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Meeting #5 Summary
Climate, Energy and Commerce Advisory Committee (CECAC)
Columbia, South Carolina
February 22, 2008

Attendees:

CECAC Members:

Representative Ben Hagood - SC House of Representatives, CECAC Vice Chair
Dana Beach, Executive Director - SC Coastal Conservation League
Crandall Close Bowles - President and CEO, Springs Mills
Lonnie Carter - President and CEO, Santee Cooper
John Clark - Director, SC Energy Office
Barry Falin - Vice President and General Manager of Carolina Operations, Voridian
Bob Fledderman Manager - Environment and Regulatory Assurance, MeadWestvaco
Dr. Paul Gayes - Director, Center for Marine and Wetlands Studies, Coastal Carolina Univ.
Emerson Gower - VP, Southern Region, Progress Energy Carolinas
Bob King - Deputy Commissioner, SC Department of Health and Environmental Control
Dr. Marcus Newberry - Former Dean, MUSC College of Medicine
Mike Olbrich - Plant Manager, BP Chemical
Bob Scott - President, SC Forestry Association
Steve Smith (by phone) - Executive Director, Southern Alliance for Clean Energy
John Tiencken - Former CEO, Santee Cooper
Johnny Williamson - CEO, SC Soya, LLC
Brad Wyche - Executive Director, Upstate Forever

Office of the Governor:

Justin Evans

South Carolina Department of Health and Environmental Control (DHEC)

Michael Juras, Agency Liaison

Center for Climate Strategies (CCS):

Tom Peterson, Executive Director
Alice Napoleon, Will Schroer, Randy Strait, Joan O'Callaghan, and by telephone Ezra Hausman, Jennifer Kallay, Steve Roe, Brad Strode, and Kenji Takahashi.

Background Documents: (all posted at www.scclimatechange.us)

1. Notice and Agenda
2. Draft Summary for CECAC Meeting #4 (held on Nov. 30, 2007)
3. Draft Summary for CECAC Teleconference (held on Jan. 11, 2008)
4. PowerPoint Presentation
5. CCS Memo to CECAC on Preparation for Meeting #5
6. Policy Option Descriptions for Analysis:
 - Agriculture, Forestry, and Waste Management
 - Energy Supply
 - Residential, Commercial, and Industrial
 - Transportation and Land Use
 - Cross-Cutting Issues

Discussion and Conclusions:

1. Welcome and Introductions

Chairman Ben Hagood opened the meeting and went around the room with introductions by members of the CECAC, Technical Work Groups (TWGs), the public, South Carolina agencies, and CCS. Chairman Hagood then reviewed the agenda for the meeting.

2. Review of CECAC Process and Next Steps

Chairman Hagood suggested that CECAC members consider approval of the easier policy options being presented, and then deal with the more difficult options at future meetings. Tom Peterson of CCS continued that the aim is to have at each ensuing meeting a shorter list of options needing the CECAC's approval.

The CECAC agreed to hold Meeting #6 on April 4, 2008, and Meeting #7 on May 9, 2008, both from 9:00 a.m. to 6:00 p.m.

Slide #'s 5 - 8—Stepwise Planning Process

Peterson briefly reviewed the stepwise planning process the CECAC is following. The process started out with a wide range of policy options for consideration. The focus for Meeting #5 is the quantification of two key items: the greenhouse gas (GHG) emission reduction potential and the costs or cost savings of each proposed option. For the Final Report, the policy option descriptions (PODs) will be summarized and presented as chapters, and the full descriptions will be included as appendices.

Slide #9—State GHG Emissions Reduction Supply Curve, and Slide #10, Global GHG Emission Reduction Supply Curves

Peterson explained that slide #9 shows a marginal cost curve for GHG mitigation measures developed from US state plans for states with whom CCS has worked. This curve was developed using the cost per million metric ton of carbon dioxide equivalent (\$/MMtCO₂e) reduced in 2020 for a wide variety of mitigation measures economy wide. Values below the horizontal line identify measures with cost savings, and values above the horizontal line show measures with costs. Peterson cautioned that cost (or cost savings) shouldn't be the only variable considered for moving an option forward; co-benefits (e.g., improved health) are also important. The supply curve is a good tool for

pulling all of the choices together in aggregate and presenting the big picture. Peterson pointed to slide #10, presenting the results of a recent study by McKinsey & Company. The results show a similar curve to the curve for the US states, even though it's based on global emissions (rather than emissions from US state plans), and extends out to 2030 rather than the 2020.

Several CECAC members asked Peterson to elaborate further on the two supply curves. Peterson explained that just under 33% on the horizontal line is where emissions from each option reach the equivalent of 1990 emissions. Several policy options have potentially significant cost savings. Some of the barriers to implementing some options may be related to such factors as market changes, and not simply related to cost. In several cases, the fuel savings from new energy-efficient technologies pay for the cost of developing the technologies.

CECAC Voting Process

Chairman Hagood then briefly reviewed the voting process on individual policy options, as specified in the CCS 04-27-07 Process Memo to the CECAC. Voting is conducted by simple request for objection at the point of decision, followed by resolution of conflicts. Final votes by the Committee include support at three levels: unanimous consent (no objection), super majority (four objections or less), and majority (less than half object). The goal and challenge are to reach unanimous consent wherever possible.

A CECAC member asked how the CECAC Final Report will show where the members were unable to reach unanimous consent. Peterson explained that this information will appear at the end of each description of each policy option under the following three subheads: Status of Group Approval, Level of Group Support, and Barriers to Consensus. The member also asked what happens if an option doesn't receive the CECAC's majority support. Chairman Hagood explained that the option may be dropped under that scenario. However, he noted that he tries to keep options on the table to enable the CECAC to become more informed about them before approving or rejecting them. Peterson added that the aim is to understand barriers to options and send the options back to the drawing board to see if they can be worked out. Meeting #5 is the CECAC's first pass to identify options that can receive unanimous approval and to do further work on others for future CECAC consideration.

