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BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. UNDOCKETED

In the Matter of
RENEWABLE PORTFOLIO STANDARDS.

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PROCEEDINGS: STAFF WORKSHOP

DATE: Thursday, December 6, 2007

TIME: Commenced at 9:30 a.m.
 Concluded at 5:07 p.m.

PLACE: Betty Easley Conference Center
 Room 148
 4075 Esplanade Way
 Tallahassee, Florida

REPORTED BY: JANE FAUROT, RPR
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DOCUMENT NUMBER - DATE
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P R O C E E D I N G S

1
2 MR. FUTRELL: Okay. If everyone will take their
3 seats, we will get started in a minute.

4 Good morning. Welcome to another staff workshop on
5 looking at a renewable portfolio standard, and welcome to the
6 Commission.

7 Again, to do some housekeeping, we have got a sign-up
8 sheet in the back. If you would sign up to have a record of
9 your attendance today. Also, we want to encourage everyone to
10 come to a microphone and speak today. This is an open
11 discussion as our other workshops have been. We have a few
12 presentations, but, again, this will be an open dialogue, so
13 please come to a microphone to participate. Also, identify
14 yourself before you speak as we are transcribing the workshop
15 and a transcript will be available in about -- December 14th or
16 so? December 14th.

17 Today we are going to go into a little more depth on
18 some topics that we have touched on in previous workshops,
19 including looking at methods to encourage specific renewables,
20 such as multipliers, set-asides, tiered goals, carve-outs,
21 those kind of techniques, also to look at methods to encourage
22 compliance. A little more depth on the alternative compliance
23 payments. How to talk about some cost-recovery issues. Also,
24 looking at compliance verification and tracking, about how
25 we -- the issue about RECs and including that in the

1 verification of compliance.

2 Finally, we are going to spend a few minutes talking
3 about some specific proposals that we have received during the
4 workshop process, and specifically in the last set of comments
5 following the last workshop, and we will have some
6 presentations summarizing those proposals by the parties. And
7 we will also, at that time, if other parties have comments or
8 other ideas on specific proposals, that will be a time for you
9 to come to a microphone and give us that information and have a
10 dialogue on those ideas.

11 To get started, we're going to have Judy Harlow with
12 our staff kind of tee up some questions that we would like for
13 the parties to consider as we go through our discussion, and
14 also to use as we did last time as kind of a template in your
15 post-workshop comments to help the staff and everyone else kind
16 focus their thoughts and their comments on the topics for
17 today.

18 And so, Judy, if you would go through your
19 presentation.

20 Thank you.

21 MS. HARLOW: Thank you, Mark.

22 Good morning, everyone, and let me just say on my own
23 part that I'm really pleased to see so much participation
24 today. We appreciate your input in this process, on this very
25 important topic, and it is so important to us to get all the

1 different points of view of the various stakeholders.

2 Mark asked me to put together a presentation similar
3 to the last workshop to kind of queue up the discussion today,
4 and we found that this was really helpful for us.

5 Particularly, it helps to move the workshop along and keep it
6 focused, but also as an added benefit it helps so much with the
7 written comments, because they all covered the same topic
8 areas, and it made it much easier for the staff to compare the
9 points of view of the stakeholders.

10 So we would like today, as we move along, to use this
11 as a guide for our discussion, and also we will have an
12 opportunity for written comments. The transcript will be
13 finished around the 14th of December, and we have set a date
14 for written comments by the 21st. So if you could use this
15 presentation as a guide for your written comments and also
16 comments on the stakeholder proposals that we will have later
17 today, and if you have your own strawman proposals, we would be
18 happy to see those in your written comments, as well.

19 As Mark said, we will cover three main topics today.
20 Methods to encourage specific renewables. We will have a
21 couple of presentations, one on a tiered approach, one on a
22 multiplier approach. We thought that would help the discussion
23 to have two points of view. We will also look at compliance
24 issues, including methods to encourage compliance. We will
25 look at some cost-recovery issues there and financial incentive

1 issues, verification and tracking. We will look at our credit
2 issues there, and then, as I said, we will look at the strawman
3 proposals that we received to date as part of the written
4 comments.

5 Just to get a little more detailed on these issues,
6 the first question we'll address is what, if any, policies are
7 needed to encourage specific types of renewables in a Florida
8 RPS. This will include discussion on which resources should be
9 eligible. In looking at the literature, I have seen
10 three suggested types of resources that may need some type of
11 tiered or multiplier approach, and these are just examples that
12 have been suggested. Specific types of renewables, such as
13 solar and wind, are perhaps renewables that are not yet
14 developed. Distributed generation has been suggested.
15 Specific vintages of renewables such as new facilities versus
16 existing facilities has been suggested.

17 Then if we determine that we need some kind of an
18 approach to encourage specific renewables, which way should the
19 RPS in Florida go? Should we go with a multiplier approach or
20 a tiered goal approach? And, again, we will have two speakers
21 today, Bob McGee and Patrick Jeffery, on these two issues.

22 Also, under a multiplier approach there are some
23 issues that we wanted to discuss. If you use a multiplier, how
24 do you set the multiplier, what is that based on? And also we
25 had some discussion at a previous workshop about if you use a

1 multiplier approach, will that conflict with reaching your
2 ultimate goal? Say you had a goal as in the executive order of
3 20 percent; if you used a multiplier approach, how do you reach
4 that goal when some renewables are getting perhaps double
5 counted.

6 Under a tiered goal or a set-aside approach, how
7 should tiers be determined, what methodology would we use to
8 set the tiers. And also can excess compliance and some type of
9 policy preferred tier be used to meet the goals in another
10 tier?

11 Moving on to the next question: What policies are
12 needed, if any, to encourage compliance? We have talked a
13 little bit in the past about financial compliance mechanisms,
14 and we would like to get in more detail about that today. We
15 also discussed ratepayer protection mechanisms that would limit
16 ratepayer costs in some way. Examples of these are alternative
17 compliance payments, rate caps have been suggested, and you
18 could also use a price cap on renewable energy credits. That's
19 another approach.

20 Also looking at penalties, are penalties needed?
21 What types of penalties should we have both on utilities for
22 noncompliance, and perhaps on renewable generators for giving
23 misinformation on their production or on their fuel sources.
24 If we have any type of financial compliance mechanisms, what
25 would be the methodology to set the level of those mechanisms?

1 And I have listed some suggestions on how to do that here,
2 multiple of the REC price, dollar per megawatt hour, or some
3 type of absolute value.

4 Then we will move on to look at cost-recovery,
5 specifically for IOUs. How should compliance costs be
6 recovered, what type of ratemaking mechanism should be used for
7 that. We'll look at recovery for ACPs and penalties, and also
8 if we have any funds from this, how should the state use those
9 funds? And we had a couple of comments that suggested that
10 financial incentives were necessary for utilities to encourage
11 their participation in this, and we would like to hear from
12 those parties what their suggested incentives are.

13 The next topic is how should compliance be tracked
14 and verified? We have discussed this a bit in the past, and we
15 will discuss this in more detail today. We will look at REC
16 tracking and verification issues, and I have listed some of
17 these issues. How do you certify your eligible facilities?
18 Who administers the REC system? How is double counting
19 prevented, particularly across regions? How should multi-fuel
20 facilities be treated? Should line losses be considered is
21 another question.

22 Then looking at self-service generation issues. Is
23 metering required to count self-service toward an RPS? How do
24 you best include small systems without having high costs to do
25 so. And, also, when you include self-generation, there are

1 several ways you can do this, you can count the total energy
2 generated by the self-generator or you can just count excess to
3 grid. Both methodologies have been suggested in the
4 literature.

5 Continuing on compliance verification and tracking on
6 energy efficiency issues. It has been suggested that we should
7 count energy efficiency toward a Florida RPS; if so, how do you
8 do this? How do you count energy efficiency toward an RPS
9 goal? How do you estimate these savings and should we include
10 existing programs? If we do, would it only be new participants
11 in those programs? How do you do that?

12 And, finally, we would like to look at the role of
13 the PSC in ensuring compliance. And I have listed possible
14 roles for the Commission on the slide.

15 And the last thing we will do today is we have
16 three presentations by speakers who have presented RPS strawman
17 proposals in their comments. We wanted to give the other
18 stakeholders an opportunity to ask questions, and also an
19 opportunity to speak if you have your own thoughts at this
20 point in time. If you would like to present those in writing
21 as part of your comments, we would appreciate that, as well.

22 And I thank you again for your participation today.

23 Our next presentation is by Bob McGee, and Bob is
24 going to present a multiplier approach. And, Bob.

25 MR. MCGEE: Thank you, Judy. I thank you all for the

1 opportunity to speak here today on this particular topic.

2 Just to give a little bit of background, as you all
3 may recall at the previous staff RPS workshop, I briefly made
4 comments about the usefulness of multipliers versus set-asides.
5 And at that particular meeting both Mr. Graniere and Mr. Trapp
6 asked some very interesting questions about how that might play
7 out, what would it look like to use a multiplier. And
8 Mr. Trapp subsequently asked me to provide an example of how
9 that might look. And I'm here today to present the results of
10 coming up with an example for our general discussion today.

11 I'm going to cover some caveats at the beginning of
12 the presentation, define a few terms, list some assumptions
13 which are really pretty important. In doing these calculations
14 you have to make quite a few assumptions. There are a lot of
15 moving parts to this. And in order to get down to some
16 concrete calculations, you have got to make a lot of
17 assumptions. So I'm going to lay those out for you and give
18 some caveats to those, and then dig into some analysis. The
19 analysis is actually done on a spreadsheet, so bear with me as
20 I carry us through a little bit of that. I'm going to try to
21 make that as painless as possible, and then draw some
22 conclusions in the end.

23 Start out with some caveats. The purpose of this
24 analysis and presentation is to propose that we might consider
25 using multipliers as opposed to or instead of set-asides and

1 carve-outs, so that's the intent here. I'm not intending to
2 advocate for any of the assumptions that are built in here in
3 order to get it to that particular conclusion. The analysis,
4 of course, as I said, requires a lot of those assumptions in
5 order to make the calculations and draw conclusions, and those
6 are only for illustrative purposes.

7 The terminology here is pretty important. As I speak
8 about this today, the terms set-aside and carve-out I will use
9 equivalently. So I consider both of those terms to be the
10 same; someone else may have a different opinion, but as I walk
11 through this I will use those two terms exactly the same. They
12 are, and I will define them for my purposes here. Someone else
13 may have a different thought about it, and we can certainly
14 discuss that.

15 As I talk about them here, I consider them to be
16 additional requirements within an RPS. So an RPS might say you
17 have got to -- you, the complier, must generate a certain
18 amount of renewable energy each year, and within that amount of
19 renewable energy, another certain amount must be done by a
20 particular form of generation type, for instance PV. And PV is
21 the example I'll use throughout this presentation.

22 The goal, of course, of a set-aside or a carve-out is
23 to get the complier to do what he otherwise might not do; and
24 that is, to purchase or build expensive renewable energy. They
25 wouldn't -- a complier wouldn't be compelled to do that

1 economically unless they had a set-aside or a carve-out in
2 place.

3 The tiers, just from a definitional perspective, are
4 very similar to set-asides and carve-outs. There is a slight
5 difference between them. Tiers are a prescriptive method to
6 get the complier to, again, purchase or build a certain amount
7 of expensive renewable energy in the top tier. Let's call it
8 Tier I, the most favorable type of renewable energy. But it
9 also has an interesting aspect in it, and generally in other
10 states what I observe is that there is a lower tier associated
11 with it, and it generally encourages, by its structure, no more
12 than a certain amount of an unfavorable form or less favorable
13 form of renewable energy. So it has got an other side to it
14 that a carve-out or set-aside does not have. But they both
15 have the same effect in that they are a mandate within a
16 mandate essentially. So I just want to kind of categorize
17 those three things together in that way. They are sort of a
18 legal mandate within a mandate there.

19 Lastly, let me talk a little bit about this term
20 market-driven. I want to make sure we recognize that the term
21 market-driven or market forces are all within the context of
22 some prescriptive rule. This is not really market forces at
23 work. This is not customers driving a market and people
24 reacting to that customer desire. This is a regulatory
25 structure that says thou shalt, and the complier reacts and

1 there may be market forces within that context, but I just
2 wanted to make sure I highlight that particular point as we go
3 forward.

4 Now, multipliers are designed to work within that
5 thou shalt format and allow a little bit of market force to
6 happen within that structure. They have the same goals as
7 set-asides and carve-outs, essentially to get the complier to
8 do what he otherwise might not do; and, that is, purchase or
9 build more expensive renewable energy. The one thing that
10 multipliers do here for us is that they reduce the effective
11 cost of a more expensive form of renewable energy and also
12 allow some market forces to work on the industry that is
13 involved in this particular multiplier effect, and we will see
14 that a little bit later.

15 So the way a multiplier works is for every kilowatt
16 hour generated by -- let's use PV as an example. A PV
17 generator, if it has got a multiplier -- and I will start out
18 with an example of five -- if it has got a multiplier of five
19 applied to it, then the entity that generated one kilowatt hour
20 of PV energy would get credit for five kilowatt hours of energy
21 toward compliance. And we will talk about some of the
22 ramifications of that as we go along.

23 Baseline assumptions upon which the analysis is
24 based -- and, again, I'm not proposing here that we implement
25 these assumptions, I simply need to make them in order to get

1 to the conclusions. We assume that an RPS exists in Florida,
2 that RPS compliers are required to purchase renewables at costs
3 above avoided cost. Of course, if renewable energy were
4 available at less than avoided cost, we wouldn't be having this
5 conversation. Some form of renewable such as PV is favored or
6 is to be encouraged more than other renewables. That is an
7 important assumption. For instance, if we didn't want to do
8 that or didn't need to do that, we wouldn't be here talking
9 about carve-outs, set-asides, and multipliers, for instance.

10 Some more detailed assumptions, again, not being
11 proposed here, just necessary to get to the calculations. We
12 will assume an RPS structure of 20 percent of retail sales. I
13 have taken for the calculation purposes the retail sales from
14 the Florida Regional Coordinating Council publication. And
15 also an assumption here that the RPS requirement is phased in
16 over a period of 13 years, using sort of an exponential.
17 Starting out low and then increasing more in the later years,
18 just for calculation purposes there.

19 Another assumption here is important for a couple of
20 reasons, one for the calculation, but I think also for the
21 solar industry, if we find ourselves in this environment, and
22 that is that the multiplier would be in effect at the time --
23 the multiplier in effect at the time of a commercial operation
24 date for a PV generator is applicable for the life of that
25 generator. And the importance of that is that it provides an

1 element of certainty for the renewable investment. So the
2 renewable investor knows at the time that they put the thing in
3 the ground that that multiplier will be applicable for the life
4 of the unit, rather than changing over time for that particular
5 unit. So that is built into the calculations here.

6 Lastly, on the assumptions, I have assumed a cost
7 structure for a PV over time. I essentially lifted this from
8 Florida Solar Energy Center's presentation given to the Public
9 Service Commission back in January of this year. They had a
10 graph in one of their presentations that showed the declining
11 cost of solar as predicted by the industry there. And I have
12 subsequently had conversations with Bob Reedy here about how
13 that cost curve needs to look, and he gave me some good
14 feedback. And I actually adjusted it down a little bit for the
15 fact -- from that presentation for the fact that we might see
16 some mass PV installed rather than just PV on roofs, you know,
17 some large scale PV installations. So I adjusted it down
18 slightly for these calculation purposes.

19 Another major assumption in this particular analysis
20 is that the cost of non-PV alternatives start at about five
21 cents per kilowatt hour and grow to about eight cents per
22 kilowatt hour. And the way to think about those numbers is
23 five cents right now is about an avoided cost across the state
24 of energy, also about the cost of inexpensive renewable energy.
25 And the point here is if you do a multiplier right, you get

1 your PV to cost-effectively or look like the cost of the other
2 alternatives, cheap renewable energy or avoided cost. And the
3 assumption here is that that grows over time. If we have got
4 an RPS in place, it's my personal belief that the cost of
5 renewable energy as the demand for it -- demand not in the
6 sense of customers, but in the sense of the regulatory
7 requirement -- as that goes up and supply potentially is not
8 growing as fast as demand, the price of that commodity will
9 increase. So my assumption in this analysis is that it will
10 grow to eight cents. And I have seen other people say, you
11 know, the price of coal and other things are going to go up
12 during that time, so they will probably meet about that point.
13 So it will be a good time to phase it out.

14 Lastly, this last point is really not an assumption,
15 it is a fact, but I have put it on the page because it is an
16 input to the analysis. An average number, a good average
17 number -- and, again, I have had this conversation with FSEC,
18 and we have measured some numbers in northwest Florida that
19 correspond to this. We get about 4-kilowatt hours per day per
20 installed kW of solar panel, and that is the AC generation
21 output from these units in the state of Florida. And that is
22 really a good number for Central Florida. It's a little less
23 in North Florida, maybe a little bit more in the southern tip
24 of Florida, but that's a good number for our state, I think, on
25 average. And Mr. Reedy and I agreed that that might be a good

1 number to start with for this analysis. And that is important
2 later on when we look at how much megawatts would be necessary
3 to do this.

4 Okay. Let me walk through this spreadsheet, and
5 please bear with me on the numbers, but you will start seeing
6 some things that we assumed as we talk through the first part
7 of the presentation.

8 The left-hand column, of course, is the year of
9 implementation of the RPS. The second column is the projected
10 cost of PV in cents per kilowatt hour and, of course, that
11 comes from the cost curve from the FSEC presentation originally
12 given in January, adjusted down slightly for the possible
13 installation of large scale solar arrays.

14 The next column there is simulated multipliers. A
15 couple of things I will point out here is it starts out around
16 five, and it ends around one. Important that it ends around
17 one, that's the time that it phases out. A multiplier of one
18 is essentially no multiplier at all. You are not getting any
19 extra credit for being that type of renewable generation if
20 your multiplier is one. One may ask, reasonably, how did you
21 get that number? Well, we're going to -- there are several
22 ways to get to these particular types of numbers. Let me show
23 you the way that I did it for this analysis. It is just a
24 convenient way to figure it. I started out actually with
25 Column A and Column C and calculated Column B. Column C is the

1 effective cost of the PV energy after applying the multiplier.
2 In other words, it's those competing forms of renewable energy,
3 inexpensive renewables, or avoided cost, for instance, however,
4 you assume those things to be. And, again, starting at five
5 cents and growing to eight cents in the assumptions. Once you
6 take Column A, divided by C, you get Column B. That's the
7 required multiplier to get you to the point that you have got
8 competitive priced, effectively competitive priced solar.

9 Continuing in the analysis, the simulated RPS percent
10 is listed here throughout the years, starting low, around
11 1.8 percent, growing slow at first, a little faster at the end
12 to 20 percent.

13 Next we take the Florida retail sales in gigawatt
14 hours. These are straight out of the FRCC document all the way
15 up through, I think, the ninth year. And then after that I use
16 the compound average annual growth rate, just kind of grew it
17 beyond that point. And, lastly, Column F is the combination of
18 Columns D and E, which would be the renewable energy
19 requirement for statewide compliance with a renewable portfolio
20 standard of these assumptions.

21 Now, let me pause here for a moment to highlight how
22 a carve-out might look in the first year. I'm going to get to
23 the multipliers here in a minute, but let me pause and talk
24 about carve-outs and tiers just as an example. I'm going to do
25 this verbally. You see there in the right-hand column in the

1 first year, 4,390 gigawatt hours is the requirement for the
2 statewide renewable energy generation. An example of a
3 carve-out might be in the first year a percentage of that. So
4 one percent of that may be required as PV. That would be a
5 carve-out or a set-aside.

6 A tier system might lay out with Tier I being PV and
7 wind, and 500 gigawatt hours are required there. Tier 3 might
8 be things like MSW and exothermic phosphate production, and the
9 most that would be allowed in Tier 3 would be 1,000 gigawatt
10 hours. And then that kind of leaves you with Tier II,
11 everything else, biomass, hydro, geo, ocean. And just using
12 these numbers here, that would wind up with 2,890 gigawatt
13 hours. So that is sort of how a tier would work or a carve-out
14 would work, just to kind of give those two examples before we
15 get into multipliers.

16 All right. So this is the foundation for our
17 analysis. I'm going to take Columns B, E, and F and carry them
18 over to the next slide and do the analysis based on those
19 columns. So here they are, the multiplier, retail sales, and
20 the renewable energy requirement for the state. Okay.

21 All right. Scenario one is the analysis that I did.
22 It is specifically in response to a question that Mr. Graniere
23 raised, and it was a very good question. What if you lay out a
24 good multiplier and everybody jumps on board and everybody does
25 PV and only PV? What's the end result? This happens to be the

1 easiest thing to calculate in the spreadsheet, so it's the
2 first scenario here. But it is kind of an interesting result,
3 and we see where it winds up in the end. So the assumption
4 here is that all compliers with an RPS would take advantage of
5 multipliers and would use only PV to comply with the RPS in
6 this particular scenario.

7 So in the first column here that comes up G, let me
8 talk about the first year, it's the simplest one to calculate.
9 The number 857 is nothing more than the renewable energy
10 requirement, 4,390, divided by the multiplier 5.12, because all
11 people are complying using PV.

12 The second year is a little bit more difficult to
13 calculate, but as I go through it, it may make sense to you.
14 You take the incremental new renewable energy requirement,
15 which is the difference between year two, Column F, and year
16 one, Column F. The difference between 5,521 and 4,390, and
17 divide that by the year two multiplier and add that to the
18 prior year's 857 PV gigawatt hours. And you wind up with the
19 total gigawatt hours that are actually generated by PV in year
20 two. Note as we do that -- and that is kind of the pattern
21 that follows all the way down -- as we do that, year one PV
22 generation is unaffected by year two's PV multiplier. Year one
23 still has year one's PV multiplier applied to it. So, as we
24 talked about in the assumptions early on, if an entity puts a
25 PV generator in the ground, it gets to keep that particular

1 multiplier all the way through its life. And that's the way
2 this spreadsheet is set up.

3 Okay. Here is the result. I will draw your
4 attention to the bottom right-hand number, 14.8 percent. This
5 was sort of the question that Mr. Graniere drew attention to
6 very appropriately. He said, you know, what if everybody does
7 this and they take advantage of the multipliers, wouldn't your
8 answer be -- assuming a 20 percent RPS -- 20 percent divided by
9 five, five being the initial multiplier. And the answer is no,
10 because over time you phase out the multiplier and your
11 renewable energy requirement increases. So we wind up in the
12 end with about 14.8 percent of our total retail sales actually
13 being generated by renewable energy, and in this case all PV.

14 So, I will point out one additional thing, and we
15 will talk about this probably at length today. Mr. Trapp had a
16 concern about the fact, and rightly so, that 14.8 percent is
17 not 20 percent. Twenty percent was sort of a number that has
18 been thrown out. That is what we used in the assumption, and
19 here we are, we are at the end, and we have got 14.8 percent.
20 What happened to the other 5.2 percent? Well, those are the
21 kilowatt hours that we spent to incent people to do PV to bring
22 this to this point. Note that we are all PV in this particular
23 circumstance.

24 But I want to give an example, and it's always
25 dangerous to use the IRS as an example. I open myself up for

1 all kinds of critique later, but I think the analogy is a good
2 one. The IRS rules say that if a couple who is married filing
3 jointly makes \$65,000 a year, they are in the 25 percent tax
4 bracket. That is just the bracket that they are in. But, you
5 know, the rules from the IRS also allow for deductions. So
6 they may have children, they may have a mortgage interest
7 payment, which allows them to deduct a little bit from their
8 income as they file. And their effective income, let's assume,
9 drops to \$60,000. Now they are in the 15 percent marginal tax
10 bracket. The rules allow that. That was okay. In fact, we
11 enjoy the pleasure of being able to do that. We all partake
12 and participate in that.

13 Not only did they drop their effective marginal tax
14 rate, they avoided taxes on \$5,000 of their real income. So
15 the question is what is their real income? Is their income
16 65,000 or is their income 60,000? Well, for tax purposes,
17 compliance purposes, and that's why I'm making the analogy
18 here, their income is \$60,000, that's what they pay taxes on.
19 But the income that they brought in the door was 65. So this
20 is a situation where the rules allow us to legally and
21 unashamedly call our income something which it is not.

22 And I'm going to propose to you today that we may
23 unashamedly be able to call 14.8 percent a 20 percent RPS
24 compliance completely PV. So there are some dangers in that
25 analogy, but I wanted to make it and bring it to your

1 attention.

2 Lastly, in the right column, we divide the Column G,
3 which is the PV actual generation by the number of gigawatt
4 hours produced per megawatt per year -- that's the 1.46 number
5 there -- to determine how many megawatts of generation would
6 need to be installed in any particular year, and that's
7 cumulative as it goes along, in order to reach that gigawatt
8 hour production level. Okay. So those are the kind of numbers
9 that you are looking at. Pretty large numbers if you compare
10 those to the number of megawatts produced in the world -- I
11 mean, installed in the world today of solar. They are pretty
12 big numbers. That's pretty ambitious. But, again, this is
13 under the assumptions of Scenario 1 that Mr. Graniere, I think,
14 well asked the question about, what if everybody did nothing
15 but PV.

16 All right. Now, I'm going to take Columns D and E
17 from this particular spreadsheet, roll them to the next and
18 delve into Scenario 2. I've only got two scenarios, so bear
19 with me. You all are being very patient. The multiplier for
20 PV hasn't changed and the retail sales in the state of Florida
21 has not changed. Column H is new. It takes Column D from
22 Slide 15 and multiplies it by 10 percent, divides by 10. It is
23 one-tenth of the total renewable energy requirement. And what
24 I'm going to do here in Scenario 2 is calculate one-tenth of
25 the renewable requirement, and in Scenario 2 assume that there

1 is a cap on the amount of PV that anyone is allowed to have
2 this multiplier apply to. And that is to overcome the
3 objection that all people would comply only using PV. One of
4 the rules that could be put in place to overcome that concern
5 is to say the max you can do is 10 percent PV in this
6 particular case. And we will see what the end results are
7 here. And that is really a little bit -- may be a little bit
8 more reasonable number when we get to the end of it and look at
9 the percentages.

10 So using the same mathematics we used before, what
11 would the actual PV generation be? You can see those numbers
12 there. And next, what is the actual RPS compliance? Now, this
13 is a new column. It is slightly different than the others,
14 because you have to add in the PV and the non-PV renewable
15 energy generation together in that column right there. Okay.

16 So what's the actual percentage taking Column L and
17 dividing it by the retail sales? And in Column E you can see
18 that those percentages -- and I will draw your attention again
19 to the bottom right corner -- is 19.5 percent. So if you
20 limited your PV multiplier benefit to 10 percent of your total
21 package, you would wind up in the end with 19.5 percent. Not
22 14.8 percent, not 20 percent, but maybe having my income at
23 60,000 is okay.

24 PV capacity required to reach this. These numbers
25 are much more reasonable than the numbers we saw on the other

1 chart compared to what is being installed in the world, in the
2 United States, capacity of the industry, et cetera. So I just
3 wanted to highlight those.

4 One summary table. If we vary the multiplier, and
5 ask what impact does that have on us with a given PV cost
6 curve, you can see the variance in the effective cost in year
7 one. I'm just looking at year one here. If the multiplier is
8 5.12, that's the analysis that we use, the effective cost in
9 year one is five cents per kilowatt hour. If we reduce the
10 multiplier to 3.2, and, by the way, that I'm aware of, the
11 highest multiplier in any state where this methodology is
12 implemented is about 3, then our effective cost is around eight
13 cents per kilowatt hour.

14 And you can see what the impacts are on the last
15 year, the 13th year scenario there on the right, Scenario 1 and
16 Scenario 2 in the right-hand column. It doesn't vary a whole
17 lot. A lot of the assumption that drives this is the
18 exponential phase-in of the RPS.

19 So what conclusions can we draw from this? Number
20 one, multipliers and set-asides both place emphasis on a
21 particular type of renewable generation. And the example we
22 have given here is PV. They both have the same goal. Number
23 two, multipliers make no guarantee that kilowatt hours of a
24 particular type will be generated. The assumptions that I have
25 built into this are that in Scenario 1, all compliers will

1 install PV and take advantage of the multipliers. In Scenario
2 2, I assumed 10 percent, and people took advantage of that 10
3 percent of the renewable energy requirement was PV. But there
4 is no guarantee of that. Again, this is the market forces
5 component where you give an incentive. It's a carrot. It's
6 not wielding a stick. It's providing a carrot out there for
7 folks to be able to participate. But there is no guarantee.
8 That is really the main downside of multipliers, you may not
9 have somebody participate, where with a carve-out or set-aside
10 you can require them to participate.

11 An additional conclusion here is that the multiplier
12 method offers the highest incentive in the early years. And
13 this was actually pointed out to me by my friend, Bob Reedy, at
14 the Solar Center. This is a very important point. The
15 incentive in the early years in the multiplier structure is
16 very high. Note, the multiplier starts at whatever you set it
17 at to begin with, five, and then it decreases, or three, then
18 it decreases. In a set-aside situation, the ones that I have
19 observed across the states, they generally start out small,
20 just like the RPS starts out small, and then grows over the
21 years. Now, in the multiplier case, a complier has most
22 incentive to install PV, or whatever the preferred method, is
23 early in the process rather than late.

24 Next, multipliers offer an incentive to choose PV
25 without removing market pressure to keep PV costs low. And I

1 think this is probably the most important aspect of multipliers
2 in this entire discussion. We have to ask the question of
3 ourselves what happens if PV costs don't decrease as projected.
4 Remember, we built an assumption in there about a decreasing
5 cost curve, and that's predicting the future. That's always a
6 difficult thing to do accurately.

7 Well, in the set-aside case, if PV costs don't
8 decrease as projected, what happens? Those costs are passed on
9 to the customers because compliers have to comply. That's the
10 nature of a set-aside or a carve-out. But in the case of a
11 multiplier, if PV costs don't decrease as projected, what
12 happens? That is where the market forces kick in, and the
13 complier chooses not to choose PV because it is no longer
14 cost-effective anymore. Its costs have not declined, the
15 multipliers have shrunk, but the costs have not declined over
16 time. And the complier then chooses a less expensive form of
17 renewable energy to comply, because they don't have to choose
18 PV in a multiplier scenario; pure play multiplier. I know
19 there are mixtures, and I really wouldn't -- I'm not going to
20 get into that. I don't suggest that. I think pure play is a
21 little bit better.

