



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 #11
June 25th, 2008
1:30 pm – 3:30 pm EST

Attendance:

1. ESD TWG Members: Alisa Coe, Earthjustice; Ben Crisp, Progress Energy Florida, Terry Beeson, Maribel Nicholson-Choice, John Wilson for Steve Smith, Southern Alliance for Clean Energy; Tom Hernandez TECO.
2. FL Department of Environmental Protection: Tom Rogers
3. Members of the Public:
4. CCS: Donna Boysen, Hal Nelson, Judith Barry

Background documents: (all posted at <http://www.flclimatechange.us>)

- Notice and Agenda
- Powerpoint for Teleconference #11
- Revised ESD Straw Proposals

Discussion items and key issues:

1. This was the 11th conference call of the FL ESD TWG.

Donna Boysen of CCS called the roll and noted that on the last call that there was a conflict for some TWG members today, so she welcomed others joining the group in their stead.

2. Donna requested any comments, questions, or corrections to the summary of the Call #10 on June 18, 2008, last Wednesday. There were none. She stated that if they wanted to add something later on, to let her know and it would be raised on a subsequent call.
3. She noted that Judith Barry and Hal Nelson from the CCS team were on the line, and that Judith and Hal would be helpful with the quantification steps going forward and since the language being reviewed speaks directly to that process, it is helpful to have them listen in.



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4. Donna reviewed the agenda by outlining the goals for the call, as well as the anticipated next steps for later calls for the group. The task after the next Action Team meeting, July 9–10 (slide #10) will be a review by the full Action Team of the draft language from all of the TWGs for each policy option. The Action Team will weigh in on any suggested changes or additions. Then the TWG will return to the policy template and examine initial quantification results and the costs and savings per ton of GHG reduction associated with each option. That will inform TWG revisions to the policy design which we will continue to develop with the help of the quantification results.
5. As noted in the email reminder for this call, Donna stated the unfinished business that remains for this call regards options 1, 3, 5, 6, 8, 9, 11, and some clarifying discussion on 14, as a result of the last conversation. The other participants had no additional requests or comments on the plan.
6. Donna reminded callers that it is acceptable to conclude initially with any of these that they don't lend themselves well to quantification. There is an intention to quantify each policy option, but in some cases that isn't possible. The policy description language typically comes from the catalog of items from the beginning of this process. In some cases, each option represents a bundling of more than one catalog item, so we may have an amalgam. The text is offered as a starting point for discussion. Any aspect of it can and should be changed if the group feels that change is appropriate for applying the option in Florida.

ESD-1 Technology Research & Development with Near-Term Commercial Opportunities

This option concerns cleaner energy options that are currently market ready for implementation. We are looking for a policy design as a default of trying to achieve 15% reductions in emissions from investments in these cleaner technologies. For the sake of modeling, we want to identify not only the impact of that 15%, but also the timing of it and how it would unfold over the course of the modeling period. This is just a default language that we've seen from other states, this kind of approach meant to give participants something to react to and starting point for discussion. Donna inquired if there were any thoughts about the logic of trying to achieve this level of improvement over this time frame with renewable cleaner energy alternatives in Florida, and asked Hal what was the weak point of how this is worded so far.

Hal stated that there were two things in this option that would help from a quantification standpoint. One is a clarification of the scope of the technologies that are to be considered. The second that in terms of the language, it's unclear as to whether that 15% emission reduction is overall, what the baseline is, or what the 15% would apply to? He told callers that this was proto placeholder language and asked if participants thought this was a reasonable target? Should this apply to total emissions reductions? Assuming this is in the power sector, but what should it be applying this to, considering that it's an aggressive target for near-term commercialized R&D?



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John Wilson responded that it seems like there are two components to R&D. First is to get additional reductions beyond those identified by existing technologies, and second is to make the approaches identified in other policy options more cost effective. He is uncertain as to what basis we could have to come up with numbers on those, but feels these components are worthy objectives, and that this description only focuses on one of them.

Hal asked if that was just a clarifying question or a proposal to expand the scope?

John clarified that there are two approaches we could take with this policy and one of them is to focus on additional emission reductions beyond those identified in any other policy option, and the other is to focus on reducing the cost of implementing other policy options. For instance, in Energy Efficiency, instead of stating an average of \$0.03 per kilowatt hour (kWh), identify new technologies to reduce the cost to \$0.027/kWh, it would be one way to do it. He couldn't provide any citation to support the pace of near term commercial opportunities and how they affect commercial emissions and costs, but felt it would be a useful approach to think of it in both terms.

Donna stated that sometimes we let the model tell us what the reductions are going to be, given a certain penetration level of new renewables, but we probably can do it either way.

Hal responded that it's just whether or not the committee wants to spell out what technologies we should look at and then try to find the supply of potentials for those technologies, or just come up with kind of a hypothetical basket and say we know there are these near term commercialized technologies that are out there on efficiencies or demand side and make an assumption about what their likely penetration is going to be. One of the problems that we operate with on the supply side and on the demand side is these studies don't talk about technologies that are commercialized. In the UK, they are deploying wave energy and certain small title energy generation. Are those commercialized or not? His guess is that Florida has a great deal of potential with the Gulf Stream current and wave action around the state. That's just one example of where we could go with this, but from a quantification standpoint, the easiest thing would be to assume that these near term commercialization opportunities can make 1.0% per year emissions reduction or some fraction of 1.0%, whatever the committee thinks is reasonable.

Donna suggested that the other end of the spectrum would be to say that we'd like to see the near term technologies implemented at a certain rate of megawatt (MW) capacity available per year and tie a cost to it as well. If we said 100 MW/year through the end of the modeling period, then we could see what the impact would be on GHG reductions and costs. Or we could have the GHG reduction goal and see what kind of technologies that might pull into the market based on what the analysis uses.

