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**Residential, Commercial, and Industrial Technical Work Group**

**Summary List of Recommended Priority Policy Options for Analysis**

Option No.	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of Support
		2012	2020	Total 2008–2020			
RCI -1	Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity (including expansion of same) (Residential, Commercial, and Industrial)	<i>Not Yet Quantified</i>					Pending
RCI -2	Demand-Side Management (DSM) Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil	<i>Not Yet Quantified</i>					Pending
RCI -3	Incentives and Regulatory Reform (including net-metering) to Promote Implementation of Renewable Energy Systems, Including PV and solar thermal (Residential, Commercial, and Industrial)	<i>Not Yet Quantified</i>					Pending
RCI -4	Energy Management Training/Training of Building Operators	<i>Not Yet Quantified</i>					Pending
RCI -5	Incentives, Resources, and Regulatory Reform (including net-metering) to Promote Energy Recycling Including Combined Heat and Power	<i>Not Yet Quantified</i>					Pending
RCI -6	Incentives and policies for improving building and appliance efficiency, including building energy codes and appliance standards*	<i>Not Yet Quantified</i>					Pending
RCI -7	Improved Design and Construction in new and existing state and local government buildings, "Government Lead-by-example"	<i>Not Yet Quantified</i>					Pending
RCI -8	Post-secondary College and University Programs	<i>Not Yet Quantified</i>					Pending
RCI -9	Green Power Purchasing for Consumers	<i>Not Yet Quantified</i>					Pending
RCI -10	Participation in Voluntary Industry-Government Partnerships (including incentives)	<i>Not Yet Quantified</i>					Pending
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

Notes: the RCI TWG recommends that RCI-6 be split into two separate policy options: 1) incentives and policies for improving building efficiency, including building energy codes and 2) Incentives and policies for improving appliance efficiency, including appliance standards.

The numbering used to denote the above policy options is for reference purposes only; it does not reflect prioritization among these important policy options. Numbering has been changed to reflect CECAC modifications (recommended priority policy options RCI-6 and RCI-8 were moved to the ES and CC TWGs, respectively, and the remaining policies moved up in number).

## **RCI-1. Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity (including expansion of same) (Residential, Commercial, and Industrial)**

### **Policy Description**

This option focuses on increasing investment in electricity demand-side management programs through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals. These options are typically termed DSM activities, and may be designed to work in tandem with other strategies recommended by the CECAC that can also encourage efficiency gains.

National studies suggest that South Carolina has substantial potential to improve the efficiency of its energy use, with a 1% annual target being a reasonable and achievable target in the near term. However, South Carolina's efforts to date offer substantial room for improvement from 30<sup>th</sup> in the country in a 2006 ranking of state efforts.<sup>1</sup> Among states recognized as having strong performance, the Vermont Public Service Board has contracted for over 1% energy efficiency per year from 2006 through 2008. Xcel Energy in Colorado has agreed to achieve savings of 1.4% in 2013, which would offset 55% of forecast annual load growth.<sup>2</sup> Like many other states and utilities, Xcel Energy's commitment matches the benchmark set out in the National Action Plan for Energy Efficiency: "Well-designed energy efficiency programs are delivering annual energy savings on the order of 1 percent of electricity and natural gas sales."<sup>3</sup>

Although there is no statewide energy efficiency market potential study for South Carolina, two recent studies have been conducted by South Carolina utilities on this topic. One evaluated the market potential for energy efficiency in Duke Energy's South Carolina service territory.<sup>4</sup> The draft study identifies a suite of demand-side management programs and estimates an associated economic potential of 3600 GWh of energy savings, or a 16% demand decrease, for this 14 county region in South Carolina's upstate by 2026. Another study estimates the market potential in the service territories of the 20 state electric cooperatives represented by Central Electric Cooperative, Inc.<sup>5</sup> The findings pointed to a 20% demand decrease or 4000 GWh of energy

<sup>1</sup> Eldridge, M. et al. (2007). The State Energy Efficiency Scorecard for 2006. American Council for an Energy Efficient Economy, Report Number E075.

<sup>2</sup> Dan York and Martin Kushler. (2006). A Nationwide Assessment of Utility Sector Energy Efficiency Spending, Savings, and Integration with Utility System Resource Acquisition. American Council for An Energy-Efficient Economy.

<sup>3</sup> Diane Munns and Jim Rogers. (2006). National Action Plan for Energy Efficiency, US Environmental Protection Agency and US Department of Energy, pp. ES-4.

<sup>4</sup> Forefront Economics LLC et. al (2007). Duke Energy Carolinas DSM Action Plan: South Carolina Draft Report. Report prepared for Duke Energy Carolinas.