22 But, in this case, in the multiplier case, the PV
23 industry has a very strong incentive to reduce their costs. In
24 fact, if they reduce their costs lower than that cost curve,
25 they are ahead of avoided cost, and that's a good thing for the

1 PV industry, for the environment, et cetera.

2 A couple of obvious conclusions here, multipliers can
3 make RPS compliers indifferent to higher actual costs of PV
4 because the effective cost has been lowered by the multiplier.
5 And they can bring the cost of RPS compliance in total, and
6 that's really where we're concerned about in terms of the
7 customers, down to the cost of compliance using other renewable
8 resources, the cheaper renewable resources.

9 An important point, and Gwen and I talked a little
10 bit about this prior to the workshop start today, multipliers
11 must be set high enough to be effective. The experience in
12 other states indicates that multipliers of two times or
13 three times are inadequate. But I'm going to submit to you
14 today that the reason the multipliers in the other states may
15 not have worked is mostly because the multipliers were not set
16 high enough. If you take a multiplier of three, apply it to a
17 25-cent per kilowatt hour PV option, you get an eight-cent per
18 kilowatt hour renewable energy option. There are other less
19 expensive renewable energy options out there. And in a market
20 force environment, those higher costs, eight cents per kilowatt
21 hour, may not be chosen.

22 Last slide on conclusions. Even if all RPS
23 requirements are met with PVs and multipliers, a substantial
24 portion of the original RPS target will be met. In the cases
25 we looked at, Scenario 1, 14.8 percent; in Scenario 2, 19.5

1 percent, but those are the actual kilowatt hours. The
2 compliance kilowatt hours, the \$60,000 number, was 20 percent.
3 So within the context of the overall mandate of an RPS,
4 multipliers, I believe, allow market forces to work for the
5 benefit of all customers.

6 And that's the conclusion of my presentation, and I
7 will be glad to either take questions or hold those until the
8 end, whatever your preference is, Judy and Mr. Trapp.

9 MR. TRAPP: Thanks, Bob, very much. That was very
10 enlightening. I do have a few questions myself, and then I
11 will pass it down the line to staff.

12 MR. MCGEE: Yes, sir.

13 MR. TRAPP: And please excuse me if these are stupid
14 questions, but there is no stupid question when you're dumb.
15 I'm trying to get to your slides. It seemed to me the first
16 impression I had was you started out with an estimate of
17 current PV costs relative to current utility costs, and then
18 you generated a forecast of where you thought both of those
19 costs would go. And that seems to me a real prime mover in
20 your example of how you're designing your set-asides.

21 What happens if those cost projections don't
22 materialize the way you forecasted? Do you, you know, adjust
23 annually the multipliers going forward, or how do you envision,
24 you know, checking these numbers or verifying of these numbers?
25 And I'm looking at a very dramatic estimated decrease in

1 photovoltaic costs, which causes me pause. And then I'm
2 seeing, you know, an increase in utility costs. But in light
3 of all the worldwide activity with capital costs and
4 limitations of fuel types and things like that, I'm questioning
5 whether or not those numbers may be too low. How does one fit
6 that into the system?

7 MR. MCGEE: This is all conjecture at this point, but
8 I think if we got off into this and you all had the
9 responsibility for setting a multiplier, it would be important
10 to make sure you were very comfortable with whatever that PV
11 cost curve reduction projection was. And I think you are
12 right, it would need to be revised or reviewed at least
13 periodically. I personally think once a year is probably too
14 often. Sort of like we do in the conservation docket, every
15 five years gives enough time for things to change structurally,
16 to be able to look back and see what has happened. That might
17 be a good time period. That would certainly be at your
18 discretion to determine what time frame that would be useful.

19 As far as the projections for the alternatives, there
20 are a lot of considerations that go into that. And I will be
21 frank with you, my analysis in producing those numbers was
22 pretty short. It was brief. So I wouldn't put a lot of weight
23 in the particular numbers that I used here, but I think the
24 methodology is sound, and that is really where I was headed
25 with that.

1 MR. TRAPP: And, again, your analysis assumes that
2 over time there's going to be some convergence with the solar
3 costs in this example and the utility costs. That seems to be
4 another thing you have got to ask, when is that convergence
5 going to take place?

6 And then going to the other question that we talked
7 about early on, about how you never really got to 20 percent.
8 In the overall design of an RPS, if you were to say add five
9 years past the convergence point to have the mandate for
10 20 kick in, would that then be a means by which to use a
11 multiplier as kind of an interim mechanism to incent a
12 particular industry, but working together with other
13 technologies to ultimately reach 20 percent?

14 MR. MCGEE: Yes. Answering that last part of the
15 question, I think that is another solution and certainly
16 overcomes the objection that 14.8 percent is not 20 percent. I
17 offered one particular view of that. But another view of that
18 is that we want to get to a 20 percent actual number. And in
19 that case you could add another five years onto the back end of
20 it, especially in the case where you've got 19.5 percent
21 instead of 20 percent, and allow that to float up, and that's
22 certainly another solution.

23 MR. TRAPP: And then my final question for the moment
24 is, you know, you're still talking about subsidizing someone
25 with a lot of dollars in this. And I don't know, I get the

1 sense in going through your example that the multiplier helps
2 the utility to comply with a goal, but what about the
3 ratepayers? How do they play in this? How does the multiplier
4 transfer money to the renewable? Do you have to link it to a
5 tradable REC or something where they actually get, you know,
6 five times the dollars, too, and then the ratepayers have to
7 pay for that, that invokes also linkage with some type or do we
8 need to be concerned about a rate cap in this?

9 MR. MCGEE: You have gotten to a level of complexity
10 beyond my capacity, I think, at this point. In terms of
11 linking dollars and RECs with the solar kilowatt hours, my
12 analysis and my proposal really is a very simple one. And the
13 way it impacts the customers is simply in reducing the economic
14 burden on the customers by allowing early on a compliance by
15 using PV that is a lower effective cost. That lower effective
16 cost would be passed on or less expense would be passed on --

17 MR. TRAPP: This is where I don't understand. On a
18 per unit basis I don't see that you are in any one year
19 reducing the cost other than the theory that if you promote the
20 industry it will grow into a lower cost. But all you are
21 really doing by using multipliers is limiting the applicability
22 of a 20 percent goal in that year to some lower amount so that
23 the amount of additional cost that has to be paid in total is a
24 smaller dollar amount, but it is still more cost being paid.

25 MR. MCGEE: That's right. And one of the other

1 assumptions that I do not explicitly list here, and now that
2 you've mentioned this, I probably should have, was that the
3 utility -- in terms of the customer impact, the utility would
4 have full recovery for expenses associated with complying. And
5 in that way, to the extent that the utility's expenses are
6 lowered in any way particular year, the customer benefits in
7 that way. And that is the presumption from which I worked.

8 MR. TRAPP: I see. Thank you.

9 MR. GRANIERE: Bob Graniere.

10 Bob, I think to get at what the other Bob here was
11 talking about is the way I see it is that the effective cost
12 that you put down there at present is just a fiction. You just
13 made it up, essentially. You picked a multiplier, you divided
14 it by another number and wa-lah, it came out five. But we can
15 make that a real effective cost if the other assumptions are
16 right by doing what Bob just said, increase the dollar value of
17 the multiplier by five. Then the customer gets that, and lo
18 and behold its effective cost is five cents to the customer
19 that actually has the solar. However, if you pass through all
20 of that cost to the other customers, they get to pay it. So,
21 basically, all this talk about effective cost really doesn't
22 add a whole lot to the example, in my opinion.

23 Now, the other part is about the actual numbers for
24 the energy charge. One of my questions is, is why isn't there
25 a capacity component, because right now that number five and

1 eight is only energy. What happened to the capacity? Are you
2 saying that this renewable portfolio standard has no capacity
3 effect? I would venture to say that that's not true. So I
4 guess there should be a capacity component in that avoided cost
5 component.

6 Then I would ask the question about --

7 MR. TRAPP: Could you get a verification to your
8 question first?

9 MR. GRANIERE: Okay. Well, I'm just -- okay. Should
10 there be a capacity component?

11 MR. MCGEE: Are you asking me that question?

12 MR. GRANIERE: Yeah.

13 MR. MCGEE: I'm sorry. I was taking notes for later
14 reference.

15 I didn't consider that in this particular
16 circumstance. I have done some analysis at Gulf Power with
17 solar PV output relative to our load shape, and there is some
18 small contribution to peak, but, of course, solar PV peaks at
19 noon, and our peak during the day in the summer time is more
20 along the lines of 4:00 or 5:00 p.m. So it's pretty far from
21 the actual peak. So the amount of contribution at the time of
22 our peak, 4:00 or 5:00 p.m., is relatively small. I
23 essentially ignored it for analysis purposes.

24 MR. GRANIERE: Can we go back to your slides that
25 show the total number of megawatts that this thing would

1 generate, the renewable portfolio standard?

2 MR. MCGEE: This is the 10 percent limited slide. Do
3 you want the other one?

4 MR. GRANIERE: No, no. It's over there, PV capacity
5 required. Now, would you have us believe that 3,000 megawatts
6 of solar capacity has no capacity effect in Florida? That's
7 like a -- that's like a nuke.

8 MR. MCGEE: I haven't spent much time thinking about
9 the capacity effect. As I said earlier, I essentially ignored
10 the capacity effect for the analysis purposes.

11 MR. GRANIERE: Okay. And as for the avoided cost,
12 this notion about the above avoided cost and the expensiveness
13 and things, is there a reason why 3,000 megawatts of solar
14 should be treated as if it was 3,000 megawatts of a combined
15 turbine -- of 3,000 megawatts of a gas turbine?

16 MR. MCGEE: I'm not sure I understand the question.
17 Could you restate it for me?

18 MR. GRANIERE: Well, if the avoided cost is measured
19 on a gas turbine, then you're basically saying that in this
20 example 3,000 megawatts of photovoltaics is the same thing as
21 3,000 megawatts of a gas turbine. That's a lot of gas
22 turbines, by the way.

23 MR. MCGEE: I still don't understand the question,
24 what you're getting at.

25 MR. GRANIERE: Okay. Couldn't it be like

1 3,000 megawatts of a nuke, or 3,000 megawatts of an IGCC, or
2 3,000 megawatts of an ultra supercritical coal-fired plant, or
3 3,000 megawatts of a supercritical coal-fired plant, or 3,000
4 megawatts of just a plain old coal-fired plant because,
5 basically, we have had all of those plants in front of the
6 Commission in the last six months?

7 MR. MCGEE: I'm sorry, I'm still missing the point.

8 MR. TRAPP: I think the point that Bob is trying to
9 make, and correct me if I'm wrong, Bob, is that in the analysis
10 that you do, you have got to look at the contribution that the
11 renewable does to peak and energy reduction and how that
12 translates into your avoided cost column. And if that's the
13 point, I would agree with the point. I think you said in your
14 example you just pick a number, five cents, and that may have
15 been just picking a number, or it may have been consciously
16 energy only, no capacity component or whatever, but in the
17 final -- in the analysis the Commission would have to do to
18 implement this, would there not have to be linkage between the
19 contribution of whether it be solar or wind or whatever,
20 whatever renewable that you are trying to target with your
21 multiplier, you would have to tie into some type of avoided
22 cost analysis in order to get this methodology to play out.

23 MR. SMITH: Yes, I agree. But a rigorous analysis of
24 this type -- and, again, this was very, sort of
25 back-of-the-envelope for the purposes of illustrating the

1 point, would need to account for any capacity contribution
2 whatever that might be from that preferred form of generation.
3 I agree with that, yes.

4 MR. HARTMAN: This is Tom Hartman with FPL. And I
5 have had, probably in this room, the unique experience of
6 actually operating a 310 megawatt solar-powered power plant.
7 The energy points have been well made. The issue on the
8 capacity is can there be a capacity contribution from a solar
9 plant? Certainly. Can you depend on it day in and day out?
10 No. So if you are going to have solar without a thermal
11 backup, then you need to go ahead and build something to
12 account for it not being there. So are you avoiding the coal
13 unit? No. The coal unit is base load. As a matter of fact,
14 if you put in four or 5,000 megawatts, you might be in a
15 situation where you are cutting back inexpensive base load and
16 nuclear units.

17 Can there be a capacity contribution on a statistical
18 basis with widely dispersed resources? Yes, there can. But it
19 is much, much less than you really think it is. It is not
20 going to be on the order of 3,000 megawatts. Maybe it's on the
21 order of 30 megawatts, and you still have to go ahead and have
22 the backup available to keep the lights on.

23 MR. TRAPP: Well, again, I think that reinforces my
24 point. You have got to do quite a bit of technical analysis.
25 You just can't pick a multiplier. You have got to do quite a

1 bit of technical analysis to see how that design is actually
2 really going to work to incent what you are trying to
3 accomplish.

4 MR. HARTMAN: Your point is that the multiplier is
5 based on the cost versus avoided cost. And the trick is really
6 understanding and calculating what the avoided cost is and what
7 has truly been avoided by this. One of the issues that we've
8 looked into, and others have looked into, is you put in solar,
9 for example, and you potentially avoid capacity during the day.
10 Everybody else around here also has winter peaks that occur at
11 night, you don't avoid that capacity, certainly.

12 The energy consumption is different, so you might use
13 a different selection of units that you are going to have. So
14 it has wide ramifications in calculating what the true avoided
15 cost is, and it's just not a back-of-the-envelope calculation.

16 MR. TRAPP: I agree with you 100 percent, but I would
17 note that utilities do that type of analysis in every
18 conservation program that you evaluate, including solar
19 conservation programs that have come before this Commission.
20 And the utilities do that type of calculation in every standard
21 offer contract that you develop to promote cogeneration,
22 supply-side type conservation. So while I agree with you 100
23 percent, it's just how much more work are we going to have to
24 do to implement a multiplier is really the point I'm getting
25 from this.

1 MR. HARTMAN: It's quite a bit.

2 MR. GRANIERE: Bob Graniere, again.

3 Tom, I guess if I heard you right, you said the
4 problem with photovoltaics was that it was intermittent and
5 only four hours, and you have to build it back up, is that
6 correct?

7 MR. HARTMAN: That's correct.

8 MR. GRANIERE: Let me make an example. Let me ask
9 you this question. What is the avoided cost of 3,387 megawatts
10 of waste-to-energy that runs 24/7?

11 MR. HARTMAN: Waste-to-energy gets a full capacity
12 credit.

13 MR. GRANIERE: So that could be a coal-fired plant or
14 a nuke?

15 MR. HARTMAN: Absolutely.

16 MR. GRANIERE: Thank you.

17 MR. JONES: Bob, I have a question.

18 When you did the four-sun-hour assumption -- oh, I'm
19 sorry. Dale Jones with Regenesys Power.

20 MR. TRAPP: Excuse me. Could we just have an
21 administrative point of order here? We're having a hard time
22 juggling this mike over here on our staff side. If we could
23 ask Bob to go ahead and sit down at a mike and continue to take
24 questions, I think that would work. And then that would give
25 our moderator a mike, and then staff a mike to pass around, and

1 we could try to stay on top of what's going on.

2 MR. JONES: Thank you, Bob.

3 The question I have is really questioning the
4 sensitivity of using a four sun hour and the resulting capacity
5 factor of that system, and that was based on actual systems
6 installed in Florida. And I would have to say to this point in
7 time really no large systems of the size that are going on in
8 Europe and in California have been installed in Florida as yet.
9 My assumption would be is that when you have larger systems on
10 this sort of order of magnitude of capacity, these are going to
11 be more central station type systems, larger arrays, single
12 access tracking which can certainly enhance, you know, later in
13 the day capacity delivery. That, you know, this four sun hours
14 on actual measured systems I would believe would tend to go up.
15 And my question was is what sort of sensitivity have you done
16 if you raise that to 4.5 or 5 sun hours per kW installed and
17 what the result would be on that?

18 And my second comment, I guess, would be is just, you
19 know, it certainly follows along the other tangible and
20 intangible benefits associated with capacity benefits, grid
21 enhancement by the virtue of these types of systems being in
22 distributed service territories, deferred expenses associated
23 with reconductoring and sort of end-of-grid extensions, and
24 just the job creation associated with this type of business,
25 the jobs created per megawatt of capacity added versus a

1 combined cycle power plant or some of the others. So I guess
2 some of the other intangible and tangible benefits of those
3 would also be -- should be considered when this technology is
4 looked at as an RPS compliance methodology.

5 MR. REEDY: Bob.

6 MR. TRAPP: Go ahead.

7 MR. REEDY: An opportunity to answer a few points and
8 raise my own observations, please. Bob Reedy with the Florida
9 Solar Energy Center.

10 I think we're talking about energy, we're talking
11 about capacity. Excellent observations that Bob McGee made
12 about the effects of the multiplier. And then we drifted into
13 talking about the capacity question. And I think clearly Bob
14 was mostly addressing the energy proposition there. So with
15 regard to energy, let me just first say that if I had 14.8
16 percent of the net energy for load from PV, and I asked the man
17 on the street type of question, have we achieved what we
18 would -- we could achieve 20 percent if we had burned biomass
19 and waste-to-energy or other means, is this an inferior result?
20 And were we taking a carbon neutral, let's say in the case of
21 biomass and then with PV where we have no carbon output, it
22 could even be considered carbon negative.

23 So there's a quality issue. You have achieved a lot
24 with the air with all the other resulting pollutants if you did
25 get 14.8 percent and it was all PV. So you get off into that

1 qualitative issue very easily, but I think it's an excellent --
2 it makes you really think about is that so bad if that
3 happened?

4 And with regard to capacity, we're all buzzing here
5 that have some experience in this area, and we're saying
6 something in the order of 60 percent of the peak rating would
7 be closely aligned with the utility peak in the afternoon on a
8 summer day. And I absolutely insist that it is much more
9 reliable than a simple cycle gas turbine in terms of beating my
10 real -- anything other than the needle peak on a winter
11 morning, and that is because when the sun is not there, the
12 load is not there. And I'm not out in the market anyway. I
13 wouldn't be -- well, I wouldn't start my peakers. I wouldn't
14 be using any other peaking capacity if the clouds are there or
15 the sun is not there. So we really don't have an issue. We
16 think that PV is a very reliable resource in Florida in terms
17 of capacity and can be banked on.

18 MR. TRAPP: Thank you very much.

19 First of all, just let me say that at this part of
20 the program, as far as I am concerned, we are not here to
21 advocate the merits of any particular technology. And I would
22 like to get the discussion back more to a philosophical
23 discussion about the relative merits of a multiplier system
24 versus not. So, you know, I think there will come a time when
25 we have to select technologies. We will have to look at the

1 various merits. But to the extent that we can get back to
2 Bob's example and have dialogue on aspects of the mechanism by
3 which he is proposing, I would appreciate it.

4 MR. FUTRELL: And you can make your comments also
5 considering that Bob had in his slides a statement there that
6 2 or 3 percent may not be sufficient, you know, what's going on
7 in other states. If you can kind of focus comments on that as
8 to what levels do you see out there that would be appropriate,
9 higher, lower, what experience have you seen out there?

10 MR. TRAPP: Yes. Thank you.

11 My question more pointedly to what his question was,
12 was that should that be driven by a utility cost versus a
13 technology cost forecast and estimate, and whatever that number
14 is, that is the number, or should we just pick a number?

15 MR. COOKE: Chris Cooke here on behalf of SunEdison
16 and the Solar Alliance. The Solar Alliance is a group of
17 national major photovoltaic manufacturers and installers.

18 I'll address the multiplier issue, but, unfortunately
19 our perspective is from the photovoltaics view. So in that
20 context.

21 I think the difficulty with a multiplier is the key
22 in setting the market conditions are getting that multiplier
23 exactly right. And if it is 5.12 and you have gotten that
24 exactly right, it will function. If it was actually 5.5, and
25 you set it at 5.12, you put an incredible margin squeeze on the

1 photovoltaic industry or drive it to zero margin, which means
2 you have no participation from that. If it's actually 5, and
3 you set it at 5.12, you have given us needless extra margin and
4 we will drive market share based on your inaccurate setting of
5 that multiplier.

6 Now, Mr. McGee --

7 MR. TRAPP: Does that call for periodic review and
8 how quickly? I mean, I think Bob was suggesting every five
9 years. I'm hearing you say maybe we should look at it every
10 month or two months, or every six months.

11 MR. COOKE: If you wanted to do a multiplier, I think
12 you would have to consider information that came in monthly.
13 You have a number of requests for proposals that are out in
14 Florida from municipal enterprises, and I think you will see
15 significant price fluctuation there.

16 One of our other concerns, too, is we do not
17 currently have experience in any state that's got a solar
18 program where they have successfully implemented multipliers.
19 In all the other states where there is a significant amount of
20 distributed solar electric, it's done through either a
21 carve-out, a specific target, or through a carve-out and a
22 specific SREC goal. And the advantage of using the Solar
23 Renewable Energy Certificate is to the extent that there are
24 changes in the marketplace that adjust the price, that SREC
25 immediately reflects that price adjustment in an open, fair,

1 and competitive marketplace.

2 So those appear to be the states that are
3 functioning, and I would comment on a recent report from the
4 Lawrence Berkeley Labs in California in their analysis of state
5 programs. They noted a trend away from states using
6 multipliers towards specific set-asides or carve-outs on the
7 technologies they wanted to see.

8 MR. TRAPP: Are they having to adjust those targets
9 as quickly as they would have to adjust a multiplier?

10 MR. COOKE: No. In the states that either -- and
11 there are two prime examples. There is California with its
12 performance based incentive where they said we are going to put
13 an incentive in place that we believe would be the appropriate
14 incentive for the industry for each year, and then let the
15 marketplace decide whether that was an appropriate incentive,
16 but lock in the amount of volume they wanted on that.

17 So, for instance, in California there is a
18 performance based incentive that initially started beginning
19 this year of 39 cents per kilowatt hour for a five-year period
20 for a block of 70 megawatts. And they just said when we get to
21 that 70 megawatts, the price is going to drop. The California
22 PSC staff who set that anticipated that that block would be
23 reached each year. In fact, the industry has been able to
24 lower prices much quicker than that. We are already on the
25 fourth step of price reductions in California under their PBI.

1 In the other markets where there is an SREC,
2 Colorado, New Jersey, and burgeoning markets in Maryland,
3 Delaware and Pennsylvania, that SREC price simply fluctuates.
4 As the market price to install distributed solar goes up or
5 down, the SREC price goes up or down. I think it's fair to say
6 in all of those jurisdictions, based on what the projections
7 have been, or what that SREC price would be, the industry has
8 actually delivered product at a lower price. Colorado and
9 Excel (phonetic), I think, would be a good example where they
10 were initially looking at SREC prices in the \$250 range for a
11 megawatt hour. And then their most recent bid actually got
12 double what they expected in terms of the volume and they are
13 priced around \$190 a megawatt hour.

14 But what that system allows is for that immediate
15 price reduction. The cost of solar is, to a large degree, also
16 influenced by what happens on Capitol Hill and Congress and the
17 tax credit. And, for instance, there used to be a 10 percent
18 investment tax credit that jumped up to 30 percent. And now
19 it's unclear whether that 30 percent will continue out past
20 2008. It may drop back to 10 percent. The SREC structure
21 allows an automatic accommodation for that. So as soon as the
22 federal tax credit increased, then that price of the SREC drops
23 to reflect that. If it goes the other way, you would expect to
24 see the SREC price go the other way. But it is an immediate
25 adjustment based on the policies from Capitol Hill, of course,

1 that affect the cost.

2 MR. TRAPP: What I am kind of hearing you say,
3 though, that a fixed percentage RPS doesn't work as good as a
4 mandatory request for proposals.

5 MR. COOKE: I think you could do that, but one of the
6 keys is the longevity of the program. And what I mean by that
7 is for a state like New Jersey, or Maryland, or Colorado who
8 has, in essence, said we are going to procure this amount of
9 distributed solar in increasing blocks out over a period of 10
10 to 12 years gives the industry the transparency to come in and
11 say, you know, if we invest in the market creation aspects of
12 coming into a new state, distribution channels, training
13 installers, sales channels, all of that that goes into an
14 investment in the state, what kind of market will we have three
15 to five years out. In all of those states that's transparent.

16 We would urge that Florida follow that example and
17 say this is our goal in terms of that program. Again, a
18 multiplier doesn't give you that transparency. There is a huge
19 market risk to say if we hit a price target, perhaps we have a
20 much larger market share than we have in any other market.
21 Although it was disconcerting to hear to address that Mr.
22 McGee's proposal would then cap that, so there is only a
23 downside for the industry.

24 If there is only a downside, then in terms of a three
25 to five-year projection, say, what is Florida going to be like

1 for distributed solar in three to five years? You have a
2 question mark, and you can't put together a business plan based
3 on that. And the net effect of that is to keep solar costs
4 higher in the state, because people aren't making those
5 business investments as contrasted with the other states in
6 which they are making those because they see that market.

7 MS. HARLOW: It occurs to me that we are talking a
8 lot about the utilities, and we're talking about industry, and
9 we are using solar just as an example in this point, and how
10 multipliers versus a tiered approach would affect utilities,
11 ratepayers, and the industry itself to encourage the industry.
12 But to me there is a missing piece here, and that's the
13 customer that might want to install one of these systems,
14 because we're talking a lot about distributed generation, if we
15 are talking about solar and small wind systems potentially.
16 And I'm wondering how a multiplier approach versus a tiered
17 approach -- I know we haven't heard from Mr. Jeffery yet --
18 would affect that individual or that business that is thinking
19 about installing a PV system. I can see the multiplier
20 approach increasing the value of their RECs and reducing the
21 pay back period on that system. But I wonder, Mr. Cooke, if
22 you might speak to that.

23 MR. COOKE: I think however you structure the
24 program, success or lack of success will be determined based on
25 the net effect of cost to that retail customer. And whether

1 you get to their payback horizons, which for a commercial
2 customer is typically five years, for a residential customer it
3 may be 12 to 15 years. If you get back -- if you get
4 incentives in place that get the customer to that payback
5 horizon, you will have a very robust and virtually unlimited
6 demand.

7 To the extent that you go beyond that, and the
8 incentives are not quite as robust, and you push commercial say
9 to an eight to ten-year payback, you will see a precipitous
10 dropoff in the willingness of customers to participate. The
11 same thing for residential. If their payback horizon moves
12 well past 15 years into the 20 to 30-year range, you will see a
13 precipitous dropoff. So it really doesn't matter how you
14 generate that incentive, provided that incentive mechanism puts
15 those customers on the retail side into that payback horizon.

16 MR. FUTRELL: I don't want to get too off topic too
17 much, but you mentioned earlier about an SREC goal. Could you
18 talk a little bit more about that and how that -- is that set
19 on an energy level or how that fits into an overall RPS?

20 MR. COOKE: Sure, and I am going to reflect here on
21 the Vote Solar proposal. I think it has been put before you,
22 and that mirrors what has been done in a number of other states
23 who have SREC programs, which includes New Jersey. It's the
24 second largest program in the nation.

25 What works there is the BPU has simply set out a

1 schedule going out to the year 2020 saying in each year this
2 percentage of the energy generated in the state will come from
3 distributed solar. New Jersey's program starts with a very
4 small amount, .0016 percent, if I recall. It grows by
5 70 percent per year until they reach 2010. Then they grow that
6 share by 30 percent each year. So it increases by another 30
7 percent each year until they reach a goal of 2 percent of the
8 energy in the state of New Jersey coming from distributed
9 solar, and I can give you their constitutionally appropriate
10 definition of that, in the year 2020.

11 So by the year 2020 in New Jersey, it's a competitive
12 state. Electricity suppliers who are injecting energy into the
13 state must show SRECs that represent megawatt hours
14 representing two percent of whatever that supplier supplied in
15 the state. Colorado, Maryland, Delaware, Pennsylvania, all
16 follow that with a similar buildout schedule in varying
17 percentages.

18 I believe the Vote Solar proposal for Florida would
19 be two percent. The definition of that in New Jersey is it has
20 to be solar power feeding into the distribution grid, which
21 means it can't come into the state on transmission nor within
22 the state utilize the transmission grid. Constitutionally that
23 passes muster, because there is a rational state basis for that
24 in offsetting transmission grid requirements and the future
25 thought would be the need for additional transmission to serve

1 the state.

2 MR. GRANIERE: Bob Graniere.

3 I'm getting a little confused because we are
4 switching between what is essentially a set-aside and what is a
5 multiplier. Okay. Forget that. Let's go to back to the
6 multiplier for a minute and build on the following statement
7 that you made. You said that the price has to be right for the
8 buyer for the market to develop.

9 MR. COOKE: Right.

10 MR. GRANIERE: Now, in a multiplier the price that
11 would have to be right would have to be the price of the REC,
12 right?

13 MR. COOKE: Correct.

14 MR. GRANIERE: So at the numbers that were provided
15 in the example, the price of a REC is 50 bucks in the first
16 year, and at the end it's 80 bucks. So my first question is
17 would that be enough from your experience?

18 MR. COOKE: It is in the neighborhood. I don't know
19 if it is exactly enough or perhaps a little bit too much.

20 MR. GRANIERE: Okay. So, basically, a REC that
21 sells -- that would sell in Florida at \$50 a megawatt hour
22 should be okay, in your opinion, for a market to develop on the
23 customer side?

24 MR. COOKE: Again, we at SunEdison or the Solar
25 Alliance have not done the exact detailed analysis to find out

1 what that would be, but it sounds about right.

2 MR. GRANIERE: Okay. And then so rising it up to 80,
3 that's okay, too?

4 MR. COOKE: Yes. Although that is an interesting
5 trend, and we would tend to suggest goes in the opposite
6 direction of what we like to see, the trend of solar costs
7 going down instead of up.

8 MR. GRANIERE: Okay. So that then says that the --
9 so wouldn't it be true, Bob, at that point that if the RECs are
10 what is driving the effective cost at \$50 a REC that someone is
11 buying, would that mean that there would have to be a fairly
12 robust REC market in Florida that would support 50 bucks a REC,
13 just in case the national market didn't support 50 bucks a REC?