John observed that when we talk about technologies we could be talking about a lot of different sectors. Policy options in the other states have not been this focused and he is unsure how to go about analyzing this concept. He feels that forecasting technology



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research and development is a “sticky issue” and National Research Council (NRC) studies on that topic are always pretty vague.

Donna reminds the group that we don't have to try to impose a quantifiable goal, if folks feel that's impractical.

Alisa made the observation that when they start to run the analysis if it's really not quantifiable, or if the data turns out to be very thin, then it will be identified for us at that time and we can revisit it, but that without knowing the data sources, it's a little hard for her to know how easy it is to be deemed quantifiable or not.

Donna described information related breakdown of the inventory in Florida, including the generation inventory by fuel type that includes renewables. We would then have projections going forward, which represent the business-as-usual (BAU) assumption. For this option, we would pick whichever combination of renewables thought to be most supportable and most realistic in Florida. We might then say that the results of this policy option are that they would be more aggressively deployed to some extent. The data sources (e.g., the EIA, the EPA) are transparently available and fairly rigorous information to date that we would then use to project forward. She asked Hal for more clarification.

Hal said that he would be hesitant to use the EIA data BAU forecasts for Florida because most of the renewables capacity that the EIA predicts comes from wind, and Florida basically doesn't have much in the way of wind resources that we know about. He hasn't looked specifically at the Florida forecast, but guesses that it doesn't show a lot of renewables in the BAU model. He assumes Florida has good biomass potential. This policy option is interesting in the sense that if Florida is going to deploy a significant amount of renewable energy, it's most likely going to come from these types of programs, whether it's solar PV or solar thermal, offshore wind, wave, or tidal, because that's where the big supplies are in Florida. This is really quite an important policy option, so he encourages people to think a little bit about what they want to see here.

John asked if anybody was familiar with how Enterprise Florida sets its goals in terms of economic development? (No one on the call responded affirmatively.) He observed that it is an analogous situation. The creation of a numerous jobs and attracting a certain amount of economic development, and yet there is no substantive basis for those findings other than experience. He agreed with the philosophy behind this, and thinks we ought to quantify it in some way. He felt it was too important to render as “nonquantified,” but guessed it would be helpful to have some kind of an idea as to how to do that without being just sort of a shot in the dark.

Ben agreed that it was too important to not quantify it, that there are questions concerning the baseline and where we are right now. He also was concerned about what type of energy resources that currently emit GHG would be replaced by certain types of renewable resources. “It almost begs you to go out and find out what are your options and then evaluate them one by one and see how they stack up, not necessarily from a cost



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effectiveness, but more from a here is the best bang for your buck and start off at the top and then work your way down the list and see how they fit in with the other options that you have at your fingertips through the rest of the policy options.” He said we need more information about the different options within this policy before we can put out a goal.

Donna clarified that some of these points are steps will be part of the analysis. One of the reasons for this particular quantification exercise is to attempt to capture the reduction effectiveness and cost effectiveness of each option to see how they perform relative to one another and rank them.

Regarding the projection that others in Florida are coming up with and using for the different renewable resources going forward, we would like access to that information so we may incorporate in our analysis. To the extent that various agencies in Florida might have this information, or other organizations that aren't part of state government but that are generally viewed as credible sources, Donna asked the participants for suggestions as to where we could get that information. She asked if there are there other documents or organizations that we should turn to, to get better insight to where renewables are going in Florida? No suggestions were offered.

Donna suggested that this be kept on the list of things to do for this option. Her observation at previous Action Team Meetings the group were quite engaged and at the next meeting on July 9th, would likely not hesitate to offer suggestions about what to focus on initially and possible data sources, and that would be helpful to the group's progress.

Donna reiterated that if we aren't able to quantify this option, it does not lessen its importance, and did not rule out it being quantified later in the process. The option will be fleshed out robustly as possible, as far as implementation and other categories featured in the template. Absent specific changes to the language, she felt we should start with this, unless people suggest specific changes. She asked Ben and John if 15% reduction phased beginning in for 2015 was a reasonable.

Ben still is unsure 15% against what measurement. What is the baseline?

Donna suggested using either the BAU (there is a forecast going forward for each year), or we can pick a past year and then try to drive reductions down from that year.

Hal asked for clarification—is the 15% reduction against to the total emission baseline? If so, that seems unlikely.

Ben was concerned that the 15% reduction was too aggressive. “If we do not tie this to some specific projects and know what they are going to offset, we can't get a good handle on how much it's going to reduce GHG.”

Donna clarified that regarding avoided emissions, unless marginal units are provided, we may default to a grid average rate. For example, we'll assume that the clean energy



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coming in is zero emitting, and take that amount of generation and pull off the equivalent amount of generation emitting at the average rate to calculate the GHG reductions. That would be our default, unless the group has another suggestion.

Ben observed that if it is PV that will pull energy off the grid at a certain point during the day and wind is random, but waste burning is more consistent from a capacity factor and easier to predict. When is this energy offset and GHG offset going to take place? He can't quantify the amount of GHG reduction, unless he knows which units.

Donna replied that with some guidance on how the decision points should be treated, these could be manipulated. On page four of the template, under "Estimated GHG reductions and costs or cost savings," there are subheadings "Data Sources," "Quantifications Methods," and "Key Assumptions." For example, if we take wind, PV, and biomass phased in at different rates, offset them at different portions of the default mix, we can then see what the net effect is of implementing that combination of renewable technologies.