<sup>5</sup> GDS Associates, Inc. (2007). Electric Energy Efficiency Potential Study for Central Electric Cooperative, Inc. Retrieved 10/1/07 from <http://www.ecsc.org/newsroom/EfficiencyStudy.ppt>

savings over a ten year timeframe. These numbers are consistent with findings from other studies in the southeast.<sup>6</sup>

Considering that South Carolina has “low hanging fruit” compared to states with well-established energy efficiency programs, the indication that as much as 2% per year demand reduction due to energy efficiency is possible does not seem unreasonable. Therefore, South Carolina may be able to achieve a higher level of energy efficiency results than 1% per year.

This policy would take a two-pronged approach to increasing DSM in the state: implementing specific goals and incentives for household (residential) DSM, and consumer outreach on the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities. In order 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 above. It could also go further and add a value for CO<sub>2</sub> emissions to cost-effectiveness evaluations for energy efficiency. South Carolina also may need to clarify how municipal, cooperative, and state agency utilities will be held accountable for expected results.

### Policy Design

**Goals:** Achieve a 1% per year reduction in electricity use by 2015, increasing to 1.5% by 2020.

**Timing:** Legislative and utility commission action in 2008, initial target of 0.25% in 2009 gradually increasing to 1% in 2015 and then to 1.5% in 2020.

**Parties Involved:** All electric utilities (public and private), regulators, and customers (all sectors)

**Other:** The TWG recommends that this policy implement specific goals and incentives for household (residential) DSM, as well as an educational awareness campaign showing the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities.

### Related Policies/Programs in Place

Energy Efficiency Summit – planned for April 2007 – sponsored by Duke Power, Energy Office, DHEC and others

Energy Office tracks utility programs.

South Carolina currently has enabling legislation in place for performance contracting as a result of the South Carolina Energy Conservation and Efficiency Act 1992. A growing number of South Carolina federal, state and local government agencies as well as private industry have

<sup>6</sup> Beck et. al. (2001). Powering the South: A Clean and Affordable Energy Plan for the Southern United States. Washington, DC: Renewable Energy Policy Project.; La Capra Associates, Inc. et. al. (2006). Analysis of a Renewable Portfolio Standard for North Carolina, Prepared for the North Carolina Utilities Commission; Tiller, J. (2007). Energy Efficiency Opportunities for North Carolina Buildings and Industrial Facilities. Boone: Appalachian State University; Hedman, B. (2006).

chosen to evaluate potential energy savings project measures within their facilities and pursue energy savings performance contracting as a preferred arrangement to fund these projects. Some of the agencies, institutions and industrial entities in South Carolina that pursued and implemented projects using performance contracting include Winthrop University, Veterans Integrated Network System – VISN 7 VA Hospitals, Fort Jackson, BMW, and USC. Entities that are currently developing DSM projects using performance contracting include The Citadel, the City of Columbia, Columbia Housing Authority, and Medical University of South Carolina.

## RCI-2. Demand-Side Management (DSM) Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil

### Policy Description

This option focuses on increasing investment in demand-side management programs for natural gas, propane, fuel oil, biomass and other combustion fuels. The goals may be accomplished through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals.

These options are typically termed DSM activities, and may be designed to work in tandem with other strategies recommended by the CECAC that can also encourage efficiency gains. In particular, this policy should be designed to complement option RCI-1. In particular, this policy option also considers efficiency gains to be achieved through fuel neutrality.

Fuel neutrality refers to encouraging fuel-switching where it results in reduction of greenhouse gas emissions, lower energy use (measured in BTUs), economic savings or by some other metric. Common examples include switching from electric resistance hot water heaters to on-demand gas hot water heaters for residential use, or switching from diesel-powered airport service equipment to electric or hybrid equipment. It is also worth noting that some reported natural gas and other fuel use is used for on-site generation at industrial and some large commercial facilities; therefore, energy efficiency measures normally associated with electricity use will be of benefit to reducing non-electric fuel use.

National and state-level studies for non-electric sector energy efficiency provide incomplete guidance for setting an appropriate goal for energy efficiency. The most commonly mentioned benchmarks are similar to the one set out in the National Action Plan for Energy Efficiency: “Well-designed energy efficiency programs are delivering annual energy savings on the order of 1 percent of electricity and natural gas sales.”<sup>7</sup>

In order 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 above. It could also go further and add a value for CO<sub>2</sub> emissions to cost-effectiveness evaluations for energy efficiency. South Carolina also may need to clarify how municipal, cooperative, and state agency utilities will be held accountable for expected results.