14 MR. MCGEE: I think I need to back up and make sure I
15 understand -- forgive me if I'm misunderstanding what you're
16 getting at. I was not proposing that we have solar RECs at \$50
17 per megawatt hour or \$80 per megawatt hour. I was proposing
18 that the solar would be 25 cents a kilowatt hour, which is \$250
19 a megawatt hour. But for compliance purposes from the view of
20 the utility and the consumer, because the costs are passed on
21 to the consumer, the effective cost of that to the utility and
22 the consumer, not to the generator, would be \$50 per megawatt
23 hour. That's why the utility and the consumer as the
24 beneficiary of that has the incentive to choose solar because
25 it looks like a biomass generator.

1 MR. GRANIERE: But, Bob, that's the part I don't
2 understand. How is anybody seeing the price of solar at 25
3 cents a kilowatt hour divided by five, how does anyone actually
4 see that as the effective cost? What are they actually paying
5 that says they're paying five cents a kilowatt hour?

6 MR. MCGEE: That is a good question. If I'm the
7 utility and I have to meet a certain number of gigawatt hours
8 generated in a particular year, and I can do that by buying
9 biomass, let's use that as an example, at \$50 a megawatt hour,
10 and I can fulfill my entire requirement that year by buying
11 that many RECs or gigawatt hours, whatever it is, I will do
12 that. I wouldn't be incented to buy solar at \$250 a megawatt
13 hour unless I had a set-aside or a carve-out.

14 Now, if a multiplier were applied by the rulemaker,
15 by the authority that puts the rules in place, and this is a
16 game that we are talking about here where the rules have not
17 been formed yet. But if the rulemaker says, Mr. Utility, as
18 the complier, if you buy solar at -- I don't care what your
19 price is. I'm not going to set your price. But let's say in
20 the first year it's really going to cost me \$250 a megawatt
21 hour to do that. I will give you five times the credit. What
22 does that look like to me now? However many kilowatt hours I
23 buy, I get five kilowatt hours times that credit toward my
24 compliance toward the goal. That's why my cost is effectively
25 now one-fifth the actual price that I paid to the generator,

1 which was \$250 a megawatt hour. That's the foundation of the
2 basis of the multiplier.

3 MR. GRANIERE: I think I understand what you are
4 saying. You are saying that you have five more RECs, but what
5 if the price of a REC is a penny?

6 MR. MCGEE: If the cost of the solar decreases
7 significantly below \$250 per megawatt hour in the scenario of
8 the first year where the multiplier is five, the utility has a
9 very significant incentive to fill up his entire portfolio with
10 solar there.

11 And back to the other gentleman's comments about
12 getting the multiplier right, that is important. I am not sure
13 that it has as significant an impact as between 5.0 and 5.12.
14 I think you get ballpark whether it is 5 or 3. You can get it
15 pretty close and incent the market that you need.

16 MR. GRANIERE: I think what I'm hearing you say is
17 that in order to get it down to five cents on the utility side
18 you would have to get 200 bucks for the REC. When you sold
19 your five RECs, you would get 200 bucks. And five times --
20 five into 200 -- so this REC is going at \$40 a REC.

21 (Simultaneous conversation.)

22 MR. GRANIERE: Am I right, Tom? Yeah. Okay. Thank
23 you. Okay. So this REC is going at 40 bucks a REC. Okay.
24 Thank you.

25 MR. MOLINE: I'm Barry Moline with the Florida

1 Renewable Municipal Electric Association.

2 Bob, I am going to thank you because I think you did
3 a great job in putting some numbers up and allowing us to have
4 a robust discussion. And the first time we talked about
5 multipliers is was very foggy, but at least you have given us
6 the opportunity to shoot for something. And, actually, I
7 didn't think that you were going to try to, you know, use the
8 scenario of all solar, because it would seem to me as though
9 you would be looking more at something in the range of 2 to
10 5 percent solar and that would be more reasonable. But you
11 didn't look at that scenario, you went kind of for the whole
12 enchilada. So thank you for doing that.

13 I'm wondering -- and this is a question for staff,
14 but as well for you, Bob -- cost impacts, overall cost impacts
15 to consumers, could we do that from your spreadsheet? Could we
16 look at what the costs would be? And, simultaneously, I think
17 the question for staff is to -- what is the alternative of cost
18 impacts for a tiered approach or a quota approach, you know, if
19 we look at 2 percent as the quota, then what kind of cost
20 impact is that going to be on consumers? So did you look at
21 the costs?

22 MR. MCGEE: I'm suggesting that the multiplier
23 methodology would have a lower impact on consumers from a cost
24 perspective, simply because within the context of the mandate
25 it allows market forces to work. So if reductions in PV

1 production costs don't materialize like they were projected,
2 the utility would not be incented to purchase PV and would
3 choose lower cost renewables, and would be allowed to under
4 that particular mechanism, and the consumer would benefit by
5 lower costs in that scenario.

6 Anytime that you have a mandate that says thou shalt
7 in the setting of a carve-out or a set-aside, the utility is
8 going to be required to comply, and the cost is not really a
9 factor unless you have got other mechanisms. And we have other
10 opportunities to talk about those. Again, there are a lot of
11 moving parts. But if you have got an expense cap, for
12 instance, there are ways to limit that. But within the
13 marketplace of that mandate, there is no restriction on the
14 cost to comply.

15 MR. TRAPP: But I understand that, Barry -- my
16 interpretation of that is, you know, what Bob Graniere raised
17 in the last meeting. We do that in the first year. We cap
18 costs in the first year by reducing the 20 percent energy
19 requirement down to 4. But what Bob has done is he has taken
20 that 4 percent real energy contribution by solar in the first
21 year, and he has grown it under the assumption that by
22 incenting the industry at \$250 a megawatt hour in the first
23 year that will cause them to go into mass production, and what
24 have you, and the overall cost of solar over the 13-year
25 horizon that he has picked comes down. So that by year 13

1 solar is contributing, you know, more like one-to-one instead
2 of five-to-one on the energy goal of 20 percent.

3 So to me it's a kind of very intriguing market
4 development strategy that he has put forth in the form of a
5 multiplier, but we are also hearing there are other
6 alternatives for market strategy development in the form of
7 what I am calling a request for proposal type of scenario where
8 you put forth we want to buy this much this year, this much
9 this year, whatever. So that to me is what I'm interpreting
10 from --

11 MR. MOLINE: And ultimately we need to do a cost
12 analysis on this.

13 MR. TRAPP: And that was my point. This system
14 requires an extensive -- in my mind an extensive avoided cost
15 analysis, and an extensive forecast of where the solar industry
16 is going to go in order to get those multipliers to provide the
17 incentives for it to get there. That sounds incredibly
18 complicated to me given my experience with setting just simple
19 avoided cost for general co-generators. But I'm a little bit
20 intrigued about the other approach where you just basically set
21 the request for proposal components for two percent. And I
22 think our next speaker may be going to speak to that. Mark, is
23 that right?

24 MS. HARLOW: I think Barry had a really good point,
25 that we need to look at the cost impacts of these two different

1 approaches. And you have two times the costs you want to look
2 at, your upfront costs for any renewable system and also your
3 compliance costs with RECs if you are using a REC market on a
4 going-forward basis. And I think I agree with Bob. I think it
5 would be instructive now to bring up our next speaker, Patrick
6 Jeffery, who is representing Wheelabrator Technologies to speak
7 to us about a tiered approach, and we can have questions
8 following that and perhaps more comparison of the two
9 methodologies.

10 Mr. Jeffery.

11 I think you need this.

12 MR. JEFFERY: I may not. Okay. Thank you very much
13 for the opportunity to speak. My name is Patrick Jeffery. I
14 am with Wheelabrator. We own waste energy facilities in
15 Florida here and elsewhere in the country. And I'm here to
16 talk about the other methodology for addressing potential RPS
17 requirements, what we would refer to as a tiered system.

18 Let's see. First, I would just like to say that we
19 are members of the IWSA, the Waste Services Association, and we
20 support attractive incentives for solar and wind development.
21 And I wanted to mention that initially, because what we're
22 seeking to obtain here from the association's perspective is a
23 methodology that can be supported by the full spectrum of the
24 renewables community. And we are trying to find a solution
25 that isn't what works for me is bad for you, and vice versa.

1 We feel that this is kind of a win-win that can support the
2 entire community.

3 And we have proposed a two-tier system which really
4 is something that uses something that we haven't talked about
5 too much here so far, which is purchase requirements in terms
6 of a percentage purchased requirement from the RPS. What my
7 assumption is from the previous presentation is that we
8 understand that there is an overarching goal to get to
9 20 percent renewables in the state of Florida. But within
10 that, if we move to the next slide, we also need to keep in
11 mind that there is some mandate from the Legislature.

12 I don't want to get into this in detail, but I would
13 just like to remind folks that what we are trying to also do is
14 provide a system that addresses the issue of fuel diversity and
15 also provides the incentives that were envisioned with the
16 Legislature for not just solar, but other technologies, as
17 well. So we believe the system can support the development of
18 solar and wind and other technologies, as well.

19 Now, on this slide we talk about the disadvantages of
20 a multiplier system. But, in fact, I'm not sure I want to
21 spend a lot of time on this because we have already talked
22 about this a bit. And, in fact, some of the assumptions that
23 were made for this presentation may be slightly different than
24 the assumptions that were made for the previous presentation,
25 so I think some more discussion is required amongst the parties

1 about the manner in which the multiplier is calculated.

2 But there are some basic characteristics of a
3 multiplier system that I wanted to address, and that is I
4 believe the assumption is that there is an overarching
5 requirement that 20 percent renewables is the goal. And within
6 that it is possible -- I think it was mentioned in the previous
7 presentation that you could get to most of that goal by simply
8 purchasing PV power. And while we do support the incentives
9 for PV power, that, in our view, does not address the fuel
10 diversity issue or the other legislative mandates to support
11 other technologies aside from PV as renewables, as well.

12 Also, one other issue that was touched on, and I will
13 talk to you in a second about the linkage between the different
14 renewables and the multiplier system is that I think there
15 needs to be a better understanding of how a REC, Renewable
16 Energy Certificate, would be structured and the market-based
17 price for a REC. Now, there has been some discussion already
18 about solar RECs and that kind of thing. What I didn't see,
19 and I'm hoping we can learn more about, is how a REC would be
20 structured in a multiplier situation.

21 In terms of cost control, the beauty of the REC
22 system, which would be a part of a tiered system, is that
23 basically you would have two purchase requirements. You would
24 have a purchase requirement for solar and wind -- and, frankly,
25 the concept here is quite simple. We go from, basically,

1 having the overarching requirement to purchase 20 percent of
2 renewables to just dividing it into two different tiers. You
3 could call it a carve-out, and I have had heard some discussion
4 about the distinction between what is a tier and what is a
5 carve-out. I think the important distinction from the
6 perspective of the IWSA is that we have two separate and
7 distinct purchase requirements. Now, I have heard talk of an
8 RFP. We have envisioned this in terms of simply a percentage
9 purchase requirement.

10 So for a Tier I, solar and wind sources, for example,
11 there would be a percentage requirement. Now, we haven't gone
12 to the level of actually calculating what that percentage
13 requirement would be, but that percentage requirement purchase
14 for simply those kinds of resources would drive a value for the
15 RECs for those resources, which others have termed solar RECs.

16 The important characteristic of this is that those
17 resources have a purchase requirement of their own. And other
18 resources, such as existing and new renewables, that is also in
19 Tier II, we want to emphasize that existing and new would be in
20 that tier, they would have their own separate purchase
21 requirement that is directed by the PSC. Therefore, there
22 would probably be different prices for the RECs in either one
23 of those tiers. And those prices would be market-driven by the
24 demand generated by the percentage requirement, whatever that
25 may be. It would be set by the PSC.

1 This addresses the position that some have taken that
2 solar and maybe wind should have a different incentive than
3 other resources that are lower cost. That incentive can be
4 addressed by having their own purchase requirement, which may
5 be a higher percentage or a greater percentage than what is
6 currently available; and, therefore, driving the value of their
7 RECs up accordingly.

8 But there is still -- and this is another important
9 point that was touched on earlier. In terms of cost control,
10 remember, you are now creating a market for those solar RECs or
11 for the Tier II RECs. Because of that market, you have those
12 market-based forces exerting cost control on those RECs because
13 the utilities in their purchase requirement would want to go
14 out and see where they can get -- they will eventually settle
15 down to a market-based price for the REC. If somebody is too
16 expensive then, you know, the RECs will find their market-based
17 price. And that would be your cost control methodology there.

18 One of the other major -- and I haven't put it on a
19 bullet here, but in listening to the other presentations, one
20 of the things that we see as a distinction between this system
21 and a multiplier system is -- and, again, we need to understand
22 more exactly about how that is structured in detail. But
23 really the distinction that we need to examine is whether there
24 is a single purchase requirement for renewables or whether
25 there are more than one purchase requirement that are separate.

1 And the reason this is important is we don't want to create
2 competition between technologies because that is not consistent
3 with the desire to create fuel diversity. So by creating these
4 separate tiers, we eliminate the competition that might result
5 if utilities wind up with a multiplier just purchasing a great
6 deal of solar, and then there is a reduced demand for other
7 technologies, which, again, doesn't seem consistent with the
8 legislative mandate to promote other technologies such as
9 existing renewables and create fuel diversity.

10 In fact, we can actually -- it was noted in the
11 previous presentation that it is possible to almost completely
12 satisfy a 20 percent renewables requirement by just using a
13 multiplier and using PV technology. To us that is inconsistent
14 with the need to create some fuel diversity there.

15 And, again, I think I've touched on this. By having
16 these two tiers, the regulator later can now tailor their
17 requirements for whatever the policy goal is that they are
18 trying to achieve. If they want to have a certain additional
19 incentive for solar, then there can be a purchase requirement
20 that's set -- I know this has already been touched on, so I
21 don't want to get too repetitive -- but you can see how you can
22 target it to that technology. And then for the other
23 technologies, the existing and the other new renewables, they
24 can have their own tier.

25 The other benefit that I mentioned here is if you

1 eliminate the competition between the technologies for economic
2 incentives, you make the state a more attractive place for the
3 renewables community in general. And I think that's something
4 to consider in trying to achieve these policy goals.

5 I have already mentioned fuel diversity a number of
6 times. And, again, I just kind of wanted to mention how this
7 is consistent with current mandates. You know, we see the
8 mandate from the Legislature to protect existing renewables as
9 well as new renewables. It would be unfortunate if we were to
10 incent development of new renewable resources only to find
11 there might be some backsliding on some existing resources at
12 all, because then the net result is not -- it would be harder
13 to get to your net result.

14 And, of course, I have mentioned the -- that is just
15 a citation there to the fuel diversity requirement.

16 And, again, just to summarize, it's consistent with
17 current statute. And I keep -- you know, I don't speak for the
18 solar community, but I think we have already heard from the
19 solar community, and I have noticed this, and I urge folks to
20 really look at the written comments that were all submitted in
21 October. I think they address many of the issues -- the
22 questions that we saw first thing this morning. But it's clear
23 in my reading of that that the solar community is in favor of
24 something other than a multiplier system. And I think it's
25 attractive to find a system that can have the support of a

1 broad spectrum of the renewables community. So, you know, this
2 kind of system has our support and appears to have the support,
3 from what I've heard this morning, from the solar community, as
4 well.

5 Again, fuel diversity. Elimination of competition,
6 making the state more attractive for the industry in general.
7 And, again, I do think it is a tool that allows for a better
8 and easier ability of the PSC to kind of tailor their policy in
9 they way they wish, and to incent technologies in the manner in
10 which the Legislature has intended.

11 So that's it right there, but if there are any
12 questions?

13 MS. HARLOW: Thank you, Mr. Jeffery.

14 I would like to -- it's kind of an awkward time to do
15 this, but I would like to take, perhaps, a ten-minute break.
16 And we would ask Mr. Jeffery to come back and ask him questions
17 following that break.

18 Thank you.

19 (Recess.)

20 MS. HARLOW: Okay. Now we are ready to go.

21 Mr. Jeffery, our speaker, is at a microphone, and I
22 would like to ask if we have any questions for him on his
23 presentation on the tiered approach.

24 Well, I will start it off. I have a question on the
25 two approaches, it appears to me, as I said earlier, that we

1 have two different costs we are looking at. You are looking at
2 an upfront cost for a renewable system, to install a system,
3 and then you are looking at operating costs and on a
4 going-forward basis compliance costs with RECs, assuming we
5 used a REC system. And I am wondering if you have any thoughts
6 on how the two approaches would affect those two types of
7 costs.

8 MR. JEFFERY: How the two different approaches would
9 affect the development and operating costs?

10 MS. HARLOW: I noticed, for example, in your
11 presentation that you said one of the reasons you preferred the
12 tiered approach was that it would set up competition.

13 MR. JEFFERY: Well, no. Actually --

14 MS. HARLOW: Excuse me. It would reduce competition
15 among certain types of renewables, but couldn't that also
16 result in a higher starting cost for those systems?

17 MR. JEFFERY: It would actually result in ultimately
18 a higher cost for certain RECs. But I think that's an
19 assumption that we already -- I was assuming that that is
20 already a policy decision that is made as a result of wanting
21 to have a renewable portfolio standard.

22 You are absolutely right. The minute we start to
23 have a different treatment for different technology -- I mean,
24 let's face it, what we're trying to do is create a financial
25 incentive. Now, you're right. Depending on the type of

1 financial incentive we provide, does that allow for higher
2 costs to create that technology? And what I was hoping to try
3 and communicate in my presentation, and I may not have done so
4 well, is that by creating a market-based REC, then that creates
5 a downward pressure within that tier, or whatever. That is the
6 way that you can control costs, by having a market for that.
7 But, yes, if you wanted to have absolutely the lowest cost, and
8 I think this has already been reflected in written comments
9 received from the solar industry. The solar industry has said
10 in this workshop that, you know, you can have other systems
11 that produce just the lowest cost, but they are not going to
12 provide for fuel diversity and the development of the types of
13 technologies that we see, you know, being required either by
14 the Legislature or others as technologies to support.

15 MS. HARLOW: My concern is with the set-aside. You
16 are developing a specific market for a specific type
17 technology, and what would the incentive -- I understand that
18 encourages the industry, but I am also looking for an incentive
19 for the industry to keep its costs low, because we always have
20 a mind toward ratepayer costs here at the Commission. And I'm
21 wondering how we could combine the system of a set-aside with
22 keeping those initial capital costs to put a unit in low for
23 the ratepayers. I understand your point about the RECs on a
24 going-forward basis.

25 MR. JEFFERY: Right. Well, I think you're going to

1 have to -- there is going to be additional -- again, there is
2 going to be additional incentives for the industry that has an
3 incentive for it, and you have to decide which method you are
4 going to use to support that industry. If you really want to
5 control costs completely, then there will be no renewable
6 portfolio standard. I mean, that is really the most
7 cost-effective way to handle this.

8 So, I understand your concern, but my only answer
9 that I can give, and I welcome the input from the solar
10 industry, as well, is that this is a recognition that there are
11 higher costs. And I can only say that this is the most
12 market-based methodology of the two that are under
13 consideration here that in our view creates the most efficient
14 system you can, while at the same time providing extra
15 incentives that would not exist in the most efficient system
16 possible.

17 MR. COOKE: If I may weigh in on that. Chris Cooke,
18 SunEdison, again, with Solar Alliance. Within that carve-out,
19 we would recommend that there is a very robust competitive
20 element to that. So that if there were a distributed PV
21 carve-out, for instance, how you determine which projects were
22 going to be incentivized would be determined based on who could
23 provide the lowest cost. So, for example, if you said in the
24 Vote Solar proposal in 2009, we want to see 20 megawatts,
25 approximately 20 megawatts, of distributed solar in the state,

1 whatever mechanism you go out to get that, whether it is a
2 centralized procurement, whether it's procurements by the
3 utilities, you then ask Mr. Foley with BP, and myself at
4 SunEdison, say, you guys bid on that and we are going to pick
5 the lowest cost supplier. And that's what gives us the
6 ultimate incentive to keep our costs as low as possible,
7 because we know in that context we don't get the business
8 unless we are the lowest cost.

9 But what it does do is say, you do have this market
10 segment in which to compete. And you can develop a business
11 where we currently have, you know, a very marginal business in
12 Florida. Whereas, in the multiplier where we are competing
13 with all other technologies, you might say, you know, we got
14 the multiplier just right this month, next month we shorted you
15 guys a little bit. You are in this boom-bust cycle. The costs
16 for our technology is going to be much higher in that boom-bust
17 cycle than it is going to be in where we say this is our market
18 share, and we compete amongst each other to get that down.

19 Two other critical elements, I think, are a per unit
20 cost cap, and you see that in every state that has the
21 functional tiered approach to it, as well as an overarching
22 cap, saying the total project cost cannot be more than this.
23 If it is, the program is either throttled back in terms of
24 individual price or throttled back in terms of total price
25 impact.

1 MR. FOLEY: Can I add, as well?

2 MR. MOLINE: I just had a quick question, Chris. The
3 idea you just described is reasonable. In year four of your
4 proposal you are suggesting 149 megawatts would be required.
5 And I don't mean to jump ahead too much, but let's just say the
6 number in a particular year is, you know, well, 149 megawatts.
7 The bids that come in are for fewer than 149 megawatts. And
8 does that mean utilities have to purchase the highest price
9 from the highest priced vendor? In fact, if the two of you do
10 bid, and low bid gets the work, but it's only for 20 megawatts,
11 and the rest of it is the higher bid, we have to take the
12 higher bid, as well. So there is no competition in that case.
13 The point is how do you balance the point of a specific
14 capacity addition that is required with cost?

15 MR. COOKE: Yes. And certainly that is a concern,
16 and I think you could, again, have cost cap thresholds on that
17 overarching, but also a minimum bid requirement. I might be so
18 bold as to say looking at the entire Florida build-out
19 schedule, SunEdison anticipates competing for every megawatt
20 that Florida wants to install. So you will at least have one
21 bid for every megawatt. As long as we have got another one,
22 you have the opportunity for the low-cost bid for the entire
23 portfolio.

24 MR. FOLEY: My name is Todd Foley with BP Solar. I
25 would add to your earlier points on really, the drivers to

1 reduce cost over time, and that is an important, you know,
2 policy objective. It's not just to deploy the technology, but,
3 of course, it is to, over time lead towards the lower cost of
4 it. What a number of states have done, too, of course, is have
5 a declining incentive schedule over time, so that the
6 incentives actually decline as we go forward. The incentives
7 are higher in the early years to get the market started, and
8 then decline over time to promote the lowering of costs.

9 I would also add that if you look at the historical
10 curves for solar products, our modules, our systems have been
11 coming down anywhere between 5 and 10 percent per year, and
12 that is a projection we expect to continue. So it is
13 actually -- what the industry would urge is that you do so as
14 to promote the lowering cost of the systems, but also -- which
15 is in the best interest of everybody actually, including the
16 industry.

17 To Chris's point on the competition, I think that
18 what we have seen elsewhere in similarly designed programs is
19 very stiff competition within the industry really at all
20 levels. So, the other, I think, couple of design ideas to,
21 again, actually encourage this is to set the incentives on a
22 declining basis. That's important. One thing to consider, and
23 the RPS does this, too, of course, is as it ramps up is looking
24 at essentially blocks of solar being deployed at different
25 price points. So that, I think, has an overall pressure

1 downward on the cost of solar across the system, both to those
2 who invest their own money to leverage their own investment,
3 homeowners and businesses investing in solar, and ratepayers,
4 too, who eventually are accommodating the incentives that help
5 diversify the overall energy supply. And the more and more
6 solar and the other renewables that we see adding to the load,
7 the greater the downward pressure is on overall energy power
8 costs to all ratepayers in the state.

9 MS. HARLOW: I'm not sure I understand your point
10 about the caps. Are you talking about rate caps on top of the
11 tier levels?

12 MR. FOLEY: (Indicating yes.) In fact, one provision
13 of the Maryland legislation that was enacted into law this year
14 was that there -- really as assurance -- insurance to
15 protect -- for those who were concerned about the costs of
16 compliance being too high, there was a one percent absolute
17 rate cap. So in any one year if the cost of compliance
18 exceeded one percent of electric rates, there was immediate
19 cessation of the need to comply. So I think a rate cap, you
20 know, can be a prudent measure to make sure, again, give the
21 system the assurance that the costs won't escalate in any way
22 out of control beyond what is designed.

23 MS. HARLOW: The idea of a rate cap or some other
24 mechanism to keep ratepayer costs low appeals to me personally,
25 not speaking for the staff, just for myself. But the other

1 idea we have had expressed by many of the renewable
2 stakeholders is their concern for certainty and the need for
3 certainty to develop in our market. And how do you get that
4 certainty that you say you need when you have a rate cap
5 system?

6 MR. FOLEY: Certainty is a key element. You know,
7 our systems have long lifetimes. You know, we warrant our
8 modules for 25 years. The systems will produce electricity
9 for, you know, 25 to 40 to 50 years, and that is the life of
10 the system. We are also -- you know, it is an emerging market.
11 So from the business standpoint the certainty of these programs
12 is very important so that we can justify long-term investments
13 and commitments. I think, in turn for that, I think there is a
14 concern about, well, not at any cost, of course. And I think
15 that is what the role of a rate cap can be a mechanism or tool
16 to help balance that.

17 But then I think the next level is important to
18 design, you know, kind of the mechanisms, the structure for
19 delivering, you know, the deployment over time. And I think by
20 having what we are talking about, you know, tiers of, you know,
21 of the amount of solar per year to be deployed, that's one way
22 of, you know, measuring the progress forward. Two is looking
23 at the incentive structure declining over time, but set at a
24 level -- and I go to Chris's point on the difference between a
25 multiplier and a tier. You do want to set -- whatever the

1 mechanism, you need to set that incentive level to the market.

2 Now, in a REC-based program the beauty of that is
3 that it sets to the market. So you are introducing a market
4 force within the context of an RPS. But if it is another
5 mechanism which could work, you do need to calibrate those
6 levels periodically. And, you know, Chris even suggested
7 something on a monthly basis. That's more frequent than any
8 other state is doing, but at least on an annual basis so that,
9 again, we are getting these incentives right so they are not
10 enriching, but also so we don't have the boom and bust of the
11 market.

12 MS. HARLOW: And could you or perhaps, Mr. Cooke,
13 speak to how a tiered approach versus a multiplier approach
14 would affect that individual that wanted to put in some form of
15 distributed generation. Would it be strictly through the price
16 they received for the REC under either approach?

17 MR. COOKE: Yes, that's fundamentally it. And
18 whether there is a multiplier for your REC in the example we
19 saw this morning, that gets you to \$250 per REC, typically it
20 is a megawatt hour. So that actually cost is \$50, but you get
21 five of them, so it's \$250, or whether they get paid directly
22 and, say, there is a special REC for distributed solar and you
23 get paid \$250. The incentive works out for the customer or the
24 developer's perspective to be the same.

25 I did want to touch quickly on your original

1 question, caps and cost limitations set market conditions, and
2 there is certainty in market conditions. We don't need
3 certainty in the market, but we need certainty in the market
4 conditions. And that's with the tiered approach, because there
5 is much more certainty than a multiplier approach, which puts
6 us into the marketplace with many other technologies that we
7 have to follow and understand whether we are competitive
8 against.

9 And most critically, if you are setting it monthly or
10 quarterly, what did the multiplier do to us. And a simple plus
11 or minus four percent change in the multiplier multiplied by
12 that amount which comes out to if it is 5, a 20 percent change,
13 it puts us well into the market as the lowest-cost provider,
14 and knocks us completely out of the market. And that's where
15 you don't have any market certainty. If you look out five
16 years, we would say, oh, my God, what is the Commission going
17 to do or even a subsequent commission going to do with that
18 multiplier? We don't know what the market is going to look
19 like.

20 MR. GRANIERE: Bob Graniere.

21 Listening to the discussion thus far, I guess if you
22 put all the pieces together that has been talked about, which
23 is a rate cap, an affordability cap, I guess, or -- Barry, is
24 that the same thing? Is the rate cap and the affordability cap
25 the same thing?

1 MR. MOLINE: Yes.

2 MR. GRANIERE: Okay. Good. I don't have to talk
3 about one then. Okay. You have an affordability cap, and then
4 you have a tier that gives a number. It just seems to me that
5 once those get introduced into the process that a lot of the
6 market forces, so to speak, disappear. And basically what
7 happens is that if it's too expensive to get the 149, you just
8 get less. If it is too expensive to get the total 560, you
9 just get less. If it's real cheap, on the other hand, you get
10 more than 149, you get more than 560, right? So wouldn't it be
11 fair to say, just kick it out, isn't the key here not really
12 the numbers, or the cap, or the tier size, or anything, but
13 it's more how well the state of Florida will be involved in
14 monitoring, verification, evaluation, and adjustment than
15 anything else? Wouldn't that be the key that makes this whole
16 thing run over time?

17 MR. COOKE: A couple of responses to that, and some
18 of the devil here in the design of the program is in the
19 details. For a long-term technology like solar, when you make
20 a project sale, is there an off-taker for the energy, and if
21 you are looking at RECs, for what period of time? If you have
22 got certainty for three years, and you say, we have got a REC
23 deal for three years. You go to the bank, and the bank says,
24 well, I'm going to discount years 17 through -- I mean, years 4
25 through 30 of your production because I don't know what deal

1 you're going to get.

2 Some states, Colorado and Maryland, for instance, say
3 there is a minimum period that you have to sign up for that,
4 both set by statute. Maryland is 15 years for the REC deal;
5 Colorado is 20 years. Those have an incredible impact on
6 reducing the net cost of solar.

7 The other critical element to your remark on the
8 size, if you set the size too small, you don't get the volumes
9 of scale, you don't get the production, you don't get the
10 efficiencies that you get in having a robust market. One
11 full-time solar crew should be able to install about
12 three megawatts a year. So if you have a program that's doing
13 less than six megawatts a year, you're not even employing two
14 full-time crews. If you have got 60 megawatts a year, you are
15 employing 20 full-time crews. You get some efficiencies there,
16 some competition amongst those. So getting the scale right is
17 key to getting the cost down.

18 The caution is, though, if you have the scale too
19 big, if you were to go to the solar industry and say, Florida
20 needs a nuclear power plant, needs it on line by 2012, that's
21 1,500 megawatts. The industry couldn't do that. And by
22 overthrottling the industry you are going to drive costs up.

