Chapter 4
Residential, Commercial, and Industrial Sectors

Overview of Greenhouse Gas Emissions

The residential, commercial, and industrial (RCI) sectors are between them the third largest direct source of gross greenhouse gas (GHG) emissions in South Carolina, accounting for about 19% of gross GHG emissions in 2005, if emissions from the generation of the electricity they consume are not included. Direct use of oil, natural gas, coal, and wood in the RCI sectors accounted for an estimated 17.9 million metric tons of carbon dioxide equivalent ($MMtCO_2e$) (19%) gross GHG emissions in 2005.[1] Energy-related direct emissions result principally from the on-site combustion of oil and natural gas, with a smaller contribution by on-site combustion of coal. The release of CO_2 and fluorinated gases (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]) during industrial processing, the use of sulfur hexafluoride (SF_6) in the utility industry, and the leakage of HFCs from refrigeration and related equipment accounted for an additional 4.14 $MMtCO_2e$ in 2005.[2] Including industrial process emissions, the RCI sectors are directly responsible for almost one-quarter of South Carolina's current gross GHG emissions (22.0 $MMtCO_2e$ in 2005).

Considering only the direct emissions that occur within buildings and industries, however, ignores the fact that nearly all electricity sold in the state is consumed as the result of RCI activities.[2] If the emissions associated with producing the electricity consumed in South Carolina are considered, RCI activities are associated with over half (about 59%) of the state's gross GHG emissions in 2005.[3] Therefore, the state's future GHG emissions will depend heavily on future trends in the consumption of electricity and other fuels in these sectors.

Figure 4-1 shows historical and projected RCI GHG emissions by sector. On a percentage basis, emissions associated with the residential and commercial sectors are forecasted to experience rapid growth—on the order of 50% and 47%, respectively. Forecasted industrial GHG emissions growth is sizable, with a 20% increase from 2005 to 2020.

Figure 4-2 shows historical and projected RCI GHG emissions by fuel and source, and illustrates the large fraction of RCI emissions associated with electricity consumption. RCI emissions associated with electricity use are expected to rise by about 46% between 2005 and 2020, from 33 $MMtCO_2e$ in 2005 to about 48 $MMtCO_2e$ in 2020. While GHG emissions from the direct use of petroleum remain flat, emissions from the direct use of coal, wood, and natural gas are

[1] Emission estimates from wood combustion include only nitrous oxide (N_2O) and methane (CH_4). Carbon dioxide emissions from biomass combustion are assumed to be "net zero," consistent with U.S. Environmental Protection Agency (EPA) and Intergovernmental Panel on Climate Change (IPCC) methodologies, and any net loss of carbon stocks due to biomass fuel use should be accounted for in the land-use and forestry analysis.

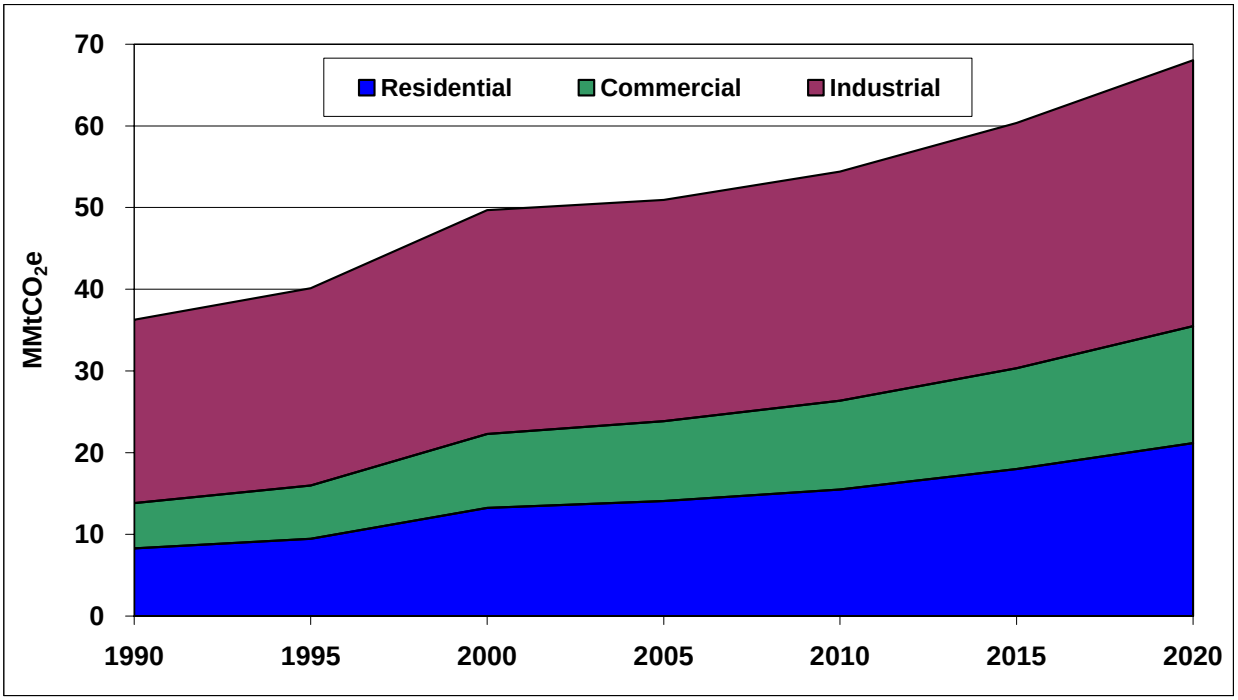
[2] Emissions associated with the electricity supply sector (discussed in chapter 5) have been allocated to each of the RCI sectors for comparison of those emissions to the emissions associated with direct fuel consumption. Note that this comparison is provided for information purposes and that emissions estimated for the electricity supply sector are not double counted in the total emissions for the state.

