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**Energy Supply Technical Work Group**

**Summary List of Pending Policy Options**

Draft Option #	Draft Policy Option Name	Straw Proposal Volunteers
ES-1	A thorough study of energy options for portfolio standards including renewables, energy efficiency, nuclear power, waste to energy, landfill gas, offshore wind, and hydro [includes former ES9]	
ES-2	Technology Research and Development, including state funding	
ES-3	Renewable Energy (full range) financing, tax incentives, loans	
ES-4	Decoupling of energy sales and revenues to allow investment in efficiency and renewables to be considered in parity with investment in new conventional capacity – merge with ES 7 Regulatory model to equalize utility returns on energy efficiency with returns on traditional power supply	
ES-5	New Nuclear Power, including reprocessing	
ES-6	Green power purchases and marketing	
ES-7	Attract renewable energy technology businesses to South Carolina	
ES-8	Distributed renewable energy incentives and/or barrier removal (Including Interconnection Rules)	

Note: The numbering used to denote the above policy options is for reference purpose only; it does not reflect prioritization among these policy options.

## ES-1. Clean Energy/Environmental Portfolio Standard, including renewables, energy efficiency, nuclear power, waste to energy, landfill gas, and hydro

### Policy Description

A renewable portfolio standard (RPS) is a requirement that utilities must supply a certain, generally fixed percentage of electricity from an eligible renewable energy source(s). An environmental portfolio standard (EPS) expands that notion to include energy efficiency, nuclear energy, or other GHG emissions-reducing technologies as an eligible resource. About 20 states currently have an RPS in place, while a handful has implemented an EPS. In some cases, utilities can also meet their portfolio requirements by purchasing Renewable Energy Certificates (RECs) from eligible renewable energy projects.

The CECAC accepted this policy priority for analysis in order to capture a comprehensive range of options for portfolio standard options, specifically to analyze the impact of including or not including nuclear resources as an eligible resource. Capture and combustion of methane gas from landfills and combustion of municipal solid waste are also to be considered.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### Related Policies/Programs in Place

None identified.

### Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

### Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

#### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

#### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

#### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

#### **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]

## ES-2. Technology Research and Development

### Policy Description

R&D funding can be targeted toward a particular technology or group of technologies as part of a state initiative to build an industry around that technology in the state, and/or to set the stage for adoption of the technology for use in the state. For example, an agency can be established with a mission to help develop and deploy energy storage technologies. R&D funding can also be made available to any renewable or other advanced technology through an open bidding procedure (i.e., driven by bids received rather than by a focused strategy to develop a particular technology). Funding can also be given for demonstration projects to help commercialize technologies that have already been developed, but which are not yet in widespread use. Finally, funding could be targeted to increase collaboration among existing institutions in the state for R&D.

A number of energy technology research and development (R&D) programs are already underway at organizations and academic facilities throughout South Carolina, as noted below.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### Related Policies/Programs in Place

- Bio-diesel research at Clemson and USC
- Hydrogen research at Savannah River National Laboratory
- The National Science Foundation Center for Fuel Cells – USC
- Hydrogen production and storage and automotive system integration- International Center for Automotive Research (CU-ICAR).

- FuelCellSouth - fuel cell researchers, entrepreneurs, and businesses preparing for the emerging hydrogen economy.
- The Greater Columbia Fuel Cell Challenge -creating a plan to make the region a center for fuel cell use.
- EngenuitySC - leadership council designed to coordinate technology initiatives in Columbia.

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **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]

## ES-3. Renewable Energy Financing

### Policy Description

Policies can be developed to help overcome barriers for renewable energy development. Institutional and market barriers include price distortions, failure of the market to value the public benefits of renewables and the social cost of fossil fuel technologies, inadequate information, institutional barriers to grid interconnection, high transaction costs because of small projects, high financing costs because of lender unfamiliarity and perceived risk. These can be overcome through a suite of financial and regulatory redresses as well as through information and public education campaigns.

This policy option concerns financial incentives to encourage investment in renewable energy resources. Examples include: (1) direct subsidies for purchasing/selling renewable technologies; (2) tax credits or exemptions for purchasing renewable technologies; (3) feed-in tariffs, which provide direct payments to renewable generators for each kWh of electricity generated from a qualifying renewable facility; (4) tax credits for each kWh generated from a qualifying renewable facility; (5) regulatory policies that provide incentives and/or assurance of cost recovery for utilities that invest in central station renewable energy systems.

Financial obstacles can also be addressed through property tax exemptions, exclusions, and credits; personal income tax credits or deductions to cover the expense of purchasing and installing renewable energy equipment; loan programs to aid in financing the purchase of renewable energy equipment; and grant programs designed for research and development or to help a project achieve commercialization.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

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

See list of current and pending legislation posted by the SC Energy Office, at <http://www.energy.sc.gov/index.aspx?m=1&t=67>. [TWG volunteers to identify legislation which applies.]

