to provide approximately 556 MW of power in South Carolina in 2007.

Electricity from qualified facilities is classified into two categories: 1) purchase, meaning that the utilities purchase the power generated; and 2) displace, meaning that the power is used by the facility itself, thus displacing power that would otherwise be drawn from the utility grid. Displacement from qualified facilities, in other words, is analogous to demand-side activities presented by some utilities in this report, in that it contributes to reducing overall system peak by utilities. Purchase is a direct, non-utility addition to total system use and peak capacity. As shown in Table 3, qualified facilities in South Carolina had the capacity to provide 556 MW of power in 2007.

The survey distributed by the SCEO requested the total generation of MWh supplied from qualified producers or avoided due to their operation. The Duke Energy system

accounted for 41.7 percent of such generation in 2007, the SCE&G system for 36.7 percent, and the Progress Energy system for 21.4 percent.

Table 3. Listing of Electricity Qualified Facilities, 2007

Utility	Plant Owner	Location	Fuel Type	Capacity (MW)	Purchase/ Displace
Progress Energy	Montenay Charleston RRI	Charleston	Solid Waste	13.000	Purchase/Displace
Progress Energy	Foster Wheeler	Charleston	Refuse	8.700	Purchase
Progress Energy	Stone Container	Florence	Wood Chips	68.000	Purchase
Progress Energy	Invista	Camden	Coal waste	30.000	Displace
			TOTAL=	119.700	
Duke Energy	Aquenergy	Multiple	Hydro	8.700	Purchase
Duke Energy	Customer-self generation	Multiple	Multiple	105.000	Displace
Duke Energy	Bob Jones University	Greenville	Diesel	4.400	Displace
Duke Energy	Cherokee County	Gaffney	Gas	100.000	Purchase
Duke Energy	Converse Energy	Clifton	Hydro	1.250	Purchase
Duke Energy	Daniel Nelson Evans	Spartanburg	Hydro	.225	Purchase
Duke Energy	Northbrook Carolina Hydro	Multiple	Hydro	7.400	Purchase
Duke Energy	Pacolet River Power	Clifton	Hydro	.800	Purchase
Duke Energy	Pelzer Hydro Co.	Pelzer	Hydro	5.300	Purchase
			TOTAL=	233.075	
SCE&G	International Paper	Eastover/Georgetown	Wood waste	205.200	Purchase/Displace
			TOTAL=	205.200	
TOTAL				557.975	

Source: Energy Information Administration. *Electric Sales and Revenue Database File*

SYSTEM SUMMARY

The tables on the following pages provide an overview of statistical information for South Carolina utilities. Specifically, Tables 4, 5 and 6 provide residential, commercial and industrial statistical information respectively.

Table 4. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for the Residential Sector, by Utility, 2008

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Average Retail Price (cents/kWh)
Abbeville, City of	Public	60	3644	33670	10.00
Bamberg Public Works	Public	1471	1704	20814	11.55
Bennettsville, City of	Public	2730	5250	52505	10.00
Camden, City of	Public	9268	9144	106198	8.61
Clinton, City of	Public	3862	4118	37902	10.82
Duke Energy Carolinas	Investor	448461	517405	6551312	8.56
Easley Combined Utility System	Public	11467	15381	158383	9.71
Gaffney, City of	Public	5658	6007	70075	8.57
Georgetown, City of	Public	3,871	4,563	52,144	9.26
Greenwood Commission of Public Works	Public	11234	9973	116568	8.56
Greer Commission of Public Works	Public	13461	15468	163775	17.56
Laurens Commission of Public Works	Public	4,486	4922	46,483	11.53
Lockhart Power Company	Investor	5132	7209	70997	8.61
McCormick, Town of	Public	895	1137	10656	10.67
Newberry, City of	Public	4064	4497	48616	9.71
Progress Energy Carolinas	Investor	139,454	209,701	2,179,202	8.19
Rock Hill, City of	Public	33491	31587	341089	10.67
Santee Cooper	Public	131869	138610	1657068	9.25
SC Electric Coops	Cooperative	634807	995763	9635453	10.33
Seneca, City of	Public	6,839	6,458	64,116	10.15
South Carolina Electric & Gas	Investor	554099	902775	7828251	11.53
Union, City of	Public	5968	6838	38943	17.56
Westminster, City of	Public	1322	1543	13364	11.55
Winnsboro, Town of	Public	3,435	3,229	30,863	7.90

Source: 2008 EIA-861 Forms as submitted to SCEO. Electric cooperative data provided by Central Electric Cooperative. Non-respondents include City of Due West, City of Orangeburg and Town of Prosperity.