2020 Timeline

A CECAC member questioned cutting off the mid-term timeline at 2020, given that it's only 12 years away, and asked whether the CECAC should consider a longer time frame. Peterson explained that many policy options include longer-term goals. He added that the entire inventory and forecast is set up for 2020, and that it's late in the process to change some goals to 2025 or 2030, which would entail a lot of work for all of the options. Will Schroerer of CCS observed that more technological options will become available in the future (e.g., cellulosic ethanol), but it's difficult to determine when they'll come to market. He also urged the CECAC to focus on the nearer-term options (e.g., commuter choice) regarding what can be done immediately. Chairman Hagood recommended staying on target, with the CECAC focusing on moving forward with the process, and added that if a longer trajectory could affect the choice of or level of support for a policy option, additional analytical work can be done in the future.

Net Present Value Terminology

A CECAC member requested clarification regarding how net present value (NPV) is presented, saying an NPV savings should not be “negative.” Chairman Hagood noted that this terminology will be defined clearly in the Final Report. Another member was surprised by the “positive” NPV values, and asked whether this is typical in other states. CCS indicated that the preliminary results in South Carolina align with analyses performed in other states. CCS clarified the inputs for some of the cost estimates provided in the summary table. Typically, benefits realized after 2020 are not included, although some committees have wished to quantify these in the past.

3. Approval of Draft Summaries of CECAC Meeting #4 and Teleconference

The CECAC agreed to extend the review and comment period for the draft summaries of CECAC Meeting #4 (held on November 30, 2007) and Teleconference (held on January 11, 2008) to the close of business on February 26, 2008, since the summaries were posted only a few days before today’s meeting.

A CECAC member requested revision of the text in the summary for CECAC Meeting #4 in the first paragraph under Energy Supply Option #1 (ES-1) and ES-4. Referring to the sentence, “Representatives of the utilities prepared a revised straw proposal for hand out at the meeting that reflected their point of view,” the CECAC member clarified that the utilities prepared a revised straw proposal for the ES TWG’s review prior to the CECAC meeting, and that the revised straw proposal was not included in the materials for the CECAC meeting.

The summary will be revised to address this comment. Note that no additional comments were received on the summary for the November 30, 2007 meeting and the January 11, 2008 teleconference by the close of business on February 26, 2008.

4. Review and Approval of the Draft Policy Options

The CCS facilitator for each TWG provided a brief summary of the draft analyses for each pending priority policy option. TWG members were invited to provide additional information on their work on each option. The CCS facilitator and TWG members then responded to questions and comments from the CECAC, as summarized below. The CECAC members were then asked to vote on recommendations for moving the options forward for final recommendation.

Transportation and Land Use (TLU)

For each of the TLU straw proposals, Will Schroeer of CCS provided a brief summary of the draft quantification results and TLU TWG members assisted in responding to the CECAC’s questions and comments.

Summary of Comments and Responses to Questions

TLU-1 (Adopt California Clean Car Standards)—Schroeer gave background on the California standards: California adopted legislation in 2002 (and regulations in 2004) requiring a reduction in GHG emissions from new cars and light trucks sold in that state

beginning with model year 2009. Since then, 16 other states have adopted similar legislation. The California law regulates GHG emissions, including those from fuel and from hydrofluorocarbon emissions from air conditioners. Though automakers continue to litigate the California legislation, every court to date has ruled in favor of the California standard. The U.S. Environmental Protection Agency (EPA) has denied California the permission to implement the standards.

In December 2007, the president signed the Energy Independence and Security Act of 2007 (Energy Bill), establishing a 35-mile per gallon (mpg) corporate average fuel economy (CAFE) standard for cars and light-duty trucks to be reached by 2020. The new CAFE standard will achieve many of the GHG reductions previously anticipated under TLU-1. As a result, the emission reductions shrank because many of those reductions are now in the state baseline.

In comparing the California standard with the new CAFE standard, CCS has found the former standard is a bit more stringent. California requires the new-vehicle fleet to reach 36 mpg by 2016, while the CAFE standard sets a target of 35 mpg by 2020. Though the difference in the two standards isn't huge, it's meaningful in terms of GHG reductions. The fact that the Energy Bill sets only the end CAFE target, but doesn't establish the implementation schedule or the precise regulatory mechanisms makes analysis difficult. In its analysis, the TLU TWG used the California Air Resources Board (CARB) assumptions about federal implementation.

A CECAC member noted that cost-effectiveness numbers are missing from all the TLU options. Another member suggested inserting a separate column in the summary table for the cost to consumers. Chairman Hagood asked how much more cars would cost as a result of adopting the California standard. Schroeer responded that before the 2007 Energy Bill was passed, the analysis was: new cars on average would cost \$2,000–\$3,000 more, but this cost increase was more than offset by fuel savings (at \$1.74/gallon). Considering today's cost of fuel, the savings should increase. However, given that the new CAFE standards have resulted in moving the "cheap" actions into the baseline for this option, the previously estimated savings of \$39 per metric ton of carbon dioxide equivalent (\$/tCO₂e) of GHG emissions reduced will probably change to roughly a break-even number. Schroeer noted that this conclusion is his best professional judgment, and that the precise cost will ultimately depend on how the CAFE standards are implemented.

A CECAC member observed that the potential impacts of this option on oil conservation and transfer of wealth in the world are huge. Schroeer agreed and recommended that the TLU TWG read California's analysis of its regulation versus the Energy Bill, which points to the additional technology jobs and earnings that will be created to meet the standards, in contrast to sending money overseas for oil.

Another CECAC member asked whether the option's proposed target for 2012 includes more plug-in hybrid vehicles in the new-vehicle fleet. Schroeer explained that plug-in hybrid vehicles fall under a low-GHG fuel standard.