23 So the key is to get that scale so you get the
24 efficiencies, drive the costs of solar down, but don't make it
25 too big that the industry can't respond. And I think if you

1 look at growth rates in the 30 to 70 percent range, like other
2 states have done, the industry can easily accommodate that. If
3 you move to annual growth rates above 100, reaching 203
4 percent, 300 percent, it is probably something the industry
5 cannot respond to.

6 MR. GRANIERE: Okay. I think I understand you.

7 But the point I'm getting to is it seems to me --
8 what you just said, again, the question seems to be in getting
9 it right, but it is not -- so let me ask this question. Can
10 getting it right happen ex ante or before we start doing
11 anything, or is getting it right more a sequential thing where
12 you adjust over time?

13 MR. COOKE: I think you should have an mechanism to
14 adjust. You should have some monitoring, as you said. Is the
15 program working along the parameters that we have? But I do
16 think it is also important to set out a target, 10, 12 years
17 out, so that people that make investment from the development,
18 training, et cetera, say if we invest in Florida, after 12
19 years there's going to be a 2,000-megawatt a year market in
20 Florida for PV, or something on that kind of scale, so it is
21 worth making the investment in the first few years.

22 MR. GRANIERE: But there is where I run into the
23 disconnect for me. On the one hand there is an adjustment
24 going on. If it is too much you pull back. If it is more --
25 if it is cheap, you get more and everything. So you can't have

1 now, say, 12 years out there is going to be a 2,000-megawatt a
2 year, or whatever it is, market in Florida, because you don't
3 know what it is going to be 12 years from now. And that's what
4 you're saying, you don't know what it's going to be 12 years
5 from now.

6 So what I'm trying to get a handle on here is that I
7 understand that the issue is coming down, at least in my mind
8 right now, to a financeability issue on the contracts, and this
9 applies to all of the renewables out there. It is all the same
10 thing. It is financeability. And I know that every business
11 person out there and every lawyer out there likes complete
12 contracts. They are really great, because they have no
13 contingencies that aren't unaccounted for. But what I'm
14 hearing here is that the nature of this thing is that the
15 contracts are going to become less complete, i.e., more
16 unaccounted for contingencies because you can't provide the
17 security you want because we just don't know.

18 So how do we find a balance between the tier size,
19 the multiplier size, I don't care, pick a multiplier size, the
20 same thing, pick a tier size, the same thing, same problem.
21 How much incompleteness will we accept in the contracts so they
22 still remain financeable, right? And then we get to Barry's
23 and other's concern about how much it is going cost down the
24 road. And it seems that those three things move all the time,
25 and how do we put in the system that works that, because I

1 don't see the answer being ten years from now the market will
2 be this big. It just can't be that.

3 MR. FOLEY: Let me take a shot at that. I think what
4 you're touching upon with regard to solar probably applies to
5 all energy sources, frankly. Who knows what's going to happen
6 in ten years? However, of course, we need to plan obviously.
7 And, you know, we, obviously -- you can use, you know, the
8 projections of, you know, population and so on for demand. And
9 then we do have, obviously, a sense of where, you know, prices
10 are going, at least from the snapshot today. And I think that
11 there absolutely is no -- there is no certainty about where
12 things are going to be in a number of years. But, I think, you
13 know, the general consensus is, you know, we all know that
14 power is going up, et cetera, et cetera.

15 I think the key thing is when we do this analysis and
16 make, you know, these plans for the future, and I think what
17 has been guiding other states is part of that overall supply in
18 the near term and in the out years, we want a more diverse
19 portfolio. And we're looking at what the growth is, what it's
20 going to be, and we want to set out, you know, some objective
21 pretty close to what we think we would like to see in that time
22 period. I think that is what we are talking about.

23 And then what you want to do is -- obviously in the
24 near term the information is much more clear where things are
25 at, and, you know, hence the interest in, you know, getting the

1 policies calibrated as close to, you know, what will begin to
2 drive some deployments, whether it is solar or anything else,
3 gas plants, or a nuclear plant, or whatever, and you follow
4 along.

5 And I think what we are suggesting, like everything
6 else, too, these things will need to be calibrated and checked
7 over time. In fact, you know, it just absolutely makes sense.
8 So I would say that we do have quite a bit of experience on
9 what solar is doing in the world. There are a number of --
10 aside from a few states here in the U.S. that have, you know,
11 have committed to diversify their portfolios with solar, we see
12 countries around the world doing it, as well. So we have a
13 good amount of information.

14 The Department of Energy sees a certain schedule for
15 the cost reduction, and it actually is committed to a plan of
16 more than half the cost of systems by 2015. So we are on track
17 for that. So I think that gives us a lot of guidance. So I
18 think the key thing is, from the business standpoint, as Chris
19 is suggesting, is saying let's set a long-term target that
20 gives certainty in the market forces. It doesn't absolutely
21 set the market, but it gives context. And then within that is
22 a structure that begins to help deliver on that and calibrated
23 periodically to see whether we are on target or not to see how
24 we are doing.

25 MS. HARLOW: I think Mr. Twomey had a point and after

1 him Mr. Krasowski.

2 MR. TWOMEY: Thank you, Judy.

3 Ladies and gentlemen, good afternoon. For those of
4 you out of state, my name is Mike Twomey. I represent
5 primarily residential consumers before the PSC here in Florida
6 and before the Legislature. My clients vary in size, civic
7 associations and larger, including my parents, who are served
8 by Florida Power and Light and get good service from them, and
9 who I have represented individually in a number of cases
10 involving FPL.

11 I want to make a comment and perhaps ask a question.
12 As a person who represents consumers and primarily residential
13 consumers, I'm interested in seeing them get the least cost
14 service possible. As you all are aware, particularly in the
15 state of Florida, we have issues with property insurance, we
16 have property tax issues, we have gasoline bills going up. We
17 have problems particularly for people that are on fixed
18 incomes, low income people. We want to see our electric bills
19 as low as is reasonably possible. And they way the state of
20 Florida works now, as you all know, is that the companies
21 can't, per statute, pay above avoided cost.

22 Now, I see there's some notion, since we don't have
23 an RPS in this state, and we don't have one that I'm aware of
24 nationally yet, we envision some type of a program in which
25 there is going to be a requirement that we purchase a certain

1 level of megawatt hours that are above avoided cost, current
2 above avoided cost, with the result that we reduce global
3 warming and the greenhouse gases.

4 And whether we have a certain number of hours
5 dictated by the Legislature, or the National Congress, or we
6 have a dollar cap, as Barry has suggested, I think, in terms of
7 a certain percentage of existing sales, we're going to have to
8 have a system whereby we pay more. I say we, because the
9 companies aren't going to pay it. They are going to expect to
10 be passing it through to the customers through recovery clauses
11 and the like.

12 So my suggestion to you, as somebody that represents
13 primarily residential customers, is that if we are going to
14 reduce greenhouse gases by paying above avoided cost, I think
15 as one that represents residential consumers, again, is that we
16 ought to expect to get the maximum bang for the buck from going
17 right out of the gate. If there is going to be a certain
18 number of millions of dollars, or ten or hundreds of millions a
19 dollars spent on renewables or sources that don't produce
20 greenhouse gas, we think, or I think, and I think most
21 consumers would think, we should get the low hanging fruit
22 first.

23 If biomass could provide all the megawatt hours or
24 eat up all the dollars, my view would be on behalf of
25 residential consumers, that whoever is the lowest hanging fruit

1 ought to get all of it if they can supply it, or ought to get
2 as much of it as they can supply in that year. And that the
3 second most cost-effective renewable provider ought to get
4 whatever they can supply or the rest.

5 I'm not finished.

6 I've got to say that the notion of -- I've heard at
7 least two speakers now say that we don't want to have renewable
8 providers competing against one another. And I think that's
9 what I heard. Anybody in this room not hear that? We don't
10 want to have renewable providers or industries competing each
11 another is just plain offensive from the residential consumers
12 perspective. We don't need any more monopolies. We don't need
13 tiers, in my view. We need competition. And I will suggest to
14 you that as at least one person that represents residential
15 consumers in this room, I'm going to expect to see that we
16 don't have carve-outs, that no industry gets a piece of the
17 action that's just theirs, and that garbage burners, or cow
18 manure digesters, underwater windmills, or whatever you call
19 them, don't get a piece of the action so that they're safe.

20 I think, and I think most consumers in the state of
21 Florida would believe that the industries out there have to
22 compete head-to-head, and that the ones that are the most
23 effective in producing power at the least cost should get the
24 contracts. Now, I don't think -- I would ask the staff, we
25 don't have an RPS in this state yet, and I don't see that we

1 have a statute yet, except for the generalized notions that we
2 have to have fuel diversity, which means all kinds of stuff.
3 Do we see any requirement yet that we have to have carve-outs
4 or that we have to have multipliers? That's my comment, and
5 that is my question to the staff.

6 MR. TRAPP: My response is we are having workshops to
7 develop information on what best systems might be put together
8 to meet some of the current topical concerns with respect to
9 promoting renewables in the state of Florida, and staff will
10 continue to educate ourselves.

11 MR. TWOMEY: Well, in that regard, Bob, wouldn't it
12 be true, then, that a system by which there were RPS and there
13 were requests for proposals and that the lowest cost providers
14 of renewables got all or a portion of -- the greatest portion,
15 you don't see that being prohibited by what we expect the law
16 to be, do you?

17 MR. TRAPP: I don't know that I expect the law to be
18 anything. But I do know, Mike, that there is -- to me there's
19 another variable in the equation that has most recently come
20 up, and that is this carbon control greenhouse gas emissions.
21 And there seems to be, you know, some desire that that be put
22 into the avoided cost equation.

23 Certainly, there is no statute I'm aware of yet that
24 does that, but, certainly, there is a lot of talk about it with
25 action teams, and energy commissions, and legislation, and the

1 Governor and everything else. I think that's why we are here,
2 we're trying to educate ourselves on what is important. And it
3 does -- your question is a good question, because it has been
4 mulling in my brain since we started this discussion about
5 tiers. And I will just -- I won't put it as a question. I
6 will just make an observation that it seems to me that whether
7 we do it by multipliers or whether we do it by tiers, what we
8 are really doing is giving an advantage to a particular
9 technology because we feel that technology has some merit above
10 other technologies.

11 Which leads me to conclude that whether we, again, do
12 it by multipliers or tiers in designing an RPS, it goes back
13 to, I think, the first workshop meeting that we had. We have
14 got to first identify what it is we are trying to do. And if
15 our goal is to reduce greenhouse gases, then we ought to do
16 multipliers and tiers on the basis of who produces the least
17 greenhouse gases. If we're doing it to promote economic
18 development in the state, then we need to do it by who is going
19 to bring the most jobs to Florida, and likewise for all the
20 fuel diversity. Okay. Fine, give the person that gives us the
21 most fuel diversity the most dollars.

22 So, again, this is one of those series of workshops,
23 we're trying to focus in on some topics today, but there are
24 topics that have gone on before this that will ultimately have
25 to be digested by, I guess, this Commission as the staff, you

1 know, reports back to them what we have been finding out in
2 these workshops to go forth on policymaking.

3 We're going to have to identify that and say what is
4 it we are trying accomplish first. And then once we determine
5 that, then I think we will use the education that we have
6 gotten here with respect to all of these different
7 methodologies and components to design a system. But at this
8 point in time I'm just trying to educate myself.

9 MR. TWOMEY: I understand. I just want to close by
10 saying that I think I have attended all of your meetings. I
11 have tried to be here the whole time. And one of the reasons I
12 felt compelled to come up here now is that I have heard -- I
13 don't recall hearing much in the way of anybody, except for
14 Barry, speaking in the interest of the consumer.

15 This is going to be hugely expensive at the least
16 cost level as far as I can tell. And so I just want to speak
17 on behalf of consumers and say we have to be cognizant of the
18 people that aren't in this room, the 15-plus million or however
19 many we have now of consumers in this state that want to have
20 the least-cost electric service while trying to reduce global
21 warming and greenhouse gases.

22 Thank you.

23 MS. HARLOW: Thank you, Mike.

24 Mr. Krasowski.

25 MR. KRASOWSKI: Thank you. My name is Bob Krasowski.

1 I'm a 27-year resident of Florida, and I have always had an
2 interest in environmental and economic and resource management
3 issues. I work with a voluntary organization, the Florida
4 Alliance for Clean Environment. And we breathe Florida air,
5 drink Florida water, and interact with Floridians all the time.

6 There are two issues I would like -- subjects I would
7 like to touch on today briefly. With the interest of your time
8 constraint, I'm not going to get into a too elaborate
9 presentation. But I thought it was real prudent for me to be
10 here at this moment, given the discussion as it has been going
11 on.

12 First, I received this e-mail yesterday and I would
13 like to hear something from the solar people or others about
14 what's going on in California as far as they are going to be
15 implementing feed-in tariffs, which very much parallel what is
16 being done in Germany, which I think is something you are
17 probably analyzing as you move forward. But, apparently, last
18 year German farmers and homeowners installed just in 2006 alone
19 600 megawatts of solar power. And last year under the
20 renewable category, last year, Germany installed
21 4,000 megawatts of renewable energy.

22 Exactly what that encompasses, they make mention of
23 agriculture being able to burn methane that's created on the
24 farms as one of the ways they do that, but it doesn't give any
25 further detail on that. So it seems to me under certain

1 economic scenarios that encourage various practices that there
2 is quite a lot of opportunity to go to renewables.

3 Now, the Florida Alliance for Clean Environment and
4 many other people in Florida see this renewable portfolio as an
5 opportunity to advance clean energy options. Burning municipal
6 solid waste, whether you pyrolysize it, or you gasify it, or
7 you burn it in an open burner does not meet the definition of
8 clean renewable energy. It shouldn't even be in the renewable
9 energy category competing with the other clean renewables, the
10 solar, the wind, the ocean current, and maybe something else,
11 efficiency and conservation.

12 They shouldn't be in there competing with them,
13 because when you burn municipal solid waste -- and this is one
14 of the things I won't go into in great detail, but will provide
15 you the material I base these comments on to you -- you are
16 actually creating more pollution than if you would be more
17 aggressive in your recycling program. And, also, the economics
18 aren't there. So I have to somewhat disagree with the previous
19 speaker about we should just go forward with municipal solid
20 waste burning.

21 MS. HARLOW: Mr. Krasowski, could I stop you for just
22 a second and ask you a question?

23 MR. KRASOWSKI: Sure.

24 MS. HARLOW: So are you saying that if we -- to pull
25 this back to set-asides and multipliers, that if we had any

1 kind of specific policy to promote a certain type of renewable,
2 your preference would be that that would be based on that
3 renewable's environmental characteristics, is that correct?

4 MR. KRASOWSKI: Yes. I'm saying that at least one of
5 the criteria should be the -- and a big criteria should be its
6 environmental impact. We have circulated over the past several
7 months, and it has been distributed to your staff and to -- we
8 participated in the Energy Commission, the Governor's Action
9 Team. We have called for a complete profile analysis of every
10 option, and that would include the economic and the
11 environmental characteristics, and then a comparative analysis.

12 I would like to make one other point, and then I will
13 put it to rest until later on in the meeting. But, in the
14 federal legislation, it's my understanding that waste-to-energy
15 thermal treatment is not being included any longer as being
16 identified as a renewable resource. There is still some kind
17 of element there where they will be getting some -- they might
18 be getting some kind of credits, tax credits to do it, but,
19 hopefully, those will be removed. And we should be recycling
20 more and eliminating what is left over after the use of
21 materials that would be burned. If we did that, we would save
22 energy, and it would be better for the environment.

23 So I appreciate the opportunity to make the comments
24 here in this group setting. Thanks.

25 MR. TRAPP: Mr. Krasowski, hey, this is Bob Trapp.

1 I'm just curious, do you know if anyone has studied or done a
2 study on the relative emissions, CO2 emissions from the solid
3 waste facility process versus the methane emissions from
4 landfills versus the emissions that might occur through
5 recycling? Has anybody really looked at that comparison?

6 MR. KRASOWSKI: You know, that is very interesting
7 and, you know, the obvious great question. There is. There is
8 a lot of research on that, and particularly I'll mention, and
9 I'll send you these contacts or whatever. Dr. Jeff Morris out
10 of Washington has made it his -- he's an economist, and he has
11 made his career based on this type of resource comparison. And
12 he has a paper that compares landfilling to recycling to
13 incineration. And, of course, incineration, one of the legs on
14 their stool is that you get rid of the methane that's coming
15 out of the landfill if you burn the garbage. But there are
16 other ways of diverting organics from the landfill, and then
17 you can control the methane and burn it without going to the
18 landfill to do it or going through an incinerator.

19 And there is a lot of research in the University of
20 Florida that identifies treatment of organic materials with
21 those methods as opposed to letting it go towards an
22 incinerator. And these are opportunities for that industry to
23 just transfer what they do into another method of resource
24 management that more people will be happy with, you know. But
25 I'll share that with you, but Dr. Morris is the key factor

1 here. Okay.

2 MR. GRANIERE: Bob Graniere.

3 I just have one question. I understand your
4 positions, I think, but I do have a question. What does all of
5 this have to do with generating electricity?

6 MR. KRASOWSKI: Well, we come to the electric
7 generation issue through this resource management, and so when
8 you are talking about generating electricity, especially in the
9 context as was mentioned before of climate change and global
10 warming, and those things, and the impact on Florida, it seems
11 to me that it's most prudent and the best idea for Florida to
12 pursue the cleanest method of generating electricity. And so
13 if you want to save electricity on a local Florida scale or a
14 global scale, as far as climate change and environmental impact
15 goes, our analysis should be directed at looking at what each
16 one of these methodologies, how it impacts these, you know,
17 various elements.

18 So it's real important to spend our money and
19 resources on what we believe are solar energy, wind, ocean
20 current, and not have that finite amount of dollars and efforts
21 going into the competition, or the tier, competition tier,
22 however you want to set it up, but that those monies shouldn't
23 be going to a process that wastes resources and continues the
24 linear method of extracting materials from the resource pool
25 and then destroys them through incineration rather than

1 rediverting them. You know, does that kind of answer the
2 question in general?

3 MR. GRANIERE: I'm going to go on to a plain that I
4 don't normally go onto. But what it is, is that I'm a little
5 bit concerned about taking off the table any kind of
6 technology. Because the one thing I actually do worry about is
7 if you take too much off the table, I would like the blackout
8 to be at your house and not mine.

9 MR. KRASOWSKI: Well, we would agree to do that if it
10 meant we weren't going to burn garbage. But in all
11 seriousness, we are not saying take it off the table. We are
12 saying that in our analysis of what is available, what category
13 do you want to put burning garbage in? If you want to call it
14 a renewable resource, then you lose the credibility of those
15 who understand what a renewable resource is and how burning the
16 garbage instead of recycling it and all of these other things
17 actually impacts what we do and, you know, how we proceed. So
18 don't take it off the table, but let's really understand
19 exactly what is going on.

20 MR. GRANIERE: Okay. Well, then I think we are in
21 agreement. I mean, you know --

22 MR. KRASOWSKI: Thank you.

23 MR. ZAMBO: Could I make a quick comment?

24 Rick Zambo. I represent some of those
25 garbage-burning folks, Palm Beach County and the City of Tampa.

1 And I just want to make a couple of comments. You know, I have
2 read studies that say that wind energy is dangerous to the
3 environment, because it interferes with the natural wind
4 cycles, and we are going to effect our environment that way.
5 And I have read studies that say ocean current is really not
6 renewable, because once you take the energy out of the ocean
7 current it is not going to come back again. And so I think
8 it's all in the perception of the beholder.

9 But the question I specifically wanted to ask you,
10 Mr. Krasowski, you mentioned that federal law specifically
11 provides that waste-to-energy is not renewable. What law are
12 you referring to? I'm not aware of any. The only law I'm
13 familiar with is that federal facilities are required to buy a
14 certain percentage of their energy from renewable producers,
15 and waste-to-energy is included in that definition.

16 MR. KRASOWSKI: Well, it's my understanding that the
17 new energy bill and the many variations as it's moving through
18 Congress now at some points identifies municipal solid waste
19 thermal treatment or burning of any sense as a renewable
20 resource, and then there are other forms of legislation that do
21 not. And at this time now the new energy bill does not
22 identify, as Florida does, waste-to-energy in the category of
23 biomass that is identified as a renewable energy.

24 So then these are -- this is just current
25 conversations that are going back and forth. So ultimately how

1 that's going to wind up, I don't know. But I certainly don't
2 agree with garbage being a renewable resource. It is something
3 we should be eliminating. Garbage represents a flaw in design
4 and efficiency. But I certainly appreciate your position and
5 would be glad to read everything that you have and to learn to,
6 you know, modify my position if I'm wrong or if there is
7 something that should be known.

8 MR. ZAMBO: Yeah. But I guess the point is there is
9 not any federal law that excludes -- this is just in the
10 drafting stage that you are referring to, is that correct?

11 MR. KRASOWSKI: Yes. I'm projecting to the energy
12 bill that is coming up, and as we are here today to project
13 what kind of structure we're going to put into Florida to relay
14 to truly renewables, hopefully, truly renewables, not --

15 MS. HARLOW: I believe Mr. Moline has a brief
16 question. And just as a good way to stop this very valuable
17 discussion, after that I would like us to break for lunch. And
18 I'm seeing that this is taking longer than staff anticipated,
19 and we have some time issues for some of our speakers. So we
20 might need to juggle things around a little bit in the
21 afternoon, but we'll be flexible. So, Barry.

22 MR. MOLINE: And it is actually a question of
23 Mr. Jeffery, who I think started us off on this discussion.
24 And that is how do you choose the percentage purchase
25 requirement in each tier?

1 MR. JEFFERY: Excellent. Excellent question.

2 And my answer, I think, will disappoint you, which is
3 that the IWSA definitely is not in a position to advocate a
4 specific purchase requirement at this time. And we have done
5 that intentionally, because the point we want to emphasize is
6 simply that we believe that separate purchase requirements are
7 important. And I have also mentioned in my presentation that
8 by doing so it allows the regulator the ability to set specific
9 purchase requirements for those tiers in order to effect the
10 kind of policy they want.

11 I do not profess to know at this point in the process
12 what is the exact percentage that should be set for the
13 solar/wind tier. I actually think that at some point others
14 will decide what that would be. But suffice it to say that
15 the MSW industry is mainly interested that that number be set
16 as a number that does not impact the purchase requirement for
17 other renewables. Now --

18 MR. MOLINE: I don't want to know how much it should
19 be; I want to know how it is chosen. What do you think is the
20 process for coming up with that number?

21 MR. JEFFERY: It would be chosen -- well, my
22 assumption would be it would be chosen through the same process
23 that the rest of the rules for the RPS would be set up.
24 Through this process. We are having a workshop; there will be
25 a draft rule, all of that. At some point -- and one of the

1 things that I have noticed today is I see some people getting
2 into levels of granularity that I think we need to be careful
3 of.

4 I'm a big advocate of the whole decision-tree
5 approach, and I think it would be very premature at this point
6 to say I think that the solar and wind industry should receive
7 X percent of the total purchase requirement for the state and
8 then the rest of the renewables should get Y. I just don't
9 think we are there yet, because there has to be an analysis of
10 what would that purchase requirement generate. And the main
11 thing that I think the purchase requirement is there to
12 generate is a REC price. And that is the mechanism by which I
13 think we wind up creating the incentives and controlling the
14 costs.

15 And I'm not here to say what the REC price should be
16 for solar RECs. I don't even know if that is my place to say,
17 and so that is why I think it is a little premature. But I do
18 want to make clear that there should be a separate requirement
19 and, our assumption is that this regulatory process would
20 result in those. I'm not sure if I have answered your
21 question. Are you asking specifically at what point in the
22 process do we sort of settle on a number?

23 (Simultaneous conversation.)

24 MR. MOLINE: Based on what you have said so far it
25 sounds like pick a number out of a hat.

1 MR. JEFFERY: No, absolutely not.

2 MR. MOLINE: Well, how do we even get in the ballpark
3 of trying to figure out whether the number should be, as Vote
4 Solar has said, two percent or should it be four percent? I
5 mean, just like how do we even get to that point?

6 MR. JEFFERY: Well, again, I think we are getting
7 ahead of ourselves, but I will just say what I think maybe step
8 one would be to do a current inventory and agree on the
9 inventory of renewables that exist in the state today. And
10 then you're going to go from there. Then you are going to have
11 a debate about what level of purchase requirement would
12 generate what kind of incentive for an industry. And I'm not
13 qualified to get into that for other industries.

14 MR. GRANIERE: Barry, let me ask you a question, and
15 then I think it will all become clear.

16 MR. JEFFERY: I welcome that.

17 MR. GRANIERE: Are you trying to decide whether we
18 are going to reach that number -- let us assume for the sake of
19 argument that it is going to be a number, okay. It's going to
20 be a tier. Okay. And is it your question are we going to
21 reach that number by putting it into some sort of analytical
22 machine and out pops the number, or is it we are going to reach
23 it through consensus? Which one would you like?

24 MR. MOLINE: My preference would be that it be based
25 on some level of analysis.

1 MR. GRANIERE: Excuse me?

2 MR. MOLINE: Well, I recognize that policymakers,
3 you know, have a certain level of, you know, of opinion in
4 their decision-making, but it has got to be based -- to get
5 them in the ballpark of where to set a number, it has got to be
6 based on reality. So it's important to know what reality is,
7 and I think what Mr. Jeffery just said is, you know, if we have
8 an inventory we can at least understand what's achievable. I
9 mean, is that more or less what you said?

10 MR. JEFFERY: Yes. I agree that is a first step, and
11 that we already -- in a previous workshop there was some
12 discussion about what was the real number. And I do think that
13 is very important. At some point and I don't know exactly what
14 point that is, but at some point we are going to have to agree
15 on what the current inventory is. That is going to be a
16 critical part. I don't know if it is the very first part, but
17 it is going to be a critical preliminary part of developing the
18 purchase requirements.

19 MR. GRANIERE: So I guess in the grand scheme of
20 things it is a hybrid approach. We do a little analysis and
21 then we pick a number. Okay.

22 MR. MOLINE: (Indicating yes.)

23 MR. KRASOWSKI: If I could add one other thing, Madam
24 Chair, and that is that the Florida Energy Commission has dealt
25 with this very topic in their deliberations over the last ten

1 months, and they will be making recommendations. And it is not
2 entirely clear that waste-to-energy is going to be received --
3 continue to have the renewable tag that it has gotten to this
4 point.

5 MS. HARLOW: Thank you. And since I've got the floor
6 for a second, I am going to call for lunch. And I think that
7 will be the most popular thing said this morning. Can we come
8 back at 1:30, and staff will get together and discuss what
9 topic we will start on then.

10 (Lunch recess.)

11 MS. HARLOW: Let's go back to order.

12 Before lunch we were talking about multipliers and
13 set-asides, and I thought we had some good discussion. We had
14 a couple of speakers that wanted to make a final statement
15 relative to that, and I'm going to call Jane Maxwell up and
16 then Bob Reedy.

17 After they speak briefly, I hope, I would like to
18 make a change to the agenda, but I think we can cover all the
19 material here by doing this, and probably stay more focused at
20 the same time. I would like to call the speakers up that have
21 the individual stakeholder proposals, and go ahead and let them
22 give their presentations and follow that with a question and
23 answer session. And in that way I think in a more focused
24 manner we can get at the additional questions on the agenda and
25 use those in the context, address those in the context of these

1 specific proposals. And then perhaps we will have more time
2 for other speakers if they have their own proposals.

3 And I would like to ask the speakers in the few
4 moments they have before they come up to glance at the
5 questions we have on compliance and verification and be
6 prepared to address those.

7 So, Ms. Maxwell.

8 MS. MAXWELL: Hi. My name is Jane Maxwell. I'm a
9 project consultant with Waste Energy Solutions. We are a
10 company that uses anaerobic digestion technology to make biogas
11 methane. And we're based in Pittsburg, but we're looking at
12 trying to build some plants, biogas plants down here. And in
13 other states we are a Tier I, in the Tier I.

14 We have a lot of environmental benefits for our
15 technology. One is that all the waste that we are using,
16 whether it is animal manure, sewage, grease, food waste,
17 produce methane. And through our process, using that methane
18 for power, we are destroying the methane and that is really
19 important for the environment, because methane is 21 times more
20 potent as a global warming gas than carbon dioxide. So that's
21 one of our environmental benefits.

22 Of course, getting rid of sewage solids is another
23 really important benefit. Down here cities and towns are
24 having problems because what they do is mix the sewage solids
25 with lime and land apply that, and that's not really a good

1 environmentally safe way to deal with sewage. We can put it in
2 our digestion tanks and convert that problem into a useful
3 fertilizer while we are making energy with it.

4 Also, down here in Florida we would be using a lot of
5 dairy cow manure that is causing problems for farms because too
6 much nutrients on the farmland gets into the water and so
7 forth. We can take -- I think we are the only anaerobic
8 digestion company that can do this, but we can take those
9 nutrients, separate out nitrogen and potassium and sell them as
10 fertilizer, and that's a benefit because nitrogen production
11 commercial fertilizer uses a lot of fossil fuel. So that's
12 another way in which we benefit the environment.

13 Keeping waste out of landfills, of course, is really
14 important. Keeping grease and so forth out of wastewater
15 treatment is really valuable. But what I just wanted to
16 mention is in our technology we use a lot -- we would be
17 generating power with creating a lot of heat, and that heat
18 energy we use to heat the tanks, because we need a lot of heat
19 to keep the digestion process working. And one of the things I
20 think that has been mentioned at another workshop is would you
21 be able to sell the renewable energy credits separate from the
22 power? And that would be somewhat of a big benefit to us if we
23 could do that because we would like to be able to sell the
24 renewable energy credits that would go along with the heat that
25 we generate. And also we would be generating our own power for

1 the plant, and if we could sell renewable energy credits from
2 that power that would also be a benefit to us.

3 So those are just a couple of quick comments I wanted
4 to make about -- since you had put on the agenda that you
5 wanted to know about things that would encourage a variety of
6 renewable energy sources, and that would be a help to our form
7 of renewable energy. So that's about it.