Ben said the numbers are a challenge, given what they've been up against in getting some of the biomass projects started. Waste burning has been in place with a certain level of reductions, but he doesn't know sources for additional waste burning GHG reductions. Solar, PV, and wind projects are in development, so he does not have a sense of what that will offset. The 5% by 2015 and the 15% by 2020 are very aggressive.

Donna would like to focus on some of the initial points, recognizing that there is more information needed. Using wind, solar PV, and wave, with biomass having a more significant role later on.

John asked if we should consider supply side and demand side here, and perhaps focus specifically on Florida targeted technologies, such as those used for cooling. Discussion of the development of better technology for home cooling industrial Florida's unique high power-consumption activities more opportunity for energy savings. The language here is not titled to limit to supply side, and while we wouldn't address every demand side, keep the focus on specific initiatives.

Donna feels that this may come up at the next Action Team meeting, but posed the question would Wind, Solar, and PV be the reasonable options for going forward with renewable collection? Should we include Biomass?

Ben agrees, but wants to know if wave energy would be in place by 2025? Hal observed that it would require a small but not capital intensive investment to typically put it in place, and that it could be deployed easily.

Ben suggested that maybe achieve certain amount of MW from investments in clean renewable technologies, then go back and calculate against the type of generation it offsets to calculate the GHG reduction based on the type. John and Alisa are in



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agreement. Mirabelle thinks it would be a good idea to figure out the baseline to calculate it. All are in agreement to use MW pulled in over time.

Donna reiterated that this is a draft number going forward. Where would you start for annual MW number? A detailed discussion is needed between different utilities where they are now versus where they could get to, which is above and beyond what's in the current plan.

John suggests a possible case study to draw from would be to look at would be mid-western wind and the pace of development where resources are ample and widespread. Or Texas. Look at the adoption curve—the pace at which a new technology, once it's proven, then gets applied into the field—use that rate of implementation as a basis for projecting how new technologies that might be developed in three to five years could then be implemented in the next ten years after that.

Ben agrees that if we apply it to Florida's best resources may be PV and biomass, and then wind resources and then add wave or ocean, as well to see what we come up with.

Conclusions:

Four technologies to focus on are Wind, PV, Biomass, and Wave resources.

The baseline to calculate as a starting point will be BAU, and can be changed but need default assumption on the baseline.

Target number on megawatts is easier rather than specifying, stick with 15% reduction, and see what that drives. Leave as it is and see what comes from the four different technologies first, and change it later. Phase it in, and if it is too aggressive/too expensive the analysis will bare that out. Once we obtain initial feedback from the analysis we can change it.

Note: Still of concern is what it potentially offset will be a cleaner resource in the generation stack so net reduction may not be as significant as what is targeted here. No alternative offered at this time.

ESD-2 Technology Research & Development with Longer-Term Commercial Opportunities

No discussion.

ESD-3 Renewable Energy Incentives and Barrier Removal

There was a lengthy discussion previously that probably represented a bundling of a number of catalog items. On page eight is the policy design draft language that basically says overall increase grid-based renewable electric production in Florida by 1.0% per year relative to total annual generation, beginning in 2010 through 2025, that's the starting point for discussion.



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Donna confirmed that the increase of 1% would be on top of existing generation per year. It needs to be beyond the expected. This may lead to questions about what when we say grid-based renewable energy, that is presumably larger projects easily incorporated into the grid, as opposed to more decentralized smaller-scale projects. How fine a line we draw, in terms of roping in a net metering logic that might allow smaller sources to tap in? We discuss that at the bottom of eight.

Hal replied it is up to committee if they want to limit it to grid-based, or include distributed generation (DG). It should be generation. Typically, when you see these types of targets, they are usually expressed percent of demand or load, as opposed to generation within the state because then you are getting away from consumption-based part of it.

Donna observed that the title is "Renewable Energy Incentives and Barrier Removal," but the discussion is actually about DG, as well as grid-based. In fact, it might emphasize DG a little more. This is a reflection of bundling multiple items together. We should be clear and consistent in our consideration of these issues. It may be that we don't need to change the reference to "grid based" in the goal statement, but make clarify that it does not refer to big installations that you wouldn't find on someone's home, and that the policy description clearly talks about DG and net metering. Possibly, the emphasis was meant to be putting incentives and in place and removing barriers to encourage more renewable energy in the state.

Hal added that the goal statement is from a measurement standpoint. We could measure what the state generates, but if the state becomes big exporter or a big importer, then the renewable section isn't necessarily going to match. As in reports for other states, those last four or five words should be relative to total annual electric demand in the state, rather than generation, but that's up to the committee.

Ben agrees that we need better wording. Florida has very limited import and export capability. Florida usually doesn't export a significant amount, but it does need to relate specifically to generation and consumption within Florida. Is there overlap between this and Item #1?

Donna explained that will addressed later in process, after each is evaluated as freestanding option, we'll look at the interactions and overlap issues, and take that out, which will prevent us from taking credit for the same renewable technologies multiple times, but first we want to look at the costs and how the reduction effectiveness shake out for each of them.

Hal confirmed that we should replace generation with the word demand. "...relative to total electric demand." However, Ben stated that if you use the phrase "energy demand," it separates from a capacity issue.

[Linda, the following came up in this part of the conversation, but really addresses part of ESD-1 discussion, and changes the conclusions for that part of the call. New



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conclusion to add would be to use energy demand, rather than MW to be consistent. Should this be moved?]

Tom H. is confused regarding MW versus electrical demand. Going back to the energy piece, the capacity or demand component on a MW or kW basis doesn't get to utilization. If you don't use it, it seems that you would want to keep it on an energy basis. Resources that don't dispatch at a high enough capacity-factor won't displace that much, in terms of the carbon dioxide (CO₂) reductions. That would be consistent with previous discussions/decisions. Ben agrees that in looking back at #1, across the board it needs to be on an energy basis rather than MW to be consistent.