This policy would take a two-pronged approach to increasing DSM in the state: implementing specific goals and incentives for household (residential) DSM, and consumer outreach on the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities.

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<sup>7</sup> Diane Munns and Jim Rogers. (2006). National Action Plan for Energy Efficiency, US Environmental Protection Agency and US Department of Energy, pp. ES-4.

## Policy Design

**Goals:** Achieve a 1% per year reduction in natural gas use by 2015, sustained through 2020. Similar goals should be set for other fuels, although they may need to be modified by the utility commission due to the smaller number of affected parties who may have special circumstances.

**Timing:** Legislative and utility commission action in 2008, initial target of 0.25% in 2009 gradually increasing to 1% in 2015 and then sustained through 2020.

**Parties Involved:** All natural gas utilities (public and private) and customers (all sectors), industrial facilities, large commercial facilities, and regulators.

**Other:** The TWG recommends that this policy implement specific goals and incentives for household (residential) DSM, as well as an educational awareness campaign showing the value inherent in performance contracting and energy management programs for commercial, industrial, and institutional entities.

## Related Policies/Programs in Place

See RCI-1.

### **RCI-3. Incentives and Regulatory Reform (including net-metering) to Promote Implementation of Renewable Energy Systems, Including PV and Solar Thermal (Residential, Commercial, and Industrial)**

#### **Policy Description**

This policy promotes the use of renewable energy generation sited at residences and commercial and industrial facilities (renewable distributed generation). This policy would encourage consumers to switch from using fossil fuels to using renewable fuels in applications such as water, process, and space heating. Consumers would also be encouraged to supply new energy services using fuels that produce low or no GHG emissions. Because distributed generation provides energy closer to demand, it reduces or avoids electricity transmission and distribution losses, thus reducing greenhouse gas emissions in addition to the displaced fossil-fueled generation.

Potential elements of this option include:

- Programs targeted at specific customer sectors (residential, commercial, industrial), or specific markets within sectors.
- Tax credits, and/or utility or other incentives to lower the first cost of distributed energy systems to users. South Carolina currently offers a tax credit of 25% of the installation cost for residential or business purchase of solar heating and cooling systems. (Amounts over the annual tax credit limit of \$3,500 can be rolled over to subsequent years.)
- Consideration and adoption by state regulatory authorities of rate designs (possibly incorporating into the rate design a value for offset CO<sub>2</sub> emissions), coupled with the necessary metering technology, that promote reduction in GHG emissions by encouraging consumers to install renewable distributed generation systems.
- Supporting measures, including training/certification of installers/contractors, and creation/support of markets for biomass fuels.

#### **Policy Design**

##### **Goals:**

- 10% of all SC homes and suitable business facilities will have solar hot water installations by 2020
- 3 MW per year of new distributed renewable generation

**Timing:** Beginning in 2009, 1% per year of all SC homes and business facilities have solar hot water installed; new distributed renewable generation beginning at 0.5 MW in 2009 increasing to 3 MW per year by 2014 and thereafter.

**Parties Involved:** Residential, Commercial, and Industrial sectors, state regulatory authorities, utilities

**Other:** Definition of Green Power – A renewable energy resource includes solar (roofing materials with built-in solar photovoltaic cells, solar PV panels erected on roofs, solar water heating and solar space heating systems); wind; hydroelectric (less than 10 kW); geothermal; ocean current or wave energy; biomass resource including agricultural waste, animal waste, wood waste, spent pulping liquors, combustible residues, combustible liquids, combustible gases, energy crops, or landfill methane; waste heat derived from a renewable energy resource and used to produce electricity; or hydrogen derived from a renewable energy resource.

### **Related Policies/Programs in Place**

SC offers tax incentives for residential/business purchase of solar heating and cooling systems – tax credit of 25% of installation cost - \$3,500 annual tax credit limit (amounts over the cap can be rolled over to subsequent years)

## RCI-4. Energy Management Training/Training of Building Operators

### Policy Description

In many facilities, utility bills can be significantly decreased through more efficient equipment and building operation. Administrative and technical training can inform and encourage energy managers, school officials, building operators, and others responsible for facility energy efficiency to utilize methods for minimizing unnecessary energy waste. This policy would increase education and demonstrate the benefits of energy efficient building operation through government “Lead-by-Example” of energy service contracting, in such a manner that it creates a desire to implement.

Specifically, this policy involves developing, implementing, and requiring 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. 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. Continuing education credits would be required annually. Classes should be conducted at the state’s Technical College Facilities. South Carolina was the first state in America to provide a Technical College System with a campus within 28 miles of every residence.