Chairman Hagood requested further clarification on this question, noting that the CECAC needs cost-effectiveness information before proposing TLU-1 for approval. Schroeer explained that cost-effectiveness information won't be available within the time frame established for the CECAC's delivery of its recommendations to the Governor. The Energy Bill doesn't establish a timeline for each vehicle class, which complicates comparison of the California and federal standards. Peterson added that the analysis includes the policy option's implications for energy security, such as the reduction in demand for oil and shifts in energy supply. Chairman Hagood suggested that the CECAC move forward with this option and revisit these issues once the underlying data are available.

TLU-2 (Transportation System Management)—Improving vehicle flow on the roadway system can reduce fuel use and GHG emissions. Using infrastructure management can reduce GHG emissions by 10% by 2025 relative to the baseline in the most congested corridors in each of South Carolina's three largest metro areas. A CECAC member noted that the Policy Design section of this option's description used a 2025 versus 2020 timeline. Schroeer responded that's probably a typo and will be corrected in the next TLU-2 POD.

TLU-3 (Tax Credits for Efficient Vehicles)—This policy option would maintain and enhance the current state tax rebates and state income tax credits for low-GHG emission vehicles. Schroeer noted that the TWG is talking with the state about why increasing the cap is a good idea because currently the cap is not being reached. Unless something unusual happens, like \$5/gallon gas, changing the incentive will not produce additional GHG emission reductions. He suggested the TWG consider raising the \$2,000 income tax rebate for in-state purchases of plug-in hybrid vehicles, and not just the cap.

A TWG member commented that no one uses the \$2,000 tax rebate because plug-in hybrids aren't available. He encouraged the TWG to look at the large-scale gains that will be available from hybrids, and to recommend tax incentives that will make South Carolina one of the first states to sell these vehicles where incentives are in place so people will take advantage of them. A lot of people buying cars today probably don't know about the \$2,000 tax credit. A CECAC member added that this points to the need for public education and outreach, and South Carolina has an opportunity to be a leader in this test market niche.

Another member commented that the state will need to determine where the additional power will come from and how much it will cost. Schroeer responded that a full fuel life-cycle analysis would need to be done, considering where the power comes from. Because South Carolina is a heavily coal-powered state, the GHG emission benefits won't be as high as in California, which uses hydropower. Another member added that the plug-ins could be charged at night, when electricity rates are lowest.

TLU-4 (Improve Development Patterns)—The goal of this policy is to stabilize per-capita vehicle-miles traveled (VMT) at today's levels by 2010. Schroeer said the TWG is refining the language in this option to articulate how the state would work with local jurisdictions to improve development patterns. The cost-effectiveness calculation is a

complex issue. The potential savings from high-density, mixed-use development are enormous—shorter sewer lines, fewer schools, etc. The option would also improve the quality of life in the state by reducing traffic congestion, the time people spend in their cars, etc.

Chairman Hagood noted that this policy option isn't ready for the CECAC's approval. A recent TWG suggestion was to quantify the cost savings through stabilization of VMT. To convert the goal of this option into policy, he suggested requiring local governments to develop land-use plans and transportation plans to stabilize VMT. The local jurisdictions could determine how to achieve their VMT targets, and the state would provide the analytical resources and other support needed. Schroeer noted that Oregon has been successful in stabilizing its VMT by working with local jurisdictions. It uses a combination of land-use changes in existing areas (not sprawl) and commuter benefits to fill empty seats in public transit.

A CECAC member said the challenge would be giving local governments the tools to evaluate whether what they're currently doing has a positive or negative effect on GHG emissions. They don't have the models for this now or for multiple roads. Every new subdivision has implications for VMT. Another member asked whether the VMT would be broken down by urban and rural areas. Schroeer replied it would, but for political and practical reasons the process can't make specific recommendations to local jurisdictions on how to reduce their VMT.

Another member said this is a good opportunity for South Carolina, whose VMT per capita is 20% higher than the national average and continuing to grow. The goal for the state might be to achieve the national average.

A TWG member noted that the state needs to be more aggressive because local governments haven't done a good job in managing growth. Another member commented that local governments don't coordinate with each other on planning issues and have no metropolitan planning councils. Chairman Hagood said this could be a rallying point that both state and local governments need to work together toward the VMT goal. This option needs a lot more discussion, and the TWG needs to make sure it's measuring the right thing and develop a list of best practices to present for the CECAC's approval.

TLU-5 (Transit & Bike-Pedestrian)—This option is necessary to get the benefits required from TLU-4. No comments or questions.

TLU-6 (Alternative Fuel Infrastructure)—Because this option is necessary to TLU-12, it is quantified as part of that option. However, it is presented as a separate option because its policy measures are distinct from those of TLU-12. No comments or questions.

TLU-7 (Diesel Engine Emission Reductions and Fuel Efficiency Improvements)—These essentially voluntary options tend to be popular because they are effective, relatively cheap, and don't require large policy changes. A member suggested the TWG

think about providing tax credits for trucks using auxiliary power units, particularly downtown, where emissions are concentrated.

TLU-8 (Stricter Enforcement of Speed Limits)—The TWG quantified the GHG emission reductions based on the existing speed limits, not lower limits. Stricter enforcement of a 65 mile-per-hour (mph) speed limit saves a significant amount of energy (e.g., versus 80 mph). No comments or questions.

TLU-9 (Make Full Use of CMAQ Funds)—The TWG cannot forecast how individual jurisdictions or the state will change policies to achieve the goals of this policy option through the allocation of Congestion Mitigation and Air Quality (CMAQ) funds. No comments or questions.

TLU-10 (Commuter Choice)—This option focuses mostly on commuting to work. The state would work with employers to provide options for employees, such as transit contracts and pre-telecommuting, to reduce single-occupant vehicle commutes. This option can provide meaningful GHG emission reductions in areas with a variety of transit options. No comments or questions.