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **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]

## **ES-4. Decoupling of energy sales and revenues to allow investment in efficiency and renewables to be considered in parity with investment in new conventional capacity**

### **Policy Description**

Traditionally, the revenues of utilities are determined by their volume of electricity sales. Because energy efficiency and renewable energy sources decrease the volume of electricity that the utilities must produce, utilities often have a financial disincentive to support energy efficiency and renewables. The goal of decoupling is to separate a utility's revenues from the amount of energy that it sells, to provide a return on energy efficiency investments, and to remove this disincentive.

### **Policy Design**

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### **Implementation Mechanisms**

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

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

TBD

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]

- **Key Assumptions:** [TBD, as needed on TWG approval]

#### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

#### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

#### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

#### **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]

## ES-5. New Nuclear Power

### Policy Description

Nuclear power provides about 20% of U.S. electricity, and is the largest single source of low carbon power in the electric sector. During operation, nuclear plants generate no GHGs, although there are GHG emissions associated with the mining, refining, and transport of nuclear fuel and the construction and decommissioning of plants. South Carolina currently has seven nuclear reactors, making it the U.S. state with the third highest total nuclear capacity.

However, while nuclear power has historically presented a low-GHG source of electricity, no new commercial reactor has come on line in the US since 1996 due to extremely high capital costs, the absence of any plan or technology for permanent disposal of nuclear waste, and risks to public safety exemplified by high-profile accidents at Three Mile Island and Chernobyl. Congress has recently offered significant financial subsidies for new nuclear plants, both directly and in the form of liability protection, in an effort to jump-start the industry, including limitations on liability for nuclear accidents.

The CECAC suggested that the focus of this policy should be to remove disincentives to nuclear power, and that it should specifically address issues related to recycling of nuclear fuel.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### Related Policies/Programs in Place

- SCE&G/Santee Cooper - new nuclear plant planned (two 1000-MW units.)
- Savannah River National Laboratory, which is partnered with the Economic Development Partnership of Aiken and Edgefield counties, and EnergySolutions will each receive a part of the \$10 million in Global Nuclear Energy Partnership grants to allow for detailed studies of the proposed nuclear waste recycling plants.

- Savannah River National Lab is applying for the nuclear recycling program.
- Duke Energy - new nuclear plants at the old Cherokee site. (2 1000 Megawatt units)

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **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]

## ES-6. Green power purchases and marketing

### Policy Description

Green power purchasing comprises a variety of consumer-driven strategies to increase the production and delivery of low-GHG power sources, above and beyond levels achieved through Renewable Portfolio Standards and other mandatory programs.

Possible elements of green power programs include:

- A definition of what power sources qualify as green power source by a relevant authority.
- Regulatory encouragement for utilities to develop green power tariff structures.
- Implementation of regulatory requirements that power sources and emissions data be reported in consumer utility bills.
- State goals or mandates for green power purchases, or for the renewable fraction of standard purchased electricity, that would apply to all non-federal government buildings, including local government buildings, public schools, and public universities. This could also be a part of State “Lead-by-example” programs.
- Promotion by the State and/or other entities of voluntary purchasing of green power through provision of information and promotional materials.

Currently, Santee Cooper and the state electric co-ops offer Green Power purchasing options to residential and commercial customers. The CECAC could recommend that South Carolina regulators encourage the other utilities to offer green power tariffs.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### **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 Green energy

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **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]

## ES-7. Attract renewable energy technology businesses to South Carolina

### Policy Description

As the U.S. economy supports increasing penetration and diversity of renewable energy resources, South Carolina has the opportunity to establish itself as a commercial and industrial hub for renewable energy technologies. Through state-wide political and financial incentives, South Carolina can encourage businesses to invest in the manufacture of wind turbines, tidal turbines, solar photovoltaics, and a range of other technologies within the state. Having this capacity at a local level would not only provide lasting benefits to the state economy, but also greater access to reliable, clean, and affordable electricity for South Carolina residents.

An inviting business climate for renewable energy businesses would also entice businesses that currently manufacture wind turbines, or tidal turbines, or solar PV, etc. to set up shop in SC. This would position the state to better address the availability and promotion of renewable energy technologies within our borders.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### Related Policies/Programs in Place

TBD

### Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

### Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]

- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

#### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

#### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

#### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

#### **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]

## ES-8. Distributed renewable energy incentives and/or barrier removal (Including Interconnection Rules)

### Policy Description

Institutional and market barriers to distributed renewable energy include price distortions, failure of the market to value the public benefits of renewables and the social cost of fossil fuel technologies, inadequate information, institutional barriers to grid interconnection, high transaction costs because of small projects, high financing costs because of lender unfamiliarity and perceived risk. These can be overcome through a suite of financial and regulatory redresses as well as through information and public education campaigns. The goal of this policy is to change interconnection rules in ways that will ameliorate these barriers and foster the development of this resource.

### Policy Design

**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:** [TBD]
- **Parties Involved:** [TBD]
- **Other:** [As needed]

### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

### Related Policies/Programs in Place

- SC Alternative Energy bills establish 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)
- In addition, the Public Service Commission, Santee Cooper and the electric cooperatives are considering net metering.
- Under consideration:
  - Tax credit for purchase and installation of equipment for creating energy from biomass
  - Renewable energy revolving grant and loan programs

### **Types(s) of GHG Reductions**

TBD – [CCS to list GHG reductions with input / approval from TWG]

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **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]