Table 5. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for the Commercial Sector in South Carolina, by Utility, 2008

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Average Retail Price (cents/kWh)
Abbeville, City of	Public	529	2608	27051	9.64
Bamberg Public Works	Public	362	1736	21709	8.00
Bennettsville, City of	Public	2270	4366	43658	10.00
Camden, City of	Public	1424	6789	74635	9.10
Clinton, City of	Public	656	4352	44012	9.89
Duke Energy Carolinas	Investor	86657	395371	5814767	6.80
Easley Combined Utility System	Public	2051	13285	138873	9.60
Gaffney, City of	Public	1590	9143	101062	9.05
Georgetown, City of	Public	1,233	8,134	78,781	10.32
Greenwood Commission of Public Works	Public	2494	4379	48197	9.09
Greer Commission of Public Works	Public	4076	13418	156146	8.59
Laurens Commission of Public Works	Public	853	3802	45,933	8.28
Lockhart Power Company	Investor	1234	2185	21217	10.30
McCormick, Town of	Public	196	822	7709	10.66
Newberry, City of	Public	861	5818	65474	8.89
Progress Energy Carolinas	Investor	32,642	161,474	1,853,337	8.71
Rock Hill, City of	Public	3449	34025	387125	8.79
Santee Cooper	Public	30788	153436	2041185	7.52
SC Electric Cooperatives	Cooperative	75832	228246	2342206	9.74
Seneca, City of	Public	1,089	7,457	73,071	10.21
South Carolina Electric & Gas	Investor	92300	742211	8021180	9.25
Union, City of	Public	1113	5697	62042	9.18
Westminster, City of	Public	241	1170	14752	7.93
Winnsboro, Town of	Public	573	1,372	14,423	9.51

Source: 2008 EIA-861 Forms as submitted to SCEO. Electric cooperative data provided by Central Electric Cooperative. Non-respondents include City of Due West, City of Orangeburg and Town of Prosperity.

Table 6. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for Industrial Sector in South Carolina, by Utility, 2008

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Average Retail Price (cents/kWh)
Abbeville, City of	Public	0	0	0	N/A
Bamberg Public Works	Public	5	557	9917	5.62
Bennettsville, City of	Public	0	0	0	N/A
Camden, City of	Public	0	0	0	N/A
Clinton, City of	Public	7	2518	34765	7.24
Duke Energy Carolinas	Investor	1807	416192	9135369	4.56
Easley Combined Utility System	Public	0	0	0	N/A
Gaffney, City of	Public	0	0	0	N/A
Georgetown, City of	Public	0	0	0	N/A
Greenwood Commission of Public Works	Public	209	9241	143023	6.46
Greer Commission of Public Works	Public	0	0	0	N/A
Laurens Commission of Public Works	Public	4	877	10,410	8.42
Lockhart Power Company	Investor	9	6638	108148	6.14
McCormick, Town of	Public	0	0	0	N/A
Newberry, City of	Public	12	5062	75533	6.70
Progress Energy Carolinas	Investor	736	153,598	2,510,576	6.12
Rock Hill, City of	Public	12	4357	55180	7.90
Santee Cooper	Public	33	359712	7477777	4.81
SC Electric Cooperatives*	Cooperative	547	187363	3053278	6.13
Seneca, City of	Public	2	40	290	13.79
South Carolina Electric & Gas	Investor	752	390201	6452403	6.05
Union, City of	Public	12	649	7972	8.14
Westminster, City of	Public	0	0	0	N/A
Winnsboro, Town of	Public	22	1,665	18,741	8.88