Energy management training would include instruction in and demonstration of successful energy management programs throughout the state, including Winthrop University and government projects (e.g., undertaken under RCI-7) as models.

This policy could draw on or expand the South Carolina Energy Office’s preparation classes for Energy Manager certification and other related training.

### Policy Design

#### Goals:

Starting in 20[XX], require energy managers and facility operators in all sectors to obtain certification for successful completion of the training program.

Timing: See above.

**Parties Involved:** State and local entities, private energy managers and facility operators throughout the state

**Other:** N/A

### Related Policies/Programs in Place

The South Carolina Energy Office holds a preparation class for Energy Manager certification and other related training.

## **RCI-5. Incentives, Resources, and Regulatory Reform (including net-metering) to Promote Energy Recycling Including Combined Heat and Power**

### **Policy Description**

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. CHP is sometimes called “recycled energy” because the same energy is used twice. The recovered thermal energy can be used for industrial process steam, space heating, hot water, air conditioning, water cooling, product drying, or for nearly any other thermal energy need in the residential, commercial, and industrial sector. The end result is significantly increased efficiency over generating electric and thermal energy separately. In fact, many CHP systems are capable of an overall efficiency of over 80 percent – double that of conventional systems. Another significant advantage is the reduced transmission and distribution losses associated with centralized power generation.

There are a number of existing CHP installations in South Carolina, primarily at large manufacturing facilities. According to one study, South Carolina has the potential to install an additional 4,497 MW of commercial (1,243 MW) and industrial (3,254 MW) CHP considering technical potential only.<sup>8</sup> While it is unlikely that all technically feasible installations would be economically or operationally practical, this estimate is conservative in that it assumes systems are sized to meet thermal loads with no power exports, it does not consider economic growth for target markets, and it does not consider the potential for upgrades of existing CHP systems. In the absence of a market potential study, these data suggest a very large unrealized potential for CHP in South Carolina.

Energy recycling, including CHP, is challenged by several non-economic factors.

- When excess electricity is produced (either overall or only at certain times), this excess electricity should be sold onto the electrical grid. There may be resistance or legitimate concerns regarding these sales. In the absence of decoupling, these sales represent an evident loss of expected revenue for utilities.
- To the extent that energy recycling results in increased fuel consumption (which may be economically and environmentally efficient), it may nevertheless lengthen the time required to obtain air pollution permits or trigger a higher level of scrutiny. So-called performance permitting can address this concern but may nevertheless increase permitting complexity.
- The addition of energy recycling of any type to a facility adds design and operational complexity. Although the adjustments may be modest, the requirement for new expertise and different operating skills may be a barrier, particularly to firms that are already facing challenges in attracting talent.

<sup>8</sup> Hedman, Bruce, “CHP Market Review,” Energy and Environmental Analysis, Southeast Planning Session Presentation, July 6, 2005.

- Regulatory/environmental permitting complexity or uncertainty associated with use of innovative processes and “alternative fuels”.

Additional installations of new CHP systems and continued operation/expansion of existing systems by residential, commercial, institutional, and industrial energy consumers could be encouraged through a combination of regulatory changes and incentive programs. Potential elements of this option include:

- Promotion of education and information transfer related to the use of CHP in residential, commercial, and industrial applications
- Promotion of industrial (and large commercial facility) cooperation in sharing energy needs/utilization of waste energy.
- Creation/expansion of markets for, and incentives designed to promote implementation of, CHP units in capacities suitable for residential, commercial, and industrial users
- Provision of tax benefits, attractive financing arrangements, and other incentives to promote CHP technologies
- Consideration and adoption by state regulatory authorities of rate designs (possibly incorporating into the rate design a value for offset CO<sub>2</sub> emissions), coupled with the necessary metering technology, that promote reduction in GHG emissions by encouraging consumers to install combined heat (and or cooling) and power systems that offer the opportunity to improve the overall efficiency of fuel use. This includes reviewing existing net-metering policies and establishing clear, consistent interconnection standards.
- Consideration of “fast track” or streamlined environmental permitting mechanisms for all recycled energy projects, including CHP installations.

### Policy Design

**Goals:** Installation of 50% of the additional CHP and waste heat recovery technical potential in South Carolina by 2020, while maintaining the existing baseline.

