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**Cross-Cutting Issues Technical Work Group
Summary List of Pending Policy Options**

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2008–2020			
CC-1	Inventories and Forecasting	<i>Not quantified</i>					Pending
CC-2	GHG Reporting and Registry	<i>Not quantified</i>					Pending
CC-3	Statewide GHG Reduction Goals and Targets	<i>Not quantified</i>					Pending
CC-4	State Government GHG Emissions (Lead-by-Example)	<i>Not quantified</i>					Pending
CC-5	Comprehensive Local Government Climate Action Plans (Counties, Cities, etc.)	<i>Not quantified</i>					Pending
CC-6	Public Education and Outreach	<i>Not quantified</i>					Pending
CC-8	Adaptation & Vulnerability	<i>Not quantified</i>					Pending
	Sector Total After Adjusting for Overlaps	<i>Not quantified</i>					
	Reductions From Recent Actions	<i>Not quantified</i>					
	Sector Total Plus Recent Actions	<i>Not quantified</i>					

Note: The numbering used to denote the above policy options is for reference purposes only; it does not reflect prioritization among these important policy options. There is no policy option CC-7, as this catalog option was determined not to be a priority for analysis by the CECAC.

CC-1. Inventories and Forecasting

Policy Description

Greenhouse gas (GHG) emissions inventories and forecasts are essential for understanding the magnitude of all emission sources and sinks (both anthropogenic and natural), the relative contribution of various types of emission sources and sinks to total emissions, and the factors that affect trends over time. Inventories and forecasts help to inform state leaders and the public on statewide trends, opportunities for mitigating emissions or enhancing sinks, and verifying GHG reductions associated with implementation of the Climate, Energy and Commerce Advisory Committee's (CECAC) recommendations to the Governor to be included in its Action Plan.

Policy Design

The CC TWG recommends that South Carolina develop its capacity for preparing statewide emissions inventories and forecasts. Key elements are noted below.

Goals:

- Develop a periodic, consistent, and complete inventory of emission sources and sinks and an accompanying forecast of future GHG emissions in at least 5 year increments extending at least 20 years into the future. The GHG forecast should reflect projected growth as well as the implementation of scheduled mitigation options, and should, through differences year-to-year, provide a basis for documenting and illuminating trends in state GHG emissions.
- Develop a consistent protocol for preparing the inventory and forecast. This should include clear definitions of emission source sectors as well as sinks. In forecasting future GHG emissions, treatment of uncertainties should be transparent, as consistent as possible across sectors and time, and to the extent possible, reflect multiple scenarios.
- Inventory all natural and man-made emissions generated within the boundaries of the state (i.e., a production-based inventory approach) as well as emissions associated with energy imported and consumed in the state (i.e., a consumption-based inventory approach).

Timing: This function should be implemented as soon as possible, as allowed by funding. The process should be updated to reflect significant reductions or increases, beginning with every year for major point (largest Title V) sources and every three years for other sources.

Parties Involved: All GHG emission sources and sinks (both anthropogenic and natural) should be included in the inventory and forecast.

Implementation Mechanisms

The South Carolina Department of Health and Environmental Control (DHEC) already gathers information for many sectors included in the GHG inventory. The larger Title V facilities submit data annually and should include the GHG pollutants as part of that submittal. DHEC develops data for smaller facilities and for other sectors such as mobile sources on an every three year

basis. Again, the additional pollutants can be incorporated into this process. Eventually, it may be appropriate to require certain sources to report their GHG emissions.

Related Policies/Programs in Place

The DHEC has been developing emissions inventories for pollutants that contribute to the formation of the criteria air pollutants for stationary and mobile sources for several years. The pollutants include carbon monoxide (CO), volatile organic compounds (VOC), oxides of nitrogen (NO_x), sulfur dioxide (SO₂), and fine particulate matter (PM). As part of this development, DHEC also currently tracks carbon dioxide and methane from many sources. Larger Title V facilities are currently inventoried every year and smaller Title V sources and area sources are inventoried every three years.

Type(s) of GHG Reductions

The option is an enabling policy to encourage management, tracking, and ultimately reduction of GHG emissions. It does not reduce GHG emissions itself per se. Public disclosure of GHG emissions may encourage sources to reduce emissions.

Estimated GHG Savings and Costs per MtCO₂e

This option could be considered an administrative and enabling function of the Action Plan and will incur overhead costs but not directly reduce emissions per se except where these data motivate reductions for public relations by individual companies or sources.

Data Sources: Many.

Quantification Methods: Several.

Key Assumptions: Development of inventories and forecasts on an on-going basis will establish a baseline for GHG emissions and provide a monitoring tool for assessing the efficacy of recommendations included in the Action Plan. Effective emission sinks can be identified and augmented. Public participation will inform and involve citizens in the overall goal of GHG emission reductions. Forecasting will allow state officials to plan for, implement and monitor necessary additions of emission sources or sinks to the emission cycle.

Key Uncertainties

None cited.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-2. State GHG Reporting and Registry

Policy Description

Greenhouse gas (GHG) reporting reflects the measurement and reporting of GHG emissions to support tracking and management of emissions. GHG reporting can help sources identify emission reduction opportunities and reduce risks associated with possible future GHG mandates by moving “up the learning curve.” Tracking and reporting of GHG emissions can also help in the construction of periodic state GHG inventories. GHG reporting is a precursor for sources to participate in GHG reduction programs, opportunities for recognition, and a GHG emission reduction registry, as well as to secure “baseline protection” (i.e., credit for early reductions).

A GHG registry enables recording of GHG emissions reductions in a central repository with “transaction ledger” capacity to support tracking, management, and “ownership” of emission reductions; establish baseline protection; enable recognition of environmental leadership; and/or provide a mechanism for regional, multi-state, and cross-border cooperation. Properly designed registry structures also provide a foundation for possible future trading programs.