TLU-11 (Explore Available Resources for Funding Road Maintenance and Mass Transportation)—The TWG quantified a 7-cent increase in the fuel tax and ran the numbers through a demand response analysis. One member was surprised that cost-effectiveness numbers weren't presented, since the quantification of a 7-cent increase should be straightforward. Schroer agreed. Another member suggested the TWG look into using this option to generate funding for TLU-4 planning.

TLU-12 (Low-GHG Fuel Standard)—Schroer noted that this option would have the largest effect on reducing GHG emissions of all the options. It proposes a 10% decrease in the carbon intensity of all passenger vehicle fuels sold in the state through a substantial change in the fuel mix. The CECAC has approved the goal, but it's still not clear what technologies will enable the fuel shift—perhaps using hybrids, changing the full-fuel-cycle carbon content of gasoline, etc. Because the cost implications of this option will be difficult to model, the CECAC will need to make decisions under uncertainty. Though California has conducted volumes of studies on how the state may reach its (identical) goals, it still is unable to quantify the cost implications because technologies are changing rapidly. The TWG will try to bound the numbers as best it can.

Schroer mentioned a recent study reported in the journal *Science* that concluded that using biofuels that require land conversion is a net loser regarding GHG emission reductions because large amounts of carbon are released during the conversion. Previous studies tried to be comprehensive in all the analyses, but didn't have a good understanding of the carbon emissions of converting land. Though biodiesel looks promising, it too may be limited because it's a biofuel. If the CECAC requests, the TWG will look at an option focused on biodiesel.

A CECAC member said the TWG should make sure it's not using the same resources to get to the same place. No additional comments or questions.

TLU-13 (Commercial Vehicle Technology Improvements)—The freight vehicle quantification is part of the TLU-7 quantification. The TWG will look more aggressively to increase freight penetration. No comments or questions.

TLU-14 (Rail)—This option addressing freight and passenger rail issues was added at the last CECAC meeting. The TWG doesn't understand the role of rail yet in reducing GHG emissions. No comments or questions.

TLU Voting on Draft Policy Options

TLU-1—No objections to moving forward for further analysis; address cost and oil-saving issues.

TLU-2—No objections to moving forward for further analysis.

TLU-3—No objections to raising both the sales tax cap and the \$2,000 income tax rebate.

TLU-4—No objections to moving forward for further analysis.

TLU-5—No objections to moving forward for further analysis.

TLU-6—No objections to moving forward for further analysis.

TLU-7—No objections to moving forward for further analysis.

TLU-8—No objections to moving forward for further analysis.

TLU-9—No objections to moving forward for further analysis.

TLU-10—No objections to moving forward for further analysis.

TLU-11—No objections to moving forward for further analysis.

TLU-12—No objections to moving forward for further analysis.

TLU-13—No objections to moving forward for further analysis.

TLU-14—No objections to moving forward for further analysis.

Residential, Commercial and Industrial (RCI)

For each of the RCI straw proposals, Alice Napoleon of CCS provided a brief summary of the draft quantification results and RCI TWG members assisted in responding to the CECAC's questions and comments. Ezra Hausman and Kenji Takahashi of CCS, who participated by telephone, also assisted in responding to the CECAC's questions and comments.

Summary of Comments and Responses to Questions

Napoleon noted that similar to RCI policies in other states, the cost savings of many of the South Carolina RCI measures outweigh the costs.

RCI-1 (Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Electricity (Including Expansion of Same) [Residential, Commercial, and Industrial])—This option focuses on increasing investment in electricity demand-side management (DSM) programs through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals. Between 2009 and 2020, it would reduce GHG emissions by 43 MMtCO₂e at a cost savings of \$26/tCO₂e reduced.

A CECAC member noted that the benefits to consumers of this measure should be emphasized. Another member noted the numbers here are the same as in ES-4 and ES-1e. Napoleon replied that ES-1e isn't a policy; it's considered to be a component of a portfolio of measures. ES-4 is a separate policy for which the ES TWG has insufficient data because there's no precedent for Duke Energy's proposed "Save-A-Watt" program. The TWG needs to make assumptions about the costs and cumulative impacts of RCI-1 and ES-4.

A TWG member noted that the CECAC needs to understand the impacts of the individual implementation components before it can recommend policies to decision makers, and suggested that common measures be applied. Napoleon replied that the TWG can provide more information about what measures might be included in South Carolina's DSM portfolio, and that CCS is already looking at the components of the portfolio to determine how different policies overlap—e.g., RCI-1 and RCI-9. She added that more detailed studies for South Carolina will need to be conducted after the CECAC has completed its work. Peterson added that the important thing is to have goals, incentives, etc., in place to move forward so the intention of the policy measure is clear. Another member added that it's important for the CECAC to have a relative idea of the impacts of the policy option broken down by component to show where the real bang for the buck is. Just even knowing proportionally would be helpful.

Takahashi explained that the policy goals of reducing electricity use by 1%/year by 2015 and 1.5%/year by 2020 are based on what other state utilities have achieved—e.g., in Massachusetts and California. A CECAC member commented that pointing to other states' experiences is too broad. Another CECAC member suggested that the CECAC let the RCI TWG know if it thinks the targets are inappropriate.

A CECAC member noted that South Carolina doesn't have a well-developed energy efficiency program. There are lots of ways to implement this policy option, and if the state is aggressive, the goals are achievable. The costs are accurate as experienced by other states. Another member suggested that the TWG find out where the biggest bang for the buck is among the various components. Napoleon responded that the TWG can provide more guidance about what the most cost-effective measures might be.

