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MEETING SUMMARY
SOUTH CAROLINA CLIMATE, ENERGY AND COMMERCE ADVISORY
COMMITTEE

Energy Supply (ES) Technical Work Group (TWG)

Teleconference meeting #11, March 27, 2008 from 3:30 PM to 5:00 PM

Attendance:

1. Technical Work Group Members:

- Mark Tye (for Lonnie Carter – President and CEO, Santee Cooper)
- John Clark – Director, South Carolina Energy Office
- Jerry Freck – Environmental Engineer, South Carolina Department of Health and Environmental Control
- Emerson Gower – Vice President, Southern Region, Progress Energy Carolinas
- Henry Barton (for Kevin Marsh – President, South Carolina Electric & Gas)
- Ben Moore – Coastal Conservation League
- David Odell – President, Sunstore Solar of Greenville, South Carolina
- Mark Hollis (for James E. Rogers – Chairman, President and CEO, Duke Energy Corporation)
- C. Dukes Scott – Executive Director, Office of Regulatory Staff
- Steve Smith – Executive Director, Southern Alliance for Clean Energy
- John Tiencken – Former CEO, Santee Cooper

2. Center for Climate Strategies (CCS) Staff:

- Ezra Hausman – Lead facilitator
- Alice Napoleon
- Kenji Takahashi
- Tom Peterson

3. South Carolina Department of Health and Environmental Control (DHEC):

- Michael Juras – SCDHEC; Agency Liaison

4. South Carolina Agency Observers

- Anthony James - South Carolina Office of Regulatory Staff

5. Public Attendees:

- Tom Howell
- Mike Kennedy – Progress Energy Carolinas
- Bob Long – South Carolina Electric & Gas

- Janelle McCain – Progress Energy Carolinas
6. Technical Work Group Members not attending:
- Robert Boyles – Deputy Director, Marine Resources Division, Department of Natural Resources
 - Joan Bozzone – Physical Scientist, National Nuclear Security Administration
 - Bob Fledderman – Manager, Environment and Regulatory Assurance, MeadWestvaco
 - Jeff Hinson – Utilities Manager, Clemson University
 - Fred Humes – Chairman of the Board of Directors of the South Carolina Hydrogen and Fuel Cell Alliance
 - Mark Lewis – Vice President, Westinghouse Electric
 - John Plodinec – Savannah River National Lab
 - Nick Rigas – Director, South Carolina Institute for Energy Studies
 - Coleman Smoak – General Manager, Piedmont Power
 - Joette G. Sonnenberg – Associate Laboratory Director, Energy Security, Savannah River National Laboratory

Background documents:

Posted at http://www.scclimatechange.us/Energy_Supply.cfm:

1. Meeting Notice and Agenda
2. Revised Summary of Meeting #9
3. Draft Summary of Meeting #10
4. Draft Summary of Supplemental Meeting #10a
5. Draft Summary of Supplemental Meeting #10b
6. PowerPoint for Teleconference
7. Policy Option Document

Discussion items and key issues:

This was the 11th meeting of the ES TWG.

1. CCS called the meeting to order, completed the roll call and reviewed the agenda and plans for the call. Ezra noted that the penultimate CECAC meeting is next week (at which the CECAC will be voting on policies from other TWGs), and the final CECAC meeting is May 9. He thinks that the TWG will need another meeting to wrap up outstanding issues, and that an in-person meeting in Columbia would be most productive. Some dates were considered but presented conflicts for various members of the TWG. Provisionally, the TWG will meet on 4/28/08.
2. Draft meeting summaries
 - a. Meeting 10 – no comments or objections
 - b. Meeting 10a – no comments or objections
 - c. Meeting 10b – no comments or objections
3. Summary & status update –
 - a. ES-1 CCS has avoided energy & cost information to discuss with the TWG
 - b. ES-2 Complete