[3] Gross emissions here denote GHG emissions from activities in South Carolina, adjusted for exports of electricity, oil, and gas, but not including consideration of estimated "sinks" of GHGs in the forestry and land-use sectors.

projected to increase moderately (13%, 13%, and 21%, respectively) from 2005 to 2020. For the residential sector, emissions associated with the generation of electricity to meet energy consumption demand are projected to increase by 58% from 2005 to 2020, while emissions associated with the direct use of natural gas are projected to increase by 26% over this 15-year period. Residential sector emissions associated with the direct use of petroleum and wood are projected to decline by 14% and 7%, respectively, from 2005 to 2020. The residential sector has not consumed any coal since 1999, and is not projected to use any coal over the forecast period.

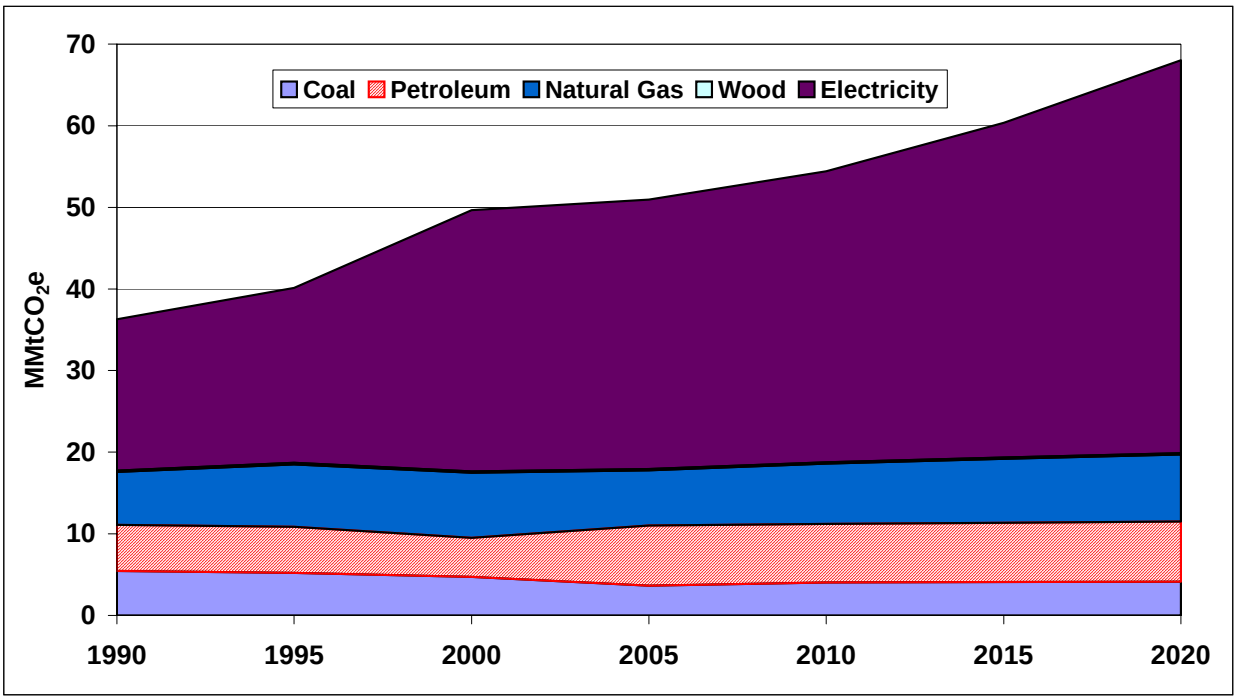
Commercial sector emissions associated with the generation of electricity to meet residential energy consumption demand are projected to increase by 52% from 2005 to 2020, while emissions associated with the direct use of natural gas are projected to increase by 29% over this 15-year period. Commercial sector emissions associated with the direct use of petroleum are not expected to increase during the 15-year forecast period. Commercial sector emissions associated with the direct use of wood are projected to decline by 6% from 2005 to 2020. The commercial sector has not consumed any coal since 1999, and is not projected to use any coal over the forecast period. Industrial sector emissions associated with the generation of electricity to meet residential energy consumption demand are projected to increase by 32% from 2005 to 2020. Emissions associated with the direct use of natural gas, wood, coal, and petroleum are projected to increase by 17%, 20%, 13%, and 2% over the 15-year forecast period.