Another CECAC member asked how the TWG calculated avoided costs. Napoleon responded that the avoided costs for electricity are based on information from Duke and Progress. The member suggested getting information from other utilities in the state. Napoleon responded if the TWG gets the information from the rest of the utilities, based on their Public Service Commission utility filings, the numbers can be adjusted.

Chairman Hagood summed the discussion by saying that the RCI-1 goal remains the same, but the option needs further consideration regarding what steps need to be taken to achieve the 1% goal, and the priorities, costs, and impacts of those steps.

RCI-2 (Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil)—This option is not ready to move forward as a TWG recommendation to the CECAC. The TWG has the numbers for natural gas, but not for propane or fuel oil. No comments or questions.

RCI-3 (Incentives and Regulatory Reform To Promote Implementation of Renewable Energy Systems, Including Solar Hot Water [Residential, Commercial, and Industrial])—This option is a work in progress. The TWG recommends adding solar to 10% of homes and businesses. This option may have a minor overlap with RCI-1 and RCI-2; CCS is analyzing the extent of this overlap. No comments or questions.

RCI-4 (Energy Management Training/Training of Building Operators)—Napoleon reported that this option is ready to move forward as a TWG recommendation to the CECAC. It hasn't been quantified because the results can be so varied, especially the GHG reductions. No comments or questions.

RCI-5 (Incentives, Resources, and Regulatory Reform To Promote Energy Recycling, Including Combined Heat and Power)—This option has a relatively aggressive target of 40% of technical potential, which will reduce GHG emissions by 39.5 MMtCO₂e at a savings of \$6/tCO₂e reduced. Other states are achieving 30%–40% penetration. The TWG considered a target of 50%, but rejected it as being infeasible. This option may have a minor overlap with RCI-2, which has not been analyzed.

One member asked what combined heat and power (CHP) means. Napoleon responded that CHP uses technologies that channel the otherwise wasted steam from the power system into productive energy uses. The member asked why CHP isn't being used widely in the state. Napoleon responded that processes using CHP might get penalized in their rates if they need backup from utilities. Another member added that the avoided costs are low, so it doesn't make sense to shift to a different supply of energy.

A TWG member noted that none of the utilities is studying the possibility of making a standard offering to increase the use of CHP. A development company is saying it would use the power from a standard offering if criteria were met. Conversations about this are taking place with the Tennessee Valley Authority. This might be a large missed opportunity if not pursued. A CECAC member noted it's difficult to conceive how a standard offering would work. Another member said that some of the proposals he's seen

have mandates, etc., that aren't in the best interest of consumers. Steve Smith offered to submit language for the CECAC's consideration regarding a standard utility offering.

RCI-6 (Incentives and Policies for Improving Building Efficiency, Including Building Energy Codes)—Napoleon noted that more work needs to be done to quantify the costs and GHG reduction benefits of this option. There is a difference between residential sector code and commercial sector code energy efficiency improvements.

RCI-7 (Improved Design and Construction in New and Existing State and Local Government Buildings, “Government Lead by Example”)—This relatively aggressive policy involves audits for state and local government buildings and associated retrofits. The TWG doesn't have cost numbers for retrofits yet. No comments or questions.

RCI-8 (Participation in Voluntary Industry-Government Partnerships [Including Incentives])—This option encourages voluntary partnerships among businesses, industry, and government entities to reduce GHG emissions to 2000 levels by 2012 and to 10% below 2000 levels by 2020. The GHG reductions are modest. The TWG can't quantify the costs of this option because the data are considered proprietary, and information may vary widely from industry to industry. The goals could be met by reducing process gases and using energy efficiency measures and renewable energy. No comments or questions.

RCI-9 (Incentives and Policies for Improving Appliance Efficiency, Including Appliance Standards)—The appliances in this option were suggested by the Appliance Standards Awareness Project (ASAP). Part of the option calls for state purchase of appliances, but the TWG couldn't find the data, so they're not included in the total. The TWG also doesn't have data for the cost and benefits of periodic review of ASAP standards as ASAP suggests new appliance standards for states.

RCI Voting

RCI-1—No objections to moving forward for further analysis, as noted above.

RCI-2—No objections to moving forward for further analysis.

RCI-3—No objections to moving forward for further analysis.

RCI-4—Approved, subject to the CECAC's approval of the final text.

RCI-5—Approved, subject to the CECAC's approval of new language regarding a standard utility offering.

RCI-6—No objections to moving forward for further analysis.

RCI-7—No objections to moving forward for further analysis.

RCI-8—No objections to moving forward for further analysis.

RCI-9—Approved without objections.

Energy Supply (ES)

For each of the ES straw proposals, Alice Napoleon of CCS provided a brief summary of the draft quantification results and ES TWG members assisted in responding to the CECAC's questions and comments. Ezra Hausman and Kenji Takahashi of CCS, who participated by telephone, also assisted in responding to the CECAC's questions and comments.

Summary of Comments and Responses to Questions

ES-1 (Study the Energy Options for Portfolio Standards)—Napoleon explained that ES-1a–e are components for a portfolio of low-carbon and no-carbon resources considered in the ES-1 analysis. These components are depicted in a supply curve on page 9 of the ES-1 POD. Table 2 of the POD summarizes the parameters for new installations of renewable energy resources. Napoleon noted that the full potential for offshore wind power is much higher than what is shown in Table 2. Based on data provided by Walt Musial of the National Renewable Energy Lab (NREL), there is 7,200 megawatts (MW) of potential within 13 nautical miles of shore at a depth of the ocean floor of 30 feet or less at the location of the wind facility. The analysis of ES-1 assumes two 500-MW offshore installations during the period of analysis on the basis that this seems feasible on this time scale. Offshore wind is potentially the largest source of renewable energy in South Carolina.

A member noted that the numbers in Table 3 of the POD derived from Moody's look very high for nuclear. A member said his company has talked with three different vendors and the numbers haven't been this high. A TWG member suggested the utilities provide numbers the TWG might use. The member responded that he can provide ranges, not exact numbers. This will be discussed at the next TWG meeting.