8 MR. TRAPP:

9 Hi. I'm Bob Trapp with the Commission staff. I just
10 had a couple of questions. Do you view your process --
11 handling municipal solid waste, is that an augmentation to the
12 generation of electricity from the waste streams from landfill?
13 Does it augment that or does it substitute for it?

14 MS. MAXWELL: I'm not quite sure what you are asking,
15 but what we do is in cases -- I don't know all the sewage
16 treatment systems, but I know from talking to a couple of towns
17 in the area that we might put this plant, that they normally
18 have a lot of sewage solids. And they will mix those with lime
19 and put them on -- and spray them out. So we can take those
20 solids, they can truck them to the digester, and we can use
21 them.

22 Now the liquid we don't take, but the solids we
23 would. And the Department of Corrections has a number of
24 sewage treatment plants at their prisons. They would like to
25 bring us those solids from those prisons, too.

1 MR. TRAPP: Okay. So your process doesn't entail
2 capturing methane from existing landfills, for instance?

3 MS. MAXWELL: No. We would be capturing methane from
4 all the waste brought into our plants, which would be about
5 100 tons a day. Eight hundred tons a day. I'm sorry, 800 tons
6 a day.

7 MR. TRAPP: And your process does not use newspapers,
8 lawn clippings --

9 MS. MAXWELL: Lawn clippings could be used.

10 MR. TRAPP: -- yard trash, that would go through an
11 incinerator type process to produce electricity?

12 MS. MAXWELL: We can use lawn clippings. Anything
13 organic that will rot we can use. Some things are better than
14 others at producing gas. And we will be charging tipping fees
15 for most waste hauled to the plant, except for the dairy cow
16 manure, and the reason for that is the dairy cow manure has
17 certain bacteria that are very beneficial to the process. And
18 one of the big economic advantages to Florida for this is the
19 dairies are under some severe pressure because of their
20 nutrient overloading.

21 The University of Florida recently did a study
22 showing that most of the small dairies in Florida are likely to
23 go out of business in the next few years because they will not
24 be able to comply with DEP, but we can prevent that because we
25 can take their nutrient problem away. And that would be -- I

1 can't remember the exact numbers, but somewhere from 30 million
2 and up loss in revenues per year to Florida if these smaller
3 dairies go out of business. So, we can keep them in business
4 if we can get these plants built.

5 MR. TRAPP: And the other question, you had mentioned
6 that you would like to see energy credits given for your waste
7 heat. Now, let me understand that, because I'm not sure how
8 that fits in the scheme of things. I think, generally
9 speaking, we have been discussing so far energy credits
10 associated with electricity either provided to the grid or
11 electricity that is used on-site to avoid load on the grid.
12 But as I understand it, correct me if I'm wrong, you are
13 talking about basically an internal plant use that would not
14 otherwise be there except for building your plant.

15 MS. MAXWELL: If you had to build the plant without
16 using our waste heat, we would have to be buying power off the
17 grid. But the waste heat, you know, in Btus you can convert
18 that to kilowatts, and you could figure, you know, for each
19 megawatt of waste heat it could be worth as much as one
20 renewable credit would be if it were actual electricity.

21 MR. TRAPP: Okay. Thank you.

22 MS. HARLOW: Thank you, Ms. Maxwell.

23 Mr. Reedy, you had a comment?

24 MR. REEDY: Yes, I do. Thank you. Regarding the
25 avoided cost discussion that we began just before lunch, I just

1 briefly wanted to speak from the -- really from the perspective
2 of a utility as much of my career has been, and of the solar
3 industry where it is now, and as a consumer, a ratepayer, and
4 say that with PV these things all converge with avoided cost as
5 long as you realize and we talk seriously that we are talking
6 about the true avoided cost for the hour of generation. And
7 that is often glossed over, and it is a very serious
8 multiplier.

9 If you go into the hourly market or even a day ahead
10 or time ahead, month ahead for -- if you are buying the ultra
11 peak or selling the ultra peak, it is quite a bit higher,
12 sometimes three, four times the average annual avoided cost.
13 And so we really -- it is a great concept. The trouble is it
14 is very difficult to get that data. And so one of the ways it
15 is addressed is with a carve-out, because if you do rough
16 numbers, you kind of get the same results with a set-aside.

17 So I wanted to bring that back to the front and say
18 that there is a legitimate, quantitative, economic reason for
19 all of the interest involved to be happy with a reasonably
20 sized set-aside, because it simulates the true avoided cost,
21 the full avoided cost of that hourly generation.

22 MS. HARLOW: Thank you, Mr. Reedy, for clarifying
23 your point of view on that.

24 Mr. Hartman, would you come up for us, please.

25 MR. HARTMAN: I understand from Mr. Moline that maybe

1 I can even do it from here.

2 MS. HARLOW: Mr. Hartman is here to speak to us about
3 Power and Light's stakeholder proposal on RPS. And after
4 Mr. Hartman concludes his presentation, I would like to take a
5 few moments for some questions about his specific proposals,
6 and then move into Mr. Moline's and then Gwen Rose, and then
7 open it up to the crowd for questions on all three. Thank you.

8 MR. HARTMAN: Thank you. This is an outline of FPL's
9 renewable portfolio standard proposal or strawman. I believe
10 we filed a written description in a little bit more detail with
11 the Commission after the last workshop.

12 One of the first things we need to point out is
13 whenever we go through this there is going to be additional
14 work that is going have to be done and additional discovery in
15 order to get an optimal design. There is a lot of things that
16 we plain don't know, things like what are -- you know, somebody
17 mentioned earlier, the effectiveness of the various renewable
18 options on reducing greenhouse gases. We don't have good
19 figure on that. What is renewable availability truly in the
20 state of Florida? There is going to be some sort of supply
21 curve for that. What available do we have at what prices? The
22 last published material I saw was from the FPSC in
23 January 2003. And that indicated that if you are going to go
24 with 20 percent of our load with those figures, we are going to
25 have a problem.

1 We also strongly feel that the primary focus of a
2 renewable portfolio standard should be on the benefits to the
3 state with a focus on greenhouse gas reduction, focus on solar
4 and renewable -- and wind because of their greenhouse gas
5 benefits. We should also have some fuel diversity, increasing
6 our energy security. We need to maintain electric service
7 reliability. And we need to keep prices reasonable for the
8 customer. And it is our point that an RPS is not an end in and
9 off itself. It is one of the means of achieving these
10 objectives for the state.

11 In order to achieve these objectives we strongly feel
12 that clean energy sources should be included. Everything that
13 reduces greenhouse gas emissions and everything that increases
14 our fuel diversity and energy security should be available to
15 meet the needs of the state under this RPS.

16 One of things that we mentioned is we think that REC
17 trading or purchases of RECs should be a preferred means of
18 compliance. We agree that there should be a preference for
19 in-state RECs rather than out-of-state, but out-of-state should
20 be available. And to recognize the differential fuel diversity
21 benefits of in-state versus out-of-state, we are proposing that
22 120 percent of the out-of-state price be used for an in-state
23 REC. Greenhouse gas emissions really don't care whether it's
24 in Kansas or it's in Florida. It's a global problems.

25 We are also proposing that since one of the primary

1 objectives is greenhouse gas emission reduction, that the cost
2 of a REC should be capped at the cost -- estimated cost of
3 avoiding the carbon emission to begin with. And we believe
4 that is about \$20 a megawatt hour. We also think that we
5 should have an adder, an extra 2 percent ROE for utility
6 investment in renewable resources. And one of the reasons we
7 think that is appropriate is it basically gives an incentive
8 for the utilities to build a renewable facility rather than a
9 fossil.

10 Frankly, it's easier for us to produce a thousand
11 megawatts of natural gas fired power than it is to do a
12 thousand megawatts of renewable. There is a lot less risk to
13 the fossil fuel, it takes fewer of our resources to actually
14 develop it. Development problems for renewable don't scale on
15 the size of the plant. So we believe that an incentive to
16 encourage the utilities to develop renewables rather than
17 fossil is appropriate.

18 We also believe that from the utility perspective
19 quick FPSC approval and -- for cost recovery and for approval
20 of the project in the contracts is essential. These contracts
21 can develop quickly. We need to have an encouragement for the
22 utilities to do them. The quicker and more promptly we can
23 give approval of cost-recovery, the easier it is going to be
24 for both the renewables and the utilities.

25 Prudence determinations, cost recovery approvals, and

1 administrative finality are going to be essential. As I think
2 somebody else pointed out, right now the utilities do not make
3 a dime on these. They are pass-throughs. They go entirely to
4 our customer. Therefore, the utility is going to be taking
5 shareholder risks. It also becomes essential for the
6 customers, because they want to have finality on this, and it
7 becomes essential for the renewables, because they need to be
8 able to finance the projects. Therefore, expedited
9 determinations and regulatory finality and the decisions of the
10 PPA are going to be essential for all parties. We think cost
11 recovery for renewable projects can be accomplished through
12 existing mechanisms, energy cost recovery clause, environmental
13 cost-recovery clause, et cetera.

14 The final point on this particular slide is dealing
15 with default by a renewable producer. If we have an RPS, we
16 are going to be signing up contracts for people to produce
17 power to us. If that renewable project does not develop for
18 reasons outside of the responsibility of the utility, we don't
19 think the utility should then be put in the position of having
20 a penalty for not complying with an RPS whenever we had stuff
21 under contract.

22 There has been a lot of discussions about multipliers
23 and set-asides. FPL believes that a multiplier is appropriate
24 for technologies we want to encourage, the state wants to
25 encourage. We are proposing a multiplier of 3.5, not because

1 it equalizes the costs, but because it basically takes
2 intermittent resources, such as solar and wind, and evaluates
3 the capital investment in RECs based on the equivalent of a
4 base load. So if you have a solar plant that's 25 percent
5 efficient, you multiply -- 25 percent capacity factor, you
6 multiply that by 3.5 you wind up with the equivalent of a base
7 load unit, so that's the reason for the 3.5.

8 One of reasons why we don't agree with the use of a
9 set-aside is the cost of RECs in set-aside markets. Figures
10 from October of this year indicate that New Jersey solar, which
11 does have a solar set-aside, the market value of the RECs are
12 currently \$270 a megawatt hour. If you look at voluntary RECs
13 for solar available throughout the country, the market price is
14 \$17 a megawatt hour.

15 Let's take a look at the impact of some of these REC
16 prices. We proposed a one percent cap as has Mr. Moline. If
17 we had a REC price of \$200 a megawatt hour, the one percent cap
18 for FPL would be achieved at .5 percent solar. At a solar REC
19 price of \$20 a megawatt hour, we would be able to achieve five
20 percent in solar against that one percent cap. If you put a
21 two percent set-aside for solar, so 2 percent of our load for
22 energy, retail load was going to be served by solar, and we had
23 a 200-dollar solar REC price, that would increase our cost by
24 \$465 million a year and would represent 4 percent of our
25 revenue. That is just for the solar set-aside. These are

1 market figures for REC compliance prices in the United States.
2 You will notice that most of them are on the left-hand side,
3 except solar which is a little triangular one up there, you
4 will see is about \$250 or so in New Jersey at the present time.
5 REC prices for tiered markets are relatively high. Connecticut
6 Class 1 RECs, for example, you're looking on the order of \$50 a
7 megawatt hour. .

8 If you start looking at non-tiered markets, I know
9 that REC prices for wind right now in Texas is running about
10 350 a megawatt hour. You can get a lot of RECs in voluntary
11 markets for wind and other technologies at four bucks. So
12 other people have mentioned the fact that tiers prevent various
13 renewable technologies from competing with one another. That
14 is demonstrated in this slide, which shows that whenever you
15 have tiered RECs, you start looking at very high REC prices in
16 the market.

17 We strongly feel that our customers should have a
18 separate statement as to the cost of an RPS to them. This is
19 going to be done in their bill through bill inserts and various
20 other mechanisms. But they need to understand what their
21 contribution to clean and renewable energy is providing them
22 and what it is costing them.

23 The targets are going to be critical. Other people
24 have mentioned here before, you set a target too low, it is
25 going to be readily achieved. You set a target too high, it is

1 going to result in sky-rocketing costs. That's complicated by
2 the fact we really don't know what the availability of
3 resources are in this state at the present time. The
4 assessment should be updated, and we don't believe that the
5 target should be set on a year-by-year basis. Interim targets
6 might be set on the way to the 20 percent, so you could set
7 targets at five years out, ten years out, fifteen years. The
8 trouble with setting, you know, one-year, two-year, three-year,
9 four-year is these plants take time to build. Interconnect
10 takes time. It takes time to negotiate.

11 You start putting in every year targets, you are in a
12 position where we are going to be up and down trying to meet
13 each one of those. You set as a target five years, ten years
14 out, we aim and negotiate and people construct to meet that
15 target, rather than necessarily an arbitrary interim one in
16 between.

17 We believe that the RPS target should be capped at
18 one percent of our net retail costs. We can understand why
19 that can grow. We propose it grows over a five-year period of
20 time to a cap of about 2 percent. Our interim targets we have
21 suggested are five percent by 2017, 10 percent by 2025 and 20
22 percent by 2030. The targets, as I mentioned, are long-term
23 planning. Interim targets are inappropriate, but the annual
24 progress reports are. You need to know that we are making our
25 way towards those targets, even though we don't necessarily

1 have an interim one in between.

2 One of the issues that has also come up earlier today
3 is the fact that there are -- is on going efforts for
4 legislation at the national level. To the extent that a
5 federal RPS is put in place, we believe that the Florida RPS
6 should be harmonized with that. There will be additional costs
7 associated with an RPS no matter who puts it in place. And it
8 would be unfair to the customers and unfair to the state of
9 Florida to have us hindered above a federal cost and above a
10 federal compliance standard.

11 We have talked about compliance, various
12 technologies. One of best means of meeting it as far as we are
13 concerned is purchasing of RECs. RECs should be allowed to be
14 banked. RECs should be allowed to be borrowed. In the early
15 years in Texas REC prices were extremely volatile. The reason
16 they were volatile is people got up to the year December, found
17 out they were a little bit short, they didn't allow borrowing
18 from the next year, REC prices went up to about \$50 per
19 megawatt hour very quickly. Then after the end of the year,
20 the prices plummeted. By allowing borrowing and banking, you
21 provide a bit more certainty and a bit more stability to the
22 REC pricing.

23 We believe there needs to be an alternative
24 compliance mechanism. The ACP should be capped, and it should
25 be no more than the cost of avoiding the carbon emissions that

1 would otherwise result. We also think it is important to
2 recognize that an ACP is not a penalty. The ACP provides a
3 mechanism so that if we cannot buy the renewables or build the
4 renewables to comply for a range of reasons, we and our
5 customers can provide for this alternative compliance payment
6 that then goes to develop renewables in the state. Maybe it is
7 used to develop MET (phonetic) studies in detail, MET studies
8 throughout the state to support the future development of wind.
9 One of the things that would hinder wind at the present time is
10 there isn't enough data. So an ACP could be used to provide
11 that data, that sort of structure.

12 That is not to say that, you know, all reasons for
13 noncompliance should result in an ACP. I have already
14 mentioned that if we have plants under contract and they are
15 not built, we should be able to count those plants anyway
16 because it isn't our fault until we can get another plant to
17 replace it. Similarly, if we have reasonably analyzed solar,
18 and we have a very cloudy year, and, therefore, we are short
19 some RECs, you have to recognize the fact that over a long
20 period of time they are going to balance out, maybe that is a
21 force majeure.

22 A transmission line goes out, that is a force
23 majeure. We have a hurricane and that reduces the renewable
24 production, that would be force majeure. So excuses should be
25 provided or an excuse for compliance should be provided under

1 those sort of circumstances. Absent that, the ACP allows
2 certainty in the utilities being able to comply with the
3 requirements of the RPS. That's it.

4 MS. HARLOW: Mr. Hartman, a great deal of your
5 proposal seems to be based on the cost of avoiding carbon and
6 you use \$20 a megawatt hour as your value for that. First, I
7 would like to ask you how you arrived at that figure. And,
8 second, I would like to ask you if you foresee any need for
9 that to be reevaluated over time.

10 MR. HARTMAN: Let me answer to the second one first.
11 Yeah, I can see reasons why that would need to be reevaluated
12 over time. Clearly, if carbon emissions is worth a lot more
13 than \$20 a megawatt hour, then there are reasons why you would
14 you want to invest more and not have that cap. You might want
15 to have it go up. Conversely, if the technology develops and
16 the cost of avoiding an emission of carbon plunges from \$20 a
17 megawatt to two, then the value to our customers of a renewable
18 goes down substantially, and that should be reflected also.

19 As far as the \$20 per megawatt hour, that's based on
20 a company estimate as to the tax value of the RECs, of cap and
21 trade and what our emissions profile is for our existing units.

22 MR. TRAPP: Does that \$20 include the cost of capture
23 and sequestration?

24 MR. HARTMAN: No, it doesn't. It includes our
25 estimate as to what the value -- assuming that you go to a

1 cap-and-trade system or a tax system on carbon, there are some
2 estimates out there as far as the market price of that carbon,
3 and we take that market price of the carbon and run it through
4 the profile of our fuel consumption and get a market price for
5 what it would cost us to get it, not necessarily a technical
6 evaluation of what it would cost to put carbon capture on any
7 one of our units.

8 MR. TRAPP: And the cap and trade, what is the cap?
9 I mean what estimate of caps are you talking about?

10 MR. HARTMAN: I don't know offhand. There has been
11 some legislation with cap and trade out there for greenhouse
12 gases, and it's based on some consultant's analysis on some of
13 these cap and trade issues. I can get you some of the figures.

14 MR. TRAPP: Is that basically the testimony in the
15 Glades?

16 MR. HARTMAN: A lot of it is from the same source,
17 yes.

18 MR. TRAPP: Okay. And you also mentioned the
19 derivation for the 3.5 multiplier. Could you repeat that?

20 MR. HARTMAN: Basically, we are looking at the 3.5
21 multiplier not based on the cost of the technology, because we
22 think that is irrelevant for our customers. What we're trying
23 do is recognize the fact that some of the technologies are
24 intermittent in nature, even though the capacity costs, the
25 cost of construction is not intermittent. So we are trying to

1 levelize those intermittent resources against their capital
2 cost. So if you have a unit that is only 20 percent capacity
3 factor, okay, and you're looking at, say, 90 percent, so you
4 would take 90 percent for a base load unit, divide it by 20 and
5 you get an appropriate multiplier. The 3.5 is based on what we
6 think a reasonable capacity factor is for solar and wind in the
7 state.

8 MR. TRAPP: Go ahead.

9 MR. GRANIERE: Tom, you said that New Jersey was --
10 that was the market price, 270, for a solar REC there. My
11 recollection is that that was a Commission-set price. Am I
12 right?

13 MR. HARTMAN: No, 270 is the market price as of
14 today. It floats in the market. The commission projections
15 that are out there now in New Jersey, I think 2008 they are
16 projecting over \$500.

17 MR. GRANIERE: Okay. And can somebody explain to me
18 why they are so high?

19 MR. JONES: Well, in New Jersey they have set a new
20 alternate compliance cost, and I guess the rationale is that if
21 you raise that, then the REC prices would also go up.

22 MR. GRANIERE: Okay. Good. All right.

23 So basically it is the alternative compliance cost
24 that is sort of driving the REC price?

25 MR. HARTMAN: The other part of that is New Jersey

1 forecast that they can't meet their solar set-asides for 2008
2 through about 2015. And as a result, the estimated cost of the
3 solar RECs have gone through the roof.

4 MR. JONES: Part of that is the fact that they have
5 tapered back their incentives and rebates.

6 MR. GRANIERE: Okay. The alternative compliance
7 payment that you are talking about in here, could you give me
8 an example as to when it would kick in?

9 MR. HARTMAN: It could kick in in a number of
10 circumstances. One would be if we are looking at, say, a
11 maximum price of \$20 a megawatt that we would be willing to pay
12 for RECs, okay, and we can't buy enough renewables at that price
13 to meet the standard, to meet what we have said we had in the
14 standard for 2015 or 2017. Then we will be providing the
15 alternative compliance payment in order to develop renewables
16 in the state.

17 MR. GRANIERE: Okay. Under that example, would the
18 one percent revenue cap kick in?

19 MR. HARTMAN: Absolutely.

20 MR. GRANIERE: Would it be true, then, that if the
21 one percent revenue cap was spent then there wouldn't be any
22 alternative compliance payment?

23 MR. HARTMAN: What we are suggesting is the cost to
24 our customers should be capped at one percent of our net retail
25 pricing. So, yes, if all the RECs were used up, all the

1 pricing was used up, and all the ACP was used up, our customers
2 shouldn't have to pay more.

3 MR. GRANIERE: So, basically, the answer is --

4 MR. HARTMAN: That's correct.

5 MR. GRANIERE: -- that there would be no alternative
6 compliance payment if you used one percent of your revenue?

7 MR. HARTMAN: That's correct.

8 MR. GRANIERE: Okay. The interim goals, right, don't
9 matter?

10 MR. HARTMAN: The interim goals that I put -- that we
11 suggested in 2017, 2025, et cetera, we suggest do matter. It's
12 the years in between that shouldn't -- there shouldn't be any
13 numbers established for them.

14 MR. GRANIERE: Okay. So there is no -- there is no
15 compliance per year?

16 MR. HARTMAN: No compliance per year.

17 MR. GRANIERE: Okay. So I guess when we are all done
18 with this proposal, is that if you spend one percent of your
19 refund you are okay.

20 MR. HARTMAN: If we spend one percent of our revenue,
21 our customers shouldn't be asked to pay more.

22 MR. GRANIERE: Which means you are okay.

23 MR. HARTMAN: Yes.

24 MR. GRANIERE: Okay. That is what I am just trying
25 to get at. So, basically, what's driving the whole -- what

1 actually gets put on the ground is that one percent revenue
2 cap?

3 MR. HARTMAN: No, I didn't say that. If we were
4 using the current market price for RECs which is about \$4 a
5 megawatt hour, we would achieve 20 percent under that one
6 percent cap.

7 MR. GRANIERE: Let me ask that question. Does that
8 mean that you are buying the RECs from out of state?

9 MR. HARTMAN: We could be. As I said, we are already
10 willing to pay more for an in-state REC. I'm just pointing out
11 that the market price for a renewable REC on a voluntary market
12 is basically \$4 a megawatt hour. If our prices in this state
13 correspond to what we are seeing on a national basis, then the
14 one percent cap isn't an impact, and we could achieve
15 20 percent. If, on the other hand, we are looking at New
16 Jersey, \$200 a megawatt hour prices, we are going to be nowhere
17 near 20 percent.

18 MR. GRANIERE: Does voluntary market mean that there
19 is no set-aside?

20 MR. HARTMAN: Voluntary market means not only is
21 there no set-aside, but those are RECs that are available,
22 basically, to anyone that wants to buy them. There isn't an
23 RPS component.

24 MR. GRANIERE: Because the reason I asked that is
25 that it was my understanding from your statement was that the

1 reason the REC was at 270 was because of the set-aside and the
2 alternative compliance payment.

3 MR. JONES: Yes, that is right. It's defined in New
4 Jersey only. A generation has to be created in New Jersey.
5 There is that carve-out and no -- RECs from other states
6 don't -- do not apply.

7 MR. GRANIERE: Okay. So we got to the RECs.

8 MR. JONES: And, also, I have to say, too, you know,
9 they also don't have -- when we talk about solar in Florida, I
10 believe we are talking about solar thermal as it offsets
11 electricity. In New Jersey it's solar only from PV. Solar
12 water heating is not renewable energy in the state of New
13 Jersey.

14 MR. GRANIERE: Okay. Would it be fair to say that
15 the voluntary -- perhaps one of the reasons why the voluntary
16 RECs for solar are so low is because they are basically being
17 sold by people who put in solar anyway?

18 MR. HARTMAN: To some extent, but wind RECs are
19 running about \$4 a megawatt hour, also.

20 MR. GRANIERE: Because there is a lot of wind out
21 there in Texas.

22 MR. HARTMAN: Sure. The RECs are relatively
23 inexpensive in markets where there are a lot of resources.
24 Therefore, if there is a lot of resources available, and we can
25 achieve this 20 percent renewable goal, it is not a problem

1 under the one percent --

2 MR. GRANIERE: Okay. Does the FPL plan have any
3 minimum requirement of renewables actually built in Florida?

4 MR. HARTMAN: No. We don't.

5 MR. GRANIERE: I didn't think so. Okay. So would it
6 be fair -- I hate to say this, Tom, but I have to. It's only
7 following it out to its logical conclusion. Would it be fair
8 to say that if the REC price in Florida was higher than the
9 goes nation's average, that instead of selling FPL Energy's
10 RECs from Florida in the national market, you would sell them
11 here?

12 MR. HARTMAN: I don't know the answer to that one.

13 MR. GRANIERE: I do. Yes?

14 MR. HARTMAN: No. That isn't quite -- no, that isn't
15 quite clear, because we have some regulations at both the
16 Commission and at the federal level as far as affiliate
17 transactions. And I know the Commission wants us to make sure
18 that we don't buy from an affiliate above cost. I'm not too
19 sure what the production cost is of a REC. And I know -- I
20 know FPL Energy well enough to know they are not going to sell
21 it below market. So if there is a spread between those two
22 numbers, I don't know that they will be selling them into
23 Florida. Let me take that back. Progress Energy and TECO and
24 others will an excellent opportunity to buy them from FPL. We
25 would not --

1 MR. GRANIERE: I was getting along to that.

2 MR. HARTMAN: We would not necessarily have that
3 opportunity.

4 MR. GRANIERE: Okay. Okay. So I'm sort of getting
5 long, you know, to that level. I guess, Tom, what I'm
6 basically saying is that if for some reason the REC price in
7 Florida was not at the national average, if it was below the
8 national average, and your particular company would sell
9 outside of Florida because that is what you would do. But, on
10 the other hand, if for some reason it was above the national
11 average, you would sell in Florida. I mean, why would you not
12 do that? I mean, of course you would do that, because that is
13 what you would do.

14 MR. HARTMAN: Absolutely. But as I pointed out, a
15 couple of things. Number one, we are proposing a 20 percent
16 premium for in-state. So to that extent, we are already saying
17 we have a preference for in-state resources. Now, how much of
18 a premium should we pay? The second thing is we are saying
19 that energy efficiency should count. We are also saying that
20 new nuclear should count. We've proposed new nuclear. And we
21 are also developing on our own and signing contracts for
22 renewables in the state. As a matter of fact, there is one in
23 front of the Commission right now that has a new renewable
24 project where we are buying the renewable energy credits.

25 MR. GRANIERE: Yes, I'm intimately familiar with that

1 one.

2 MR. HARTMAN: Right.

3 MR. GRANIERE: The point I'm trying to get at here is
4 that the 120 premium in your plan, is there a minimum purchase
5 of RECs at 120 above.

6 MR. HARTMAN: No, there is not.

7 MR. GRANIERE: So there is no minimum purchase of
8 RECs?

9 MR. HARTMAN: No minimum purchase.

10 MR. GRANIERE: There is no minimum purchase of
11 in-state anything in Florida.

12 MR. HARTMAN: No, there isn't.

13 MR. GRANIERE: Okay. That's what I wanted to finally
14 get down to. Thank you.

15 MR. TRAPP: Could I just ask you a question about the
16 ACP funds?

17 MR. HARTMAN: Yes, sir.

18 MR. TRAPP: Are they going back to Florida Power and
19 Light?

20 MR. HARTMAN: Well, first of all, they go back --
21 well, let's just say they come from the customers and they get
22 spent on renewable development. We are proposing that we be
23 the one to spend them. Of course, it's overseen by the FPSC.
24 So how those funds are used and whether that use is appropriate
25 under the rule, you guys are going to have the oversight on.

1 MR. TRAPP: I guess I'm floundering here, because I
2 don't see any teeth in your compliance. You are asking for a
3 200 percent basis point reward for building renewables on your
4 own, and you have got all of these caps and provisions to
5 protect the ratepayers, and that is good. And then you've
6 got -- if for some reason you slip up and you don't meet your
7 goals in any particular period, the ACP goes in and banks to
8 Florida Power and Light --

9 MR. HARTMAN: Well, it isn't like it is going to our
10 shareholders. What we are saying is if there isn't enough
11 renewables in the state for us to buy, then the ACP kicks in,
12 and that is used to develop new renewables in the state. So,
13 for example, Florida Atlantic University is developing offshore
14 ocean energy programs, it could be used to help funds those
15 programs and those developments. It could be used to fund the
16 necessary MET towers to make it possible to build wind in the
17 state. That is the sort of uses we are looking for those ACPs.

18 MR. TRAPP: Okay. I guess the key word is oversight
19 by the FPSC. You would be looking to us. For instance, if you
20 didn't meet your goals, I wouldn't want to reward your
21 stockholders 200 percent basis points for what you were able to
22 build.

23 MR. HARTMAN: No. If you look at the two percent we
24 are asking basically to levelize a two percent return on equity
25 for what we are building in our own renewable plants. Now, if

1 we go ahead and build a renewable plant, the idea is to
2 encourage us to do it as opposed to a fossil. Are we asking to
3 be rewarded for not contracting with a renewable? No, we are
4 not asking that at all.

5 MR. TRAPP: But you would hold yourself up to
6 bidding -- you know, how do I determine that Florida Power and
7 Light building so they can get a 200 percent basis point return
8 for their stockholders is the most cost-effective, given the
9 new definition of cost-effective, however it plays out in this
10 scenario, as opposed to going and having a developer doing it
11 or going over next door and getting PEF to do it?

12 MR. HARTMAN: You know, I'm certainly not a
13 regulatory attorney. I used to be an engineer. But it is my
14 understanding that the prudence of the decisions we make for
15 assets to be added into the rate base are subject to your
16 review.

17 MR. TRAPP: So you would look at it as a
18 post-construction decision prudence review at time of cost
19 recovery?

20 MR. HARTMAN: Depending on the magnitude, we would
21 probably want to come to you ahead of time and say, you know,
22 we think this is prudent, do you guys agree?

23 MR. TRAPP: Would you contemplate filing a compliance
24 plan for the Commission in advance with respect to your goals
25 and targets for purchasing or acquiring and building renewables

1 in advance as part of your Ten-Year Site Plan?

2 MR. HARTMAN: I can't answer that one right now. It
3 is something we would consider and come back to you on. It is
4 a good question.