Policy Design

The CC TWG recommends that GHG sources in SC participate in a nationally recognized platform that establishes credible and consistent GHG reporting requirements, specifically *The Climate Registry*. GHG emitting entities include state and local governments; academic and non-profit institutions; businesses and regulated industries. By 2008, *The Climate Registry* will have established a framework that lays out the basic structure of a voluntary, entity-wide reporting system requiring third party verification of reported data. The Governor delegated SC DHEC to act on his behalf as a founding member of *The Climate Registry* and as member of the Board of Directors. DHEC’s leadership role will help ensure that South Carolina’s needs and priorities are addressed in the course of *The Climate Registry*’s development. To the extent that South Carolina’s needs may not be fully met by *The Climate Registry*, the State may consider developing supplemental or ancillary registry capacity or opportunities. This may be particularly true for the state’s agricultural and forestry sectors.

Goals: Implementation of a program to facilitate and encourage South Carolina GHG reporting through *The Climate Registry* as quickly as possible, with supplemental reporting protocols developed if necessary to meet South Carolina’s needs, particularly with regard to carbon sequestration and offsets.

Every effort should be made to avoid duplication of reporting requirements on emission sources. Rely on the use of data that emission sources already report under existing state and federal programs to avoid duplication of reporting burden on the sources.

Timing: This function should be implemented as soon as possible as allowed by current funding and enhanced over time.

Parties Involved: All GHG emission sources and sinks (both anthropogenic and natural) should be included.

Implementation Mechanisms

- Utilization of data that sources voluntarily report to *The Climate Registry*.
- Utilization of existing state regulations, which require all entities with an air quality permit to report emissions of regulated pollutants on an annual basis. Reporting protocols and opportunities for parties not subject to existing reporting requirements will need to be developed.
- Utilization of the existing requirement for state agencies and public school districts to report energy usage, which may be adapted, expanded or modified.

Related Policies/Programs in Place

South Carolina has joined the effort to develop a national GHG registry through *The Climate Registry*.¹ Being a charter state in this effort should help ensure that South Carolina's needs and priorities are addressed in the course of *The Climate Registry's* development, including the development of protocols for calculating and reporting emissions to *The Climate Registry*.

Agencies and school districts have to report energy usage to the Energy Office per 1992 law.

Type(s) of GHG Reductions

The option is an enabling policy to encourage management, tracking, and ultimately reduction, of GHG emissions. It does not reduce GHG emissions itself per se.

Estimated GHG Savings and Costs per MtCO₂e

The reporting and registry components of this policy option would help position South Carolina entities for participation in an emissions trading program should one develop in the future, leading to cost savings. Although establishment of a credible reporting program is essential for participating in a trading program, these elements do not reduce GHG emissions themselves.

This option could be considered an administrative and enabling function of the Action Plan and will incur overhead costs but not directly reduce emissions per se except where these data motivate reductions for public relations by individual companies or sources.

Data Sources: Many.

Quantification Methods: Several – will be designed to follow standard, comparative and accepted reporting protocols to support the exchange/sale of emission reduction credits should this become a need in South Carolina.

¹ See <http://www.theclimateregistry.org/>.

Key Uncertainties

None cited.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-3. Statewide GHG Reduction Goals and Targets

Policy Description

NOTE: All italicized text is meant to reflect only an illustrative example.

The CECAC is to recommend actions that can be taken in South Carolina to reduce the state's contribution and vulnerability to climate change. Consistent with this charge, the establishment of a statewide goal or target can provide vision and direction, a framework within which implementation of CECAC policy recommendations can proceed effectively, and a basis of comparison for regular periodic assessments of progress. GHG reduction goals or targets recommended by the CECAC should be consistent with the parallel goal of an efficient, robust South Carolina economy. In pursuit of similar climate progress, at least 16 other states have established GHG reduction goals or targets.

Policy Design

TBD – [as approved by the TWG]

Goals: *Reduce statewide GHG emissions by ____% from [Specify Year] levels by 20__ [or ____% per year from 20__ through 20__].*

Timing: *TBD – [as needed and approved by the TWG]*

Parties Involved: *TBD – [as needed and approved by the TWG]*

Economy-wide (i.e., State Government, municipalities, citizen's groups, non-governmental organizations (NGOs), commercial, industrial, and economic sectors).

Other: *TBD – [as needed and approved by the TWG]*

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as needed and approved by the TWG]

All.

Estimated GHG Savings and Costs per MtCO₂e

TBD – [as needed and approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-4. State Government GHG Emissions (Lead-by-Example)

Policy Description

State and local government is responsible for providing a multitude of services for the public that are delivered through very diverse operations and result in wide-ranging GHG emission activities. Because of this, government entities have the opportunity to model a diverse array of GHG emission reduction activities for a wide variety of clients. State and local government entities should take the lead in demonstrating that reductions in GHG emissions can be achieved through analysis of current operations, identification of significant GHG sources, and implementation of changes in technology, procedures, behavior, operations, and services provided.

State government can also encourage and/or provide incentives to reduce GHG emissions by others in a variety of ways. One of the most important is to link GHG reductions to energy expenditures, and demonstrate that reduction in one leads to reduction in the other. (If an overarching oversight committee is created, .then insert) The role of the Oversight Committee will include publicizing individual agency achievements, approaches that work, and incentives that may be available to assist.

Policy Design

The CC TWG recommends that South Carolina establish GHG reduction targets for state government operations and school districts with an emphasis on energy efficiency for both transportation and non-transportation uses. The establishment of these targets will be helpful in setting an example for non-governmental entities and will help agencies to focus on doing the necessary analysis. Reductions should be reported at the agency level. Thus, state government agencies or departments would first need to develop agency- or department-specific GHG emissions inventory data, ideally building on existing energy use reporting data. This would become the baseline data for ongoing emission reduction activities and measurement, which could be included in the annual reporting currently required by law for state entities. Agency and/or department reports would be aggregated into a summary report reflecting state GHG emissions.