- c. ES-3 CCS will not be able to analyze all of the elements of this policy; some parts need to be left unquantified
 - d. ES-4 There are a couple of different proposals, either like Duke's proposed Save-A-Watt model, or a higher return on energy efficiency
 - e. ES-5 CCS circulated the Boston Consulting Group study. Ezra thinks the TWG probably won't agree to use this source and suggests not including reprocessing in the analysis.
 - f. ES-6 Complete
 - g. ES-7 Complete
 - h. ES-8 CCS hasn't gotten the chance to quantify the costs and benefits of this policy yet
4. Policies in most need of definition and direction from the TWG were discussed first.
- a. ES-1
 - i. Before the meeting, Ezra circulated a new version of the portfolio analyzer, updated with new resource potential & costs discussed at the previous meeting. He also adjusted the costs of nuclear.
 - ii. He thinks that costs all around are too low, perhaps because the current assumption for the weighted average cost of capital (WACC), 6%, is too low, and recommends closer to 10%. Utilities were asked about their WACC; Mark Hollis reported that Duke's is 8-8.5%, although Marc Tye thought 6% is high for Santee Cooper (with a bond rating close to AAA). Kenji Takahashi suggested that a different risk profile might be appropriate for financing nuclear plants.
 - iii. There was some discussion of the results of the analysis for 3 portfolios: 1) 3% RE, 3% EE, 6% nuclear, with RE scaled according to potential 2) 3% RE, 3% EE, 6% nuclear, with most cost effective RE, and 3) all available RE potential, 10% EE with no nuclear (the "strong RE/EE portfolio"). Ezra explained that the gross benefits are almost entirely from avoided costs (\$58/MWh), and that the avoided cost assumption is based on conventional generation, not based on constructing a nuclear plant. Cost is from installation, etc. This analysis doesn't monetize employment benefits or the substantial benefits of avoided emissions. Mike Kennedy noted that these types of benefits may not flow thru to customers (e.g. from avoided CO2).
 - iv. It was suggested that the analysis use a 8.5% WACC for all resources, regardless of ownership. There were no objections to this proposal.
 - v. Ezra asked which portfolio should be shown to the CECAC, or if the TWG wanted to show the results for all of these portfolios. Ben Moore suggested that the analysis use the strong RE/EE portfolio, based on its superior cost effectiveness & greater GHG reductions. Mark Hollis said that he didn't have time to review the results of the analysis. Marc Tye

expressed reservation about being able to achieve 10% EE at 3 cents per kwh saved—the cost effectiveness goes down. Ezra noted that 10% is by 2020, and EE can be added incrementally.

- vi. It was asked why EE was cut off at \$30/MWh, when the cut off for the portfolio was based on assumption for the cost of nuclear at \$97/MWh. Alice explained that for RCI-1, achievable EE was based on the feasibility of ramping in efforts and building up infrastructure—RCI constructed a ramp in over several years, based on what other utilities have been able to achieve. Kenji noted that San Diego Gas & Electric is getting 2% savings per year, at a cost of about 3 cents/kwh.
- vii. John Clark noted that 6% does not reflect what utilities are proposing—there’s a big difference between 800 MW & 4000 MW, but he doesn’t want to hold things up. Ezra noted that the generation could be exported.
- viii. It was suggested that both portfolios be “run up flagpoles” for the CECAC, but that CCS should point out the sensitivities and provide the portfolio analyzer tool to the CECAC. Ezra will write up examples in text in the policy option document and provide the CECAC with the tool. There were no objections to moving ES-1 forward to the CECAC.

b. ES-3

- i. Ezra reviewed the five parts of this policy and recommended the following:
 - 1. Ezra proposes that this part not be quantified.
 - 2. This part would be quantified. Kenji noted that he has set up a budget and incentives at \$3500/kw, allocated the budget to four resources based on professional judgment – biomass, PV, Hydro, Wind.
 - 3. Ezra proposes that this part not be quantified.
 - 4. CCS hasn’t been able to analyze this one but proposes to do so.
 - 5. Ezra proposes that this part not be quantified, because it is not defined well enough at this point.
- ii. It was suggested that the word “biomass” under part 5 be changed to “renewable”.
- iii. John Clark asked about information he had sent to Ezra on the cost for PV from NREL. Ezra replied that he looked at the materials, but was hesitant to use them because it identified these costs as a target, not a projection. He also pointed out that if cost comes down to \$100, then the federal tax credit may go away. Should we taper down costs towards end of period? John noted that the sources for PV costs are pretty old. CCS will look at this, including the AEO projected cost trajectory.
- iv. Kenji noted that the state tax credit is not included in the analysis because it is subsidy from state (i.e., a transfer). The federal tax credit does apply,

because the source is largely external. John noted that the state looks at tax incentives as promoting economic activity that would otherwise not occur. Ezra indicated that he would note other benefits in additional costs & benefits.

c. ES-4

- i. Ezra reviewed the outstanding proposals for this policy:
 1. A model based on Duke's Save-A-Watt proposal – utility would get 90% of the avoided cost
 2. 90% of profit on avoided investments (which equals 10% of avoided cost)
 3. Utility would get a bonus rate of return for successful implementation of EE
- ii. The question was put to the 3 utilities (SCANA, Progress, Duke): What would work? It was noted that the utilities may not agree on one method. Whatever the TWG recommends should have the flexibility to accommodate all programs in the state.
- iii. Concern was expressed about the 90% proposal, that there will be negative blow-back because of negative consequences to ratepayers, and that ES-4 could be seen as an implied endorsement of Duke's proposal. Ezra noted that we can address these issues qualitatively in text, even if it is not in reflected in the analysis. It was asked if this policy need to be quantified; Ezra responded that it is up to the TWG & the CECAC, but also noted that for the cumulative analysis, ES-4 will not add to the bottom line because it overlaps with the goals of RCI-1. If all can't agree on specific incentive, then not quantifying this policy may be a good way to go.
- iv. It was suggested that "reasonable" should be added to the third bullet under policy design as follows: "Allow utilities to earn a [reasonable] financial incentive..." There were two objections to adding "reasonable" to the text. The proposal was withdrawn, because there are other more appropriate venues to address this issue.
- v. Ezra raised the earlier proposal not to quantify this policy option. Ezra would edit the policy to reflect that it isn't being quantified, although the graph and language on utility share of avoided cost will staying in.
- vi. There were no objections to moving ES-3 forward to the CECAC.