5 MR. GRANIERE: Bob Graniere.

6 But then if you did that, FPL essentially would be
7 putting in a minimum construction in Florida.

8 MR. HARTMAN: If that was part of our compliance
9 plan, certainly.

10 MR. GRANIERE: I mean, that's what would happen.

11 MR. HARTMAN: Well, you know as well as I do right
12 now we have announced a number of projects we are working on to
13 develop renewables in this state.

14 MR. GRANIERE: Sure. Would that two percent bonus
15 sort of apply to a nuke?

16 MR. HARTMAN: I don't know that we have asked for
17 that.

18 MR. GRANIERE: Okay. So it is other than nuke.

19 MR. HARTMAN: Other than nuclear.

20 MR. GRANIERE: So it would not apply to a nuke?

21 MR. HARTMAN: It would not apply to a nuclear.

22 MR. GRANIERE: Okay. I just wanted to make sure
23 because it is one of those clean guys. But Bob just ask me to
24 clarify that you would consider the -- FPL's position is that
25 the nuclear generation would be counted toward your

1 requirement.

2 MR. HARTMAN: I believe our statement was new nuclear
3 generation past 2007 or uprates. So there are two issues out
4 there that would count towards that requirement, yes.

5 MR. GRANIERE: And what are you up for building right
6 now?

7 MR. HARTMAN: On nuclear?

8 MR. GRANIERE: Yeah.

9 MR. HARTMAN: We're asking to build Turkey Point
10 6 and 7, which is 2200-plus megawatts.

11 MR. GRANIERE: 2200-plus megawatts and your number
12 was for 220 was 20 percent, right? For 2020 was --

13 MR. HARTMAN: 2030.

14 MR. GRANIERE: 2030 was 20 percent, and that would be
15 the nationwide -- the statewide number, and what would be your
16 guess of Florida Power and Light's allocation of that would be?

17 MR. HARTMAN: What, in terms of the megawatts we
18 would have to add?

19 MR. GRANIERE: Yes, or the gigawatt hours.

20 MR. HARTMAN: Hang on just a second. I'm sorry, I
21 don't know.

22 MR. GRANIERE: Don't know. Okay.

23 Let me ask this question then. When would that come
24 on line?

25 MR. HARTMAN: The proposed --

1 MR. GRANIERE: Nukes.

2 MR. HARTMAN: -- nukes, starting 2019, I believe.

3 MR. GRANIERE: 2019. And that thing runs 24/7 and
4 all of that other stuff, right?

5 MR. HARTMAN: That's correct.

6 MR. GRANIERE: And it runs, what, about 90 percent of
7 its capacity?

8 MR. HARTMAN: I hope that's a bad year.

9 MR. GRANIERE: Okay. So it is even worse than that.
10 Okay. Let's say 100 percent, just for the hell of it, excuse
11 me, just for the heck of it. So that is 2200 megawatts and you
12 get 100 percent. I'm getting the feeling that you are meeting
13 your RPS by 2030 just on that nuke alone.

14 MR. HARTMAN: I'm pretty sure we are not.

15 MR. GRANIERE: Really?

16 MR. HARTMAN: Yes.

17 MR. GRANIERE: Could you sort of give me a number
18 that if it was at 20 percent by 2030, and your nuke was up and
19 running at 2200 megawatts, could you tell me how much of that
20 energy would count -- well, we know how much we count towards
21 the RPS, but could you tell me what your expected RPS
22 allocation would be, and then what would be the difference that
23 didn't have to be met by a nuke.

24 MR. HARTMAN: Not right here I can't.

25 MR. GRANIERE: I know, but sometime in the future.

1 MR. HARTMAN: Absolute.

2 MR. GRANIERE: Okay. Good. Thank you.

3 MR. TRAPP: I'm trying to refresh my memory of what
4 you proposed to include and not. And you mentioned reductions
5 due to energy efficiency. How did you treat energy efficiency
6 in this proposal?

7 MR. HARTMAN: We treated energy efficiency basically
8 the same as a renewable.

9 MR. TRAPP: Okay. The existing conservation
10 program --

11 MR. HARTMAN: No.

12 MR. TRAPP: Incremental conservation program?

13 MR. HARTMAN: Incremental.

14 MR. TRAPP: Utility-only conservation programs?

15 MR. HARTMAN: As opposed to?

16 MR. TRAPP: The PSC puts a broadcast out saying save,
17 save, save, and we note System --

18 (Simultaneous conversation.)

19 MR. TRAPP: -- responses immediately 10 percent lower
20 because we are such an effective publicity group that --

21 MR. HARTMAN: No. We are looking for additional
22 energy efficiency. And, you know, if the utility is doing it,
23 we are assuming that we are going to get the credit for it in
24 terms of the RPS contribution, yes.

25 MR. TRAPP: So the concept of measureable,

1 monitorable, verifiable in the conservation program?

2 MR. HARTMAN: That has to be there.

3 MR. TRAPP: Okay.

4 MS. HARLOW: Mr. Hartman, are you asking for the two
5 percent ROE on energy efficiency as well?

6 MR. HARTMAN: I think we're asking for the two
7 percent ROE on our capital investments.

8 MR. GRANIERE: So would that be a yes or no?

9 MR. HARTMAN: It depends on what's going on with
10 energy efficiency. If we have an energy efficiency item that
11 requires a large capital investment by our shareholders, we
12 would expect to get a return on it.

13 MR. GRANIERE: Okay.

14 MR. FUTRELL: Would that apply to, like, your load
15 management equipment that you might invest in? Have you
16 thought that far down the road with that?

17 MR. HARTMAN: That's an existing program. I can't
18 see that it would be --

19 MR. FUTRELL: For incremental additions.

20 MR. HARTMAN: Again, I don't know.

21 MR. GRANIERE: Tom, if you could amend my request and
22 add in incremental energy efficiency and conservation.

23 MR. HARTMAN: I figured you were looking for that.

24 MR. GRANIERE: Yeah. I'm pretty sure -- I'm just
25 getting the sense that there's not going to be a whole lot of

1 renewables around here.

2 MR. HARTMAN: If you are look at the FPSC numbers in
3 the past, there aren't a whole lot of renewables. I mean,
4 basically, if you want to develop a lot of renewables in this
5 state, based on the studies I have seen that the FPSC has put
6 out, you're going to have to do it with solar and some wind and
7 maybe ocean energy if it gets there. But the existing
8 renewable basis, the biomass, the waste-to-energy, there's
9 limited resources in the state.

10 MR. TRAPP: Again, on Page 4 your focus is on
11 nuclear, wind, solar and carbon reductions due to energy
12 efficiency. We have heard a lot of comment in these workshops
13 about methane reduction. Why isn't methane reduction good?

14 MR. HARTMAN: Methane reduction is great.

15 MR. TRAPP: Why isn't waste-to-energy production
16 good?

17 MR. HARTMAN: Well, landfill gas is the primary
18 methane reduction mechanism.

19 MR. TRAPP: What about cows? We heard proposals from
20 the agricultural industry to methanize cow -- and I think we
21 just had a proposal for that industry. Why should we focus on
22 just this?

23 MR. HARTMAN: Renee just pointed out to me, if you
24 take a look at our comments on the technologies we said that
25 should be we covered under this, that includes landfill gas,

1 including methane specifically.

2 MR. TRAPP: You do?

3 MR. HARTMAN: Yes. Actually, the comment includes
4 post-2006 nuclear generation, wind, solar, solar-generated
5 steam, solar arrays, solar photochemical, solar pool and
6 residential water heaters. All energy efficiency fossil units
7 with carbon capture and sequestration, landfill gas, geothermal
8 biomass, biodiesel, hydroelectric, waste-to-energy, waste heat
9 digesters, ocean thermal, ocean current, ocean tidal wave
10 energy, fuel cells, hydrogen, combined heat and power,
11 co-firing, biogas, liquid biofuels. I mean, basically --

12 MR. TRAPP: So you have tried to include a
13 comprehensive list of what --

14 MR. HARTMAN: This is a comprehensive --
15 (Simultaneous conversation.)

16 MR. TRAPP: Okay.

17 MR. HARTMAN: Landfill gas and methane is -- as
18 somebody pointed out earlier, methane is about 21 times as
19 effective a greenhouse gas as CO2 is. But there is limited
20 amount of landfill gas generation available in the state. It
21 is probably less than 100 megawatts.

22 MR. TRAPP: But there are still a lot of cows, I
23 think, in Florida.

24 I had another question, and now it has escaped me.

25 MR. GRANIERE: What is the 2020 number for the

1 percentage?

2 MR. HARTMAN: Five percent in 2017, 10 percent in
3 2025, 20 percent by 2030.

4 MR. GRANIERE: And about how much renewables do you
5 have on your system right now, not counting nuclear?

6 MR. HARTMAN: About two percent.

7 MR. GRANIERE: Two percent. And your nuke comes on
8 on 2019.

9 MR. HARTMAN: Yes.

10 MR. GRANIERE: And that five percent number is
11 binding?

12 MR. HARTMAN: Those are the targets we are laying out
13 there initially, yes.

14 MR. GRANIERE: Okay. That would be a binding number,
15 in principle?

16 MR. HARTMAN: Yeah. The point is, remember, one of
17 the first things we said is these are the numbers that we think
18 need to be out there, but an assessment needs to be made as to
19 the availability and the cost.

20 MR. GRANIERE: Okay. How much energy efficiency and
21 conservation do you have out there right now?

22 MR. HARTMAN: I don't know the figures offhand.

23 MR. GRANIERE: So I guess what I see this plan coming
24 to is that by 2017 there will be a combination of energy
25 efficiency and renewable energy to get the additional 3 percent

1 that you need, because there won't be any nuke at that time,
2 and then after that the nuke will kick in. After that by --
3 for the 2020 number the nuke would kick in under your plan?

4 MR. HARTMAN: Well, 2017 we are short right now as to
5 what we think we need to have, that includes the nuke upgrades.
6 But whenever you sit there saying, you know, okay, you are
7 going to add 3 percent to renewables. That's 150 percent of
8 what we have now.

9 MR. GRANIERE: Well, I know that, but the point I'm
10 making is that it is now 2007, and in ten years it will be
11 2017.

12 MR. HARTMAN: Right.

13 MR. GRANIERE: And if I'm understanding this right
14 and my instincts are right, what this says is that by 2017,
15 over the next ten years, you will add 3 percent of a
16 combination of energy efficiency, conservation, and renewables.
17 And then when the next number kicks in at 2020 at 10 percent,
18 but your nuke comes on at 2019, you will hit your 10 percent
19 number with your nuke if you count the nuke, and then you will
20 have another ten years after 2020 to make up the difference
21 that would be out there, the 20 percent, if the number was
22 20 percent. That's how this is going to run when you just
23 add up your numbers. That's how it will be. Because if you
24 don't get that 3 percent by 2017, and you don't have a nuke, it
25 has to come from either energy efficiency, conservation or

1 renewables, or you ran out of money because your one percent --
2 because it was too expensive, so you ran out of your one
3 percent. So the only way you can hit your 3 percent by 2017
4 additionally in either one of those three things is that you
5 didn't have enough money to spend on that, which is the one
6 percent of your revenue over the next ten years. I mean, that
7 is how the numbers work out. It's not that I'm take making it
8 up; that's how they work out.

9 MR. HARTMAN: If your point is that the way we can't
10 meet the numbers in 2017 is because renewables in the state are
11 too expensive to be justified under our rate cap to meet the
12 percentage, I would agree with you.

13 MR. GRANIERE: No. What I said is that the only time
14 you wouldn't meet it that way is if by chance they were too
15 expensive. What I'm saying is that you can -- you would
16 probably make that under your cap by 2017 just on renewables
17 and energy efficiency alone over the next ten years. And
18 then -- and then you get this big hit at 2019 towards your RPS
19 because of the nuke. But if that nuke wasn't there, there
20 wouldn't be a big hit. There would be nothing. And then you
21 would still be stuck with energy efficiency and conservation
22 and renewable energy at a much higher number.

23 But, you know, I don't see how else that, with this
24 particular plan, you know, what would happen at 2017. That
25 would be what -- that would be what would happen. You would

1 have this pile of money. If this pile of money produced
2 3 percent more of renewable energy efficiency and conservation
3 incremental, you would meet this initial binding target. And
4 then two years later the nuke comes on, and you get this really
5 big boost in the amount of clean energy you have there. And
6 then one year after that really big boost, the five percent
7 goes up to 10 percent -- actually, seven years after that
8 really big boost the five percent goes up to 10 percent, right?
9 And then five years later it goes up to 20 percent. But you
10 got this big boost all this time.

11 And I'm just simply saying is that -- what this looks
12 like to me is it says we're just sort of playing a little bit
13 of a game here, and basically saying we get to the 20 percent
14 by a nuke.

15 MR. HARTMAN: Well, first of all, you will notice the
16 fact that we started off saying 20 percent, and we said nuke.
17 And you are saying that no nukes, 20 percent. I'm saying,
18 okay, that isn't what we are proposing. You know that is
19 simple enough. Whenever we are proposing our 20 percent
20 standard out there, it includes all sorts of options to reduce
21 greenhouse gases. And, obviously, one of the key ones in this
22 state is going to be new nuclear generation.

23 MR. MOLINE: Could I ask a clarifying question,
24 because I think it might help on this point. And that is, I
25 think on your slide that explained that there was something

1 left out. And that is from reading your proposal, you know, a
2 month or two ago the one percent rate cap goes up to two
3 percent --

4 MR. HARTMAN: Yes, it does.

5 MR. MOLINE: -- 2017 to 2022.

6 MR. HARTMAN: 22.

7 MR. MOLINE: Yes. So there is now a bigger pot of
8 money. It is not doubled in 2022, correct? So if you assume
9 that a nuclear power plant comes on line in the 2020 time
10 frame, you know, optimistically, I presume, then -- then there
11 is still plenty of money for renewables. And I don't know if
12 that's correct, but that is my interpretation of what --

13 MR. HARTMAN: There is money out there for
14 renewables. There is need for renewables. There is need for
15 additional capacity. But if your question is do we anticipate
16 and is our proposal based on achieving a 20 percent renewable
17 without nuclear, the answer is, no, it doesn't. We count on
18 nuclear to achieve that 20 percent.

19 MR. MOLINE: Could I ask --

20 MS. HARLOW: It's obvious you have got a conflict
21 here between making the systemwide broad-based to get the
22 biggest bang for your buck, as Mr. Twomey said earlier, and
23 supporting renewables. And I think that's one of the policy
24 questions that we will have to answer as we move along.

25 MR. HARTMAN: Well, as we pointed out in one of the

1 earlier slides in our presentation, we don't think an RPS is an
2 end in and of itself. An RPS is a component in achieving
3 greenhouse gas and fuel diversity and energy security for the
4 state. Okay. So, if you are saying that the RPS becomes in
5 and of itself a goal, that is not what we are proposing.

6 MS. HARLOW: I understand. I think it would be
7 beneficial now to move ahead to Mr. Moline's presentation,
8 because there are some similarities between the two, and maybe
9 we could ask Mr. Hartman to stay up front if we have further
10 questions afterwards.

11 Thank you, Mr. Hartman.

12 MR. MOLINE: Thank you, Judy.

13 MR. McWHIRTER: Are you cutting off questions to
14 Mr. Hartman at this point? (Pause.)

15 Are you cutting off questions to Mr. Hartman at this
16 point?

17 MS. HARLOW: I think I would like to move ahead to
18 Mr. Moline, and I'll give you an opportunity afterwards,
19 Mr. McWhirter, because they will both be here at that point.

20 MR. McWHIRTER: Thank you.

21 MS. HARLOW: Mr. Moline has a time conflict, and I'm
22 trying to accommodate that.

23 MR. MOLINE: Thank you, Mr. McWhirter. Thank you,
24 Judy.

25 I will go through our presentation briefly. I've

1 presented this to the Commission before, so I don't want to
2 belabor something that has already been presented, so this will
3 be a recap.

4 Our goal initially was just to put a proposal on the
5 table and get something out there. You know, initially we
6 thought that this was coming out of the Legislature because
7 that was what was discussed last in the 2007 Legislature. And
8 then subsequent, around the same time that we presented this,
9 the Governor vetoed the bill that asked the PSC to look at an
10 RPS. We always imagine this it as being done through the
11 legislature. In pulling this together, our municipal electric
12 utility members studied renewable portfolio standards
13 nationwide, and we tried to take out what we thought were the
14 best components of RPSs and then maybe take the next step in
15 thinking outside the box.

16 This is a slide that is not in your notebooks,
17 because it describes the various components of, I don't know,
18 so when you squeeze on a balloon, it pops out somewhere else.
19 The public likes the idea of green energy. Some may say they
20 are willing to spend more. The green power programs would
21 suggest otherwise. But the public at the same time wants low
22 bills. There are a lot of vendors of green technologies and
23 many of them are here in the room, and they want to sell and
24 build things, and many of them have various levels of cost and
25 availability and emissions profiles.

1 We, utilities, we have an obligation to serve. We
2 have to keep the lights on, so we are concerned about those
3 things, especially availability. And we are constantly
4 answering to our customers about costs and rates. And just
5 within the past month, customers have been protesting at the
6 Fort Pierce Utilities Authority on city hall, because those are
7 the local regulators, about their costs. And, of course, there
8 is the influence of the broader goal. Bob isn't here, but he's
9 been asking the question over and over again, what is the
10 ultimate goal? Is it climate change, is it economic
11 development? And that will influence how we approach, you
12 know, the rule.

13 So we sat down to do what we thought would be a next
14 generation RPS, looking at the 26 states that had RPSs. And we
15 call ours a Green Energy Portfolio Standard. The states that
16 have developed RPSs essentially did theirs in an era where
17 there was less concern over climate change. And we looked at
18 climate change issues as being sort of an overriding goal of
19 the direction that we took. So in our proposal we included
20 global energy and efficiency and conservation. Because of this
21 last item, this philosophy, which is we believe there is no
22 difference between a kilowatt hour generated from renewable
23 energy versus a kilowatt hour saved from efficiency and
24 conservation.

25 The executive order didn't have a time frame for the

1 goal, and we actually think that including efficiency and
2 conservation allows us to move faster. That if we just do
3 renewables alone that -- we don't really know what the time
4 frame is, but we know that would be faster.

5 This table which may not be easy to read, but I'm not
6 going to ask anybody to read it, shows the various state
7 RPSs -- it doesn't have Washington in there, which was
8 developed after this table was created, and it also has the
9 components of RPSs that qualify. It does show that six states
10 include energy efficiency and conservation in their list of
11 qualified technologies.

12 We also, in light of our concern, our customers'
13 concern for the impact on bills, we included in this idea of an
14 affordability rate cap. And that is when we came up with one
15 percent of the utility revenues. And the reason why we came up
16 with one percent is because we sat down and argued for probably
17 an hour over what the costs would be. Because whenever
18 utilities talk about RPSs, the first question that is asked is,
19 do you know how much that is going to cost? And we didn't know
20 how much it would cost.

21 But an LBNL study, which I will show you in the next
22 slide, indicated that the range was about one percent. Some
23 states were higher and some states were actually lower. Some
24 states actually had a negative impact. Actually, rates went
25 down. But those were -- Texas, I believe. That was one state

1 where rates actually went down, but it is because they have a
2 lot of affordable wind. So rather than arguing ourselves about
3 the cost, we agreed that one percent was a reasonable upper
4 limit. And it was also in the range of where we felt customers
5 would accept the additional expense.

6 And this chart shows -- on the left side shows the
7 percent increase, and those are -- all the pink bars are
8 various states. There is a lot -- actually, in some cases
9 multiple studies done of the same state. Those are just a
10 variety of studies that have been done about state RPSs. But,
11 you know, you see in the middle there is sort of a confluence
12 of bars having a range of about one percent. So that's why we
13 went to one percent.

14 As I mentioned before about Ft. Pierce, we think
15 affordability is important, and we're careful about every
16 single penny that's added to a customer's bill. Just as an
17 example, in Orlando 40 percent of the customers earn \$35,000 or
18 less. And almost half of those customers are renters, which
19 have difficulty in actually making changes to the facilities
20 that they live in. It doesn't mean that the only way to
21 approach an RPS is by installing something at a customer's
22 site. But, clearly, in this case, half the customers may not
23 even be able to. So we want to think about the big picture
24 as well as, you know, the individual customers.

25 What does the one percent look like in terms of a

1 budget? Florida's electricity bill of all of us in the room
2 and a few other folks around the state is \$20 billion a year.
3 And one percent of that is \$200 million. And just for
4 clarification, that includes fuel. So \$200 million a year is
5 what we are talking about. And that chart there just starts at
6 2010 and goes for 20 years and identifies the expenditures with
7 a 3 percent increase per year. And the total over 20 years
8 \$5.4 billion. We didn't identify in Column B what would be the
9 percent that would be the goal for each year. We actually
10 think that the idea of -- sort of like Tom described, or as
11 others have described, of doing it in five or ten-year segments
12 is more appropriate because of the ramp-up time.

13 We do recommend in setting those, that ramp-up speed,
14 in doing a resource study. And whether that is a university or
15 an independent consultant, it should update the 2002 study. It
16 should look at where we have got today. As we talked about
17 this morning, you know, we need some analytical guidance to
18 guide the policy. And I'll just say, and I've talked to staff
19 about this, we've talked with the Department of Energy about
20 getting assistance in funding a resource study, and they have
21 agreed to fund a resource study. DEP, the energy office, has
22 taken the lead on that. But my understanding is that they want
23 to work with the PSC on putting that together. They haven't
24 initiated it yet, but they -- my understanding is, from talking
25 to Jeremy Susac within the past week is they have some level of

1 confirmation that they can go ahead with doing that.

2 These are categories that we identified as green
3 energy, and Tom listed off a whole bunch more. The bottom line
4 is, the last bullet there, is all resources identified by
5 utilities, approved by the PSC. We don't want to exclude
6 anything as long as it saves a kilowatt hour. You'll notice
7 that on this list, you don't see direct load control or load
8 management. Now, load management, to the extent that it does
9 save kilowatt hours, and there is an argument that it does save
10 some, could be on the list. But in our initial pulling
11 together of this list, we excluded it because we didn't see it
12 as an efficiency or energy conservation measure.

13 The items here in blue, there is actually blue versus
14 white, are ones that are carbon free. And we looked at those
15 as the possibility of having some kind of a higher weighting
16 factor.

17 And pointing out, too, here, T&D efficiency
18 improvements and power plant efficiency improvements. When we
19 got together as utilities and talked about this, the question
20 was asked what is the difference between a kilowatt hour saved
21 on the customer side versus the utility's side, and we thought
22 there was no difference. And if the goal is climate change,
23 and I will repeat this, Bob, because I said this early on, and
24 that is we talked early on about what is the overall goal? If
25 the goal is climate change, then a kilowatt saved across the

1 entire utility consumption or delivery ought to be included.

2 I do recognize the concern that I have heard since
3 making this proposal that we don't want all of the efficiency
4 improvements to come from T&D and power plant. So I recognize
5 that that is not the goal of -- of our proposal. So to the
6 extent that they are -- you know, I don't know from the
7 resource study what the impact might be of those measures
8 alone, but that, I think, should be part of a resource study to
9 determine how much efficiency is available from those options.
10 But the bottom line is that this isn't the big loophole of our
11 proposal. We just recognize that a kilowatt hour saved
12 anywhere should be considered.

13 The next few set of slides go into how the
14 affordability cap would work with avoided costs. And the way
15 we see it is that the utility would have the opportunity to
16 spend the budget or meet the goal. And that's best explained,
17 I think, through this example. Let's say in a particular year
18 the goal is five percent, the budget is one percent. And I
19 will say in this particular example it's \$10 million. This is
20 about the budget of a utility the size of JEA, Jacksonville,
21 where they have a billion dollars in revenues, so their budget
22 would be \$10 million. So they can achieve that five percent
23 goal by spending -- if they spend \$5 million, which is half of
24 their budget, and they could achieve a five percent goal, they
25 essentially could stop spending money. I'm not sure that they

1 would close out their programs at that time, but for the sake
2 of this example, they could essentially stop spending money.
3 They might, you know, delay issuing an RFP, if they wanted to,
4 but they would achieve a goal -- if they could achieve it
5 spending that lesser amount of money, then that would be great.

6 If, however, they could only achieve four percent of
7 their goal by spending the full \$10 million, then they would
8 stop spending the money at that time. So that's how the two
9 would interact. But in both cases that would be information
10 that would be supplied back to the Public Service Commission in
11 what we would call a three-year evaluation to determine are the
12 goals set right, the percentage goals set right? Are the
13 budget numbers set right? Because it's going to take a few
14 iterations to make sure that we know what we are doing and -- I
15 mean as a state. So I believe an evaluation every three years
16 would allow us to reset goals or reset budgets.

17 Now here is how the funding will work against avoided
18 costs, and that is that the \$200 million is the first year is
19 not the full price of renewable energy. It's the price above
20 avoided cost. So if the green portfolio budget -- I'm sorry,
21 it is used only for avoided cost measures. Let's say in this
22 example -- and I'm not going to turn to Bob Reedy like I did
23 last time and ask him to verify, because he fouled me up. In
24 my good example, the cost of PV is \$130 a megawatt hour. And
25 let's say the avoided cost is \$60 a megawatt hour. The only

1 charge to the green portfolio budget would be \$70, and that's a
2 difference between 130 and 60, so it's not the full \$130 cost.

3 And likewise, for efficiency, only the cost of the
4 rebate, the \$500 in this case, even though there is a \$2,000
5 differential between a higher efficiency air conditioner versus
6 a Code 1, only the \$500 rebate would be applied to the green
7 portfolio budget.

8 And these are a few items: The budget costs can be
9 passed on to consumers, and be based on revenues and not rates.
10 We did include fuel. Credits can be traded with others, but,
11 of course, can only be counted once. We can bank green energy
12 for future years. We suggested that programs and projects
13 should be counted that were initiated back in 1997, but those
14 kilowatt hours that have been saved or generated should not be
15 counted.

16 But if the project was initiated at that time, then
17 they should be included going forward. And that's so you
18 don't penalize early adopters. And, obviously, these have to
19 be verified. So this should be done either by metering or by
20 statistical evaluation, and by statistical evaluation, I mean
21 industry standards. And that is primarily for DSM. We suggest
22 annual reporting and a three-year evaluation with shared lesson
23 learned. We recommend changes to the Legislature or the
24 Commission, depending on where the rule is set.

25 And as an alternative program, we do not address

1 compliance issues, except that if a utility chooses not to
2 comply by spending money within its own -- with its customers,
3 then it could just write a check to a state fund that would be
4 used for rebates to customers or grants to the public. They
5 could also spend the money with another utility on other
6 utilities' customers or use some of their budget for qualified
7 research on green energy.

8 So, finally, where do we go? I think, actually, what
9 we have done is a lot of -- what we have done thus far since
10 talking about this six months ago, was we have gone down this
11 road. We have tried to learn from other states. And we have
12 gotten somebody in from a consulting firm to tell us about what
13 is going on nationally. We haven't done the resource study
14 yet, and I think we need to begin that process. I was accused
15 early on of trying to delay this process, but I don't think I
16 am the delay any longer. So I think we need to get on the
17 resource study as quickly as possible and find out that answer
18 so we can guide policy development.

19 And one other thing that I think would be valuable
20 would be, if at all possible, can we get, you know, DEP and the
21 PSC and the Energy Commission and the Climate Action Team all
22 on the same page? So I say that for the record. I don't know
23 that you all can take any action, but, there, I said it.

24 Thank you amen?

25 SPEAKER: Amen.

1 MR. TRAPP: And this doesn't have anything to do with
2 compliance or enforcement, I did want to go to your suggestion
3 that we consider assigning greater weight to technologies that
4 are carbon free. And my first question would be how would you
5 do that?

6 MR. MOLINE: Well, as part of the resource study, it
7 is important to have an emissions profile for every technology
8 that is considered. And we want to have sort of like a price
9 supply curb. So how much resource is available at more or less
10 what price. And, you know, of course, that is just going to be
11 a snapshot. But we can also guide our policy development, and,
12 you know, greater weighting by emissions profiles.

13 So solar has less emissions than MSW, so that
14 probably should have a greater weighting. Now, what I'm saying
15 through weighting is that we are supportive of weighting
16 factors as opposed to tiers. So that's the direction that I'm
17 going in. But if you --

18 MR. TRAPP: Is that the same as multipliers?

19 MR. MOLINE: Multipliers, thank you.

20 You could do that simultaneously if you did do tiers.
21 Tier I, you know, technologies that address the climate change
22 goal. Tier II might be technologies that have a different
23 emissions profile. Tier III would be a different level of
24 support or emphasis. But, overall, we like the idea of
25 multipliers. But there is a way to do them, I suppose, within

1 tiers as well.

2 MR. TRAPP: I'm constantly troubled by the inventory
3 part of the thing; because, quite frankly, we have struggled
4 just to find out what is there now, much less what might be
5 available in the future.

6 In line with your comment about coordinating
7 activities, and everything, I know that there has been some
8 recommendations that -- and some impetus over at the DEP, or
9 challenge to the DEP to put together an inventory of emissions.
10 It occurs to me, could we do the same thing on the other side
11 of lack of emissions? And my thought being, not knowing what
12 markets will bring, not knowing what evolutions in technology
13 will bring, shouldn't we, perhaps, look at a registry and have
14 not just broad-based technologies, but I'm talking about
15 specific vendors that have appeared here tell us what they've
16 got.

17 Because they know specifically the parameters that
18 they are dealing with, cost, performance, emissions
19 characteristics, assigned to a specific technology, a specific
20 application of a technology. And then with that vendors list,
21 rather than a strict inventory, you would at least have a
22 registry of potential deals that you can go and negotiate
23 contracts with to meet whatever RPS goals are out there. And
24 then that information of actual people to go talk to and work
25 transactions with is available industrywide. And then I think

1 you probably need some cooperation -- or coordination, excuse
2 me, with the DEP, because we are certainly not as expert in
3 analyzing the emission characteristics of a specific
4 application. Certainly, I think we might be able to opine on
5 some economics and performance characteristics relative to
6 avoided unit type thing. But might not that be a more
7 practical approach to an inventory rather than guessing at what
8 the solar industry might look like in ten years?