**Timing:** Beginning with 100 MW installed in 2009, increasing gradually to achieve the goal by 2020.

**Parties Involved:** large residential, commercial, industrial, and institutional sectors

**Other:** [As needed]

### Related Policies/Programs in Place

SC has several CHP facilities powered by waste (Eastover and Charleston), wood (Georgetown, Florence and Charleston) and biomass (Spartanburg)

## RCI-6. Incentives and policies for improving building efficiency, including building energy codes

### Policy Description

Energy use in buildings in South Carolina accounts for about XX% of South Carolina's current gross GHG emissions. 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 in reducing building-sector greenhouse gas emissions.

State law requires statewide use of the most up-to-date building codes as defined by the IECC (International Energy Conservation Code). The IECC specifies minimum energy efficiency requirements for new buildings or for existing buildings undergoing a major renovation. South Carolina's local governments adopt and enforce the building codes.

Manufactured housing is exempt from South Carolina's building energy code. Instead, manufactured homes are subject to standards established by U.S. Department of Housing and Urban Development. A significant percentage of South Carolinians reside in manufactured housing.

In order to ensure that South Carolina's buildings, including manufactured homes, maximize the cost-effective potential for energy efficiency and minimize greenhouse gas emissions, the following policy prescriptions are recommended:

- Statewide enforcement of both existing and new building codes should be improved at all levels.
- As appropriate, codes should be modified to remove obstacles to renewable energy use, daylighting and non-conventional energy-efficient building materials in buildings where applicable.
- South Carolina should update its energy codes regularly. A three-year cycle could be timed to coincide with release of national model codes. Local adoption of new statewide codes should occur within 6 months of statewide code adoption. (RCI-8, including education of building inspectors and other building professionals, is a supporting policy)
- South Carolina Building Codes Council should consider advanced codes (i.e. beyond IECC) as appropriate for the state, (e.g. California Title 24)<sup>9</sup>
- Manufactured housing and manufactured non-residential buildings used in South Carolina after 2015 should meet Energy Star certification standards.
- South Carolina should support for low-interest financing for the incremental cost of Energy Star certified manufactured housing.

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<sup>9</sup> Note that research would be required to identify which portions of the California Title 24 codes are most applicable and appropriate for South Carolina.

- South Carolina should lobby for more stringent codes for manufactured housing at the federal level

## **Policy Design**

### **Goals:**

- Adoption of 2006 International Energy Conservation Code (IECC) by 100% of South Carolina's municipalities by 2008
- Full enforcement of 2006 IECC in all South Carolina municipalities by 2009.
- Achieve market penetration of 75% for Energy Star labeled manufactured homes by 2010.

**Timing:** As noted above.

**Parties Involved:** As noted above.

### **Other:**

## **Related Policies/Programs in Place**

Ritchie, R-Spartanburg, introduced a bill in 2007 (now passed) that would provide tax incentives and faster permitting for private developers to meet the LEED Silver standard.

EarthCraft Partnership of SCEO, local homebuilders associations and Southface Energy Institute is piloting a EarthCraft house program for Charleston and Greenville – over 100 homes built.

ICC and IECC standards apply in South Carolina.

## RCI-7. Improved Design and Construction in new and existing state and local government buildings, “Government Lead-by-example”

### Policy Description

Government-led, or “Lead by Example”, initiatives help state and local governments achieve substantial energy cost savings while promoting the adoption of clean energy technologies for significant GHG emissions in new and existing state and local government buildings.

Elements of this policy include:

- A goal for green power purchasing by state & local facilities
- Development and promotion of Green Procurement Strategies, such as installation of renewable energy systems for additional backup in emergency services buildings (e.g., police stations, fire stations, National Guard facilities).
- Audits of energy performance and operations of State and other government buildings (in tandem with an audit program). Audit results could be used to target and prioritize investments in improving government building energy efficiency
- Financial and technical assistance for implementation of energy savings projects in existing buildings and facilities, and a requirement that all state and local facilities implement an energy management program
- Expansion of A88 to include SC school buildings
- Implementation of design features to reduce energy use within State-funded and other Government buildings, as well as in the surrounding community through incorporation of proven planning guides and regulations
- Improvement and review of efficiency goals over time, and development of flexibility in contracting arrangements to encourage integrated energy-efficient design and construction
- Recommendations that the infrastructure for implementation (meters, bookkeeping systems, staff, etc.) be established as soon as possible
- “Retained savings” policies whereby government agencies are able to retain funds saved by reducing energy bills for further energy efficiency/renewable energy investments or other uses
- State bulk-purchase of appliances and equipment with higher-than-standard energy efficiency for public facilities – Energy Star
- Requirement that energy efficiency be a criterion in procurement of energy-using equipment and systems, and in the improvement in operation of buildings and other facilities