Figure 4-1. Historical and projected residential, commercial, and industrial greenhouse gas emissions by sector in South Carolina: 1990–2020*



* Emissions associated with the direct use of natural gas, petroleum, coal, and wood and the consumption of electricity.

Figure 4-2. Historical and projected residential, commercial, and industrial (RCI) GHG emissions by type of fuel in South Carolina, 1990 to 2020



* Emissions associated with the direct use of natural gas, petroleum, coal, and wood and the consumption of electricity.

Key Challenges and Opportunities

The principal means to reduce RCI emissions include improving energy efficiency, substituting electricity and natural gas with lower-emission energy resources (such as solar water heating and cooling), and various strategies to decrease the emissions associated with electricity production (see Chapter 5, Energy Supply). The state's limited pursuit of energy efficiency until recent years offers abundant opportunities to reduce emissions through programs and initiatives to improve the efficiency of buildings, appliances, and industrial practices.

South Carolina has already taken important steps in this direction. Several pieces of legislation introduced in the 2007–2008 legislative session and signed by the Governor are particularly relevant for the RCI sectors: H. 3034, H. 3395, and H. 4766. The Energy Independence and Sustainable Construction Act of 2007 (H. 3034) requires application of "green building" or comparable standards to buildings to be constructed on state property with budgets greater than $15 million. H. 3395 requires the South Carolina Energy Office and the Office of Regulatory Staff to recommend process and procedures for establishing net metering programs at all distribution electric utilities in the state. H. 4766 creates specific energy reduction and reporting requirements for state agencies and exempts agencies that implement all available cost-effective energy conservation measures from annual reporting requirements; it also requires incandescent light bulbs used by a state agency to be replaced with compact fluorescent bulbs when the incandescent bulb needs replacing, and establishes a wind energy production farms feasibility study committee, among other things. Non-legislative efforts are also taking off. For example, a partnership of the South Carolina Energy Office, local homebuilder associations, and Southface

Energy Institute is piloting an EarthCraft house program for Charleston and Greenville, through which over 100 EarthCraft homes have been built. These actions indicate growing momentum for improving energy efficiency and reducing GHG emissions in the state.

The South Carolina Climate, Energy and Commerce Advisory Committee (CECAC) has identified significant opportunities for reducing GHG emissions growth attributable to the RCI sectors in South Carolina. These include expanding or launching energy efficiency programs for electricity, natural gas, and other direct-use fuels; regularly updating building codes; requiring state and local governments to implement beyond-code building practices and green power purchase/generation; and actively promoting adoption of combined heat and power in the state. The CECAC has also identified significant opportunities to reduce GHG emissions through policies addressing electricity production, such as tapping into the state's offshore wind potential and developing nuclear generation (detailed in Chapter 5).

Overview of Policy Recommendations and Estimated Impacts

The CECAC recommends by unanimous consent a set of nine policies for the RCI sectors that offer the potential for significant GHG emission reductions in the state. These recommendations and results are summarized in Table 4.1. The GHG emission reductions for eight of these policies were quantified, and the costs per ton of GHG avoided were quantified for seven. The eight policy recommendations with estimates for potential avoided GHG emissions could lead to emissions savings from reference case projections of:

- 28 $MMtCO_2e$ per year by 2020, and
- Cumulative savings of 142 $MMtCO_2e$ from 2009 through 2020.

The seven recommended policies for which costs were quantified could result in net cost savings of over $2.9 billion through 2020 on a net present value (NPV) basis.[4] The weighted-average cost of these policies is a net savings of $21 per $MMtCO_2e$.