Goals:

- Reduce GHG emissions from South Carolina state operations by (percent) by (year), measuring from a (year) baseline.
- All state agencies and school districts should make continual progress toward the goal regardless of their starting point. DHEC should assist the Budget and Control Board in developing a consistent design and methodology for measurement.

Timing: The state's efforts to lead-by-example in reducing its own GHG emissions should start immediately. The first annual report by agencies should be due one year from approval by the CECAC, and will necessarily reflect initial agency-level inventories. The second annual report should reflect initial progress in reducing GHG emissions as agencies begin to plan and implement operational changes.

Parties Involved: Coverage should include all operations of all state agencies, authorities, and quasi-state entities, and school districts.

Implementation Mechanisms

- The State Budget and Control Board, through the South Carolina Energy Office, is charged with collecting energy use and cost data from state agencies (including state supported institutions of higher education) and public school systems. The Energy Office also promotes development and use of alternative fuels and renewable energy. Other divisions of the Budget and Control Board are responsible for tracking fuel used by the state motor fleet and for overseeing many state agency purchasing decisions. Thus, the Budget and Control Board is in a position to promote and track state efforts to lead by example. Within the Budget and Control Board, the Energy Office will take the lead and will:
 - Continue to collect and report energy use and cost data from state agencies and school districts, as required by law;
 - Collect information about state fleet fuel use;
 - Collect information about state fleet vehicles (hybrids, flex-fuel enabled, etc.);
 - Collect information about Energy Star, Electronic Product Environmental Assessment Tool (EPEAT), and other energy conservation purchases where available;
 - Compile the information into a report on state agency and school district greenhouse gas emission reductions; and
 - Convene a committee comprising, but not limited to, representatives of Budget and Control Board divisions of Office of the State Engineer, State Fleet Management, Chief Information Officer, and Materials Management Office, as well as DHEC, to standardize and refine measurements and minimize reporting requirements for agencies and schools.
- Existing energy consumption reporting process.
- Education and outreach to agencies and employees and will allow for recognition of agency progress.
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- The Materials Management Office, a division of the Budget and Control Board, will evaluate development of state contracts for the procurement of low-GHG products.
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- All state agencies should consider GHG emissions in their evaluations of Environmental Assessments and Environmental Impact Statements and similar environmental studies.
- In the future, consider climate-neutral bonding (i.e., no net increase in GHG emissions within the bond issuing agency's geographical jurisdiction after the project becomes operational).

Related Policies/Programs in Place

The 1992 SC Energy Efficiency Act requires state agencies and public school districts to consider energy efficiency and report on energy consumption. Currently, consumption is

reported to the SC Energy Office on an annual basis. Legislation passed in 2007 requires new or substantially renovated state buildings to be certified Leadership in Energy and Environmental Design (LEED) Silver or the equivalent.

Several local governments have signed the Mayor's Climate Action Agreement or have joined Cool Cities or Cool Counties programs. These jurisdictions may already be taking action to reduce GHG emissions, and may have already embarked on their own reporting plans.

Type(s) of GHG Reductions

Steps to reduce energy demand would reduce all GHGs related with energy production. Support for renewable energy and cleaner energy will also help lower all GHGs associated with energy production. Improving existing recycling efforts would result in an associated reduction in GHG emissions from processing new materials. Transportation and fleet management could lower vehicle emissions, as would converting vehicle fleets to run on alternative fuels (e.g., biofuels).

Estimated GHG Savings and Costs per MtCO₂e

None cited.

Key Uncertainties

Substantial uncertainty surrounds future growth rates in GHG emissions, as well as the timing and scope of implementation of CECAC recommendations for specific policy options, including those associated with the state's own GHG emissions.

Additional Benefits and Costs

Energy reduction will save money, and reduced emissions will improve health, ultimately lowering healthcare costs.

Feasibility Issues

None cited.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-5. Comprehensive Local Government Climate Action Plans (Counties, Cities, etc.)

Policy Description

Several local governments in South Carolina have already taken the initiative to address climate change in their communities. Six South Carolina cities have either completed or are developing climate action plans, and over 110 towns, cities and municipal utilities have signed letters to the Presidential candidates expressing their concern over climate change in South Carolina and requesting federal action to reduce greenhouse gas (GHG) emissions. Additionally, Charleston, Rock Hill, Columbia, Greenville, and Sumter have signed the Mayors Climate Protection Agreement.² The CECAC strongly encourages all local communities in South Carolina to develop such plans. Additionally, the CECAC sees a strong role for the state government, local government, and non-governmental organizations in promoting GHG reduction initiatives by local governments and in serving as a clearinghouse for local government initiatives.

The state government, local government associations, and others could help spread the successful actions and efforts of some local jurisdictions broadly to others through several means, such as workshops and conferences, a website clearinghouse, education and outreach to public and municipal officials, recognizing local government GHG emission reduction achievements, etc.

Policy Design

The CC TWG recommends that South Carolina promote adoption of community climate action plans by all local governments to set and achieve local GHG reductions and to help achieve state GHG reduction goals. The CC TWG further recommends that these locally-adopted plans be used to stimulate equivalent GHG reduction initiatives by the private sector and non-governmental entities in each community. These initiatives can be considered economic development opportunities, as well as adaptation-oriented strategies supporting policy option CC-8. The CC TWG recommends that local climate action plans include an assessment of opportunities for reducing GHG emissions by element at the community scale, specific goals or target values and a timeline for the emissions reductions, and adoption of local strategies to adapt to climate change. The types of community scale elements to be considered would include, but are not limited to:

- Energy efficiency and conservation in municipal buildings;
- Urban planning processes (including historic preservation codes);
- Land use management activities;
- Transportation management planning;
- Management of municipal power and water utilities; and
- Waste management.

² See <http://www.seattle.gov/mayor/climate/>.