Conclusion:

On the goal statement, change wording to "...relative to total energy demand in Florida."

ESD-4 Electricity Transmission and Distribution Improvements

No discussion.

ESD-5a Renewable Portfolio Standard

On page 13, there is a simple and straightforward policy description, and then target default language in the goal and timing sections. Donna asked the participants if a 15% RPS requirement by 2020, with the renewable energy technologies defined there, and a phase in beginning in 2012 until 2020 is too slow ramp up or too daunting?

Ben is unsure of the baseline and how we would get there. Of the eligible renewable energy resources listed, Solar is a potential, Wind is a potential, Hydropower is out of the question (a limited resource in Florida), Landfill Methane, Biomass, and he doesn't know the variables around Ocean Energy.

John responded that on the list of eligible renewable resources, since we have a specific policy measure that focuses on landfill methane, we might pull that one out of here, but we might note in the discussion any RPS might have added back to it, but it seems that might be a redundancy. It's redundant with one of the measure added by the Action Team that focuses exclusively landfill methane. From a policy point of view, John would favor integrating landfill methane with the general RPS, we ought to analyze it with it out of the standard, then discuss that those two mechanisms might be adopted together. There is also some merit to doing a market-based approach to RPS that doesn't include landfill methane, since landfill methane is something that can be targeted pretty effectively through government actions and most landfills are heavily regulated by government entities.

Should concerns over the 15% goal be addressed by lowering the number? John recommended a statewide goal, not a utility-by-utility goal, as smaller utilities may have a comparative advantage or disadvantage. The statewide goal should be based on their ability to perform, assuming the PSC would assign the goal.



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Tom H. That is an aggressive number. Earlier work by the Florida Energy Commission, chaired by Senator Burroughs, reduced the RPS target to 5% [subject to check], after significant discussion, but unsure of the target year or timeline for that percentage.

Donna remarked that RPS is one of the issues addressed in recent legislation HB 3175(?). At the last Action Team Meeting, it was noted that a number of our options are addressed in some way in that bill. Therefore these options need to go beyond the language of that bill in order to accomplish something. John replied that legislative ratification required in that bill, not a done deal, and the number is not specified in the legislation, so there is no way to analyze that as an existing policy and not a perfected one. The best approach may be to select several different goal levels to analyze at this point, and then go back later in the process and narrow it down. It would not be too difficult from an analytic point of view, and then revisit this once we have some data to review.

Tom H. stated in drafting goal and policy before understanding the potential means we need to manage expectations and may need to reset those percentages. Alisa felt that analyzing different levels would be a good start, and would address the concerns of setting a level before the analysis done. It may give us an idea of achievable goal. Mirabelle was reluctant to set the bar too high, may not be achievable. Donna stated that the target percentage would be used as an input that we can vary as the analysis progresses.

This is subject to getting the data on Florida. There are maps of tidal and wave resources on the west coast, and possibly the Atlantic coast as well. To reach a goal of 15% the Florida Energy Commission probably didn't look at wave and tidal in great detail. The achievable potential of 5% was based on utility programs, or market, or maybe some tax credits. Ideally, we would have a more aggressive program that would include state and federal actions together, market transformation efforts, not captured in standardized regulator dockets. (That was not a standard review or approach. There was a significant increase penetration not fully developed yet and relying on technologies not fully developed yet.)

Conclusions:

Drop Landfill Methane from the list of eligible renewable energy resources at this time, specifically discuss the relationship in the text somewhere in the policy description (it's covered in number 11), and that it might be brought into the adoption of an RPS later.

Omit "run of river" Hydropower from the list of eligible renewable energy resources, which will now include Solar, Wind, Geothermal, Waste Heat Recovery, Waste Biomass and Ocean Energy.

To address the concerns over 15% goal, we can select several different goal levels to analyze, then revisit this option once we have some data to review. Clarify three targets, stick with the default language, and revisit implementation, the phase in, as we see results from the analysis.



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ESD-5b Environmental Portfolio Standard

Recommended at the last Action Team meeting that we break out EPS explicitly from RPS. We have another set of goals focusing on the demand reduction angle beginning in 2010, hitting the initial goals in 2012, incrementally with 2% from 2015 to 2030 (not sure if we are modeling out to 2030 in Florida, but at any rate, to the end point of our analysis).

Ben had the same concern, that the numbers are aggressive and wanted clarification. Is this is over and above anything approved by the Public Service Commission (PSC) for implementation in that window of time? Donna confirmed that it is over and above anything that is already provided for is maybe the way to say it. Concerned that as we tap into energy efficiency programs and go through additional conservation programs, it's not necessarily driven by saturation of what we can afford, but driven more by what customers are willing to pay for or to do. These are aggressive numbers but had no alternative number to offer.

John stated the numbers are consistent with results utilities are achieving in other parts of the country, including areas with lower rates than Florida. These are reasonable goals, but 1% per year in the very near term is impractical, given that most of the utilities in Florida are achieving far less than that right now. We should state these in terms of total program achievement as opposed to incremental above existing programs, that we should depart from normal approach in that sense, so we would take the baseline forecast of energy that we produce and reduce by this amount, rather than this amount plus the production of existing programs.

Tom H. observed that weather impacts us so much in terms of demand and consumption, especially over the summer. In other states do they normalize the data? If not, that could be problematic. You start crossing over with these programs when measuring reduction and demand. Also, how do you normalize for weather, because weather drives the demand, and then the number of customers?

