



Governor's Action Team on Energy and Climate Change

State of Florida

MEETING SUMMARY

FLORIDA ENERGY and CLIMATE ACTION TEAM

Energy Supply & Demand (ESD) Technical Work Group (TWG)

Teleconference Meeting, Call #16

September 2, 2008

1:30 p.m. – 3:30 p.m. EDT

Attendance

ESD TWG Members: Charlie Beck, Ben Crisp, Eric Draper, Alisa Coe & David Guest, Jack Glenn, Pierce Jones, Ted McCullough & Lonnie Noack, Jack Shreve, Ann Stanton, Eric Silagy, Stephen Smith, John Wilson & Tom Larson, Jennifer Szaro, Jack Shreve, and Leon Jacobs.

Office of the Governor: Jeremy Susac, Brenda Buchan.

Members of the Public: Bob Krasowski, Lisa Scoles, Katie Travis CDM for Reliant Energy.

Center for Climate Strategies (CCS) Staff: Tom Peterson, David Von Hippel, Randy Strait and Linda Schade.

Background documents

All posted at www.flclimatechange.us

Review of prior call summary

Several corrections were requested to Call #15 Summary which were made and the final summary was reposted to the website.

Review of Newly Quantified Options

David Von Hippel led the TWG through a review of those options which had been quantified.

ESD-5 Renewable Portfolio Standard

Two Options were run for the TWG's consideration. The assumptions affect where in the cost curve this option sits.

David explained that in the ESD-5 assumptions, solar PVs figured significantly here due to TWG feedback that hydro was essentially not available in Florida, and given that the extent of other, non-solar renewable resources are limited in the State. ESD-5 also assumed that the costs of PV will decline significantly over time. For example, from a levelized value of about \$500 in 2009 to about half of that by 2025.

A TWG member noted that while the costs of panels are expected to be lower, other ancillary solar PV system costs, including transmission and distribution and land costs will not go down. Land is currently \$20,000 per acre. Some solar component costs will not go down as quickly as the main technology costs will decline.

Another member observed that solar costs seemed high. David explained that ESD-5 assumed a step increase in the amount of renewable energy included over time. The costs are leveled discounted costs, and include capital, operating and maintenance, fuel, and other costs.

A TWG member noted that costs for increased spinning reserves and other investments and arrangements needed to compensate for the intermittent nature of solar and wind power were not included in the calculations, though the PSC planning and reporting process requires those costs to be factored in to system planning studies.

If the TWG can agree on estimates of costs to use for analysis, it was agreed that solar concentrating technology could be included as a technology option, though it was noted that its cost and capacity factor is not markedly different from that of solar PV. Since costs are expected to come down on solar concentrating technology, it is reasonable to document this and include it in the analysis.

On the question of scale, the TWG agreed that a few hundred MW of concentrating solar capacity associated with existing fossil-fueled capacity (which is less expensive than stand-alone concentrating solar thermal power) could be included for Florida.

Transmission capacity studies suggest that systems can get 20% of their power from solar and wind without having to reserve marginal costs. It was noted, however, that operational issues need to be addressed. Texas has only a few percent of its generation as wind power, but the minute-to-minute changes create stress on the system from the fluctuations. Big storms systems dropping a big load of wind power into the system need to be accounted for. While conceding that these are valid points, other TWG members noted that there has been work in other parts of the world and there is no one-size-fits-all solution to the integration problem. It will be useful to look at recent Texas studies, after 2 years of PSC hearings and studies.

David requested that TWG members send references to those studies and CCS will pursue these issues if time and resources are available.

A TWG member noted that the draft offshore wind capacity number seems low; the US DoE has a target of 20% from renewables. There is also the issue of wind and bird mortality. However studies can be done and if the turbines are not on migratory routes a lot of that concern is addressed.

A TWG member noted that the results of buoy-based wind measurement data did not find enough wind on the Gulf side (confirming the understanding of other TWG members), but it was noted that the Atlantic side of Florida is a different system; studies on the adjacent coast of Georgia suggest that Atlantic offshore wind would be more viable.