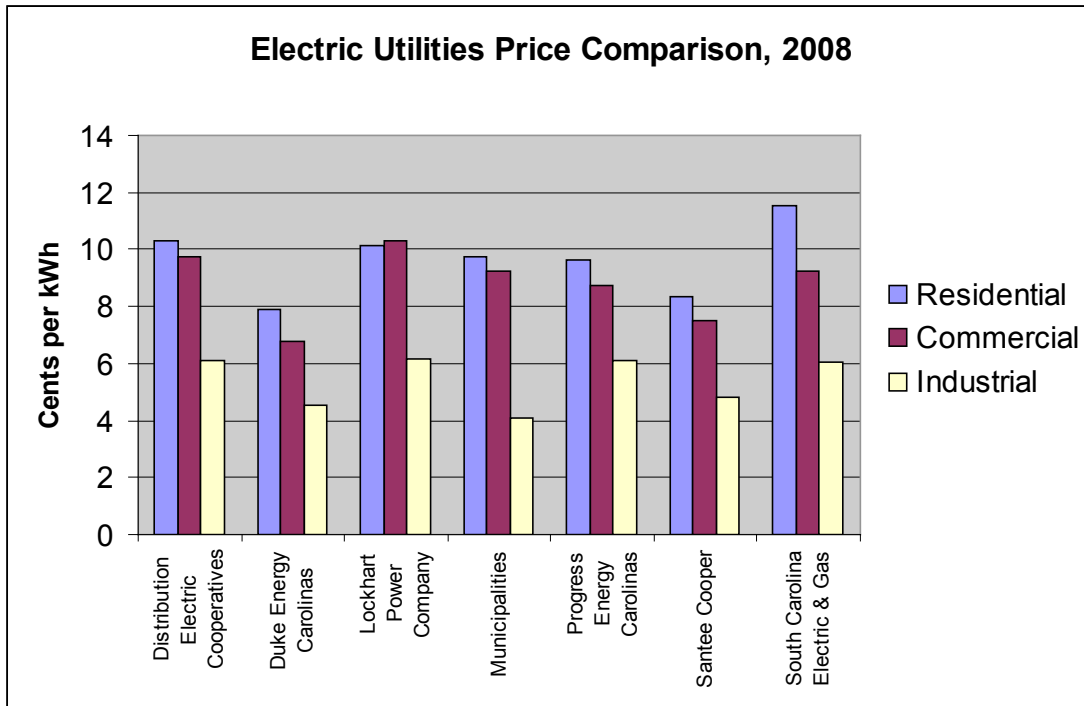
*For the Cooperatives' data, there is no "industrial" category, but rather "large power." For this reason, a direct comparison between the Cooperatives and the other utilities for the commercial and industrial classes cannot be made.

Source: 2008 EIA-861 Forms as submitted to SCEO. Electric cooperative data provided by Central Electric Cooperative. Non-respondents include City of Due West, City of Orangeburg and Town of Prosperity.

PRICE COMPARISON FOR ELECTRIC UTILITIES

Generally, residential prices were the highest and industrial prices were the lowest for electricity in SC in 2008. The City of Westminster had the highest residential prices at 11.55 cents per kWh, the City of Seneca had the highest industrial prices at 13.8 cents per kWh, and the Town of McCormick had the highest commercial prices at 10.7 cents per kWh. Prices were calculated for each utility by sector by dividing revenue by sales.

Figure 1. Electric Utilities Price Comparison, 2008



Source: 2008 EIA-861 Forms as submitted to SCEO. Electric cooperative data provided by Central Electric Cooperative.

Natural Gas Results and Findings

SYSTEM SUMMARY

For purposes of the 2008 report, the survey requested annual decatherm (DT) peak system demand, total annual system DT sales, total miles of distribution line, and total numbers of customers. All sixteen natural gas utilities submitted their data for the survey. According to survey data, during 2008 the annual peak system demand for reporting facilities was 711,420 DT, the total annual system use was about 102 million DT, there were 27,756 miles of distribution line, and 622,023 natural gas customers.