## Policy Design

### Goals:

- The State should set a goal that, by 2018, a minimum of 20% of electricity consumed by state & local facilities should come from in-state renewable resources, as defined below. The renewable established portfolio standard would counts toward this goal. This strategy would allow State Agencies as to “lead by example.” It would also create an established market for green power generators.
- The State should provide financial and technical assistance for implementation of energy savings projects in existing buildings and facilities. Require that all state and local facilities implement an energy management program, which may include the use of contracts with Energy Services Companies (ESCO) that guarantee savings. Seek to replicate the Winthrop University energy management program throughout the state.
- By 2009 [placeholder date], expand A88 to include SC school buildings.
- A program to audit energy use and identify energy efficiency opportunities in State and Local Government buildings, similar to the energy software program in use by the SC Energy Office, be procured and carried out, with a goal of 15 percent audit rate (45-50 buildings per year) over a 5 year period at an estimated 5-year total cost of roughly \$675,000-\$700,000. This energy audit program would cover existing buildings, building undergoing renovation, and buildings under design.
- State bulk-purchase of appliances and equipment with higher-than-standard energy efficiency for public facilities – Energy Star. Require that energy efficiency be a criterion in procurement of energy-using equipment and systems, and in the improvement in operation of buildings and other facilities.

**Timing:** [TBD, as needed on TWG approval]

**Parties Involved:** [TBD, as needed on TWG approval]

**Other:** Definition of Green Power – A renewable energy resource includes solar (roofing materials with built-in solar photovoltaic cells, solar PV panels erected on roofs, solar water heating and solar space heating systems); wind; hydroelectric (less than 10 kW); wind; hydroelectric (less than 10 kW); geothermal; ocean current or wave energy; biomass resource including agricultural waste, animal waste, wood waste, spent pulping liquors, combustible residues, combustible liquids, combustible gases, energy crops, or landfill methane; waste heat derived from a renewable energy resource and used to produce electricity; or hydrogen derived from a renewable energy resource.

## Related Policies/Programs in Place

State-funded buildings - either new construction or renovations – are required to meet the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Silver standard for energy efficiency or “two globes” standard.

## RCI-8. Post-secondary College and University Programs

### Policy Description

This mitigation option reflects the realization that the effectiveness of emissions reduction activities in many cases depends on providing information and education to practitioners, present and future consumers (primary and secondary school students), regarding energy consumption and resulting greenhouse gas emissions from consumer choices. In addition, in order to effectively implement many of the other RCI options, specific and targeted education, outreach, and licensing requirements will be required for professionals in a variety of building design and construction-related trades in order to ensure that those professionals have the expertise to support aggressive GHG mitigation options in South Carolina.

### Policy Design

Elements of this Option Design include:

- Training and education for builders and contractors in high-performance, “green” building strategies and rating systems
- Training of building code and other officials in energy code enforcement
- Environmental curriculum in university programs for initial training of building Design Professionals, including architects, engineers, and allied professions, i.e., developers, contractors, urban planners, lenders, realtors, and building product manufactures
- Continuing Education for building Design Professionals
- College and university education in eco-literacy
- Energy efficiency and related education introduced at SC Technical schools.
- Consumer education programs (probable overlap with recommendations of Cross-Cutting TWG)
- Continued funding to meet the expanding role of State Energy Office as a key consumer information outlet
- Emphasize provision of resources directing consumers to information and technologies for energy-efficiency and climate impacts reduction
- Introduce in K – 12 School Curriculum

**Goals:** [To be based on inputs from volunteers for straw proposals and then proposed to the full TWG for review/revision, then on to the CECAC at the next meeting]

**Timing:** Implement programs by 2009 [placeholder date]

**Parties Involved:** Builders and contractors; building code enforcement officials; colleges and universities; State Energy Office; K-12 schools throughout the state

**Other:** [As needed]

**Related Policies/Programs in Place**

None identified.

## RCI-9. Green Power Purchasing for Consumers

Text that differs from ES-6 is underlined.

### Policy Description

This policy would establish a voluntary green power program offering a green power option to consumers throughout the State. The green power purchases are comprised of a variety of consumer-driven strategies to increase the production and delivery of low-GHG power sources.

Palmetto Clean Energy (PaCE) is an independent, nonprofit organization established in August 2007. The organization consists of representatives from the SC Office of Regulatory Staff, SC Energy Office, Duke Energy Carolinas, Progress Energy Carolinas and SCE&G. PaCE is a renewable energy program designed to encourage the development of renewable energy resources that improve the environment through reduced greenhouse gas emissions. Consumers can elect to fund Green Power purchases by South Carolina investor-owned electrical utilities.