Napoleon noted that this policy option is being returned to the TWG for more work because the TWG needs to have a better idea of what the portfolio would look like before proposing the option to the CECAC. She encouraged CECAC members with good data to provide that information to the TWG.

A CECAC member asked what the format of the portfolio will look like. Chairman Hagood explained that ES-1 was originally proposed as a standard, but the CECAC wanted to understand its components. A TWG member said it would be helpful for the TWG to say what percentage of GHG reductions would come from renewable energy, nuclear energy, conservation and energy efficiency, etc. Peterson noted that it would be helpful to have a cost curve in terms of cost per ton of CO₂e reduced to develop a portfolio of the most cost-effective resources. The CECAC member suggested that the RCI and ES TWGs should coordinate their work to reflect the overlap between RCI-1 and ES-1e (the energy efficiency component).

A CECAC member proposed a portfolio of new resources: 3% renewable energy, 3% energy efficiency, and 6% nuclear energy. Another member noted that this proposal for energy efficiency and renewable energy is only half of what North Carolina came up

with—12.5% by 2020. A CECAC member suggested that the TWG model this option to determine if South Carolina can realistically achieve North Carolina's GHG reductions using 7.5% renewable energy and 5% energy efficiency, in terms of plants coming on line.

Another member requested that the TWG report costs to customers when considering the option's viability. If their bills increase too much as a result, the option won't be viable. He asked the TWG to present a practical, ambitious, achievable set of goals, outlining the cost of each option. Another member said that North Carolina isn't going to achieve its goals and shouldn't be considered a standard. He also cautioned the CECAC to make sure it proposes a practical recommendation that doesn't assume, for example, that the state cuts down every tree to meet the option's goals.

Another TWG member commented if the CECAC knows how much each option will cost, the cheapest option can be chosen first and a model can be run on it. Then the TWG can go back to economic dispatch and change the percentage to see what option should be focused on next. Hausman replied that the supply curve on page 9 may be an unsatisfactory simplification as a decision model because different elements have quantities that are arbitrary and, therefore, aren't directly comparable. Just doing economic dispatch based on the supply curve isn't straightforward. Peterson suggested the TWG work to improve the supply curve to have one or more curves to reflect timing and other issues. Hausman replied that's possible, but would result in more of a story than a supply curve.

Chairman Hagood proposed that the TWG continue working on this policy option's assumptions and come back to the CECAC with a set of recommendations for percentage allocations of the various components.

ES-2 (Technology Research and Development)—Napoleon noted that a feasibility issue for this option is potential sources of funding. The TWG will remove “TBD” (meaning To Be Determined) everywhere in the POD and insert replacement text. The TWG can identify the costs of but not the return on this option. No comments or questions.

ES-3 (Renewable Energy Financing)—Napoleon explained that this option uses the same assumptions as ES-1. The TWG still needs to evaluate a number of different incentives. Also, there are overlaps, such as ethanol production for transportation, which the TLU TWG is considering.

A TWG member asked whether the TWG plans to evaluate the 25%–28% capacity factor for onshore wind generation. Hausman said the TWG is open to suggestions for different assumptions. A CECAC member added that efforts to get reliable data for offshore wind production are a work in progress.

Another member noted that establishing feed-in tariffs may not be in the best interest of the customer. Napoleon clarified that these tariffs are proposed for large-scale projects, as noted on page 15 of the POD.

As a general comment, Chairman Hagood recommended that the CECAC talk less about what California is doing and more about GHG-reduction actions South Carolina's neighbors are taking.

ES-4 (Return on Investments in Energy Efficiency)—Napoleon reported that the TWG initially did not want to model the policy on Duke Energy's "Save-A-Watt" program, but then decided to look at the implications of different allocations of avoided costs of providing energy-efficient electricity between the utilities and the ratepayers, consistent with the general thrust of the Save-A-Watt proposal. ES-4a assumes the utility receives 10% of the avoided costs of not building a new plant and its costs of implementing energy efficiency measures. ES-4b assumes the utility receives 90% of the avoided cost of not building a new plant, in exchange for implementing energy efficiency measures. Instead of giving all of the avoided costs to ratepayers, the TWG examined sharing the avoided costs between ratepayers and utilities.

The TWG had discussed combining RCI-1 and ES-4. A TWG member noted that the TWG may not come up with one program, and asked whether it should drop this option and go back to RCI-1 and propose a plan for the CECAC's consideration. Chairman Hagood added the net effect shows up in the cost column, rather than the GHG reduction column. Another TWG member proposed that the TWG run the two different allocations and run a range to determine their costs.

A third TWG member commented that this option applies specifically to investor-owned utilities. He suggested the CECAC ask these utilities to present a proposal for its consideration.

A CECAC member pointed to his confusion about and the need for transparency regarding the TWG recommendation to award a utility 90% of the cost of building a plant on an investment it didn't make. If the utility hasn't paid for the cost of building a new plant, the TWG can't determine the real avoided cost. These comments led to extensive discussion of the recommendation and what it means to set a rate of return the utility should receive for not building a new plant. CCS clarified that the analysis assumes that program costs are assumed to be recovered including a return on investment, *in addition to* whatever portion of the avoided energy costs is allocated to the utility as an incentive payment.

A CECAC member suggested that one approach would be for the utility to derive the return on investment (ROI) it would receive if it built the plant. Another approach would give the utility an ROI above its traditional earnings for its investment in energy efficiency improvements, and the TWG would recommend a specific percentage for this ROI.