9 MR. MOLINE: Well, I think what you described is part
10 of a resource study. I still support a resource study. There
11 is no question about it. But the way you described it is that
12 it would be extremely valuable information. That is
13 information that should be available today from these folks.
14 And there are deals that are out there today that should drive
15 part of the decision today. But I think they have an idea of
16 where prices and supply are going in the future.

17 And when you look at the list that's in the
18 presentation, I think that we see it in FPL's list as well,
19 there is a lot of technologies out there that they wouldn't
20 know about. I mean, especially if we include efficiency in the
21 RPS. So I think that there is an opportunity to look at all
22 that. When I talked to the Department of Energy about a
23 resource study, they felt it was extremely doable to look at
24 the resource potential of a variety of technologies.

25 MR. McWHIRTER: Mr. Moline, John McWhirter,

1 representing the consumer group. I'm about to give you the
2 consumer friendly award today, but not yet. What is your
3 position with respect to RECs? Would your GPS portfolio
4 include purchasing RECs from other utilities or out of state?

5 MR. MOLINE: Yes, it would. And that would -- yes,
6 we would. That would be from out of state as well. You know,
7 We talked about whether or not in-state or out-of-state RECs
8 should be allowed. By the way, I think RECs have to be
9 included, because if one utility is aggressive and has
10 projects, it will -- and others don't, then there is an
11 opportunity to take advantage of the economy of scale in those
12 cases. But the point is we argued about whether or not to
13 include in-state versus out-of-state RECs, and I think the
14 answer ultimately is a policy one. Do you want to drive the
15 market in Florida? This might be, just as an example, it might
16 be more expensive, it might not be. It might be less
17 expensive. But if RECs are cheaper elsewhere, and they are
18 actually -- they are counted only once, then shouldn't we be
19 able to comply in the least-cost method.

20 MR. McWHIRTER: That was my next question. Is there
21 a standard method of evaluating RECs, or is the price
22 market-based.

23 MR. MOLINE: I don't know, but we have had
24 presentations on that. Are there others that can answer that?

25 MR. McWHIRTER: Is there a national standard -- I

1 mean, is there a national exchange where RECs are purchased, or
2 are they purchased bilaterally from, perhaps, affiliated
3 companies?

4 MR. COOKE: This is Chris Cooke with SunEdison. I
5 can add some clarity to that. In the voluntary markets where
6 it's a bilateral transaction between a willing buyer and
7 seller, not necessarily to meet a state's compliance goals or
8 any other compliance goals, the national standards are set up
9 by independent bodies like Green E, who certifies certain
10 qualities and characteristics of the REC and guarantees, for
11 instance, that the REC is only used once, and there is no
12 double counting.

13 The other primary REC markets, which are state
14 compliance markets, each state sets up its own parameters
15 around what constitutes a REC and what a REC means, how you get
16 a REC, and what it means for compliance and what you can do
17 with that.

18 MR. McWHIRTER: So the state of Florida could
19 establish RECs for what is going on in Wisconsin and Nebraska?

20 MR. COOKE: Probably not, unless by happenstance or
21 design the state of Florida had a compact with the state of
22 Wisconsin to say our REC definitions will be same. I will give
23 you a prime example. In Nevada a REC is one kilowatt hour. In
24 every other state a REC is a megawatt hour. So there are vast
25 differences.

1 MR. MOLINE: And also, John, the Green E
2 certification is -- doesn't include MSW as part of its
3 definition. And if Florida includes MSW as part of our
4 definition, then a Green E -- we could not sell to Green E that
5 REC. So it couldn't be sold elsewhere as a Green E REC. We
6 could buy Green E RECs, because they're cleaner. So, you know,
7 a Florida REC would be a little bit different from another
8 state's.

9 MR. McWHIRTER: If money from Florida consumers is
10 going to buy RECs elsewhere and bilateral contracts, is there
11 some regulatory agency that would monitor that to ensure that
12 the amounts of money being paid are not disproportionate to the
13 value that --

14 (simultaneous conversation.)

15 MR. MOLINE: That's question to answer.

16 MR. JONES: This is Dale Jones. I can add some
17 clarity to that. Normally these certifying bodies like these
18 nonprofits like Green E, RERT, they are a third-party verifier.
19 They took at the transactions to make sure that that supply was
20 actually purchased and then retired. And so they -- you have
21 got this third-party entity at arm's length from the two, the
22 purchaser and the seller, to verify that the actual -- the
23 transaction was legitimate and met those, you know, standards
24 for that particular definition of what that renewable energy
25 is. So a lot of states what they will do is adopt Green E

1 standards. Some might adopt Green E standards plus these.
2 They might put geographic boundaries. You could say, for
3 instance, Green E standards, but they have to come from Florida
4 in order to be a compliance REC in Florida. So there is the --
5 what the opportunity that Florida has is you can, to some
6 degree, do a hybridization of a set of standards and then
7 customize it to the needs of what we want here in Florida.

8 MR. McWHIRTER: Back to Mr. Moline. Your revenue cap
9 standard includes fuel costs. Does it also include money that
10 is collected for local taxes, franchise fees and gross receipts
11 taxes to the state?

12 MR. MOLINE: It is exclusive of taxes.

13 MR. McWHIRTER: Other utilities have cost-recovery
14 mechanisms for a variety of other things, such as security
15 costs, storm costs, capacity purchased costs, conservation
16 costs. Does your definition of the revenue cap include those
17 cost-recovery items or does it exclude them?

18 MR. MOLINE: You have reached the end of my knowledge
19 about investor-owned utility ratemaking.

20 MR. McWHIRTER: Then I will end my questions to you.

21 MR. DOBSON: I do have a question. Michael Dobson
22 with Florida Renewable Energy Producers Association.

23 Back to RECs, is it your understanding that in
24 Florida we have kind of a unique opportunity to put this system
25 together somewhat, you know, from scratch with the knowledge

1 that we know from other states. And by doing so, can we have,
2 perhaps, a cap on what those RECs are going to be, so that the
3 ratepayers in Florida won't be exposed to excessive fees?

4 MR. MOLINE: Well, I'm not an expert on RECs. All I
5 have learned on RECs is what we have had as presentations here
6 in the Commission workshops. And the folks up here probably
7 have a better knowledge about RECs. But the answer from what I
8 have learned, is I believe the answer is, yes, it is up to
9 Florida to define what we want as parameters for our REC
10 system.

11 Does anybody else have any comments on that?

12 MR. TRAPP: Recognizing that there is a federal
13 congress, and then there is a state legislature and other
14 bodies that trump this Commission's jurisdiction and authority,
15 but, you know, I think that is what we are here for is to try
16 to develop something Florida specific that works. Now, that
17 doesn't necessarily mean that it excludes consideration of RECs
18 from other states. I mean, that is on the table as an issue,
19 too. But, yes, I think we are looking at designing a Florida
20 system and making our own recommendations as to what we think
21 it should be.

22 Can I just ask one final compliance question of you?

23 MR. MOLINE: Yes, sir.

24 MR. TRAPP: Is it my understanding from your
25 presentation and, again, basically, from what I heard from the

1 Florida Power and Light presentation, the main thing I'm
2 hearing with respect to compliance is if we don't come up with
3 the megawatt hours, we can pay some money to a fund in order to
4 fulfill our obligations with regard to compliance to whatever
5 goal is set. Is that the only -- it's the only real compliance
6 thing I have heard.

7 MR. MOLINE: That's what you heard in our
8 presentation. And, you know, Bob, I'm walking a tight rope
9 here, because municipal electric utilities are rate regulated
10 by our city commissions. So I did not want to get into
11 compliance issues, because compliance issues with the
12 Commission affect us differently than they do investor-owned
13 utilities. So I would contend that our compliance issues would
14 be different from theirs, so that is as far as I would go is to
15 say from a budgetary perspective, it's important that we
16 shouldn't be able to get out of spending that money at a
17 minimum, and the money should be spent on qualified renewables
18 or efficiency. And if it's spent within the utility's service
19 area with its own customers, fine. But if it is spent on other
20 qualified aspects, then that should be okay, too.

21 MR. TRAPP: So I hear you are concurring to some
22 degree with Florida Power and Light that the monies paid in an
23 alternative compliance measure should stay with the community
24 who's paying them, but then I also heard you say you really
25 don't object to sending it to a state fund or some other part

1 of the state.

2 MR. MOLINE: Right.

3 MR. TRAPP: Either/or is fine with you.

4 MR. MOLINE: Right. I should say that it is, I
5 think, to the advantage of the utility to try to do its best to
6 spend the money with its own customers in its own service area,
7 just overall. I mean, that's our philosophy. But just in
8 case, we see that as an option for compliance.

9 MR. GRANIERE: Just a point of clarification. It's
10 not reaching the target, but it's spending the money, right?
11 You're not going to pay an alternative compliance payment that
12 puts you above one percent of your revenue?

13 MR. MOLINE: Correct.

14 MR. GRANIERE: You are not going to do that.

15 MR. MOLINE: We should not be required to spend more
16 than one percent.

17 MR. COOKE: I have a question for Mr. Moline. On
18 your list of technologies, I did not see nuclear power. Would
19 that be included?

20 MR. MOLINE: Nuclear power is not in our proposals.

21 MR. COOKE: For renewable.

22 MR. MOLINE: Right.

23 MR. COOKE: Okay. Thank you.

24 MR. JONES: I have a question. Dale Jones with
25 Regensis Power. Would you envision -- you mentioned a higher

1 weighting factor for technologies that might achieve the goal,
2 and if the goal, in fact, is greenhouse gas emission
3 reductions, would you see your way to agreeing with renewable
4 technologies that would offset any fossil fuel? In other
5 words, perhaps -- you know, you are a group of electric
6 utilities, but if there was a thermal application using natural
7 gas, and you met that thermal energy through solar, would you
8 like to make a claim for that technology toward an RPS goal,
9 even though it is not offsetting electric energy?

10 MR. MOLINE: Because its carbon emissions are lower
11 than coal or oil?

12 MR. JONES: Well, if you have a boiler for an
13 industrial process heat application that's using natural gas to
14 fire that boiler, you put a solar in to meet that thermal
15 energy load, and you calculate how many megawatt hours of
16 energy that solar system produced, would that be a compliance
17 measure toward this RPS goal? So it's sort of fuel switching
18 sort of, you know, what's the spark spread between the ability
19 to meet that energy with, let's say electricity or gas?

20 MR. MOLINE: I think so. I mean, if I understand
21 your example fully. Now, not all of us sell natural gas.

22 MR. JONES: I understand.

23 MR. MOLINE: But I think the answer is yes.

24 MR. JONES: I guess it's sort of dipping into the
25 revenues of another business. You know, you may be an electric

1 utility producer, you could sort of meet your RPS goals, and I
2 guess for lack of a better word, steal a little revenue from
3 the gas company.

4 MR. MOLINE: In your example.

5 MR. GRANIERE: Bob Graniere. I have a question. Is
6 there a Progress guy out there? Okay. That nuke that you want
7 to build, how big is it and when it is coming on line?

8 MR. BURNETT: I don't know, and don't know.

9 MR. GRANIERE: Well, you're informed.

10 MR. TRAPP: Could you identify yourself for the
11 record?

12 MR. BURNETT: John Burnett, Progress Energy.

13 MR. MOLINE: Bob, I have a guess. I believe the
14 proposal is 2250 megawatts by 2017. Does that sound about
15 right?

16 MR. BURNETT: Don't know.

17 MR. MOLINE: I think that's about right.

18 MR. GRANIERE: Okay. So we will just make it 18.

19 MR. MOLINE: Jerry Paul (phonetic) says that's right.
20 2250 by 2017.

21 MR. GRANIERE: I just did a back-of-the-envelope
22 calculation, and those two nukes running at 100 percent
23 24/7 account for the entire 10 percent renewable portfolio
24 standard in 2019.

25 MR. KRASWOSKI: Could I jump in here real quick? I

1 would like to make a comment. I can't hear you, your
2 microphone is off.

3 MS. HARLOW: Yes, Mr. Kraswoski.

4 MR. KRASWOSKI: Okay. Thank you. Bob Kraswoski
5 again.

6 Just a few points on issues that have come up since
7 the last time I spoke, since lunch. As far as I understand,
8 nuclear power is not renewable energy. And I really question
9 why so much time is spent on discussing it as renewable energy,
10 this back and forth that went on. So I hope, I really hope
11 it's not going to be identified as renewable energy. And I
12 won't go into the details of why I believe that or why that is
13 my understanding, but I will forward that information to you.
14 But I wanted to bring it up on the record in front of this
15 group of people because people will be submitting, but I don't
16 nuke is is appropriate. I think it is real important that what
17 we do is based in reality, and that's coming from me, okay, and
18 that we have true information as we create a profile. And I
19 have heard many people speak to that. We need accurate
20 information. And so I really want to encourage that.

21 And then the tier, the idea of tiers, we can have
22 tiers of truly renewable if some -- these things that are not
23 renewable should go into another category, like waste-to-energy
24 and nuclear are opportunities to generate power and
25 electricity. But we don't want to confuse or remove the

1 reality of true clean renewables or true renewables by bunching
2 everything into one category, regardless of whose political
3 agenda it serves or whose economic agenda it serves.

4 I have a couple of -- just a couple more brief
5 points. I think the registry of energy system providers is a
6 great idea. Once again, the more information that we have the
7 better. And then we have to leave an element in here. We have
8 to be flexible and open enough to allow for innovation to
9 develop. And we should probably even have some kind of
10 mechanism for funding that. And there is some thinking and
11 some programs going on along those lines. But we should really
12 look to that, because there is -- as was said, there are a lot
13 of things happening that we collectively are not aware of, but
14 when you look into it there is all sorts of innovation that's
15 happening that we should incorporate into the program as it
16 develops over the years.

17 And this renewable energy credits, and I will be real
18 brief on this, in cap and trade they have really been pushed
19 over the last year by special interests. And we are all
20 special interests. And I understand there is some value to it
21 and some things that aren't -- don't appear to be valuable to
22 them. But we should really be cautious about becoming involved
23 in those things until we fully understand them. Where is all
24 of this money going to come from that's going to be traded,
25 made through the traders, and exchanged with people that are

1 involved in the trades? It's just too much, being pushed too
2 quickly. And as far as far as getting our renewable energy
3 credits from outside the state, which would then allow
4 pollution inside the state, I just don't go for that at all.
5 Any renewable stuff we do should be concentrated in the state
6 for the benefit of the people of the state. I don't want to be
7 sitting in Florida getting polluted because somebody in
8 Oklahoma can put up a wind mill.

9 Thank you.

10 MS. HARLOW: Thank you, Mr. Krasowski.

11 Let me ask if there are any final questions for Barry
12 Moline, because I know that he needs to leave us? That sounded
13 bad, but he needs to leave the workshop.

14 MR. REEDY: Bob Reedy with just a clarification. I
15 can't leave Barry alone on this. We are all about -- at FSEC
16 we are all about building efficiency. More than half of our
17 effort is involved in that. It's great. In the way of
18 information, though, if that is included, literally, we need to
19 double the number, the goal that we are headed for, because it
20 is -- you talk about low-hanging fruit, it's laying on the
21 ground. You know, it's great, however that works out, but when
22 we do those numbers, those numbers are going to get a lot
23 bigger when we include building efficiency. And the reason is
24 there are other mechanisms that are addressing that, mostly the
25 price signals that consumers are driven to more and more

1 efficient homes as the price of energy goes up. So that's
2 happening that way. There is also a building code, efficiency
3 code that is ever increasing in its requirements. So that's
4 the end of that.

5 MR. MOLINE: And I would like to respond. That's
6 another reason why I think we need a resource study. And if we
7 include efficiency in this, we will know as a part of an
8 analysis if we can easily get 20 percent from renewables. And
9 if we want to include efficiency and there is an additional
10 20 percent efficiency, then the goal should be 40 percent.
11 Because we think that the price is going to be very reasonable
12 and can all be done for one percent. And if the fruit tree is
13 hanging -- laying on the ground. And I don't say that
14 sarcastically. But we can't make that decision unless we know.
15 And the only efficiency analysis that we have seen in the past
16 year has been from, ACEEE, I think, and there were aggressive
17 assumptions in that proposal -- I mean, in that study, that I
18 don't think make it as valid as I would like to hang my hat on
19 for making decisions. So that's another reason why I think a
20 resource study is valuable.

21 And, Bob, so I think we are in agreement. Another
22 point escapes me. Oh, the point about standards improving, I
23 don't think it actually distracts from this proposal, because
24 we are still only talking about money addressing or paying for
25 an increment from the standard to the most efficient. So just

1 so you know that we are still going for the most efficient item
2 to be installed.

3 Thank you.

4 MR. GRANIERE: Just one question. How long would
5 this resource study take?

6 MR. MOLINE: It probably would take around three to
7 four months. Had we started this six months ago, we would be
8 done.

9 MR. GRANIERE: I was just about to say, you all asked
10 for that resource study a year ago. But the only thing that
11 didn't happen is you didn't spent any money.

12 MR. MOLINE: Well, as I mentioned, during that time,
13 we went to the Department of Energy and found some money, and
14 the money is waiting to be used.

15 MR. GRANIERE: And the money is just sitting out
16 there in a pile?

17 MR. MOLINE: I don't actually know where it is
18 sitting, but the money is available to us now in Florida.

19 MR. GRANIERE: (simultaneous conversation) -- running
20 ahead and hire somebody.

21 MR. MOLINE: Mark and Judy noted to give Jeremy a
22 call. So I think that is probably going to be that next step,
23 because it is literally waiting for us.

24 MR. GRANIERE: One of the things that I would
25 suggest, because -- but I don't like to spend other people's

1 money, as you know. But one of the things I would have
2 suggested back there a year ago is that since everyone on the
3 utility side finds this study so important, right? Why didn't
4 you get together for a consortium and fund it?

5 MR. MOLINE: Because you wouldn't believe our study.

6 MR. GRANIERE: But, no, you could hire an independent
7 person. Actually, you can give us the money and we will hire
8 the consultant.

9 MR. MOLINE: Actually, Bob, the way that the study
10 was envisioned is that stakeholders would be involved in
11 contributing certainly information, but also making sure that
12 everybody looking at each other around the table, that the
13 assumptions are correct. So that would include staff, that
14 would include stakeholders in the room, just to make sure that
15 the study is actually done, quote, unquote, the right way.

16 MR. TRAPP: We will be happy to come and participate
17 in that effort, but I don't think -- why are you waiting on us?
18 I think Bob's point is why are you waiting on us?

19 MR. MOLINE: Well --

20 MR. TRAPP: The industry is sitting all out there.
21 You all -- let's break for five minutes, you all go out there,
22 form a consortium and come back.

23 MR. MOLINE: The DOE, which has agreed to fund the
24 study, didn't want to fund it of industry. They wanted to fund
25 it through -- they wanted the request to come from the state.

1 MR. TRAPP: Go talk to PURC. We did that once.

2 MR. MOLINE: Say again?

3 MR. TRAPP: Go talk to PURC. We did it once, we can
4 do it again.

5 MR. MOLINE: Anyway, go talk to Jeremy and get things
6 going.

7 MR. KRASOWSKI: I would like to say something here in
8 regards to this study. Okay. The Florida Public Service
9 Commission administers the rules and regulations that affect
10 all of us ratepayers. We considered allowing the expenditure
11 of our ratepayer money to the tune of \$5.6 billion to build a
12 proposed coal facility, and now there is a consideration to
13 spend and pass the cost right to me, right on my electric bill
14 and everybody else that is a customer of whatever utility
15 builds these nuke plants billions of dollars.

16 It's nothing unusual to expect that once a consensus
17 develops of what information might be appropriate through a
18 study to have in order to make those determinations, it's not
19 beyond reason for us, the people, the ratepayers or interested
20 parties, to expect the PSC to put up the money and do -- gather
21 the accurate information, within reason, along with all the
22 other wonderful work that you folks are doing.

23 MR. MOLINE: Actually, it is the Florida Energy
24 Commission's recommendation to do the study as well.

25 MR. KRASOWSKI: So to was it for the Florida Alliance

1 for Clean Environment in a petition we circulated. So we
2 all -- we all see the value of it, or most people do. I think
3 it should be done, and maybe you guys can chip in or something.

4 MR. TRAPP: We appreciate your kind remarks about the
5 PSC and everything, and we certainly do appreciate it. But
6 I -- you know, we are a state agency. And we are under funding
7 by the Legislature, and our money is, you know, pretty much
8 allocated. We may have to go ask for more money from the
9 Legislature to do a specific study. That doesn't mean, though,
10 that the industry, as a prudent reaction to the current debate
11 that's going on, can't agree to put forth a study and come to
12 the Commission, to the extent it's necessary, for cost-recovery
13 to put on customer bills.

14 MR. KRASOWSKI: I'm sorry. I forgot Mr. Moline
15 represented the industry.

16 MR. MOLINE: He's just the municipal part.

17 MR. KRASOWSKI: Okay. I forgot that. So he is in
18 another camp. We are with the -- just the general public. We
19 have less money than him.

20 MR. MOLINE: Just get with DEP. It's on its way, you
21 know. Just let's go do it. You know, there is no reason not
22 to have information about what we want to set policy for. So I
23 don't think --

24 MR. TRAPP: I agree. And I will, again, just out of
25 my own self-interest remind you that at the first workshop we

1 asked you all to give us as much information as you had about
2 what was currently out there. And we have received some
3 information. I'm not convinced myself it is total information,
4 but the challenge still is out there. Staff is collecting
5 data. Please provide us with what you have.

6 I think you have almost made me forget my question,
7 but I did have one more question that I think Bob's question
8 raised in my mind. And that had to do with respect to the
9 inclusion of energy efficiency and the goals. And I am a
10 little bit confused about how to account for that and how to
11 avoid double counting, both in terms of its contribution to the
12 megawatts hours generated or not generated and with respect to
13 the monies that might be accountable for in this rate cap. I
14 think I have heard comments to the extent that we should only
15 include incremental conservation. I think I have also heard
16 comments that it should be limited to utility sponsored
17 conservation, not necessarily building code or appliance
18 efficiency.

19 But it occurs to me that we already have a goal
20 setting process here at the Commission that sets numerical
21 goals for conservation, and then challenges the utilities to
22 meet those with programs. And then they come in with programs
23 that are cost-effective and certain of these monies are allowed
24 to be passed through bills to promote those programs. Current
25 expenditures are -- how much are they, \$250 million a year --

1 \$250 million a year for the investor-owned utilities alone. I
2 think we just exceeded your rate cap. So how do you reconcile
3 that?

4 MR. MOLINE: Well, a lot of programs that are
5 currently offered do include direct load control, correct?

6 MR. TRAPP: Some do.

7 MR. MOLINE: And at least in our proposal, that's
8 not a component of it. And we keep hearing, and we heard from
9 Bob Reedy that there is a lot of low-hanging fruit out there.
10 So, you know, we hear our programs aren't aggressive enough.
11 So I will let others, you know, argue. But --

12 MR. TRAPP: I understand my point to be what is the
13 base line for conservation if you are going to treat it as an
14 increment. What is the base line? Is it up above and beyond
15 our FEECA goals? Does it start, you know, with our FEECA
16 goals? I mean, that is a question I will leave out there for
17 somebody to answer.

18 MR. MOLINE: Well, I won't answer the question, but I
19 would agree that there needs to be a very strict base line set.
20 And business as usual probably should be the base line.

21 MR. GRANIERE: Excuse me. But if it is business as
22 usual, and all of the business as usual is cost-effective, and
23 you did all the cost-effective stuff that is out there, then by
24 definition anything above the business as usual is above
25 avoided cost.

1 MR. MOLINE: Yes, we are getting into -- I mean --

2 MR. TRAPP: In that regard, should it be the programs
3 that don't meet RIM but do meet TRC.

4 MR. MOLINE: I'm not going to go there, but I will
5 say that I'm not going to answer that question, directly. But
6 what we are proposing is that the budget only be spent on
7 activities that are above avoided costs. So implied in what I
8 just said, I think, is my answer.

9 MR. KRASOWSKI: Another comment, please. Bob
10 Krasowski.

11 In terms of -- sorry. But we need for the public in
12 here, not just the utilities. As far as we perceive it, much
13 of the energy efficiency and conservation has already been paid
14 for in the marketplace over the last 20 or 30 years. So it
15 seems most appropriate, instead of doing like a cap and trade
16 type of deal, if we did a cap and tax, then the tax money could
17 go to supporting programs that could feed into this or,
18 something we are real interested in, just our little group, is
19 setting standards, the new standards on more efficient
20 appliances and in dealing with the financial challenges that
21 that raises.

22 But there is no reason under the circumstances that
23 we are facing today that inefficient washing machines and
24 refrigerators and pool heaters and pumps should be allowed. We
25 should raise the standard like we have done with air

1 conditioning, the standard is elevated, and we shouldn't just
2 leave it up to the utilities to do this. We have to develop a
3 new mechanism for putting a push on realizing the benefits of
4 what we have already paid for so we don't have been to pay
5 twice.

6 Thank you.

7 MS. HARLOW: Thank you. I think we would like to
8 give you our court reporter a well-deserved break, and our
9 brains a break, and take maybe ten minutes and come back.

10 Thank you, Mr. Moline.

11 (Recess.)

12 MS. HARLOW: Let's go back on the record.

13 I would like to thank everybody for your continued
14 attention. I know it has been a long day and a lot to absorb,
15 but I would like to put Ms. Rose in the position of adding to
16 that. She would like to give us a presentation on Vote Solar's
17 position for an RPS.

18 Gwen.

19 MS. ROSE: Thank you, Judy.

20 And I think a lot of what I am about to say has
21 already been said, particularly in the set-aside and multiplier
22 discussion, so I will try and sort of synthesize a bit of that
23 and do it as quickly as possible.

24 Just quickly, our organization is the Vote Solar
25 Initiative. We are a nonprofit. We are working in states

1 throughout the U.S. to -- with the goal of fighting global
2 warning and developing solutions to energy independence. And
3 we think solar is a critical part of that solution. We have
4 more than 10,000 members in the state of Florida.

5 Key points. We feel the distributed solar provides
6 some real and quantifiable benefits to the grid and the people
7 of Florida. We feel that to really obtain the benefits of
8 solar power, the state should develop a program aimed at really
9 creating a self-sufficient solar industry. And if you do that
10 with sustained support, we will see the unsubsidized costs of
11 PV declining, approaching retail grid prices in the next
12 decade, at which point you will have the solar as a main stream
13 energy solution.

14 So, of course, the problem for distributed generation
15 solar under a RPS structure is that a traditional RPS where all
16 eligible resource are competing, it is effective in supporting
17 least-cost projects. But least-cost projects may not be the
18 only objective. We might be trying to get at, you know, a true
19 portfolio, diverse energy sources, maximizing in-state job
20 creation, all of these things that we have talked about.
21 Another problem with distributed generation is the cost issue.
22 Traditional RPS is generally dealing with wholesale rates,
23 central station technologies. We are really focused on
24 distributed generation, which is a retail rate technology. And
25 then there are solicitation barriers faced by smaller solar

1 projects.

2 So, of course, part of the reason we are here,
3 Governor Crist has is executive order which provides us some
4 policy direction at the highest level. We are trying to open
5 markets to clean renewable energy to avoid future greenhouse
6 gas emissions, with a strong focus on solar and wind. And I
7 think the key there is trying to open markets.

8 To back up, I think distributed generation -- there
9 has been some discussion about whether or not we should really
10 provide differential treatment to different technologies. And
11 I think that solar deserves differential treatment, because,
12 first, from the distributed generation standpoint, it provides
13 reliability and security, helps consumers reduce the monthly
14 energy bills. When system are located near loads they help
15 defer transmission and distribution repairs, upgrades to
16 infrastructure, and reduce -- and when it is sited near loads,
17 it also helps reduce transmission and distribution line losses.

18 And with enough penetration it can, in fact, help
19 defer capacity. I think it is important, also, if we are
20 talking about solutions like nuclear, clean coal, these things
21 aren't going to be available for the next 15 years, 20 years,
22 you really want to try and defer as much capacity now with
23 energy efficiency and renewable energy so that you can get to
24 these technologies when you really do need to build your base
25 load. Those technologies are available in the future.

1 And then why solar helps with peak power. It's
2 Florida's best zero emission energy generation resource. There
3 is really unlimited technical potential you have. It is a
4 ubiquitous fuel source, empty roof tops throughout the state.

5 And then as far as job creation goes, it provides
6 more jobs per installed megawatt than just about any other
7 energy resource.

8 So this really gets at the underlying structure for
9 what we are proposing. If you want to be successful in opening
10 an solar market, there are a couple of things that need to
11 happen. And these are lessons that we have learned looking at
12 state solar programs in New Jersey, Colorado, California, Japan
13 there needs to be a long-term commitment. It needs to be
14 predictable, reliable, easy to use. You want to leverage
15 private investment so you can use public monies as efficiently
16 as possible. And you really want to try and include large
17 scale commercial and small residential. And with these
18 elements, you can encourage the private sector to invest
19 significant capital to build the infrastructure in Florida and
20 bring costs down for solar.

21 So here is our strawman proposal. What we are
22 suggesting is a two percent solar photovoltaic, a two percent
23 solar thermal, carve-out ramped up over 12 years. And we
24 start -- we suggest that you start out very slow. So in year
25 one you would have 3,000 -- 3,007 percent for PV. And then,

1 you know, point one percent for solar thermal. We wouldn't
2 suggests, as in the FPL proposal, that you jump straight to two
3 percent solar and expect people to pay \$200 a megawatt hour for
4 solar RECs. We know that that is prohibitively expensive. So
5 you start with a small requirement when the cost of solar is
6 high, and then as the market builds, you see cost decline, and
7 that would ramp up. That requirement would ramp up slowly.

8 The key elements for this type of program we would
9 suggest. So explicit annual targets, compliance using solar
10 renewable energy credits. We have talked a bit about that.
11 There would be a couple of safety valves for the price. One
12 would be a solar specific alternative compliance payment. This
13 would be set at a level that is somewhat higher than the
14 expected market value of the RECs. And then you would set it
15 for a number of years at a declining schedule.