Recommended policies RCI-1, -2, -4, -6, part of RCI-7 (the state and local buildings portion), and RCI-9 are all focused on efficient energy use, but are distinguished by their different approaches, their focus on varied types of energy use, or the specific energy users they target. RCI-1 (targeting electricity use) and RCI-2 (focused on natural gas, propane, and fuel oil consumption) both involve implementing general energy efficiency programs on a widespread basis. RCI-4 and RCI-6 seek to reduce energy use by buildings in all sectors but take distinct approaches toward achieving their goals. RCI-4 focuses on educating South Carolinians and building human capital in energy-efficient building management and operation. RCI-6 draws on existing building code enforcement infrastructure to implement efficiency measures, and also implements incentives to increase penetration of ENERGY STAR manufactured homes. In contrast to RCI-1, -2, -4, and -6, which affect a wide range of energy uses, RCI-9 focuses on a specific end use through adoption of appliance standards. RCI-7 targets a set of energy users—state and local governments—that are in a good position to demonstrate the benefits of energy-efficient building design and operations to the general public.

[4] The net cost savings, based on fuel expenditures, operations, maintenance, and administrative costs, and amortized, incremental equipment costs, are shown in constant 2005 dollars. All NPV analyses here use a 5% real discount rate.

Table 4-1. Summary List of RCI Policy Recommendations

No.	Policy Recommendation	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2012	2020	Total 2009–2020			
RCI-1	Energy Efficiency Programs, Funds, or Goals for Electricity (Residential, Commercial, and Industrial)	1.5	8.2	43.0	–$1,127	–$26	Unanimous
RCI-2	Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil	0.2	0.8	4.5	–$379	–$85	Unanimous
RCI-3	Incentives and Regulatory Reform To Promote Implementation of Renewable Energy Systems, Including Solar Hot Water (Residential, Commercial, and Industrial)*	0.2	0.6	4.0	$164	$41	Unanimous
RCI-4	Energy Management Training/Training of Building Operators	Not quantified					Unanimous
RCI-5	Incentives, Resources, and Regulatory Reform To Promote Energy Recycling, Including Combined Heat and Power	1.0	8.2	39.5	–$332	–$8	Unanimous
RCI-6	Incentives and Policies for Improving Building Efficiency, Including Building Energy Codes	1.6	7.2	40.4	–$665	–$16	Unanimous
RCI-7	Improved Design and Construction in New and Existing State and Local Government Buildings, "Government Lead by Example"	0.5	5.0	24.6	–$800	–$33	Unanimous
RCI-8	Participation in Voluntary Industry–Government Partnerships (Including Incentives)	0.0	0.0	0.05	Not quantified*		Unanimous
RCI-9	Incentives and Policies for Improving Appliance Efficiency, Including Appliance Standards	0.3	0.9	5.6	–$94	–$17	Unanimous
	Sector Total After Adjusting for Overlaps (excluding RCI-8)†	**4.3**	**27.7**	**141.6**	**–$2,941**	**–$21**	
	Reductions From Recent Actions††	**0.5**	**2.2**	**12.6**	**Not quantified**		
	Sector Total Plus Recent Actions	**4.9**	**29.9**	**154.2**	**–$2,941**	**–$21**	

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

GHG = greenhouse gas; MMtCO2e = million metric tons of carbon dioxide equivalent; $/tCO2e = dollars per metric ton of carbon dioxide equivalent.

The numbering used to denote the above policies is for reference purposes only; it does not reflect prioritization among these policies.

*The costs of RCI-8 have not been quantified, due to lack of publicly available data. Refer to discussion of Key Uncertainties under RCI-8 for more information.

† The benefits and costs of RCI policies overlap as follows: between residential and commercial new construction in RCI-1 and RCI–6; between residential and commercial new construction in RCI-2 and RCI–6; between RCI–7 and energy efficiency efforts in government and schools within RCI-1 and RCI-2; and between RCI-9 and parts of RCI-1, RCI-2, and RCI-7. Overlaps also occur between RCI-1 and the energy efficiency component of the energy supply (ES) sector ES-1, and between the electricity load reductions from RCI policies in general and ES-1; adjustments for these overlaps are made in the ES totals. Benefits and costs of renewable energy in RCI-7 overlap with ES renewable energy policies and are not included.

†† Reductions from recent actions include the Energy Independence and Security Act of 2007, Title III. Refer to Annex 1 to Appendix G for more information. GHG reductions from Titles IV and V of this Act have not been quantified because of the uncertainties in how they will be implemented. It is expected that Titles IV and V measures will overlap with RCI policies, especially RCI-5, RCI-6, RCI-7, and RCI-8.