ES-5 (New Nuclear Power)—This analysis is almost complete, but the TWG doesn't have good data on the cost of reprocessing nuclear waste. A TWG member suggested using data from other countries or other states, such as Connecticut or New Jersey. A CECAC member noted that reprocessing isn't being done successfully. Another TWG member noted that there's a lot of controversy about whether South Carolina should go

the reprocessing route. He recommended that the TWG examine the range of numbers that are available to get a dose of the reality of the staggering projected costs of reprocessing. If the CECAC decides not to make reprocessing a part of this option, the option could be combined into ES-1. It was noted that the TWG needs to look at the life-cycle costs, which could have some savings. Chairman Hagood suggested that the TWG compose a narrative of the implications for South Carolina with and without reprocessing, address the objections to reprocessing and recycling nuclear waste, and quantify the costs of new nuclear power and waste reprocessing.

ES-6 (Green Power Purchases and Marketing)—This policy would establish a voluntary green power program offering a green power option to consumers throughout the state. The current policy design has a 1%–5% range of participation by retail customers by 2012. The ES TWG thinks a 1% range is more appropriate. The TWG is considering a certification program, but monitoring and verification have attendant costs, though they could be small relative to the total cost of renewables. The TWG suggested setting a goal of 1% customer participation by 2012 and keeping it steady through 2020.

ES-7 (Renewable Energy Technology Businesses)—The costs and benefits associated with this policy will not be quantified. A TWG member suggested getting universities to examine this option to add more specificity to the narrative.

ES-8 (Distributed Renewable Energy)—This option is still being analyzed. The institutional and market barriers to distributed renewable energy are the same as those for CHP, but there is no overlap in the measures.

ES Voting

ES-1—No objections to moving forward for further analysis, as noted above.

ES-2—Approved without objections.

ES-3—No objections to moving forward for further analysis.

ES-4—No objections to moving forward for further analysis.

ES-5—No objections to moving forward for further analysis.

ES-6—Approved without objections.

ES-7—Approved without objections.

ES-8—No objections to moving forward for further analysis.

Cross-Cutting (CC) Issues

For each of the CC straw proposals, Randy Strait of CCS provided a brief summary of the draft quantification results and CC TWG members assisted in responding to the CECAC's questions and comments.

CC-1 (Inventories and Forecasting)—No questions or comments.

CC-2 (GHG Reporting and Registry)—The focus of this option is to encourage sources of GHG emissions to participate in *The Climate Registry* and position themselves for future emission trading opportunities. South Carolina Department of Health and Environmental Control (DHEC) already gathers information for many sectors included in the GHG inventory. The state is a charter member of *The Climate Registry*.

A CECAC member commented that EPA was tasked with emission reporting and asked whether that new EPA requirements would take over *The Climate Registry* reporting. Randy Strait of CCS said it could, and noted that EPA intends to use *The Climate Registry* protocols. The member said *The Climate Registry* requires third-party verification, which could add \$20,000–\$50,000 to the cost of joining *The Climate Registry*. Chairman Hagood suggested that the POD make a reference to the new federal reporting requirement and recommend that there be no duplication of efforts.

CC-3 (Statewide GHG Reduction Goals and Targets)—No questions or comments.

CC-4 (State Government GHG Emissions (Lead by Example))—The goal of this policy is to have states and school districts understand the impacts of their use of energy and reduce their GHG emissions. Strait noted that the TWG revised the Implementation Mechanisms section of the straw proposal to address a comment the CECAC provided during its January teleconference. The revised straw proposal places the responsibility for implementing this option under the South Carolina Budget and Control Board, through the South Carolina Energy Office, in order to use existing infrastructure within the state and to minimize implementation costs.

A CECAC member noted that Senator McConnell introduced a bill to require a percentage of GHG emission reduction by state agencies. The agencies would be responsible for implementing their reductions and would report them to the South Carolina Energy Office. Another CECAC member suggested that the POD language be stronger, and perhaps reflect language from Senator McConnell's bill.

Strait noted that the TWG will be considering the applicability of statewide goals or targets to state government operations during its work on CC-3.

CC-5 (Comprehensive Local Government Climate Action Plans (Counties, Cities, etc.))—Under this option, South Carolina would work with local governments to help them develop plans for reducing their GHG emissions. A CECAC member noted that this option needs to be consistent with TLU-4. Chairman Hagood added that it may need some reconciliation with what TLU-4 will ultimately become. Strait suggested adding broader language to make it clear that local governments should consider incorporating all of the CECAC recommendations, as applicable to their jurisdiction, into their local plans. The CECAC agreed with this suggestion.

CC-6 (Public Education and Outreach) A CECAC member noted that getting people to change their lifestyle to reduce GHG emissions will be a huge undertaking. The message should be understandable and significant, and existing infrastructure should be used to

communicate the message via a variety of avenues and media. Another member asked that the media be added as a target audience; this request was approved by the CECAC without objection.

CC-8 (Adaptation & Vulnerability)—Strait reported that the only revision made to this option was the addition of insect vectors to the list of potential impact associated with climate change in South Carolina. A CECAC member noted that getting high-quality and consistent elevation data from coastal counties needed to support analyses of potential sea level rise impacts scenarios is problematic. The vulnerability of the coast can't be determined without high-quality data. He recommended including in the policy option a recommendation for obtaining 6-, 10-, and 12-inch contour data. Different counties in the state have different policies for shoreline mapping, and they're also territorial about their information. The state could have laser mapping done, and get funding from the Federal Emergency Management Agency. The challenge would be how to put the information into a format that is accessible to the public.

CC Voting

CC-1—Approved without objections.

CC-2—Approved without objections, with modification to acknowledge the new federal requirement for the US EPA to develop mandatory reporting requirements for GHGs and the need for South Carolina to coordinate with the US EPA to avoid duplication of potential GHG reporting burden on emission sources.

CC-3—No objections to moving forward for further analysis.

CC-4—No objections to moving forward for further analysis.