Goals: Adoption of community climate action plans by all local governments in South Carolina.

Timing: Progress in communities will vary with their particular circumstances, but given the urgency associated with climate change, every effort should be made to proceed with the development of community climate action plans as rapidly as possible.

Parties Involved: Cities, towns, counties, the Municipal Association of South Carolina, water districts, metropolitan districts, fire protection districts, and other public jurisdictions. The CECAC strongly recommends inter-jurisdictional coordination of climate action plans, since GHG reduction measures do not always respect jurisdictional boundaries.

Implementation Mechanisms

A workshop organized and held by the state government, associations of local governments, and/or individual cities who have developed climate action plans could help local governments initiate and strengthen local climate protection efforts. Development of a model plan by a consortium of state and local agencies / districts could help to facilitate implementation of this option as well as promote consistency and reduce costs to local agencies / districts. The state government should also provide technical assistance to local agencies / districts (specifically, DHEC should be given the resources to assist municipalities with emission inventories and forecasts) and help local agencies / districts secure funding (e.g., grants) to develop their climate action plans.

Related Policies/Programs in Place

Columbia is the only city that has completed a climate action plan; Charleston, Rock Hill, Greenville and Sumter are in the process of developing climate action plans.

Types(s) of GHG Reductions

All pollutants.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

Substantial uncertainty surrounds future growth rates in GHG emissions, particularly beyond 2020, as well as the timing and scope of implementation of CECAC recommendations for specific policy options.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-6. Public Education and Outreach

Policy Description

A well-articulated, meaningful, broadly implemented and sustained educational process is the means to achieve effective and durable actions to mitigate and adapt to climate change. Much of the response to climate change requires a disciplined alteration in lifestyle that shares many things in common with a healthy lifestyle. Furthermore, people have to be motivated to attempt and succeed with basic changes to life. Individual responsibility, community action, conservation and prevention are the principles upon which change of this magnitude is accomplished. It is no less than a shift in culture. The effort will benefit all aspects of society.

The educational process must define the basic aspects of climate change, including the evidence for cause and effect issues; it must specify the significance of climate change for the target audience and each individual; it must clarify and emphasize the role of the target audience and each of its members for a plan of action to mitigate and adapt to climate change; it must relate the necessary changes to all aspects of people's lives and their basic beliefs and values, e.g., health, environment, economic viability.

Public education and outreach programs must build upon existing efforts and institutions, avoid unnecessary duplication and promote best practices. The sustained success of policy actions proposed by CECAC, as well as those that might evolve in the future depends upon lifestyle changes resulting from education, experience and practice.

Policy Design

South Carolina should adopt and implement a Public Education and Outreach Plan for Climate Change and Public Health. The plan must address the recommendations of the Climate, Energy and Commerce Advisory Committee as approved by the state; it should be based upon the philosophy and principles of individual responsibility, community action, conservation and prevention; it should be designed to accommodate the needs and conditions of target audiences; it should include consideration of the specific recommendations relating to each target audience as listed in Attachment A; it should establish lines of communication with other states to keep abreast of best practices and to create efficiencies. A traditional United Way campaign may provide a good model for this effort.

The target audiences include

- The State's own actions serve as examples for employees and the public. Implement educational programs for employees that include feedback and reinforcement. Designate key individuals to sustain the effort and report the results. Authorize and organize outreach to other organizations and groups.
- Policymakers (legislators, executive branch, congressional delegation, agencies, regulators).

- **Future Generations**—Integrate climate change and healthy lifestyle into educational curricula, post-secondary degree programs and professional licensing. Emphasize the common basis and goals of response to climate change with protecting the environment and achieving optimum health for all people. Consider creating the South Carolina Health Corps as outlined in Attachment B.
- **Community Leaders and Community-Based Organizations** (e.g., institutions, municipalities, service clubs, social & affinity groups, NGOs and others)—Recognize leadership, share success stories and role models; expand involvement and participation within civic society.
- **General public**—Increase awareness and engage in actions to mitigate and adapt to climate change in personal and professional lives.
- **Industrial and Economic Sectors**—Establish sector-specific education and outreach for climate change and related issues. Create a clearinghouse to facilitate investment in climate change and related business opportunities.
- **Federal Agencies**—The state should establish clear lines of communication and active engagement with federal agencies to a) ensure they are knowledgeable and respectful of South Carolina interests, b) establish mechanisms for ongoing communication with key federal programs to leverage efficient use of resources and c) secure funding to develop and implement programs to address climate change in the state.

The State should appoint a statewide coordinator and a committee for public education and outreach to address climate change and related issues. The coordinator should be a recognized educator and appointments to the committee should be credible with each of the target audiences. The coordinator with the direction and approval of the committee will draft and implement the detailed plan, appoint coordinators for each of the target audiences, present annual reports to the Governor and legislature, and review and update the plan on a periodic basis. The coordinators for each of the target audiences should be credible with that group and have the ability to recruit and energize statewide networks of volunteers within each audience.

The State Legislature should provide operating funding for basic operations of the committee and the coordinators. Funding should be structured in such a way as to take maximum advantage of established mechanisms for education of each of the audiences. Arrangements can be made on behalf of the committee with one of the state institutions of higher education or the Commission for Higher Education (CHE) for financial management of grants, awards and private funding of specific programs.

Goals:

To inform the citizens of South Carolina about climate change and their critical role in actions to mitigate and adapt to climate change.

To motivate citizens of South Carolina to actively participate in the process of mitigation and adaptation to climate change.

To stimulate citizens of South Carolina to join together to protect the environment and the health of present and future generations by helping to prevent uncontrolled climate change.

Timing: As soon as possible.

Parties Involved: All agencies and organizations throughout South Carolina. Initiate the process with key individuals and groups within each of the target audiences.