RCI-3, RCI-5, and part of RCI-7 involve energy production. The green power component of RCI-7 requires purchase or production of green power by state and local facilities. RCI-3 and RCI-5 both focus on energy production at the site of use: RCI-3 involves promoting solar hot-water and cooling systems, and RCI-5 focuses on increased implementation of combined heat and power in the state.

RCI-8 takes a multifaceted approach to reducing emissions from the industrial sector. In addition to promoting the efficient use of energy, this policy seeks emission reductions through process changes, switching to lower-carbon fuels, or implementation of other measures.

Policies RCI-1, -2, -3, -5, part of RCI-6 (the manufactured homes portion), and RCI-8 are all structured to provide incentives for energy efficiency or other measures to reduce GHG emissions. RCI-4 (energy management training), RCI-6 (the building codes portion), RCI-7 (government lead by example), and RCI-9 (appliance standards) involve mandatory implementation of measures to reduce energy consumption.

There is overlap in the expected emission reductions and costs among some of the policies within the RCI sectors, as well as between policies in the RCI and energy supply (ES) sectors. Some of the RCI policies target the same type of energy use and implement similar energy reduction strategies. For example, RCI-9 focuses on highly efficient appliances, either by instituting statewide appliance standards or by increasing market penetration of ENERGY STAR appliances. The energy efficiency programs in RCI-1 and RCI-2 and energy efficiency efforts by state and local governments under RCI-7 would most likely include replacement of old appliances with energy-efficient ones, which would overlap with the results for RCI-9. Another instance of overlap occurs between broad energy efficiency programs in RCI-1 and RCI-2 on the one hand, and energy efficiency measures required by building codes under RCI-6 for new construction in the residential and commercial sectors. RCI-7 focuses on government and school buildings and overlaps with the cumulative GHG emission reductions from energy efficiency in the government sector under RCI-1 and RCI-2.

Some policies are expected to have no overlaps, or negligible ones, with other RCI policies. Solar hot water and cooling (RCI-3) and combined heat and power (RCI-5) are rarely included as measures in gas or electric utility energy efficiency portfolios (RCI-1 and RCI-2). RCI-8 is intended to go above and beyond the measures that an industrial user would implement within RCI-1 and RCI-2 (e.g., by targeting process emissions, which are not taken into account in any other policy).

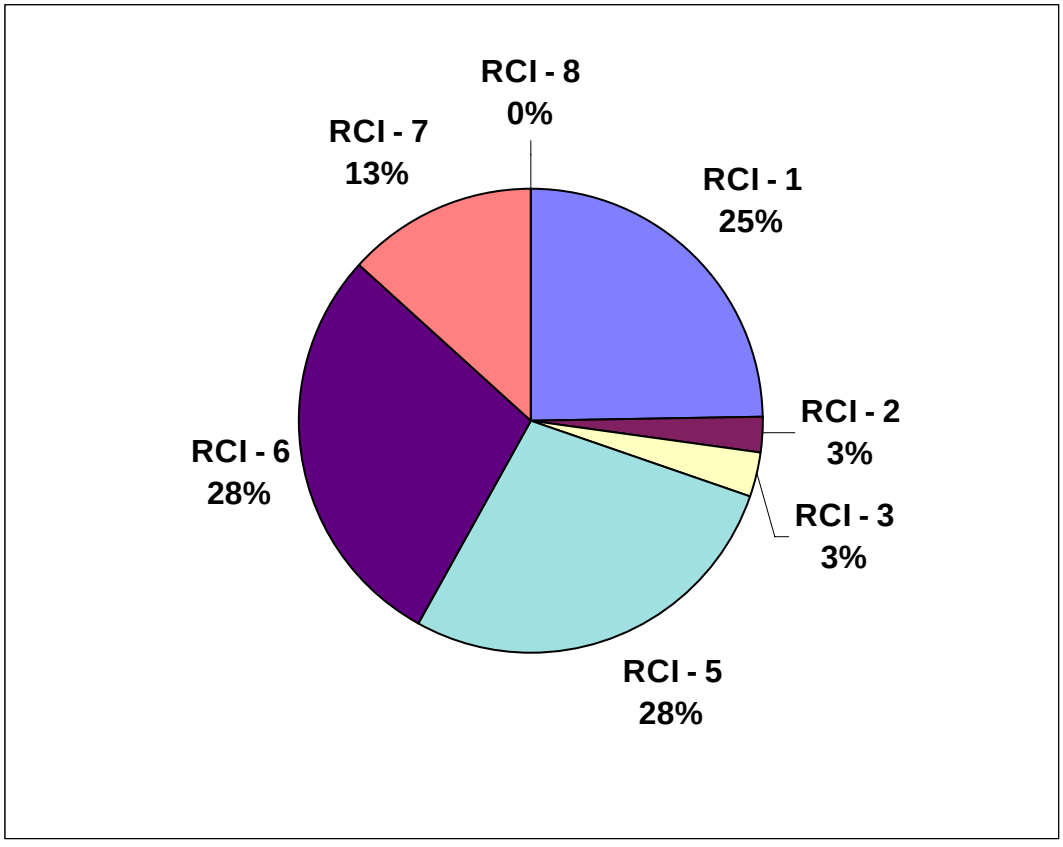
There are two primary interactions between the RCI and ES sector policies, both concerning the clean energy portfolio components in policy ES-1. First, ES-1 includes a requirement that some of the electricity demand in the state be met with energy efficiency measures. In addition, a number of the RCI policies (RCI-1, -3, -5, -6, and -7) decrease overall electricity demand. As the clean energy portfolio requirements are based on meeting a percentage of load with specific clean energy or nuclear resources, the impact of ES-1 would be reduced by reducing energy