CC-5—Approved without objections, with modification noting that community plans will be an effective mechanism for implementing recommendations that the CECAC approves for the statewide Action Plan for South Carolina, and that the CECAC encourages communities to consider and include, to the extent possible, the CECAC's recommendations in community plans.

CC-6—Approved without objections, with modification to the policy design to add "media" as a target audience.

CC-8—Approved without objections, with modification to the policy design to include plans and funding support to develop for all of South Carolina's coastal counties high-quality elevation data (based on consistent methods) that is needed to support assessments of potential sealevel rise impacts.

Agriculture, Forestry & Waste Management (AFW)

For each of the AFW straw proposals, Steve Roe of CCS provided a brief summary of the draft quantification results and AFW TWG members assisted in responding to the CECAC's questions and comments.

Summary of Comments and Responses to Questions

AFW-1 (On-Farm Energy Efficiency)—Renewable energy may be produced and used on site at individual agricultural operations or regionally through farm cooperatives to achieve better economy of scale. This option has a net cost savings. There were no questions or comments from the CECAC.

AFW-2 (Farm By-Products Energy Recovery)—This option would recover energy from on-farm wastes (swine, dairy, and poultry wastes). The likely technology is anaerobic digestion, with the conversion of the resulting biogas into electricity. The swine/dairy analysis shows a net cost, while the poultry litter analysis shows a net cost savings. There were no questions or comments from the CECAC.

AFW-3 (Expanded Use of Local Agricultural Products)—CCS has not yet analyzed the cost-effectiveness of this option or quantified the costs of this option in other states. The GHG benefits are low, but there may be potential for further reductions. CCS stated that a cost analysis would most likely capture only the cost of programs by the state. The analysis would not capture the revenue raised from the additional marketing and branding of South Carolina agricultural products or the costs associated with additional infrastructure for collecting, processing, storing, and packaging locally produced goods. The committee is not necessarily looking for an in-depth analysis, but an anecdotal and top-down look at the costs of implementing this option. CCS asked the CECAC to provide input regarding whether to leave this as a nonquantified option or to proceed with quantification of the partial costs of implementation of the option. There were no questions or comments from the CECAC.

AFW-4 (In-State Liquid Biofuels Production)—South Carolina's numerical targets for biodiesel and ethanol production by 2020 include lower- and upper-limit targets. This option will be adjusted once the TWG evaluates the overlap with TLU-12. This will be indicated in the cumulative analysis presented at the next CECAC meeting. There were no questions or comments from the CECAC.

AFW-5 (Expanded Production of In-State Biomass for Electricity, Heat, or Steam Production)—The intent of AFW-5 is to use locally produced biomass to produce electricity. This option may overlap with some ES TWG options. There were no questions or comments from the CECAC.

AFW-6 (Terrestrial Carbon Sequestration)

AFW-6a (Soil Carbon Management [Agriculture])—This option has not yet been quantified. CCS has obtained useful data and will proceed with quantification next week.

AFW-6b (Forest Management for Carbon Sequestration)—A portion of this option's goals is missing in the AFW POD. The TWG extensively discussed revising the goals. A TWG member noted that AFW-6b is not ready to move forward. He suggested that the CECAC use Tim Adams as a contact to review data regarding the urban forestry goal.

AFW-7 (Conservation and Restoration of Forest and Agriculture Lands for Enhanced Carbon Sequestration)—This option incorporates methodologies that reduce the rate at which the existing base of South Carolina agricultural land is cleared and converted to developed uses. The estimated GHG reductions are higher on the forestry side of this option, and the costs are higher on the agriculture side. A member asked whether *The Climate Registry* will include the benefits of sequestration. Roe responded that some of the existing registries (e.g., California's) have not allowed this in the past, although they are progressing in a manner that allows credit for sequestration projects.

Strait pointed the CECAC to text in the policy design section of CC-2 (State GHG Reporting and Registry) which states: “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.”

AFW-7a (Conservation and Restoration of Agriculture Lands for Enhanced Carbon Sequestration)—No questions or comments.

AFW-7b (Conservation and Restoration of Forestlands for Enhanced Carbon Sequestration)—No questions or comments.

AFW-8 (Advanced Recycling and Composting)—This option has net cost savings based on the avoided cost of landfilling and the potential value of recycled materials. There were no questions or comments from the CECAC.

AFW-9 (Organics Management for Energy Recovery)—Waste-to-energy reclamation (primarily landfill gas) results in substantial GHG reductions, but the costs are nearly zero out to 2020. The costs are based on assumptions about the types of technologies that will be used. There were no questions or comments from the CECAC.

AFW-10 (Water and Wastewater Energy Efficiency Improvements)—As with most energy efficiency measures, this policy option has net savings. There were no questions or comments from the CECAC.

AFW Voting

Chairman Hagood proposed bulk approval of AFW-1, 2, 4, 5, 7, 8, 9, and 10. A member wished to withhold full approval on AFW-7, pending further discussion of the sources used for the quantification. The block of items was accepted, pending the stated stipulation for AFW-7.

AFW-1—Approved without objections.

AFW-2—Approved without objections..

AFW-3—No objections to moving forward for further analysis.

AFW-4—Approved without objections.

AFW-5—Approved without objections.

AFW-6a—No objections to moving forward for further analysis.

AFW-6b—No objections to moving forward for further analysis.

AFW-7—Approved without objections, with the understanding that the TWG will investigate opportunities for South Carolina entities to register carbon credits generated by this option.

AFW-8—Approved without objections.

AFW-9—Approved without objections.

AFW-10—Approved without objections.

5. Review and discussion of South Carolina’s Draft GHG Inventory & Forecast

Due to time constraints, South Carolina’s Draft GHG Inventory & Forecast were not discussed.

6. Public Input and Announcements

Members of the public did not provide any comments. There were no announcements. The meeting was adjourned.

The meeting was adjourned.