One TWG member thought that the resource assumption for coastal wind is twice what it should be; another argued it is half what it should be.

With regard to the analytical assumption that wind power capital costs will decline, it was noted that wind costs are no longer going down, and in fact have increased in recent years. In part this is because demand for wind turbines is high, and production capacity is limited, but the increase in costs is also a result of considerable cost increases in recent years for commodities such as cement and steel.

It was recommended to consult European costs to augment the estimates of O&M costs shown in Table X-1. Offshore wind power in particular, it was noted should probably have a higher O&M cost.

David summarized: There were questions about the capital costs and extent of resources, and there is a desire to look into the concept of spending reserve systems for PV power. CCS has agreed to look into it as resources allow, and to provide a note on the issue in the Options Document. CCS will also look at how solar PV capacity is “stepped in” in the existing analysis.

ESD-3 has the most of the same driving assumptions as ESD-5 and will be reviewed along the lines suggested by the TWG’s ESD-5 discussion.

ESD-8 Combined Heat and Power Systems

David asked the TWG for a rationale for the GWh electricity production goal provided in the Options Document. A TWG member noted that a study was just done on onsite (Bruce Hedman’s work from 2005 – a CHP market Review for the Southeast). Also, it was noted that CHP can be designed to do onsite heating and cooling, through the use of absorption chillers. A solar cooling project was cited that takes the concept of using heat to cool to a different level.

David agreed to include points of reference in existing literature to what the FL capacity might be – if those references are forwarded.

There was a request to add information as to how the CHP cost data were derived.

ESD-3 Renewable Energy Incentives and Barrier Removal

As a point of clarification, it was noted that nuclear power was not included in the ESD-3 analysis, which focused on renewable energy resources. It was suggested that nuclear power should be a part of either the “numerator” or “denominator” of the calculation of how the RPS is achieved.

ESD-9. Power Plant Efficiency Improvements

One TWG member from a utility commented that they had done plant Energy Efficiency improvements over the years, and a point is reached where further improvements are constrained by the design of the plant/system. It seems like a high goal to improve a further 10 percent. Another TWG member from a utility suggested that for their plants, as they've "done the low hanging fruit" (done efficiency improvements where most cost-effective), he was not sure where we an additional 1000 MW of improvements could be found.

David noted that - given the goal set by the TWG – the analysis assumed that a significant amount of repowering of existing units (to combined-cycle natural gas plants) seems to be implied in reaching the goal, and the costs of the option were estimated on that basis. It was noted that after a certain point, an efficiency improvement to a power plant, if it involves a net capacity addition, is sufficiently large that NSR (New Source Review) regulations under the Clean Air Act are required.

David asked if the TWG wanted to change the goal it had set. More questions and discussion followed.

Assuming that some coal is going to be switching out over the next 10 to 20 years, it was asked how that will affect the goals of this option. FPL, for example, is looking at switching-out coal – 500 MW of repowering with natural gas. That's about a 5% repowering goal of FPL's capacity. At Gulf it will be 1200 MW maximum – if that is what is meant by repowering. Gulf would call that "replacement" rather than repowering. It was asked whether ongoing efficiency improvement efforts, repowering, and replacement would be included in meeting the goal. A TWG member noted that his utility has a 1000 MW project coming online in 2010, and there are other projects, including more that are on the way. David suggested that improvement processes ongoing now or in the advanced stages of planning, rather than as a result of this proposed policy, would more likely be described as "recent trends", and not counted toward the option goal, and that the impacts of those processes could be estimated quantitatively, but that CCS would need to have the data on what types of improvements were underway in Florida to be able to make this calculation. A TWG member asked what the emissions savings would be if all coal used in power plants in Florida were replaced with natural gas. Other members from utilities noted that much of the oil-fired steam-cycle plants are being converted to natural gas, and that many of the opportunities for fuel-switching are already being taken advantage of; few additional such opportunities remain.