John was considering this in terms of energy demand, and not in terms of capacity demand, so that could be an important language sweep. Some areas that are achieving 1.0% to 2.0% demand growth do have significant load growth as well. We could come back and look at that in detail, but those places are seeing customer growth, demand, they've got weather issues in those parts of the country as well. Idaho would be an example where you have customer growth, and a very significant weather component, both winter and summer peaks being driven by increasing electricity demand, and they are offsetting it. It may seem farfetched given that it's so far north, but there is a very strong summer peak in that state.

Ben asked how long the programs have been in place in that state?



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John stated that they are in their fourth or fifth year of ramping up. When they started out they were pretty resistant, but then they got a push from the utility commission, now they have decoupling and shared savings incentives.

Ben said that Florida has been at this since the 1980s, have been after this for the better than 20 years. We have "taken off the low hanging fruit and gone on up into the tree," as far as what we can capture. That's the caution—where are we in the learning curve pattern versus other states in the nation, and what have we captured net against our total load profile, versus other utilities and what have they have captured against their total load profile?

John replied that a lot of the utilities that are achieving 1.0% to 2.0% have been at this also for 20 years, and in fact some data that was done in a similar process in South Carolina showed that the higher the penetration rate in the state, both in terms of percent of sales and absolute megawatt hours (MWh), the lower the cost of energy efficiency. It was a surprising result and goes against the low-hanging fruit metaphor that is commonly applied and intuitively makes sense because it is true in a lot of market circumstances. This is not referring not to the programs, but to the analysis that was done for a similar process to the one that we are in today. There was a graph that was put in the report that shows how energy efficiency costs declined at higher levels of effectiveness of the program.

Donna would like get the relevant information from the RCI 1 work in South Carolina and information from other sources, so we have more specifics to compare the Florida situation against. We should weigh it for further discussion. Start with this kind of phase in logic, and revise those numbers after reviewing initial results and other states, before we're done.

Conclusions:

Weather normalized.

Compare it to the graph that John is referring to from the CCS process in SC.

Look at what other states are doing with their programs.

ESD-6 Safe & Environmentally Sound Nuclear Power

We've put in a starting point for discussion.

Alisa wanted to understand that our goals are to set an analysis framework and that we will be adjusting them as we move through and see what the actual calculations come through as. She wanted to confirm that at some point when we have done the analysis we will have an opportunity to revisit the underlying policy as well, not just the quantification to look at, say nuclear power, in terms of the whole picture and what it can offer, so that this is not just an endorsement that we are necessarily adopting this at this stage, that this is for analysis and we will be evaluating it further later.



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Donna confirmed that not only the numbers, but also every aspect of the write up needs to continue to make sense to the group as the analysis evolves and as the write up and the other sections evolve. If we discover something in the implementation mechanism section or in the other related policies, or anywhere, feasibility, that has a bearing on how we frame it up in the policy descriptions section we'll go back and change it.

Hal also explained that toward the bottom of each option is a section called level of group support. Toward the end of the process, once the document has been fleshed out, there is essentially a roll call vote to sense the level of support for each option. There is that opportunity to express your opinion about each option.

John in an earlier call suggested that if there was no objection to remove "safe and environmentally sound" from the title, since that wasn't clear exactly what that meant in the context of the title. Was that reapplied later at some point in the process?

That was in the same discussion that we were removing "promotion" from a number of the titles, but Donna's notes weren't clear, so it was not intentional as just not clear. She will take that out, as there was agreement on that.

In the design, we're starting off with two new 1,100 MW power plants 95% capacity factor, operational in 2020, and we'd have 380 MW uprated as of 2013. Is that a fair starting point for analysis?

Ben recommends taking the capacity factor down to 92%. The 95% doesn't include refueling and standard performance rates for nuclear plants. The other numbers look good.

John asked for clarification on the uprate. Is that in *addition to* upgrading that is already in the works, or is that uprating that is already in the works? Can the utilities comment on the ability to uprate by that much by 2013?

Donna confirmed the logic of the language that is here is that it should be in addition to what is already planned.

Ben stated that they are already going through our uprates. If it's above and beyond then Ben is concerned from their standpoint. (He doesn't know about light.) They are in the process of tapping theirs out right now.

Donna offered to pull that down to effectively to the related policy programs in place and just acknowledge that if the reality is that everything that can be uprated is already being pursued, then uprating doesn't really fit up in the design section. Maybe pull down for now until we hear otherwise.

John said we have to make sure those uprates are incorporated into the forecast properly. The baseline emission forecast needs to include in the generation mix of the utilities for those uprates, as opposed to assuming continuation of the existing levels.



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Ben said they are required to include the uprates in and have them approved by the PSC and loaded into the ten-year site plans, then all of the uprates are approved by the Nuclear Regulatory Commission (NRC).

John was referring to the forecast that the CCS process is putting together, the emission forecast. They've got a generation mix in their spreadsheets and it needs to reflect these uprates. The generation mix is based on EIA data.

Ben suggested checking the EIA data against Florida PSC, because the EIA data may be older.

Donna will provide the forecast spreadsheets so the group can discuss them in the call after the next Action Team meeting.

John said once we review those spreadsheets, we'd tweak the generation mix.

Conclusions:

We will remove "safe and environmentally sound" from the title of this policy option.

Take the capacity factor down from 95% to 92%.

Pull down the uprates from the design section until directed to do otherwise.

Get forecast spreadsheets to the team for review and discussion for next call.

ESD-7 Integrated Resource Planning

No discussion.

ESD-8 Combined Heat and Power Systems

The description section explains the logic of combined heat and power (CHP). On page 22 are the design elements, the goals, and the timing—includes 5 million MWh of CHP by 2022, 2% of total forecast of generation, and in the context of biomass, as a data point of comparison.