demand through these RCI policies. A smaller interaction involves green power purchasing under RCI-7 and renewable energy generation under ES-1. Finally, an additional feedback is that certain ES policies (including ES-1) will have the effect of reducing the GHG emissions associated with energy production, so that RCI policies that target electricity use will have a reduced impact on overall emissions. However, this impact is small and has not been reflected in the analysis.

The policy recommendations described briefly below, and in more detail in Appendix G, result not only in significant emission reductions and costs savings, but offer a host of additional benefits as well. These benefits include savings to consumers and businesses on energy bills, which can have macroeconomic benefits; reduction in spending on energy by low-income households; reduced peak demand, electricity system capital and operating costs, risk of power shortages, energy price increases, and price volatility; improved public health as a result of reduced pollutant and particulate emissions by power plants; reduced dependence on imported fuel sources; and green collar employment expansion and economic development. In addition, several of these policies will have water conservation benefits, not only through reductions in demands from power plants for cooling, but also by reducing water consumption by the end users (e.g., RCI-9).

Figure 4-3 shows the breakdown of the projected impacts of the recommended RCI policies, taken together, in terms of avoided GHG emissions.

Figure 4-3. Aggregate GHG Emission Reductions, 2009–2020



For the RCI policies recommended by the CECAC to yield the levels of savings described here, the policies must be implemented in a timely, aggressive, and thorough manner. This means, for example, not only putting the policies themselves in place, but also attending to the development of “supporting policies” that are needed to help make the recommended policies effective. While the adoption of the recommended policies can result in considerable benefits to South Carolina's environment and consumers, careful, comprehensive, and detailed planning and implementation, as well as consistent support, of these policies will be required if these benefits are to be achieved.

Residential, Commercial, and Industrial Sectors Policy Descriptions

RCI-1 Energy Efficiency Programs, Funds, or Goals for Electricity (Residential, Commercial, and Industrial)

The CECAC unanimously recommends that South Carolina increase the efficiency of electricity use ("energy efficiency") in the state through increased investment in energy efficiency programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals. This policy would take a two-pronged approach to increasing the efficiency of electricity use in the state: implementing new or expanding existing electric utility energy efficiency programs for all sectors, and conducting consumer outreach on the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities. To implement expanded electric energy efficiency programs, South Carolina could revise existing statutes to clarify support and provide incentives for utility investments in cost-effective energy efficiency.

The efficiency with which electricity is used today can be improved in countless applications across all sectors and throughout the state. These efficiency improvements can lead to increased productivity for a fixed amount of electricity input, or can produce the same results using less electricity. South Carolina's efforts to date offer substantial room for improvement. As a result, the state has "low-hanging fruit" compared to states with well-established energy efficiency programs. National studies suggest that South Carolina has substantial potential to improve the efficiency of its energy use.

The goals of this policy are to reduce electricity use, adjusted for growth, by 1% per year by 2015 and by 1.5% per year by 2020. The policy would apply to all electric utilities (public and private), and would affect customers in all sectors (residential, commercial, industrial, and institutional/government). This policy would also implement an educational awareness campaign showing the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities.

RCI-2 Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil

The CECAC unanimously recommends that South Carolina implement programs or policies to increase investment in demand-side management (DSM) programs for natural gas, propane, fuel oil, and other combustion fuels. Energy efficiency has been shown to be an extremely cost-effective resource for reducing natural gas use. The high costs of propane and fuel oil point to the potentially significant value of implementing DSM for these fuels.