Table 7. Natural Gas Data, 2008

	Annual Peak System Demand (DT)	Total Annual System DT, Excluding Sales for Re-sale	Miles of Natural Gas Distribution Lines	Number of Customers
Bamburg Public Works	1,279	164,000	81	1,129
Bennettsville, City of	3,425	416,141	86	2,916
Blacksburg, Town of	845	100,494	37	553
Chester County Natural Gas Authority	8,500	3,364,043	569	7,598
Clinton-Newberry Natural Gas Authority	16,500	2,500,000	638	12,474
Fort Hill Natural Gas Authority	46,024	5,408,258	2,848	37,928
Fountain Inn Natural Gas System	6,697	699,452	255	6,220
Greenwood Commission of Public Works	24,947	3,795,000	1,232	17,975
Greer Commission of Public Works	21,207	2,735,703	683	18,410
Laurens Commission of Public Works	6,505	715,313	382	7,222
Orangeburg Department of Utilities	13,627	1,953,174	311	8,584
Piedmont Natural Gas Company	175,500	23,028,006	3,489	131,240
South Carolina Electric & Gas	319,672	48,335,100	15,144	307,194
Union, City of	9,090	1,555,275	376	6,460
Winnsboro, Town of	3,644	561,933	130	2,296
York County Natural Gas Authority	53,958	6,545,000	1,495	53,824
TOTAL	711,420	101,876,892	27,756	622,023

Source: SCEO Survey for Gas Utilities, found in Appendix B

ANNUAL PEAK SYSTEM DEMAND

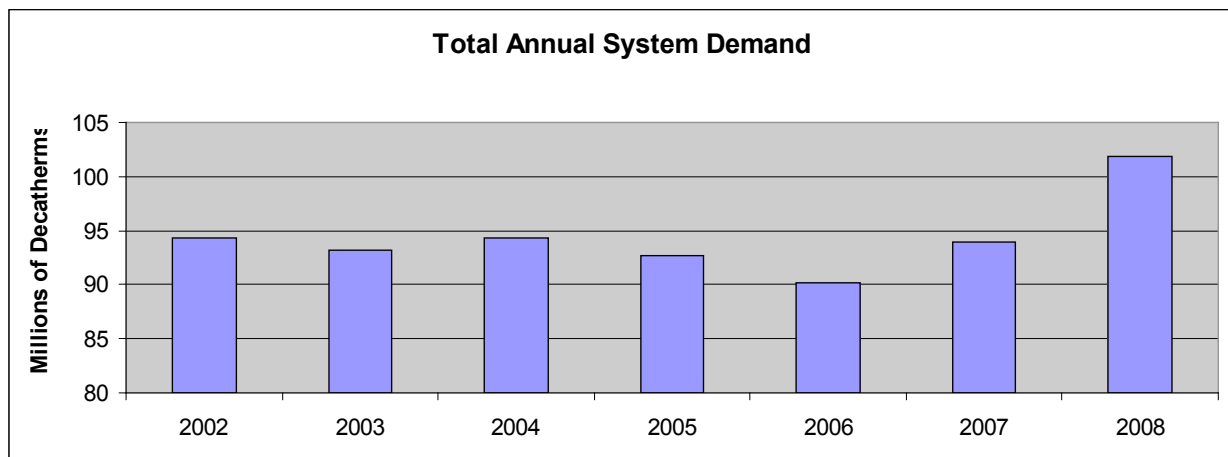
Of the 15 natural gas utilities submitting data, SCE&G had the highest annual peak system demand with 319,672 DT of the 711,420 DT in 2008. The output by SCE&G accounts for 44.9 percent of the 2008 peak demand of natural gas.

TOTAL ANNUAL SYSTEM DATA AND CUSTOMERS

The total annual system demand for natural gas in DT dropped steadily between 2002 and 2007 but then increased between 2007 and 2008 as can be seen in Figure 6. In 2008, SCE&G accounted for 47.4 percent of the total natural gas sold to customers as indicated by the reporting entities, followed by Piedmont Natural Gas Company with 22.6 percent. Figure 6 shows the total annual system demand over the past 6 years.

According to data submitted for the survey, the total number of natural gas customers for all classes (residential, commercial, and industrial) was 622,023. In 2008, SCE&G served 49.4 percent of all natural gas customers, and Piedmont Natural Gas Company accounted for 21.1 percent.