It was noted that ESD-9 seems like a major and important policy, but that it would be misleading to say that the more such measures are undertaken, the cheaper it will be, it could be misleading, due to the limitation in actual opportunities for efficiency improvement and repowering short of actual full replacement of power plants.

David summarized views: that some members think we should look at fuel switching and others say that you need a different box for replacement units.

A suggestion was made to have a 'Policy 9a' which is a fuel switching category to get a sense of what the capacity is. David noted that it would be difficult to add another option at this point,

and to do a full quantification on such a policy, so CCS will add a comment to the ESD-9 narrative noting the merits and uncertainties of power plant fuel switching.

ESD-11 Waste-to-Energy

This policy covers methane gas capture from landfills to reduce direct methane emissions and to substitute for fossil fuels for electricity generation..

Several utilities have projects which will be done before 2012.

Review of Other ESD Policy Options

ESD-6 Nuclear Power

A TWG member noted that a second nuclear unit on the same site as an existing unit is typically much less expensive than first, and noted that it looks like an average unit cost was used for the current analysis of this option. Another member pointed out a \$0.11 to \$0.14 estimate, by a Florida utility, of the levelized cost per kWh of nuclear energy, and asked why that figure was so much higher than the cost of approximately \$0.10 per kWh now being used. David clarified that the former range reflected the use of future dollars (2018 or so), while the \$0.10 figure is expressed in 2006 dollars David agreed to modify the document to identify this difference, and to further clarify as needed in the text the specific parameters on which the estimate now in use is based.

A TWG member also noted that many utility plans that include nuclear reactors include 20 years or life extension beyond the standard 40 year reactor life, so that the actual lifetime of a nuclear unit is more likely to be 60 years, While that may not affect the costs of the plant in the next 40 years, depending on how plants are financed, especially with discounting of future year cost flows, , it will change the life cycle costs. Another TWG member noted that nuclear power plant costs have increased dramatically in recent years, as have the costs of many other types of power plants, thus an escalation in capital costs may be appropriate. CCS agreed to add both of these considerations as footnotes to the text.

Comparison of FRCC and CCS Draft Inventory and Forecast

Randy Strait of CCS gave a brief presentation on this Powerpoint. The TWG was asked to review this comparison in more depth and send comments by September 4th.

Summary of results (based on default assumptions)

- Comparison between the existing forecast which relies on AEO2007 outputs, and the FRCC 2008-2017 (10-year forecast), extrapolated to 2025 using the assumptions noted in this presentation, shows by 2025 that the (extrapolated) FRCC forecast for Florida is:

- 10% higher for sales
- 39% higher for gross generation (production-based)
- 19% higher for gross generation (consumption-based)
- 100% less for imports
- Exports: 2 TWh for FRCC versus 0 TWh for the existing forecast
- 32% higher for primary energy use (production-based)
- 17% higher for primary energy use (consumption-based)
- Using the FRCC estimates and assumptions for FL as noted in this presentation will result in a considerably different GHG forecast for electricity generation than the existing forecast
- There are uncertainties in the FRCC forecast for FL in the 2007-2017 and 2018-2025 periods due to default assumptions made.

Public Comment

Bob Krasowski requested that the last sentence in the Call #15 summary, reporting his comment during made during the call, be corrected. Regarding population increase – some people seemed to think that Florida needs to build new nuclear power plants to serve a growing population, based on assumed population growth, and it isn't clear those assumptions are accurate. His opinion is that nuclear power advocates wish to build nuclear power plants to replace coal-fired power.

Regarding fuel-switching discussed as a part of ESD-9, Bob Krasowski asked where nuclear power falls into this conversation. David responded that nuclear power is separately treated in ESD-6 and not included in ESD-9. Bob noted that nuclear power produces regular on-site radioactive emissions, which could be noted in the area for Additional Benefits and Costs in the text of ESD-6. David suggested that this type of information could be included if the TWG (or CAT) wished to do so.

Next Steps

The date and time for the final TWG call #17 is Tuesday, September 23, 2008, from 1:30 p.m. to 3:30 p.m. EDT.