The goals of this policy are to reduce natural gas use, adjusted for growth, by 1% per year by 2015, and sustain annual savings through 2020 through implementation of energy efficiency programs. The policy would apply to natural gas utilities (public and private) and customers in

all sectors. Similar goals should be set for other fuels, although they may need to be modified by the South Carolina Public Utility Commission due to the smaller number of affected parties who may have special circumstances. The goals may be accomplished through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals, and should be designed to complement RCI-1. To implement expanded DSM programs, South Carolina could revise existing statutes to clarify support for utility investments in cost-effective energy efficiency at the levels indicated in this policy.

Like RCI-1, this policy would also conduct consumer outreach on the value of performance contracting and energy management programs for commercial, industrial, and institutional entities. This policy also considers efficiency gains to be achieved through fuel neutrality, which refers to encouraging fuel switching where it results in reduced GHG emissions, lower energy use, economic savings, or some other metric.

RCI-3 Incentives and Regulatory Reform To Promote Implementation of Renewable Energy Systems, Including Solar Hot Water (Residential, Commercial, and Industrial)

South Carolina is endowed with good, useful solar resources for water heating throughout the state. The CECAC unanimously recommends leveraging that potential through programs and policies that encourage consumers to switch from using fossil fuels to using solar energy for water-heating applications.

The goals of this policy are that, beginning in 2009, 1% per year of all South Carolina homes and suitable business facilities will have solar hot water installations, reaching 10% of all South Carolina homes by 2020. This policy also seeks to encourage businesses to adopt solar cooling technologies, which would have significant benefits in terms of reducing peak electricity demand.

RCI-4 Energy Management Training/Training of Building Operators

In many facilities, utility bills can be significantly decreased through more efficient equipment and building operation. The CECAC unanimously recommends the development and implementation of a statewide Energy Conservation Education and Training Program for energy managers and facility operators, to learn techniques for improving the efficiency of their steam, process heat, pumping, compressed air, motors, and other systems. Classes would be conducted at the state's Technical College Facilities, and could draw on or expand preparation classes available from the South Carolina Energy Office. Energy management training would include instruction in and demonstration of successful energy management programs throughout the state, using Winthrop University and other government projects as models. The South Carolina Energy Office would develop the course curricula (to include instruction in and demonstration of successful energy management programs) and requirements for licensing, as well as maintain a database of licensed professionals.

Starting in 2018, successful completion of this training would be required for energy managers and facility operators in all sectors (residential, commercial, industrial, and institutional) by a licensing requirement, and continuing education credits would be required annually. Companies

could outsource energy management, energy planning, and facility operations, or they could retain licensed staff to oversee operations.

RCI-5 Incentives, Resources, and Regulatory Reform To Promote Energy Recycling, Including Combined Heat and Power

Combined heat and power (CHP) refers to any system that simultaneously or sequentially generates electric energy and utilizes the thermal energy that is normally wasted, significantly increasing efficiency over separate generation of electricity and thermal energy. Many CHP systems are capable of an overall efficiency of over 80%—double that of conventional systems. Another significant advantage is the reduced transmission and distribution losses associated with centralized power generation.

Existing data suggest the existence of a very large unrealized potential for CHP in South Carolina. However, energy recycling, including CHP, is challenged by several non-economic factors, such as regulatory and environmental permitting complexity or uncertainty, utility resistance to CHP because of potential loss of expected revenue, and increased complexity of facility design and operations. Additional installations of new CHP systems by residential, commercial, institutional, and industrial energy consumers, and continued operation or expansion of existing systems, could be encouraged through a combination of regulatory changes (starting with a review of state and regional policies on permitting, net metering, standby rates, interconnection, and other issues affecting CHP), education and information transfer, and incentive programs.

The CECAC unanimously recommends increased effort toward tapping into the unrealized potential for CHP and waste heat recovery in South Carolina, with a goal of installing 100 megawatts in 2011 and realizing 40% of the additional technical potential by 2020. (Existing CHP installations are not included in the 40% goal but should be kept in service.)

RCI-6 Incentives and Policies for Improving Building Efficiency, Including Building Energy Codes

Almost half of all U.S. GHG emissions annually are associated with the operation of RCI buildings, along with the embodied energy of building materials.[5] Improving the energy efficiency of state and/or local buildings—for example, by strengthening building energy codes—will have a considerable immediate and ongoing impact on reducing building-sector GHG emissions. Although South Carolina law requires statewide use of the most up-to-date building codes as defined by the International Energy Conservation Code (IECC), conflicts between these codes and other provisions of state law have severely weakened the effectiveness of the codes.