Tom wants clarification on the timing. We're getting half of the 5 million MWh in three years, and then the balance in ten years? How do we get half in three, three and a half years?

Donna explained that part of the logic is the easy stuff will come quicker, and the portion that isn't as easy will take longer to put in place. These are still ballpark efforts on our part to get something down, so there's no problem with realigning that if it doesn't make sense to you. We can phase it in linearly. Not to be too biased, but it's not really a significant an issue. It's more that we will phase it in, rather than try to achieve it all at once. So we will set up the analysis to accommodate the phase in, and we can adjust it as we get more information from the analysis itself, as well as from other sources.



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Tom doesn't understand lack of standard offer of long-term contract. Utilities are required to make standard offers available every year, based on their ten-year site filing.

This was catalog language and was informed by what other states have done. Donna will remove the language, as it is not appropriate for Florida.

John wanted to go back to the goal, he looked at the only source that assessed the technical potential for CHP for Florida, a 1995 analysis done by the Energy and Environmental Analysis, which is a consulting firm that works for DOE on this stuff. It identifies a technical potential and not an economic screened potential of 6,500 MW (not MWh) There's no capacity factor identified with that, but he would assume it would be fairly high, as it is primarily a 24-7 operation. That's a technical potential, not an economic one, so it should be prorated that somehow for the cost effectiveness.

Base year 1995?

The report was done in 1995, an evaluation of what was in the marketplace. They identified sectors that had these types of turbines that could be met with commercially available technology. For instance, in the Southeast, they identified 261 sites with a variety of different types of boilers and turbines. This was for existing, basically what they saw out there that year. Obviously with economic growth you'd see more sites, but then there may have been a market shift in terms of what kinds of technologies were being installed. Obviously, there is some datedness to this after three years, but unfortunately, there's not a lot of market research in this field.

Hal asked if that means if using 92% capacity factor, there's about 52 million hours? That was 6,500 MWh?

No it's 6,500 MW, not hours.

A 92% capacity factor is 52 million MWh.

John states that the potential is huge in this area, whether it's that large is another question because the economics of it were not analyzed in this study.

Are you talking about retrofitting simple cycle units, or re-powering existing oil-fired units? One, we've got to reset the database. It's not clear that there is that kind of potential because you don't have a high load factor in the state. You need to have simple-cycle. Just converting it and then spending the money and having some costs or fixed costs not utilized, you can't force the load factor. You've still got to follow load.

Hal said that typically these capacity studies look at existing thermal load. What happens if we match this thermal load? We slap a generator on the end of it so it ends up being industrial plant generating, motels, Laundromats, hospitals that have thermal loads. He hasn't looked at the report but the ones he has seen for California and the Northwest are mostly all not existing central generating systems.



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John replied that this report unfortunately doesn't break it down for Florida specifically, but slightly more than half of the potential MW are at industrial facilities, the other less than 50% are commercial and institutional, and about half of the industrial is chemicals and then other manufacturing. Again, this is the southeastern region. In the commercial side, the major category is "other commercial," so that's not very helpful, but the other categories strongly represented are hotels, hospitals, colleges and schools. That gives a sense of the mix that they identified as potential sites that are technically feasible to install or retrofit the boiler with the CHP application.

Donna said that based on that, it looks like our initial target was low, but it doesn't include the economic target, but it's also twelve years old.

John made a correction here. It's three years old. The year was 2005, not 1995.

Tom and John are not ready to say this is too low. They would like to see more Florida-specific data.

John will forward what he can find, but what he wants doesn't exist to his knowledge. It's frustrating that this is such an important policy area and there's so little data. There are new technologies that have been active in the market for several years that this study does not even encompass.

Ben stated if we combined the date of data with something specific to Florida that includes our existing co-generators that we have currently under contract up there in the front end of the paragraph, we do have standard offer, which we have been active in, that kind of cries out for some updated information before we make a decision on where we stand with the goal.

Tom added that it's not just the standard offer, but also the self-service displacement that's already occurring, which is more significant than the actual purchasing or sales of that capacity back to the market.

Conclusions:

Donna will remove the language related to the lack of standard offer of long-term contract, as it is not appropriate for Florida.

John will share the research discussed above with the group, and other related information, if it's available.

We will leave the number where it is, and phase it in linearly, rather than have it front-end loaded. We will be able to revisit that later.

ESD-9 Power Plant Efficiency Improvements

Shorter description and an initial target of 10% improvement in heat rates at existing plants beginning in 2010, with 5% target in 2015, and the 10% by 2020.



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Tom said there were a number of issues with this option. There's a mix of taking existing units and trying to improve heat rate, which is a power plant measure of thermal efficiency. There's re-powering that has its issues if it's a fuel type change, so there is a cost effectiveness issue. How do you take existing units that are "vintage," which comprise a significant amount of the generating capacity in the State of Florida, and say you're going to improve the heat rate on those by an average of 10%? We've got new and more efficient technology type units that are being added to the state. The system statewide averages are continuing to improve, if you look at the data, but I don't know how you get the 10%. Also, there is an existing PSC incentive, a generation performance incentive factor (GPIF), which goes to unit availability and heat rate.

Donna noticed that in the design language it references expressing the goal as an average across all the plants versus a plant specific goal. Does it work better expressed as an average across all of them? We've tagged two ways to express it, and it sounds like 10% for each of them is untenable. So the alternative to that option is to have it 10% across all units.

You're still talking about existing units, so assuming future units that are more efficient (e.g., natural gas combined cycle units) are not going to be included in that average of existing power plants. Tom is still unsure how we get to that 10%.