Implementation Mechanisms

- Recruit coordinators
- Identify key individuals and groups within target audiences
- Refine the message in collaboration with these individuals and groups
- Facilitate the “spread” of the message

Related Policies/Programs in Place

Utilize established educational mechanisms within each organization, and audience, where they have proven to be effective. It is expected most individuals in the state will receive input from more than one source.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

Education and outreach on this scale is dependent upon recruitment of effective coordinators and key individuals within organizations. Managing the relationships with a variety of organizations and audiences presents a challenge.

Additional Benefits and Costs

Emphasis upon the climate, the environment, conservation, prevention and lifestyles will have benefits for public health, health care costs and energy costs. Also, through improved understanding of climate change and its potential social, economic and environmental impacts, South Carolina citizens may have greater motivation to reduce GHG emissions at the individual level. Additional personnel will be required to mount an effective education and outreach campaign.

Feasibility Issues

Success will depend upon the attention and the energy input from the leadership throughout South Carolina.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

CC-8. Adaptation and Vulnerability

Policy Description

Due to the build-up of greenhouse gasses (GHGs) in the atmosphere that has already occurred, South Carolina will experience some effects of climate change for years to come, even if immediate actions are taken to reduce GHG emissions. Climate impacts will likely affect South Carolina's people, land, economy, and quality of life in many ways. Thus, it is essential that the state develop a plan to adapt to the projected impacts of climate change while mitigation efforts to lower atmospheric concentrations are underway.

Policy Design

While taking action to reduce GHG emissions in South Carolina, the state should develop, adopt, and implement a state Climate Change Adaptation Plan that includes identification of (a) potential short-term, mid-term, and long-term impacts of climate change scenarios likely to affect the state, and (b) implementation mechanisms for addressing these impacts. The state should empanel a "Blue Ribbon" Commission on Adaptation to Climate Change to develop a state Climate Change Adaptation Plan within one year of establishment of the Commission. The Commission should involve and coordinate with all appropriate state and local agencies, organizations, and institutions (e.g., universities) to ensure that all potential impacts are identified in the plan. The Commission should also enlist the expertise of all appropriate state and local agencies, organizations, and institutions in developing and implementing measures for mitigating these impacts. At a minimum, the Climate Change Adaptation Plan should include the following key elements:

- Comprehensive identification of potential short-term, mid-term, and long-term impacts associated with climate change in South Carolina; including, but not limited to:

Intensification of Tropical Storms	Increased Pollen/Mold Spores
Accelerated Sea Level Rise	Increases in Heat-Related Illness
Increased Flooding	Forestry
Saltwater Intrusion into Coastal Aquifers/Rivers	Agriculture
Increases in Ground-Level Ozone	Insurance Industry
Drought	Tourism Industries
Loss of Homes and Community Displacement	Wildlife and Fishing Impacts
Insect vectors	
- Recommended steps to respond to the identified impacts so as to minimize risk in South Carolina to humans, natural and economic systems, water resources, temperature-sensitive populations and systems, energy systems, transportation systems, communications systems, vital infrastructure and public facilities, and natural lands (such as coastal areas, wetlands, forests, and farmland) and all other identified and affected sectors or areas of concern throughout the state.
- Coordination of response efforts through the appropriate state, local, and federal agencies; organizations; or other entities or initiatives.

- Characterization of the potential risks and costs of inaction; characterization of the potential costs, benefits, and co-benefits associated with specific policy and program actions; and establishment of time- and program-based goals.
- Regular review and update of the Plan on a periodic basis (at least every 5-10 years or as needed based on increasing understanding of impacts) to expand or refine the Plan as necessary, to improve implementation of the Plan, and to incorporate new information as it becomes available.

The State Legislature should provide funding to support development and on-going revision to the state Climate Change Adaptation Plan including, but not limited to, funds to support the analyses needed to guide and inform the development and implementation of the Plan and to cover expenses incurred by the Commission and Commission members.

The goals, timing, and parties involved in the Commission on Adaptation to Climate Change should include, but not necessarily be limited to the following:

Goals: Develop a comprehensive state Climate Change Adaptation Plan identifying opportunities to address adaptation issues and risks and recommending tangible, implementable measures to ameliorate these issues and risks to South Carolina citizens. Prioritize recommendations in the adaptation plan based on the certainty and severity of adverse impacts to citizens, ecosystems and local economies. Development of the plan should: (a) involve all affected agencies and entities at all levels of government, including major related planning processes, (b) involve all affected sectors and interests; and (c) provide for periodic review and update concerning adaptation risks, responses, and opportunities in the state.

Timing: The Commission should be established as soon as possible. The CECAC should recommend the initial membership of this Commission for the Governor's approval. The development of a state Climate Change Adaptation Plan should be completed within one year of establishing the Commission. Public education and outreach efforts regarding adaptation should commence immediately. "Low-hanging fruit" opportunities should be addressed as rapidly as possible, and pro-active adaptation initiatives should commence within the next 2-3 years.

Parties Involved: The Blue Ribbon Commission on Adaptation to Climate Change should involve and coordinate with all appropriate state and local agencies, organizations, institutions (e.g., universities), and other stakeholders to ensure that all potential impacts are identified and to ensure the successful development and implementation of the plan.

Implementation Mechanisms

- Review available reports, state and national adaptation plans;
- Create an inventory/catalogue of available adaptation policy options;
- Prioritize and implement selected policy options through the development of a State Climate Change Adaptation Plan;
- Develop and implement a public education and outreach plan related to vulnerabilities and adaptation needs, and coordinated with SC CECAC outreach and education activities.

- Establish and maintain a state-level, web-based clearinghouse for vulnerability and adaptation information and activities.