Figure 2. Total Annual System Demand (Millions of Decatherms), 2002-2008



*The 2007 total annual system demand is adjusted based on estimates for non-reporting entities.
Source: SCEO DSM Survey for Gas Utilities

TOTAL DISTRIBUTION LINES

In 2008, there were 27,756 miles of distribution lines for natural gas in South Carolina. By far the largest owner of these lines was SCE&G with 54.6 percent of the total, or 15,144 miles of distribution lines.

Appendices

Appendix A: South Carolina State Statute Authorizing DSM Report

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 then 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: 2008 Surveys for Gas Utilities

Two separate surveys were distributed to Natural Gas Utilities. All gas utilities responded to the first survey, and most responded to the second survey.

First Survey:

Natural Gas

Overall System Data

Utility: _____

Quantitative Data--

Please provide system summary totals for 12-month periods (on a calendar year basis) using actual annual values for each of the previous six calendar years, January 2003 through May 2009.

Data Description	ACTUAL					
	2003	2004	2005	2006	2007	2008
(1) Annual decatherm (DT) peak system demand, excluding sales for re-sale.						
(2) Total annual system decatherm (DT), excluding sales for re-sale.						
(3) Total miles of distribution line in service area (in miles).						
(4) Total number of customers (all classes).						

Second Survey:

Dear South Carolina Natural Gas Utilities,

I am writing to request information about ongoing and projected demand-side management activities that your natural gas utility conducts. We are requesting this information in accordance with South Carolina Code of Laws Section 58-37-10, which requires utilities to report demand-side management activities. A demand side activity is defined as "a program conducted by a producer, supplier, or distributor of energy for the reduction or more efficient use of energy requirements of the producer's, supplier's, or distributor's customers, including, but not limited to, conservation and energy efficiency, load management, cogeneration, and renewable energy technologies."

Information may be in a format of your choosing, i.e., a brief narrative description. Please return the completed descriptions to the South Carolina Energy Office no later than August 14th, 2009. Please email it to stholstrup@energy.sc.gov. If you are not able to meet the August 14th deadline, contact me to let me know to expect your description of DSM activities at a later date.

Appendix C: 2008 Gas Utilities Surveys and EIA-861 Request Recipients

ELECTRIC UTILITIES: RESPONDENTS

Bamberg Public Works	Duke Energy Carolinas
City of Abbeville	Easley Combined Utility System
City of Bennettsville	Greenwood Commission of Public Works
City of Camden	Greer Commission of Public Works
City of Clinton	Laurens Commission of Public Works
City of Gaffney	Lockhart Power Company
City of Georgetown	Progress Energy Carolinas
City of Newberry	Santee Cooper
City of Rock Hill	SC Electric Cooperatives
City of Seneca	South Carolina Electric & Gas
City of Union	Town of McCormick
City of Westminster	Town of Winnsboro

ELECTRIC UTILITIES: NON-RESPONDENTS

City of Due West	Town of Prosperity
City of Orangeburg	

NATURAL GAS UTILITIES: FIRST SURVEY RESPONDENTS (See p. 36)

Bamberg Public Works	Greenwood Commission of Public Works
Blacksburg	Greer Commission of Public Works
Chester County Natural Gas Authority	Laurens Commission of Public Works
City of Bennettsville	Orangeburg Department of Utilities
City of Union	Piedmont Natural Gas
Clinton-Newberry Natural Gas Authority	South Carolina Electric & Gas
Fort Hill Natural Gas Authority	Town of Winnsboro
Fountain Inn Natural Gas System	York County Natural Gas Authority

NATURAL GAS UTILITIES: SECOND SURVEY RESPONDENTS (See p. 36)

Bamberg Public Works	Fountain Inn Natural Gas System
Blacksburg	Orangeburg Department of Utilities
Chester County Natural Gas Authority	Piedmont Natural Gas
City of Union	South Carolina Electric & Gas
Clinton-Newberry Natural Gas Authority	Town of Winnsboro
Fort Hill Natural Gas Authority	York County Natural Gas Authority

NATURAL GAS UTILITIES: SECOND SURVEY NON-RESPONDENTS (See p. 36)

City of Bennettsville	Greer Commission of Public Works
Greenwood Commission of Public Works	Laurens Commission of Public Works

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