Is the GPIF a Florida only or is it national?

Tom thinks it is only five or six states. Other states have looked at performance-based rate making. He's not sure how long it's been around, but GPIF is an incentive or disincentive, depending on which side of the curve you are on. It looks at the three-year historical performance average, and when you do your projected annual rates for the upcoming year, you do this three-year averaging, there's a formula and if you beat that performance goal there is an incentive back to the company. If you fall outside that performance goal, there is a penalty to the company. It rolls over every three years. You're basically resetting the point every year, but because it is a three-year rolling average, it's constantly moving up and down.

This is a great program. In data on improving the heat rates of existing units, typically the number that's mentioned is 5% maximum. Obviously, there is wide variation in different boiler configurations and ages and other things. But those numbers don't necessarily include other things that might come on line in a carbon trained world, and that's fuel treatment for coal to remove or reduce the moisture content and other things, or re-powering. It's up to the work group in terms of what they think that this thing should include. If they want it to include just existing plants, if they want it to include re-powering, then it might be achievable. But if it's just the efficiency of existing plants, Tom's right, that at least what we know now 10% might be aggressive, but if you include re-powering then it may not.

The other problem we have and we are seeing this on our Big Bend units as we not only added scrubbers to Big Bend units one, two, and three, which we did several years ago, is



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now the SCR units that we already have on units four and three, and will finish up on unit two and one, that in order to accommodate that parasitic load or energy to power up all of that environmental equipment, has significantly increased our parasitic load where it is almost doubled at Big Bend. That hurts heat rate. So our net heat rate has actually gotten worse because we are having to generate more power for usage to power up this environmental equipment, which means less power is leaving the station back to the grid. We're taking old technology and combining it with new technology that's going to consume energy in order to improve the environmental footprint and we made that commitment, but you can look out over the years and our net heat rates continue to get worse, not better.

Donna wants to know if there is a better way to phrase the goal to emphasize or incorporate re-powering in a way that allows 5% on average to seem reasonable as a starting point?

Hal, not counting what Tom said about scrubbers and catalytic converters, thinks the 5% number is just for potential heat rate improvements at existing plants. If you talk about re-powering, then the 10% is doable.

I don't think we meant to omit the benefit that could be realized from re-powering, and if we did then maybe we should reword that goal statement to capture it explicitly.

The statement in the first paragraph says re-powering existing power plants first as switching to lower or zero emitting fuels at existing plants, that really is not going to effect the heat rate.

Donna can't remember if the Action Team kicked this back into the list, or if the TWG did come up with it initially, but thinks the goal was to try to emphasize improvements at existing power plants, fossil-fuel power plants as opposed to renewable and so forth, and doesn't think that it meant to be heat rate at the exclusion of re-powering. If the language just focuses on heat rates, maybe we should layer in a goal for re-powering and come up with a combination or set of goals that makes sense for each of them.

Or just change the reference to the heat rate in the goals statement to include CO₂ emissions intensity, or capture the re-powering and efficiency improvements.

Tom stated that it depends on the type of unit. If you're talking about re-powering a coal unit, using coal unit conversion re-powering to the base side natural gas, significantly improved the heat rate, but the units went from costing \$25/MWh to \$110/MWh produced. By switching from coal to natural gas as a fuel, we cut in half the GHG emissions for the same capacity factor, for the same energy produced, but we also dropped all of the parasitic load associated with the precipitators and other environmental equipment, and other operating equipment that is not needed for natural gas combined cycle type operation. We actually saw significant improvement in thermal efficiency. We combined the water steam cycle of the existing five and six coal units with the seven new FA combustion turbines, and our heat rate went from in the 11,800 British thermal units



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(BTUs) per kWh to the low 7,000s, but it comes at a cost. When you look at the cost, when we go to quantitative analysis, re-powering can improve efficiency depending on the type of unit you're re-powering.

In the goal statement, one of the ways this could work out would be if it were a statewide target. The draft language says the heat rates of all existing power plants, but if it said statewide fleet, then in Tom's case, if they dropped their heat rates on the order of magnitude he's talking about then there might be trading opportunities or something you could set up so that other states that don't re-power or aren't able to meet this CO₂ intensity improvement, or however you want to word the target, that this could be a source of revenue for Tom. By re-powering, his company could sell these essentially permits to a company that can't do it. If you leave language flexible enough then that may be the kind of thing that could shake out.

Tom would keep it at 5% and look at it. It may move, but 10% is very aggressive. When you start looking at the cost effectiveness parameter, the cost per ton of CO₂ removed, that's where this will be self-correcting.

Have it begin a little later than 2010 and do the linear for now. You've got to reengineer realistically and get permitting, and secure whatever tradeoffs are going to be for whoever is going to be doing this re-powering, or even if they're going to go after thermal efficiency improvements. It's not as straightforward as just going in and making changes. It changes your environmental profile and you have to work with DEP, in terms of your permitting for operations, as well as if you are going to add any capacity at your existing sites. You need some lead-time on that, so go with 5%, and do it linear for right now. It may be more back end than up front.

Ben agrees with Tom. Thinking across the potential opportunities that we've got, from a re-powering standpoint, and they do fall out in the 2020 and beyond, after the nukes come online, in that time frame. Up until that point, we can't pull units offline to do the necessary re-powering projects on them. We have to wait for nukes to come online before we can in effect go in and take units offline to do the necessary re-powering project.

ESD-10 Grace Period for Replacement of Carbon-Intensive Units

No discussion.

ESD-11 Waste-to-Energy

Simple policy description and some specific targets in the goals section. Any thoughts on 20 plants by 2025?