Contributions to the program help provide financial incentives for generators of electricity from renewable sources. To supplement the activities of voluntary green power programs in SC (PaCE and Santee Cooper Green Power), this policy provides support for marketing green power to consumers and for the developers of renewable generation through state funded green power initiatives coordinated by the SC Energy Office.

**A renewable portfolio standard would complement this policy.**

### Policy Design

**Goal #1:** Require that power (fuel) sources and emissions data be reported in consumer utility bills by 2009.

**Goal #2:** Establish a Voluntary Green Power Utility Program

**Timing:** Operational by April 2008; 5% participation of retail customers by 2012.

**Parties Involved:** SC Office of Regulatory Staff, SC Energy Office, Duke Energy Carolinas, Progress Energy Carolinas, SCE&G, Santee Cooper, Lockhart Power Company and the Public Service Commission of SC.

**Other:** Definition of Green Power – A renewable energy resource includes solar (roofing materials with built-in solar photovoltaic cells, solar PV panels erected on roofs, solar water heating and solar space heating systems); wind; hydroelectric (less than 10 kW); wind; hydroelectric (less than 10 kW); geothermal; ocean current or wave energy; biomass resource including agricultural waste, animal waste, wood waste, spent pulping liquors, combustible residues, combustible liquids, combustible gases, energy crops, or landfill methane; waste heat derived from a renewable energy resource and used to produce electricity; or hydrogen derived from a renewable energy resource.

**Goal #3: State Sponsored Green Power Initiatives**

- To supplement the activities of voluntary green power programs in SC (PaCE and Santee Cooper Green Power), this policy also provides marketing and renewable resource development assistance through state funded green power initiatives coordinated by the SC Energy Office. *CCS NOTE: potential overlap with ES-2, ES-3*

**Table 1: Demand- and supply-side recommendations**

Demand-Side Recommendations	Supply-Side Recommendations
Provide consumer education programs and green power promotional materials.	Support for R&D on new and developing renewable energy technologies.
<del>Encourage state facilities to purchase a certain percentage of their power through voluntary green power programs.</del>	Provide support for feasibility studies of various renewable energy technologies.
Provide incentives for new or expanding businesses to purchase power through voluntary green power programs.	Provide a mechanism for long-term contract guarantees for renewable energy producers.
Provide tax credits for companies purchasing from power through voluntary green power programs.	Provide support for renewable energy development projects, thereby leading to more options and sales tools.
Provide incentives for home builders to include one year of green energy through PaCE with the purchase of new homes.	Provide low or no interest loans for qualified developers of renewable energy projects.
Provide assistance and participation in consumer and business marketing programs.	<u>Provide incentive through reward and recognition for the top generators of green power.</u>
<u>Provide Web-based technical assistance to consumers. (See Maine Public Utilities Commission program)</u>	
<u>Provide incentive through reward and recognition for Industry to purchase power through voluntary green power programs.</u>	

**Timing:** Fully implemented by 2012.

**Parties Involved:** SC Energy Office, Duke Energy Carolinas, Progress Energy Carolinas, SCE&G Santee Cooper, Lockhart Power Company, the Public Service Commission of SC and PaCE.

**Other:** [As needed]

**Related Policies/Programs in Place**

- Green Power program through Santee Cooper (landfill methane – 5 sites,) expanding into solar. Eighteen electric co-ops also participate in the green power program through Santee Cooper.
- Palmetto Clean Energy (PaCE)
- Maine Public Utilities Commission program 10,000 Carbon Free Homes: [http://www.eere.energy.gov/greenpower/markets/state\\_policies.shtml#me](http://www.eere.energy.gov/greenpower/markets/state_policies.shtml#me)

## RCI-10. Participation in Voluntary Industry-Government Partnerships (including incentives)

### Policy Description

This mitigation option aims to create a voluntary program in which businesses, government, and industry become partners in reducing the emission of process gases that have high global warming potentials (GWP). The program would provide technical assistance, networking, best practices exchange, and rewards and recognition.

There are existing federal programs that encourage partnerships between businesses, industry and government entities. The US EPA's Climate Leaders is an industry-government partnership that works with companies to develop long-term comprehensive climate change strategies. Partners set a corporate-wide greenhouse gas (GHG) reduction goal and inventory their emissions to measure progress.<sup>1</sup> South Carolina's program may be based on this model or in partnership with this program.