Related Policies/Programs in Place

- State and local emergency management response plans are in place which address short-term responses to natural disasters (e.g., violent storms). To the extent possible, measures recommended in the Climate Change Adaptation Plan should assist and complement these existing state and local efforts.
- The South Carolina DHEC, Office of Ocean and Coastal Resource Management (OCRM) is renewing its focus on shoreline management in response to longstanding issues with coastal erosion, storms, and sea level rise; and in light of projections that each of these hazards will intensify in the coming decades due to climate change. In accordance with the agency's 5-yr strategy (published in 2007), a Shoreline Change Advisory Committee made up of over 20 scientists, managers, and stakeholders is being formed to identify research needs and policy options. Proposed measures addressing sea level rise, coastal erosion and storms in the Climate Change Adaptation Plan should refer to and build on this existing effort, as well as any future research and policy recommendations generated by DHEC advisory panels on shoreline change.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MtCO₂e

Potentially significant, but difficult to quantify.

Key Uncertainties

The magnitude of the risks is subject to several types of uncertainties. Sea level rise is already occurring along the South Carolina coast (approximately 8 inches over the past century, plus approximately 4 inches of land subsidence according to NOAA tide gauges), and will continue to result in shoreline changes and the inundation of low-lying areas. IPCC and independent scientists anticipate a significant acceleration of this rate of global average sea level rise, with additional uncertainty regarding the role of increasing ice flows and other potential feedback loops. Other climate impacts are expected to vary regionally. Many scientists expect drought, storm events, flooding, fire risks, and air quality issues to intensify in the southeastern region, but the magnitude of these increases remains uncertain. Population and investment, particularly along the coast, are expected to continue, although the rates of each are less certain. Water sharing arrangements with neighboring states are unresolved.

Additional Benefits and Costs

Innovative early adaptation responses to climate change impacts can be designed to

- Help prevent and/or reduce costs associated with future catastrophic events and long-term climate change impacts;

- Direct future public and private investment more effectively; and
- Ensure preparedness to help avoid extensive cost implications to state, county, city and federal agencies.
- Early preparedness can raise public awareness and encourage further GHG mitigation efforts, which can drive economic opportunities for alternative fuels, agriculture, forestry, and advanced technologies.
- Through improved understanding of social, economic, and environmental vulnerabilities, South Carolina citizens may have greater motivation to reduce GHG emissions at the individual level.

Feasibility Issues

Success will depend on sustained political and financial support from the state.

Status of Group Approval

Pending – [until CECAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

Attachment A

Reference Materials for CC-6 (Public Education and Outreach)

Option No.	GHG Reduction Policy Option	Notes
6.	PUBLIC EDUCATION AND OUTREACH	
6.1	State Government Education and Outreach Actions The State should lead by example (i.e., walk the talk) regarding education and outreach. Explore opportunities with other Southeastern States to coordinate education and outreach actions.	
6.1.1.	Establish an education & outreach committee to educate audiences regarding climate plan policies and to oversee those relating to education.	<ul style="list-style-type: none"> • Adequate staffing will be important • Annual reports should be publicly available
6.1.2.	Include state public education and higher education officials in the committee established above	<ul style="list-style-type: none"> • They will provide an important ‘two-way’ street
6.1.3.	Create and maintain one or more “outreach coordinator” positions specifically tasked with climate outreach and coordination among state agencies and outside entities.	<ul style="list-style-type: none"> • Shoreline Coastal Initiative • One possible approach: A “Climate Extension Specialist” as being pursued by SC, NC, and AZ.
6.1.4.	Educate state employees across-the-board, and assign “point persons” to do so on an on-going basis.	<ul style="list-style-type: none"> • Including press liaisons • Provide regular press releases or updates on progress with the Governor’s climate action plan
6.1.5.	Institute annual Governor’s Awards to recognize climate action of several types/categories.	<ul style="list-style-type: none"> • For students, awards should be monetary and well publicized • For community leaders, awards might include material support
6.1.6.	<p>Add GHG to Air Awareness efforts *</p> <p>The SC State Climatology Office (SCO) provides some presentations on the science of climate change and its impacts. There is a temporary employee until December that is educated in the science of climate change.</p> <p>Properly funding, the SC SCO could aid in this outreach. It already does some, but demand is greater than the available staff.</p>	<ul style="list-style-type: none"> • State Air Program: Incorporating climate change material in outreach and presentations. Bureau of Air Quality’s (BAQ) Education and Outreach section has responded to several requests from teachers for classroom visits addressing climate change, and will be addressing similar requests that have been received from community groups.

Attachment A (Continued)

Option No.	GHG Reduction Policy Option	Notes
6.2	Target Audience: Policymakers (legislators, regulators, executive branch, agencies) Implementation of climate actions hinges on policymakers' approval.	
6.2.1.	Educate policy makers on CECAC policy recommendations, climate change in general, scientific and technological advances, and progress toward state goals through regular briefings in order to promote acceptance and implementation of mitigation and adaptation policies.	<ul style="list-style-type: none"> • Need an individual that is educated in the science of climate change.
6.2.2.	Provide continuing outreach & assistance to Governor's office, legislature, and implementing agencies on a regular basis.	<ul style="list-style-type: none"> • Perhaps a semi-annual or quarterly newsletter would help
6.3	Target Audience: Future Generations Create a "South Carolina Health Corps." Integrate climate change into educational curricula, post-secondary degree programs, and professional licensing to address overlapping goals and relationship of public health and environmental issues.	
6.3.1.	Create a "South Carolina Health Corps	<ul style="list-style-type: none"> • See Attachment B
6.3.2.	Add climate change to public education performance standards for science and social studies; identify (a) gaps in climate change education, and (b) specific curricula to fill any gaps.	<ul style="list-style-type: none"> • Somebody has to be the initial teacher of the science of climate change.
6.3.3.	Organize groups of educators to identify, assemble, and employ climate change curricula appropriate to age groups	<ul style="list-style-type: none"> •
6.3.4.	Integrate "best practices" into public school design & construction to educate students (and parents) first-hand in their communities & colleges (i.e., walk the talk).	<ul style="list-style-type: none"> • Develop displays to point out efficiency improvements to students and parents
6.3.5.	Integrate climate change and sustainability into core college curricula.	<ul style="list-style-type: none"> •
6.3.6.	Promote research into climate change and solutions at state universities; develop university "Centers of Excellence" on climate issues, new approaches, and technologies.	<ul style="list-style-type: none"> •
6.3.7.	Integrate climate change into existing and/or new educational competition programs, e.g. science fairs, etc.	<ul style="list-style-type: none"> •
6.3.8.	Work with science centers, zoos, and museums to include a climate science focus appropriate to their core mission	<ul style="list-style-type: none"> • An important area for an "out-reach coordinator"
6.3.9.	Introduce core competencies on climate change into professional licensing programs (e.g., energy efficiency in building design and construction, use of recycled materials, etc.)	<ul style="list-style-type: none"> •