d. ES-5

- i. Reprocessing:
 1. Ezra expanded goal (2) into (2)(a) & (2)(b) (note typo in document; both are labeled (2)(a)). Given that we're having trouble getting agreement and comfort on sources, he suggested leaving the reprocessing piece as text and not quantify it.

2. Kenji had some research findings on the cost of reprocessing to report, which he recommended be put in a table in the text:
 - a. Testimony by Steve Fedderer from the MD School of Public Policy to the US House of Representatives Subcommittee on Science indicated that the cost of new uranium is \$32/kg. It would cost \$2000/kg to obtain uranium from a new reprocessing facility in the US, and \$400/kg of new uranium is the break even point. Even if costs of reprocessing could be halved, then the price of uranium would have to go up to \$400/kg.
 - b. Frank Von Hippel – cost of reprocessing would be \$1000-\$2000/kg.
 - c. The Boston Consulting Group study was also mentioned.
3. Mark Hollis noted that the language in 2a & 2b seem reasonable, as would be a table with different cost estimates of reprocessing.
4. It was asked what “viable” means specifically. It was suggested that “cost effective & viable” be included in both 2a & 2b.
- ii. Ezra asked about the amount of new nuclear to use in the analysis of ES-5. If the TWG decides today, we can give the results to the CECAC on April 4.
- iii. He noted that assuming 4 new nuclear plants seems unrealistic given the global market for nuclear processors. John Clark suggested including 2200 MW for Santee & SCE&G, and whatever portion of 2200 MW that would be allocated to SC for Duke. Can SC absorb 4400 MW of new baseload generation? Mark Hollis will ask about allocation of generation in Duke’s nuclear department, but the bigger question is, will Duke build 2 units? He won’t know for a couple of years. Marc Tye said that Santee Cooper still plans to get 1000 MW of new nuclear by 2020—but it is “as up in the air as anything.” Bob Long of South Carolina Electric & Gas noted that 2200 MW from a new nuclear plant (to be split with Santee Cooper) is consistent with SCE&G’s resource plan. Janelle McCain of Progress noted that Progress has no plans to build new nuclear capacity in SC. Ezra suggests sticking with the plans we already know about for SCANA, Santee, & Duke. There were no objections to this approach.
- e. ES-8
 - i. Ezra noted that he hasn’t gotten the chance to quantify the costs and benefits of this policy yet. CCS will have to make some bold assumptions and collapse the policy quite a bit.

5. I&F

- a. SF6 recovery: Ezra asked whether utilities are recovering SF6 from transformers (through the EPA program). It was suggested that the co-ops probably aren’t.

Marc Tye didn't know if Santee Cooper does. Ezra asked if the utilities could email him tomorrow, or he will bring it up to CECAC.

- b. Growth of other renewables: Concern was raised earlier in process that the growth rate is unrealistically high. The new proposal based on NC methodology has them growing at 5% per year. The gap created by reducing "other renewables" would be filled with conventional power generation to meet load growth in this ratio: 25% coal/65% gas/10% oil. John Clark suggested that oil is not a possible resource. It's not realistic to simply take the historical mix & project it forward according to those ratios. If this methodology causes oil to be used, we need to take another look.
 - c. Are the utilities likely to add any new oil or natural gas? SCANA indicated it would add gas peaking capacity if needed; coal may not be available in a carbon constrained world. Ezra noted that we are not including the new nuclear capacity in the baseline.
 - d. Alice Napoleon gave an overview of the Energy Independence and Security Act. There were no questions or comments.
6. CCS solicited input from the public. The following comments were made:
- a. Tom Howell raised questions about the Boston Consulting Group study: who funded (AREVA), and was it peer reviewed? Ezra responded that there is a disclaimer on the front page of the report, that they were given inputs from their clients.
 - b. Tom also asked whether the TWG/the analysis is considering the amount of government subsidies that go into nuclear construction & nuclear fuel. Ezra replied that it is not considered in analysis (these subsidies are largely external to the state), but this could be addressed in additional costs & benefits.
 - c. Tom Howell also noted that renewable energy generation is generally small business, and that there may be more macroeconomic benefits associated with helping smaller businesses. He said there should be a greater emphasis on distributed RE, because it gives greater energy security to the state.

Next steps and agreements:

7. At its next meeting, the TWG will review the combined analysis – e.g. there are multiple overlaps within renewable energy, as well as with RCI. This meeting will be scheduled via email.