It should be recognized that, as a part of a voluntary partnership to reduce GHG emissions, verification of emissions reductions is a key element. The Climate Registry is collaboration between states, provinces and tribes aimed at developing and managing a common greenhouse gas emissions reporting system with high integrity that is capable of supporting various greenhouse gas emission reporting and reduction policies for its member states and tribes and reporting entities. It can provide an accurate, complete, consistent, transparent and verified set of greenhouse gas emissions data from reporting entities, supported by an auditable accounting and verification infrastructure.<sup>2</sup>

### Policy Design

#### Goals:

- South Carolina should partner with industrial and other large users of energy (and/or of process gases that are greenhouse gases) to encourage those organizations to set emissions 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. Largest emitters should be approached as to get the most significant reductions through the partnerships.
- Establish a technical assistance and networking program by 2009. This may be accomplished through already established programs and should be administered by State agencies.
- Establish a reward and recognition program to include tax incentives by 2009. This may be accomplished through already established programs and/or other CECAC technical workgroup recommendations.

**Timing:** See above.

#### Parties Involved:

- Large Industrial Firms and other major energy consumers or users of high-GWP process gases are the focus of this policy. Largest emitters should be approached first.
- State Agencies: The SC Energy Office and the SC Department of Health and Environmental Control can also help manage the program, including coordinate reporting, auditing, and compliance.
- Utilities: May be involved in technical assistance or regulatory mandate in fuel switching.
- Regulators: May “level the playing field” between fuel options and to provide incentives for fuel switching where applicable.

**Other:** A clear definition of “Green power” is a necessity (See also ES-6)

### **Related Policies/Programs in Place**

The Climate Registry [<http://www.theclimateregistry.org/>]

U.S. EPA – Climate Leaders [<http://www.epa.gov/climateleaders/index.html>]

SC Environmental Excellence Program (SCEEP) administered by DHEC encourages and publicizes waste reduction and energy conservation efforts. This program provides reward and recognition as well as networking and idea exchange for entities who prevent pollution, conserve energy and other resources, and who strive for continuous environmental improvement.

[<http://www.scdhec.net/eqc/admin/html/sceep.html>]

EPA’s performance Track Program

## RCI-11. Incentives and policies for improving appliance efficiency, including appliance standards

### Policy Description

Appliance efficiency standards reduce the market cost of energy efficiency improvements by incorporating technological advances into base appliance models, thereby creating economies of scale. Appliance efficiency standards can be implemented at the state level for appliances not covered by federal standards, or standards can be jointly developed by multiple states.

There are existing federal standards for 17 residential products and 11 pieces of commercial equipment. Laws require the U.S. Department of Energy (DOE) to set minimum appliance efficiency standards that are technologically feasible and economically justified. However, there are many appliances not covered by federal standards for which state standards can play a role.

Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy designed to promote energy efficient products in the market place. Energy Star products and appliances exceed the energy efficiency mandated by minimum federal and state standards.

In order to ensure that appliances purchased in South Carolina maximize the cost-effective potential for energy efficiency and minimize greenhouse gas emissions, the following policy prescriptions should be considered:

- Improved appliance standards for appliances not regulated by federal standards.
- South Carolina should lobby for more stringent appliance standards at the federal level. Require the preferential procurement of Energy Star products if available (equipment, appliance or technology) if state funds are involved (e.g., state purchasing contracts, state grants or loans, etc.)
- South Carolina state sales tax exemptions, whether temporary or permanent, for Energy Star certified products.
- South Carolina income tax credits to reduce the incremental cost of Energy Star appliances relative to standard appliances.

### Policy Design

#### Goals:

- State minimum efficiency standards for appliances not covered by federal standards as recommended by Appliance Standards Awareness Program<sup>10</sup> by 2009

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<sup>10</sup> See [http://www.standardsasap.org/documents/a062\\_sc.pdf](http://www.standardsasap.org/documents/a062_sc.pdf). The analysis recommends standards for the following products: bottle-type water dispensers, commercial boilers, commercial hot food holding containers, compact audio products, DVD players and recorders, liquid immersion distribution transformers, medium voltage dry-type distribution transformers, metal halide lamp fixtures, pool heaters, portable electric spas, residential furnaces and

- 100% market penetration of Energy Star appliances in purchase transactions in which state funds are involved (e.g., state purchasing contracts, state grants or loans, etc.) by 2010.
- A doubling of market penetration of Energy Star appliances in purchases made in the residential, commercial and industrial sectors, where applicable, up to 100%, by 2015.

**Timing:** As noted above.

**Parties Involved:** As noted above.

**Other:**

#### **Related Policies/Programs in Place**

None noted.

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boilers, residential pool pumps, single voltage external AC to DC power supplies, state regulated incandescent reflector lamps, walk-in refrigerators and freezers.

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