Attachment A (Continued)

Option No.	GHG Reduction Policy Option	Notes
6.4	Target Audience: Community Leaders & Community-Based Organizations (e.g., institutions, municipalities, service clubs, social & affinity groups, NGOs, etc.) Recognize leadership; share success stories & role models; expand involvement and participation within civic society.	
6.4.1.	Educate community planning and zoning officials about climate change, impacts, and opportunities.	<ul style="list-style-type: none"> • An important area for an “out-reach coordinator”
6.4.2.	Identify individual community leaders who are acting effectively on climate change; showcase and share their successes.	<ul style="list-style-type: none"> • Some of them could form a “speakers’ Bureau” • Links to them and their organizations could be included on the web clearinghouse
6.4.3.	Identify individual community leaders who are not yet acting on climate change and make a special effort to educate and encourage them to act.	<ul style="list-style-type: none"> •
6.4.4.	Engage associations and attend their periodic meetings to reach out on climate change, impacts, sector-specific mitigation actions, and adaptation opportunities.	<ul style="list-style-type: none"> •
6.4.5.	Identify, assist, and leverage community-based organizations that have expertise or interest in climate-related issues	<ul style="list-style-type: none"> • Local climate study groups • Environmental and outdoors groups, sportsmen and women • Service groups
6.4.6.	Work with community-based organizations to identify & build upon climate issues related to their core mission	<ul style="list-style-type: none"> • Churches
6.4.7.	Develop & coordinate a network of community-based organizations acting on climate change so they can link up, organize joint events, etc.	<ul style="list-style-type: none"> • Provide assistance in organizing and selecting a Community Outreach Coordinator • Provide assistance in getting them online
6.4.8.	Support and facilitate outreach and education within community-based organization regarding climate change issues and actions	<ul style="list-style-type: none"> • Provide assistance and content with local websites, newsletters, etc • Coach and assist Community Outreach Coordinators
6.4.9.	Develop and provide concrete information on co-benefits to entities to use in boosting their climate efforts	<ul style="list-style-type: none"> •
6.4.10.	Organize & host events that focus on leading by example, sharing “how-to,” illuminating financial risks and opportunities, co-benefits, etc.	<ul style="list-style-type: none"> •
6.4.11.	Encourage municipal leaders to join ICLEI’s ³ Cities for Climate Protection program and/or the Mayors Climate Protection Agreement ⁴	<ul style="list-style-type: none"> •
6.4.12.	Help communities statewide implement programs.	<ul style="list-style-type: none"> •

³ ICLEI is the International Council for Local Environmental Initiatives. See www.iclei.org.

⁴ See <http://www.ci.seattle.wa.us/mayor/climate/>.

Attachment A (Continued)

Option No.	GHG Reduction Policy Option	Notes
6.5	Target Audience: General Public Increase awareness and engage in climate actions in personal and professional lives.	
6.5.1.	Educate broadcasters, reporters, editorial boards, etc. about climate change, the risks it imposes, and solutions.	<ul style="list-style-type: none"> • An important area for an “out-reach coordinator”
6.5.2.	Work with state broadcasters and print media associations to develop & run climate change public service announcements.	<ul style="list-style-type: none"> •
6.5.3.	Conduct public polling to benchmark strength and depth of climate understanding.	<ul style="list-style-type: none"> •
6.5.4.	Keep a high profile on climate change issues and actions through regular public mention by Governor and other public leaders	<ul style="list-style-type: none"> •
6.5.5.	Develop and use a state-based “brand” on climate awareness and action	<ul style="list-style-type: none"> •
6.5.6.	Develop & maintain a state climate change website for the public including a clearinghouse of climate change information and resources.	<ul style="list-style-type: none"> • See, for example, FL, WA, and CT websites • This should serve as a “hub” interconnecting and linking to grassroots and state efforts • All annual reports on state efforts, updates on climate change projections, etc. should be available via this portal • Link to SC SCO website where there is going to be some current research on climate change in South Carolina.
6.5.7.	Work with existing company outreach efforts to customers to enhance awareness of climate change issues & opportunities	<ul style="list-style-type: none"> • Provide information on mitigation options for “bill stuffers” and retail advertising • Require GHG accounting for product category
6.5.8.	Work to educate consumers – and home designers, builders, and contractors – to ensure that they are aware of the different choices they have for space heating and cooling (e.g., evaporative vs. refrigerative) and the impacts of those choices.	<ul style="list-style-type: none"> • Every sector should have information sheets available that provide an accounting of GHG emissions

Attachment A (Continued)