Tom wanted to know how descriptive "20 plants" are? Do a couple of micro-turbines at 50 kW each at a landfill site count as a plant? It's just not material. It's not going to be impactful.



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John observed that there is a database available from EPA on landfills that don't have the landfill gas captured. What if we set a goal of 90% of landfills with uncaptured gas being captured by 2020?

This is an important and discreet one because the methane is such a high contributor to GHG emissions, and even if it's captured and even if it's not always converted to energy, that's still very important. If it's captured and combusted, at least that reduces the contribution to global warming by 90% to 95%.

Tom asked if John if the gas was flared now? We had a micro-turbine at one of the Taylor landfill facility that had problems with the stability of the gas in production and the quality. Are you talking about capturing it so we don't have the release of methane directly to the atmosphere, or are you talking about capture and flare?

John responded that let's start out with a goal of 90% of the facilities that don't have energy conversion, going on with energy conversion and then back up and look if that's feasible or if we need to just focus on capture and flare. It is an issue at some facilities, but other places have pretty stable operations.

Depends on how they managed the landfill, where they put things and how well they managed that property.

John thinks we should set out a pretty aggressive goal of at least getting methane captured and put in a simple form for the initial cut, then come in and add some nuance once we get this information from that database. CCS has done that in other states. He thinks it's actually in the EPA inventory tool.

Conclusions:

Drop reference to X number of plants. Change the language to target 90% of landfills that don't currently capture and convert their methane. We'll be refitting those, retooling those so that they do capture and convert their energy.

We'll look at the EPA report, to help get specific numbers. Look at what the cost impacts of those from the first round of analysis, and then consider scaling back the scope. Phase it in from 2012 through the end of the modeling period.

Tom is concerned about the 90%. What about making it mandatory, requiring that all future landfill sites to put that in place, if that's not already a requirement? It's more easily than retrofitting something that may not have been set up well. John believes that is already the case, at least the capture, not necessarily the generation, is current state of the art. Agreed that it is easier to put that in up front than to retrofit. Retrofitting can be very problematic. We can revisit it, but it is high priority as far as bang for the buck, it's such a concentrated source of a very high potency of GHG.



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Donna hopes that EPA source will help clarify some of the other factors in what would make this practically achievable. With an older landfill, there's a steep drop in the curve in terms of what their emissions are as you get out farther in time, so it may not be cost effective. We could come up with some boundaries to help us identify a more fruitful subset of the landfills out there.

Shift the goal language and go for some initial phase in logic that we can adjust as we go in deeper.

ESD-12 Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Electricity

No discussion.

ESD-13 Incentives for Improved Building Design, Construction and Operation in the Private Sector

No discussion.

ESD-13a Existing Residential

No discussion.

ESD-13b New Residential

No discussion.

ESD-13c New Master Planned Residential Communities [formerly 20a]

No discussion.

ESD-14 Improved Building Codes for Energy Efficiency in Existing Buildings

In our discussion last week we jumped between existing and new. The rework on the call wandered too much into the new building category. From the last Action Team Meeting, with 7135 and other provisions out there, the thinking was that new buildings were already being aggressively being pursued, so therefore this policy option should target existing because there wouldn't be anything left on the new buildings. That was the intent of the Action Team on this one. We don't need to spend too much time on it right now, but Donna wanted to clarify that we need to back out the language in here that we added last time that talks about new buildings. Does that sound reasonable, or does anyone want to push back on this one?

John said since you flagged the new building codes that haven't yet been adopted as something that will be considered as existing or adopted measure, we need to then flag that for the forecast, for baseline energy forecast are not going to reflect those prospective savings from the new energy building codes to make sure we count it somewhere so we don't lose that completely.



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We are working with the state to make sure we don't miss any of those elements. Since we were getting a little off track on the last call, Donna would like to revise this language to drop references to new buildings, because the Action Team will be all over it if we keep it in. Let's focus on what we have for existing buildings and we can revisit it on the next call.

John asked where is the reference to new buildings in the goals?

Donna thinks what happened was we started to editorialize and not include some of the language that was being offered, because it was too biased towards new buildings. The first bullet point in the description references new buildings and retrofits, but we were getting too inclusive in some of our language.

John doesn't think it would hurt anything to leave that in.

Donna thinks the Action Team doesn't believe there is anything more to be had from new buildings, and so our contribution in this option is going to be found in getting more out of existing buildings. She wanted the group to be aware that we need to realign a little more on the existing building category on this one than we were on the last call. Any place we can milk more out of new buildings is fine, as we get more information on exactly how far the new legislation goes and pick up where they left off. Donna thinks the Action Team was just trying to be helpful by saying we would get more mileage out of existing buildings.

ESD-15a Training and Education for Built Environment Professionals

No discussion.

ESD-15b Training and Education for Building Operators and Community Association Managers

No discussion.

ESD-16 More Stringent Appliance/Equipment Efficiency Standards

No discussion.

ESD-17 Consumer Education Programs

No discussion.

ESD-18 Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems

No discussion.

ESD-19 Energy Efficiency Financing & Alternative Business Models

No discussion.



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ESD-21 Rate structures and Technologies to Promote Reduced GHG Emissions

No discussion.

ESD-22 Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas

No discussion.

ESD-23 Decoupling

No discussion.

Summary Discussion:

No overall summary discussion offered.

Public Comment:

No public comment offered.

Next Steps:

We will revise the language prepare it for the next TWG call, and email it to TWG members for review. Please provide comments to Donna promptly, on Monday if possible, so we have time to respond before the document deadline for the call on the 9th. If not, this will be the basis of discussion at the next Action Team Meeting. We will get their comments and questions for our call on July 16th, and inventory, forecast information will be ready, and push into the quantification stage, and get numbers to look at.