Manufactured housing is exempt from South Carolina's building energy code. Instead, manufactured homes are subject to standards established by the U.S. Department of Housing and

[5] U.S. Department of Energy, Energy Information Administration. "U.S. Energy Consumption by Sector." Available at: http://www.architecture2030.org/building_sector/index.html.

Urban Development. A significant percentage of South Carolinians reside in manufactured housing.

The CECAC unanimously recommends that the state take action to remove provisions of state law that conflict with IECC codes and address obstacles to renewable energy use, daylighting, and nonconventional energy-efficient building materials in buildings; improve statewide enforcement of both existing and new building codes at all levels; update South Carolina energy codes regularly; consider advanced codes (i.e., beyond IECC) as appropriate for the state; implement requirements and incentives for ENERGY STAR-certified manufactured housing and manufactured nonresidential buildings; and lobby for more stringent codes for manufactured housing at the federal level.

The goals of this policy are twofold: that 100% of South Carolina's local governments adopt and fully enforce the 2006 IECC in 2009 and the 2012 IECC in 2015; and, that ENERGY STAR-certified manufactured homes achieve 25% market penetration for new manufactured homes by 2010 and 75% by 2020.

RCI-7 Improved Design and Construction in New and Existing State and Local Government Buildings, "Government Lead by Example"

The CECAC unanimously recommends that the state undertake government-led, or "lead by example," initiatives and requirements that both help state and local governments achieve substantial energy cost savings and promote the adoption of clean energy technologies for significant GHC emission reductions in new and existing state and local government buildings. This policy achieves GHG reductions by setting a goal for green power purchasing by state and local facilities, as well as conducting audits of energy performance and operations of state and other government buildings and using audit results to target and prioritize investments in improving government building energy efficiency. Other elements include developing green procurement strategies (such as state bulk purchase of high-efficiency appliances and equipment); providing financial and technical assistance and incentives for implementation of energy-saving projects in existing buildings and facilities; requiring that all state and local facilities implement an energy management program; implementing design features to reduce energy use within state-funded and other government buildings through incorporation of proven planning guides and regulations; and expanding A88 to include South Carolina school buildings.[6] The effectiveness of this policy will be determined in part by sustained efforts to review and improve efficiency goals over time.

The goals of this policy are to procure and carry out a program to audit energy use and identify energy efficiency opportunities in state and local government buildings (existing, undergoing renovation, and under design), at a rate of 15% of these buildings per year over a 5-year period. In addition, this policy sets a goal that, by 2018, a minimum of 20% of electricity consumed by state and local facilities and schools should come from in-state renewable resources. The policy would apply to state government agencies, local governments, schools, and universities.

[6] South Carolina General Assembly, 117th Session, 2007_2008. *Energy Efficiency Act*. Available at: http://www.scstatehouse.net/sess117_2007-2008/bills/30\34.htm.

RCI-8 Participation in Voluntary Industry–Government Partnerships (Including Incentives)

The CECAC unanimously recommends creating a voluntary program in which businesses, government, and industry become partners in reducing the emission of process gases that have high global warming potentials. The program would be administered by state agencies and would provide technical assistance, networking, best practices exchange, and rewards and recognition (including tax incentives). Verification of emission reductions would be a critical element of this program.

The goals of this policy are to establish partnerships with industrial and other large users of energy (and/or of process gases that are GHGs) to encourage them to set emission reduction targets to return to 2000-level emissions by 2012 and 10% below 2000-level emissions by 2020, or to meet or exceed state goals. The largest emitters would be approached first. The technical assistance, networking, reward, and recognition aspects of the program would be set up by 2009. This may be accomplished through expansion and modification of already-established programs.

RCI-9 Incentives and Policies for Improving Appliance Efficiency, Including Appliance Standards

The CECAC unanimously recommends a policy to ensure high energy efficiency of appliances in the state. First, this policy would establish and regularly update appliance efficiency standards at the state level, thereby reducing the market cost of energy efficiency improvements by incorporating technological advances into base appliance models. Second, this policy involves the creation of state sales tax exemptions or income tax credits for purchase of products certified as ENERGY STAR (a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy), designed to promote products exceeding the energy efficiency levels mandated by minimum federal and state standards in the marketplace.

The goals of this policy include implementing the efficiency standards for appliances not covered by federal standards, as recommended by the Appliance Standards Awareness Project; doubling market penetration of ENERGY STAR appliances in purchases made in the RCI sectors, where applicable, up to 100% by 2015; and achieving 100% market penetration of ENERGY STAR appliances in purchase transactions in which state funds are involved (state purchasing contracts, state grants or loans, etc.) by 2010.