Option No.	GHG Reduction Policy Option	Notes
6.5.9.	Develop a statewide voluntary program to structure and assist individuals in undertaking actions to reduce GHG emissions.	<ul style="list-style-type: none"> • An important area for an “out-reach coordinator”
6.5.10.	Once progress has been made in setting up state and local committees, send out a mailing to all state residents and businesses about the climate change crisis and the ways they help to mitigate emissions and move toward a more sustainable, healthy society	<ul style="list-style-type: none"> • Contact information for all state and local efforts should be included
6.6	Target Audience: Industrial & Economic Sectors Sector-specific climate change education and outreach. Create a Clearinghouse to Facilitate Investment in Climate-Related Business Opportunities	
6.6.1.	Residential, Commercial, & Industrial	<ul style="list-style-type: none"> •
6.6.2.	Transportation & Land Use *	<ul style="list-style-type: none"> • Promote clean fuel technologies: <ul style="list-style-type: none"> – Palmetto State Clean fuels coalition. – Aggressively pursuing hydrogen technology.
6.6.3.	Energy Supply and Use	<ul style="list-style-type: none"> • Do public service announcements to education the public about demand-side management (DSM). • Include environmental disclosure in monthly electricity bills. • Help municipal utilities move to greater demand-side emphasis rather than supply-side.
6.6.4.	Agriculture & Forestry	<ul style="list-style-type: none"> • Promote local farm produce: <ul style="list-style-type: none"> – Various farmers markets throughout state. – Whole Foods in Greenville and Charleston offering loans to enhance local production.

Attachment A (Continued)

Option No.	GHG Reduction Policy Option	Notes
6.6.5.	Implement a state program of voluntary business actions to reduce GHGs.	•
6.6.6.	Institute a “business incubator” program to attract and support new business development relating to the new energy economy.	•
6.6.7.	Audiences outside South Carolina too	•
6.7	<p>Target Audience: Federal Agencies The State should establish clear lines of communication and active engagement with federal agencies to (1) ensure that they are knowledgeable and respectful of the State’s interests, (2) establish mechanisms for ongoing communication with key federal programs to leverage efficient use of resources, and (3) secure funding to develop and implement programs to address climate change in South Carolina.</p>	

Attachment B

South Carolina Health Corps A Higher Education Concept for Health, Environment and Public Service

(Prepared by Marcus Newberry)

Economic well-being, education, health, physical security and the environment rank consistently among the top concerns of the public. Each field is important to the future of society and human survival. Frequently discussed but often not fully appreciated is the linkage and leverage between the fields, which creates additional potential for efficiency, creativity and productivity. Society and government have not been adept at taking advantage of the linkages to achieve leverage and maximum benefit.

The debt and dependence between fields of endeavor is often under-appreciated. In-depth knowledge and specialization can be credited with significant progress within a specific field but they create greater difficulty for cross-fertilization and cooperation. There is much to be gained from a generalist overview to take advantage of the linkage and leverage between fields.

To the generalist, all the fields are essential and have equal importance for society to function and prosper. However, the priority and emphasis between the fields will vary depending upon the circumstances and the goals at the time.

The following are examples of relationships and dependencies:

- A clean environment is necessary for optimum health.
- Protecting the environment is a function of education.
- Education is necessary to achieve and maintain optimum health status.
- Optimum health status, education and the environment form the foundation that supports economic well-being and physical security.
- Healthy lifestyle is based upon the principles of prevention and conservation.
- Protecting the environment is based upon the principles of prevention and conservation.
- Education, health and the environment cannot be protected without physical security and economic well-being.
- Human behavior is the common element and the greatest single force acting within and upon all the fields.

Society depicted as a sphere has an outer shell composed of physical security and economic well-being and throughout the sphere is a matrix that is the environment. At the center of the sphere radiating out in all directions are health and education. If any one of these fails the integrity of the sphere is destroyed.

No activity on earth exceeds the complexity of human behavior, nor is anything more difficult to understand. Human behavior has been studied extensively but it defies easy interpretation. The

number of factors capable of determining or influencing behavior is large, and the potential for their interaction is even higher.

Human behavior is the greatest force on earth for influence upon the planet and all life that exists on it. The magnitude and scope of human behavior over time determines the direction and outcome of existence on earth, natural disasters notwithstanding.

Belief systems are the practical basis for human behavior. Human behavior cannot change without change in the belief system, and change in behavior cannot be sustained unless it is based upon a belief system.

Changes in belief systems and behavior do not come easily or quickly. People know a few things and they believe in many things. Belief systems commonly exceed the basis of fact. Dysfunctional behavior and social processes can continue for prolonged periods contrary to overwhelming facts.

The vision for the South Carolina Health Corps is to provide substantive educational content and practical experience to all higher education students regarding personal and community health, healthy lifestyles, health promotion, disease prevention, conservation of the environment and protection of the climate, and to prepare them to transmit this information and experience to vulnerable populations.

The purpose is to create a cadre of healthy citizens who will be future leaders of South Carolina and instill in them a framework and belief system for public service. The concept is based upon the following assumptions:

- Optimum health is important for a productive life;
- Health is a function of education and behavior;
- Prevention and conservation are principles in-common to health, protection of the environment and climate, economic well-being, and physical security;
- Nothing is ever learned so well as to serve as an example and teach it to others;
- Public service is crucial for good citizenship and building belief systems.

Phase I

The process includes development of a web-based instruction program available for academic credit at each institution of higher education in the state. The program development will be a collaborative effort of faculty throughout the state and include flexibility for faculty input during implementation at each institution. It will include on-line discussion groups, individual evaluation with feedback and seminars on campus.

Program content will be based upon the following disciplines:

- Physiology—metabolism, physical fitness
- Biochemistry—metabolism, nutrition, diets

- Psychology—motivation and positive outlook, cognitive behavior therapy, team building, coaching
- Communication—social marketing
- Sociology
- Economics
- Climate research
- Environment
- Forestry

Each student successfully completing the course will be inducted into the South Carolina Health (and Environment) Corps. The Health Corps will be organized to advocate and teach the principles of prevention and conservation for healthy lifestyles and protection of the environment and climate to students in grades 6 through 12, and recruit these students into the Corps.

Phase II

Opportunities and experience will be created for members of the Health Corps, such as physical training at Fort Jackson and Parris Island, wilderness outings and hiking well-known trails. Internships, fellowships and scholarships for graduate work in public health and the environment will be developed.