16 So, for instance, in New Jersey the way they have set
17 it, I think they have set an eight-year rolling schedule for
18 their solar alternative compliance payments. I think year one
19 is something like 400 or \$500 a megawatt hour, and that
20 declines by three percent each year. So that's one. The solar
21 alternative compliance payment would set a basic ceiling to the
22 cost of the solar renewable energy credits. And then you would
23 have an affordability cap. Here we recommended a one percent
24 affordability cap. That would bound program costs to one
25 percent of total electric revenues over the life of the

1 program.

2 So, again, this is just a layout of what the
3 objectives would be. You would be slowly ramping up your
4 capacity over 12 years, and then you would have your cost of
5 the program declining. This is, of course, the maximum that
6 the program would cost based on that solar alternative
7 compliance payment. You would actually expect the costs to
8 comply to be lower, because the value of the SREC is set in the
9 market is expected to be lower than that.

10 Something that we think is important -- that would be
11 an important component of a solar program under the RPS would
12 be making markets for small commercial and residential systems,
13 and these customer would continue to need some sort of an
14 upfront incentive. And this is handled in a number of
15 different ways by different states. So in Maryland they
16 basically have it so that you are buying solar renewable energy
17 credits up front for the lifetime of the production. Colorado,
18 they do, I think, a rider on their rates for a small incentive
19 for mid-sized and small systems, or some states do it through a
20 systems benefit fee.

21 And then what this program would achieve by the end
22 of 12 years, you would expect to have four gigawatts of solar
23 PV, 105 million square feet of solar thermal, which is
24 equivalent to about six gigawatts. You would have a
25 self-sufficient solar industry that can deliver systems

1 competitive with retail electricity prices. You would add at
2 least 60,000 new jobs to the state, help meet your climate
3 change goals, and then you would be helping to -- you would be
4 protecting ratepayers by diversifying the energy mix. We have
5 oil prices reaching one hundred dollars a barrel. And Florida,
6 as far as any state goes in absolutely terms, uses the most oil
7 for electricity generation. You know it's important because it
8 would help hedge against these volatile and increasing natural
9 gas and oil prices. And then it would further protect
10 ratepayers by capping total program costs at some percentage.
11 Here we have suggested one percent.

12 So we have seen that there is a lot of support for an
13 aggressive solar program. This is some of the groups and
14 organizations that have supported our proposal: Union of
15 Concerned Scientists, Environment Florida, Sierra Club,
16 FlaSEIA, Solar Alliance, Ted Turner Enterprises.

17 And then I also want to note that the public support
18 for this is enormous. A poll done by Mason-Dixon, February of
19 2007, asked Floridians if they think the Legislature should
20 support solar. Ninety percent of Floridians said that they
21 thought the Legislature should support solar; 78 percent of
22 those said that they would be willing to pay up to a dollar a
23 month on their utility bills to see it happen. So I would just
24 argue that it's -- I don't think that Floridians are agnostic
25 to what technologies get developed in Florida as part of a

1 renewable portfolio standard. I think they want to see clean
2 renewable energy, and I think they really -- I think solar in
3 the sunshine state really resonates here. And I think that's
4 it.

5 MR. TRAPP: Just a technical question on Page 10.
6 Are we to take these numerical values on Page 10 literally or
7 figuratively? And I'm looking at \$500.

8 MS. ROSE: That is just a calculation of where you
9 might set an alternative compliance payment. So that's --
10 yeah, it's a projection. It's an estimate. I wouldn't take
11 them super-literally. But, for example, that is where New
12 Jersey sets their solar alternative compliance payment. I
13 think the way they calculated it was -- they expect the solar
14 RECs to trade at this level, and then they said, okay, we are
15 going to set the alternative compliance payment 25 to
16 30 percent above that or, you know.

17 MR. FUTRELL: Again, on Page 8 with the suggested
18 solar requirement ramp up, did that assume -- are those numbers
19 based on the one percent rate cap? Is that how you arrived at
20 those numbers?

21 MS. ROSE: Well, yes. Actually, the way that we
22 calculated this, I believe the whole program comes to less than
23 one percent. That was just assuming that -- you know, this --
24 our calculation showed that it could be done for less than one
25 percent. If you had this particular sort of ramp-up, and that

1 is based on assumptions about how costs will decline and how
2 rates will increase, and --

3 MR. GRANIERE: Gwen, Bob Graniere. Just for
4 clarification, just so I know for certain, the proposal was to
5 spend the entire affordability cap on solar?

6 MS. ROSE: No. That's to bound total program costs.
7 We would expect that it could be done less than that.

8 MR. GRANIERE: Do you have an idea?

9 MS. ROSE: You know, in the presentation I actually
10 gave to the Commission I had a low ratepayer impact and a high
11 ratepayer impact. The high one was based on that one percent.
12 And the low one, I don't have it here with me. But, yes, we
13 have done that calculation. I'd be happy to make sure you get
14 it.

15 MR. WALLACE: Hi. My name is Wayne Wallace. I have
16 a comment, also, to make. Wouldn't utilities want to endorse
17 solar applications on the customer side if we had, like,
18 decoupling of sales from profits, something that they have done
19 in California that has made them way more energy efficient
20 than -- you know, of course, each person in California -- I
21 have heard they are the most energy efficient in the country,
22 and that has really pushed utilities to push energy
23 conservation and also endorse and embrace solar energy.

24 I would also like to make another comment. This
25 Mason-Dixon poll of Floridians wanting to pay up to a dollar a

1 month on their electric bill to endorse solar is pretty bold
2 and pretty substantial. I wonder how many Floridians would
3 want to pay a dollar a month to, you know, do more nuclear in
4 Florida?

5 MR. HANSEN: I have a comment, not on nuclear.

6 My name is Gordon Hanson, homeowner, Chuluota,
7 Florida.

8 I like your presentation, but one thing that bothers
9 me a whole bunch is everybody is talking about PV panels. PV
10 panels are 10 percent efficient. Solar hot water panels are
11 about 70 percent efficient. Solar hot water panels cost 28
12 times less than a photovoltaic panel. With your 11,000
13 members, it seems to me that instead of pushing photoelectric
14 you would be pushing thermal.

15 MS. ROSE: And, in fact, our suggestion is for a
16 solar thermal carve-out as well as a photovoltaic carve-out.
17 Solar thermal is fantastic. You know, if the majority of
18 Florida is using electricity to generate hot water, solar
19 thermal makes a ton of sense, and so that's why we think there
20 should be a carve-out. But we are also looking for a
21 generation sources, as well.

22 MR. HANSEN: Okay.

23 MS. ROSE: So we are supportive of both, and we
24 include both.

25 MR. HANSEN: I understand that. But you realize that

1 according to the government, that a single homeowner could save
2 \$600 a year on his electric bill, one-third of his electric
3 bill, just by putting in a solar hot water system and save
4 5,000 pounds of pollution. And if you carry this through the
5 United States, the saving to the nation's homeowners is
6 \$72 billion a year. This saves 600 billion pounds of CO2
7 pollution each year, CO2. It would save 112 coal-burning power
8 plants of one billion watts each. It would reduce power
9 consumption by 980 billion kilowatt hours each year, and save
10 one thousand one hundred billion pounds of coal being mined
11 each year, and it would save Mother Earth mountain top removal
12 coal methods. And this also would apply, naturally, to nuclear
13 power.

14 So if you are interested in these kind of numbers, I
15 have all the facts right here on an eight-page dissertation of
16 how all of this information is derived. And why in the world
17 we are not -- when we talk about conservation, we are not
18 talking and pushing solar hot water heating systems? If one
19 house, a new home, a new home put in a solar hot water heating
20 system, and two existing homes added a solar hot water heating
21 system, the impact on the electric utility would be zero. Do
22 you understand what I'm saying? That would offset. Two old
23 homes putting in a solar hot water heating system, one new home
24 being required to put on their hot water system, they would
25 cancel out the need for additional power.

1 And when you carry this through, in Florida with all
2 the sunshine that we have -- and, of course, these solar hot
3 water systems work in any climate, even in Alaska. It's just
4 you don't get quite so much. But if you carry this through,
5 there is no need for any nuclear power plants in Florida or
6 coal-burning power plants in Florida for the next 50 years.

7 So I'm advocating and will continue to push for the
8 new codes, building codes, so everybody would have to -- would
9 be required to have a solar hot water heating system. And then
10 eventually over a ten-year period, all existing homes would be
11 required to have a solar hot water heating system.

12 Thank you very much.

13 MS. HARLOW: Mr. Hansen, thank you. And I would
14 appreciate if you would give me a copy of that document for the
15 record. And I was pleased to notice that all three proposals
16 we have heard today included solar thermal systems.

17 Gwen, if you will indulge me, I would like to take a
18 break in the questions on your presentation. Mr. Barber is
19 here for Florida Crystals, and he has a brief statement, and he
20 also has a plane to catch.

21 MR. BARBER: Thank you. My name is Paul Barber, and
22 I'm representing Florida Crystals today. Florida Crystals, ten
23 years ago, invested hundreds of millions of dollars in what
24 today is one of the largest biomass generating plants in North
25 America. And they have been operating that plant for the past

1 ten years and have achieved a remarkable record. And this is
2 not only a great resource for Florida, but also for the United
3 States.

4 There can be no doubt that Governor Crist's
5 leadership has catapulted Florida into the forefront of
6 reducing greenhouse gas emissions and developing renewable
7 energy. Specifically in regard to today's agenda, Florida
8 Crystals would like to recommend that Florida should not
9 segment its renewable energy production with set-asides or
10 multipliers before new technologies have had a chance to
11 develop further. The RPS should be developed further with
12 overriding policy goals without a predisposition as to what
13 technology or methods should be used to meet those goals. This
14 is not a long-term recommendation, but Florida Crystals
15 believes that over the next two to three years the market
16 should be allowed to develop broadly before a specific
17 segmentation should take place.

18 The development of new renewable technologies is
19 rapidly advancing in many parts of the country, including
20 Florida. Many promising technologies have not yet had the
21 chance to be perfected and tested on a commercial scale. The
22 renewable technologies that will be most beneficial to Florida
23 in the next 20 years have probably not been perfected yet.
24 Once a technology has been set-aside with a designated market
25 segment through an RPS rule, it's almost impossible to reduce

1 that segment's market allocation and reallocate it to another
2 technology, even if the other technology proves to have a
3 greater benefit for Florida.

4 In other states, the RPS process has been one of
5 evolution and refinement over time. The Florida Public Service
6 Commission should proceed with caution in earmarking market
7 segments to any existing technology. An annual goal which
8 increases each year for renewable energy could now be set in
9 line with meeting the 20 percent renewable energy goal called
10 for in the Governor's executive orders, and segmentation could
11 take place at a later time when more is known about what
12 technologies would prove to be most beneficial to Florida.

13 Another important issue that should not be lost sight
14 of is that the purpose of the Florida RPS is to facilitate the
15 development of renewable energy in Florida, not in Texas or
16 California or some other state. To allow the purchase of
17 out-of-state RECs to meet a Florida RPS standard will frustrate
18 the development of an in-state renewable energy market. It
19 will not reduce greenhouse gas emissions in Florida. It will
20 not diversify the fuel mix in Florida. It will not protect
21 existing renewable resources. It will export the economic and
22 technology development opportunities that would exist in
23 Florida, and they will be developed in other areas outside of
24 the state. In essence, allowing out-of-state RECs could be a
25 way of stunting and impairing the development of the renewable

1 energy market in Florida.

2 Finally, existing renewable resources that have
3 already been developed in Florida should be included in the
4 RPS. Existing renewable facilities have had to spend
5 significant resources to operate and conform with environmental
6 requirements and to remain competitive with new technologies.
7 An RPS offsets long-term market stability and the means for
8 these facilities to remain viable. Exclusion from the RPS
9 would regulate these facilities to an inferior class, and that
10 would certainly have a long-term detrimental effect on the
11 economy of Florida.

12 Thank you.

13 MS. HARLOW: Thank you, Mr. Barber.

14 Did we have any further questions for Mr. Barber or
15 for Ms. Rose from anyone?

16 MR. GRANIERE: I have a question. Go ahead.

17 MR. SMITH: Good afternoon. My name is David Smith,
18 and I'm with U.S. Solar Energies, and I represent four
19 companies, based -- operations are based in Jacksonville,
20 Florida. We manufacture solar thermal water heating systems,
21 and we sell a number of other renewables, including
22 photovoltaics. One of our companies does installations and
23 sales of commercial and residential solar electric and solar
24 water heating systems. Solar pool heating, as well.

25 And my point would be to add to the Vote Solar

1 initiative the comments and, of course, they were amplified by
2 Mr. Hansen, as well, that if we could find out how the
3 utilities could help builders be motivated or incented to put
4 solar water heating systems on new home construction, you could
5 increase the efficiency of the home, produce electricity -- and
6 he gave you the -- I mean, offset electricity production. He
7 gave you the figures that are pretty outstanding. And you
8 avoid the initial cost of putting in a piece of equipment that
9 would have to be retrofitted later, such as a solar water
10 heater by electric or gas.

11 This proposal makes sense. It's economic to the
12 ratepayer. The incremental cost of a solar water heating
13 system that might cost four or \$5,000 on a 20 or 30-year
14 mortgage is less than the energy costs that it would save, and
15 that is at today's rates. So you have got an instantaneous
16 payback to the ratepayer and a job creator, and it would help
17 offset and shave peak, at least in probably half of Florida.
18 Certainly the northern third of Florida it would also shave
19 peak on cold winter mornings. And several utilities are doing
20 studies on that. And I know there are other folks in here that
21 could amplify some of the details. I know the folks at FSEC
22 have done numerous, numerous studies on this.

23 I think the real critical thing, and I know the
24 Public Service Commission isn't regulating home builders and
25 they have their own set of issues, but if there is a way to try

1 to come up with something innovative in an RPS that would help
2 utilities or building and code people motivate or -- unless you
3 want to mandate it, which you probably don't have the
4 capability to do, but those kind of things really make
5 cost-effective sense, and they can begin to be implemented
6 immediately and have a very significant impact.

7 I'll just repeat one more time, the benefit of the
8 energy produced on the thermal side is much more cost-effective
9 than generating electricity. Obviously, there are things you
10 can do with electricity you can't do with hot water, but still
11 it's electricity and energy all the same. So there should be
12 some consideration.

13 We are trying to put together, you know, some kind of
14 a statement that might be a recommendation, which I know would
15 be helpful. But because you are dealing with the building
16 industry as well as the utility and energy industry, there are
17 some challenges that could be looked at favorably in an RPS, I
18 believe.

19 MR. GRANIERE: Bob Graniere.

20 The first question about the solar, is it the
21 position that it's the upfront cost that is stopping these
22 solar panels?

23 MR. SMITH: That is a significant impact on the
24 perception of buyers is that -- you know, people seem to want
25 to have things instantaneous. They don't want to wait three,

1 four, five years to have a system pay for itself, so that
2 upfront cost is an issue. On new home construction, the
3 builder is motivated to go in with least cost to get something
4 sold, and he is really not concerned about the operating cost
5 of the homeowner, generally speaking.

6 MR. GRANIERE: And did I hear correctly when you said
7 that in your opinion the life-cycle cost of the solar thermal
8 is less than the life-cycle cost of the alternative, is that
9 correct?

10 MR. SMITH: I would say the life-cycle cost of solar
11 thermal would be, you know, maybe 30 years. Life-cycle on
12 solar electric might be 40 or 50.

13 MR. GRANIERE: No, no, no. What I'm talking about is
14 for using regular electricity to heat your water rather than
15 solar. Is that your position?

16 MR. SMITH: Oh, yeah. My position would be that
17 solar thermal costs less than the utility avoided cost today if
18 you look at a 30-year life, or even less.

19 MR. GRANIERE: Okay.

20 MR. JONES: Just a comment for clarification. I have
21 run some numbers on just the Lakeland program. They currently
22 have an RFP out on the street to expand their solar thermal
23 utility program, and our company intends to respond to that.
24 And some of the initial numbers that I'm looking at, levelized
25 costs, we are looking at the kilowatt hour of hot water rolled

1 up over time, considering debt cost, equity return on
2 investment to investors, it turns out about six cents per
3 kilowatt hour.

4 MR. GRANIERE: So is that higher or lower?

5 MR. JONES: I don't know what Lakeland's avoided cost
6 is, but that is my levelized cost over a 20-year period.

7 MR. GRANIERE: Okay. This one is for the utilities.
8 Since this sounds like such a great deal, why doesn't the
9 utility have a program that just pays for the solar panel and
10 then put it into rate base?

11 MR. SMITH: Some utilities do. I don't think -- JEA
12 may or may not be represented, but JEA, and Progress Energy,
13 and the Orlando Utilities Commission, I know they are
14 represented, they are doing programs to help motivate folks to
15 put these systems in and enjoy that within their territory.

16 Part of the problem is that it's the homeowner that
17 gets motivated, not the builder. And the homeowner, I think,
18 needs some help with the builder to get it done so that we can
19 avoid that initial upfront wasted cost of a standard water
20 heater. It's a key point I'm trying to make.

21 MR. GRANIERE: Well, I understand that. What I'm
22 trying to say is was to any utility who wants to answer, is
23 what's wrong with paying for the upfront cost of the solar
24 thermal water heater and then putting it into rate base and
25 earning a little return on it just like it was something else?

1 And then you don't have to worry about motivating builders and
2 consumers and everything, just the utility pays it. What is
3 wrong with that?

4 MR. WALLACE: This is Wayne Wallace. Maybe I can
5 make a comment on that. I think the belief or the consensus is
6 that a solar water heater saves too much money. It simply
7 saves too much money. I mean, if there are nine million homes
8 in Florida and two million people put in a solar water heater
9 and they save \$30 a month, I mean that is a heavy impact on
10 utilities. And if they simply can't -- you know, if policy
11 isn't changed, I don't know how that needs to work in the
12 structure of it all. Where if utilities were incentivized for
13 that -- and I guess that is what you are kind of saying is if
14 they were incentivized for that, I believe they would do it,
15 but it doesn't appear that they are.

16 MR. GRANIERE: I mean, it's just an observation.

17 MR. REEDY: Bob?

18 MR. GRANIERE: Yes.

19 MR. REEDY: Bob Reedy. You are asking what is wrong
20 with it, and I would flip it around and say it is absolutely
21 what the utilities do today. They put capital investment in
22 the ground or in the air, and they generate energy, and they
23 distribute and sell that energy. And that's exactly what this
24 is. It is done successfully, and I think there are probably
25 some mechanics, especially for the investor-owned utilities,

1 that need to be addressed by the Commission, but it is a
2 beautiful business model. And its all in costs are in the
3 range of what is going on with conventional generation right
4 now. And especially, as Dale said, when you go at it in a big
5 way you get those costs really down. But they are selling
6 energy, they are not -- you know, they are just owning the
7 equipment and selling the energy, rate-basing it. What's not
8 to like?

9 MR. KRASOWSKI: I would like to speak to this. Okay.
10 Why would we want to insert the utility in on this deal? I
11 mean, what are you trying -- excuse me. I don't see the logic
12 in that. If you were to just make the standard that a new home
13 would have a solar hot water heater there, and we know that a
14 new home with the solar hot water heater and the cost saving in
15 electricity, when you compare the cost of that and the mortgage
16 to the mortgage and paying electricity for an electric hot
17 water heater, you're paying the same amount or less with the
18 solar. So why do you have to interject a utility in this?

19 All we have to do is make a requirement of that, and
20 we are well within our right. Because if we keep bringing an
21 electric hot water heater when we have the clean solar option,
22 then we have to build the coal plant or the nuclear plant to
23 satisfy the need for that electricity. So this could be done
24 totally independent of the utilities, and I think there is a
25 strong case here now, based on this conversation, for creating

1 a new entity that represents clean energy in Florida and takes
2 it out of the realm of the existing utilities who are in
3 conflict of interest in their own interest to implement these
4 programs.

5 And maybe that's the next step that we will be
6 interested in talking to you about, because if we have this
7 obviously beneficial situation and somebody is trying to create
8 a need for the utilities to be involved, it's just totally
9 weird to me.

10 MR. GRANIERE: Well, I can answer your question for
11 you.

12 MR. KRASOWSKI: Thank you.

13 MR. GRANIERE: It's the reason I drive a Pontiac and
14 not a Cadillac.

15 MR. KRASOWSKI: Why is that?

16 MR. GRANIERE: I can't afford the Cadillac.

17 MR. KRASOWSKI: It is not a matter of not affording
18 the hot water heater. It's no more cost to buy a home with a
19 solar water heater than an electric hot water heater, but we
20 receive the benefits by avoiding building dirty power plants.
21 I mean --

22 MR. GRANIERE: What I'm trying to say is that I just
23 don't have -- the argument here is there are a bunch of people
24 who just don't have the money to put it out in their mortgage
25 or put it out to buy it up front. That's what I am saying.

1 MR. KRASOWSKI: It doesn't cost any more, and the
2 Florida Solar Energy Center research shows that. So what more
3 do we need? What am I missing? Could you explain it to me?

4 MR. GRANIERE: Yes. I just did. I don't have -- the
5 people either don't have the money to take it out of their
6 pocket today to put in the system today at \$5,000 and then
7 recoup it on the way back. They either don't have that, or
8 they don't have the money to increase their mortgage by \$5,000
9 so that they can buy the house that they want. They just
10 cannot afford it. That's the basic argument. And what I'm
11 saying is that for those people who cannot afford it up front,
12 that's my solution.

13 MS. HARLOW: I think we are getting a little far
14 afield here. Let's get back to our agenda. Although this is
15 all very interesting, I wanted to address compliance
16 verification for something that avoids energy. Everyone here
17 has suggested that solar thermal be included. I think there is
18 some agreement on that. Agreement is good. But how do we
19 include something that is avoiding energy, and the same will be
20 the case with energy efficiency that has been mentioned, or any
21 other technologies that avoid electricity usage. How do you do
22 that? How do you meter it? I know that Dale has some
23 experience in this. Perhaps he could help us.

24 MR. JONES: Yes. And, actually, there are. In
25 Europe it is very common to have energy meters, as they are

1 called, and -- Dale Jones. And these energy meters just
2 measure the thermal energy. It is thermal mass. It is the
3 differential in temperature times the volume of water, and it
4 calculates a Btu, or a horsepower, or a kilowatt hour, and it
5 is just a unit of energy.

6 So there are methods of measuring that hot water that
7 is being produced, and one of the things I've always said is
8 that a solar water heating system is a demand-side measure or
9 an energy conservation measure until you put a meter on it.
10 Now it becomes a production measure. And then to some degree
11 who owns that system and who operates it, and whether you are
12 selling the energy now sort of splits it out between an
13 efficiency measure and a demand-side measure versus a
14 production device. And, when it comes to efficiency, you know,
15 I have my own personal thought that some of these efficiency
16 standards, you know, we can certainly calculate.

17 And there are performance verification methodologies
18 that are well known. But one of the things that I see in some
19 of the other states, like, for instance, Colorado, when they
20 pay the REC value for 20 years going forward, there is no
21 verification that that system will stay operational for the
22 full life of the system. So, you know, I would propose that,
23 you know, we could set up a schedule, perhaps, you don't force
24 anybody to put a meter on it, but then you live with the
25 depreciation schedule, that year one you get, let's say,

1 90 percent of the engineering estimate of what this system will
2 do, and then the subsequent years you drop that by 20 percent,
3 unless someone comes out and validates that it's still
4 performing to its original specifications. And at that point
5 that person might then, quote, metaphorically reset you right
6 back to that 90 percent level.

7 So if you chose to have annual performance checks and
8 verification that the system was still operating under the
9 design parameters, you could maintain that 90 percent of the
10 calculated or 100 percent of the calculated energy savings. In
11 lieu of that, put a meter on it, and it's pretty well, you
12 know, rote how much energy this solar system will make.

13 And I think the same thing with the efficiency
14 measures. You could have tables of deemed savings and then
15 depreciate those over time. You know, the screw in compact
16 fluorescent versus the hard-wired compact fluorescent. Maybe
17 the screwed-in one gets taken out and the incandescent one goes
18 in, and that does in some cases happen. But you might have
19 different tables of deemed savings and depreciation schedules
20 for those.

21 But one of the things in principle I'm not
22 comfortable with is granting someone a certain efficiency
23 reduction kilowatt hours of energy savings forever. And that,
24 to me, doesn't make a lot of sense. I mean, I have been
25 practicing in the conservation efficiency renewable area for 28

1 years and systems, air conditioning, solar, you know,
2 refrigerators, everything tends to have its sort of useful
3 life, and things happen, and they go out of service. So I
4 think in terms of them metering, I think there are
5 well-understood methods for metering solar water heating
6 systems and photovoltaic systems. And then just nonmetering
7 deemed savings, engineered savings, and then perhaps give them
8 the depreciation schedule.

9 It is up to the consumer whether they want to sell
10 their RECs, perhaps, you know, knowing that five years from now
11 their REC values have gone to nil because they haven't had the
12 system sort of checked, verified, and made sure that it is
13 operational. And it makes sense for the homeowner, too. You
14 would want to -- you know, you wouldn't any more operate your
15 car without ever getting it checked, and you certainly
16 shouldn't operate your air conditioning system without it ever
17 getting checked, and you probably shouldn't operate a solar
18 water heating system without it ever getting checked.

19 MS. HARLOW: Do you know, or perhaps Gwen knows, in
20 the states that are using RECs from individual systems, and I
21 know we have addressed solar a good bit today, but just use
22 solar as an example. Are those systems required to be metered,
23 either for something that avoids energy or something that
24 produces energy?

25 MR. JONES: Well, in the case of Nevada they are

1 actually just taking engineering estimates for the solar water
2 heating systems and using OG100 or 300 protocols to sort of
3 estimate it. And New Jersey, they are using an engineering
4 estimate. They have the ability to go back and audit to make
5 sure that that system does work, but less than ten kilowatt
6 systems in New Jersey are not required to be metered, that you
7 can use engineering estimates. And, there again, I just feel
8 that sense from consumer confidence and the ratepayer -- I
9 mean, you should have some sort of performance verification at
10 some time during the life, if you don't have the audible
11 metering to make sure that the system is operational.

12 MS. HARLOW: And are you aware who is performing that
13 auditing function?

14 MR. JONES: The BPU when they originally came out
15 with their program, the third party -- the entity that operates
16 the REC registry is responsible for verification. I'm not
17 sure, but I believe what they do is they do a random -- the
18 thought was originally when they put out the RFP for the entity
19 that was operating the registry, that that entity would provide
20 some sort of statistical basis to make sure that what they are
21 predicting is actually happening, so they have the ability to
22 go out and look at any one particular site address and make
23 sure that really the system is really there. And then, two, it
24 is, you know, on the roof, outside of the shade, and it really
25 is still there.

1 MR. SMITH: May I add -- this is David Smith with
2 U.S. Solar Energy. The state requires, Florida requires that
3 manufacturers get systems and equipment, such as solar panels,
4 certified by the Florida Solar Energy Center, represented by
5 Bob Reedy. So we know that the engineering is done, tested,
6 and certified, and verified. So the original energy
7 production, whether it is electricity or thermal, it's still
8 energy, is set. I agree with Dale that metering over the
9 long-term is the ideal way, but knowing that a system is
10 working and that it has been a certified system, which is
11 required here in Florida that those only be sold, gives you an
12 effective way to understand, you know, how much energy is going
13 to be delivered by that system over time.

14 MR. TRAPP: Would you agree, or should I say would
15 anyone disagree that, to the extent we can, we should extend
16 our policies down to the smallest kilowatt hour of savings to
17 encourage everyone to participate?

18 MR. JONES: Well, as a person who has been involved
19 in the REC markets and now on these distributed systems, I
20 think it really gets down to the business model that makes
21 sense. I mean, you know, you have a certain amount of revenue
22 that these things can generate in terms of if you are -- you
23 are in the business of putting a system in and then conveying
24 the RECs to a utility or some other party and selling the
25 energy. It is probably going to get down to what is

1 economically viable. So you really want to try to reach down
2 and get those systems, you know, and take those RECs out of
3 someone's backyard, but to some degree it gets down to -- if
4 there is a requirement, let's say for metering, then how do you
5 get that data to an aggregator in a cost-effective way so that
6 they can take those RECs to market? Because a REC is, in most
7 states, a one megawatt hour. So one REC is about what a single
8 residential system, a solar water heating system, or a two or
9 three kilowatt photovoltaic system was going to produce in one
10 year. So, you know, you have to sort of ask if there is this
11 cost of a REC of \$20, I mean, what's the transaction cost just
12 to get that one megawatt hour to market?

13 MR. TRAPP: Well, it requires some innovation it
14 seems to me. I think you just referenced that in Nevada less
15 than ten kW they kind of do an honor system. And, you know,
16 okay, fine. I'm a residential customer. I buy a solar thermal
17 water heater for my house, and it comes with a little
18 certificate that says, hey, you get ten RECs or whatever,
19 assuming ten kilowatt hours are going to be produced by the
20 thing until somebody actually comes out and reaudits it, or
21 something like that.

22 I mean, it seems to me you could do a promotional
23 program of that nature, and, hey, the customer has got a piece
24 of paper that incents him a little bit more to buy the thing,
25 and then puts him in communication with whoever is going to

1 redeem the REC, who then has a contact to promote him to buy
2 even more stuff. It is called marketing.

3 MR. JONES: And that is a perfect model when you can
4 get every -- I mean, the utility to put some skin into the
5 game, the homeowner to put some skin into the game, and, you
6 know, that's a perfect balance when the utility doesn't have to
7 pay for it all, or the homeowner doesn't have to pay for it
8 all. So, you know, it is a perfect balance. But from having
9 been in the industry a long time, I really like the idea of
10 performance-based incentives, which, in essence, a REC is. You
11 know, it is no tickee, no washee. I mean, you don't produce
12 the energy, you don't get the REC.

13 And I have to say that it's conflicted a little bit
14 in the balance of, you know, how do you assure that those small
15 systems can still play in the market. So the only practicable
16 way to do that is really probably through engineering estimates
17 for small systems. And there are certainly technologies now
18 that are in the forefront, the AMI. There is no reason why
19 meters can't pull the data, you know, and push it out through
20 an AMI system.

21 So, you know, as we see, you know, advanced meter
22 interfaces coming into play for these solar meters or
23 controllers to basically push that one pulse per kilowatt hour
24 out to an AMI system and then be collected. It's certainly the
25 great -- you know, it's the Holy Grail in terms of an

1 aggregator. You just don't have to touch it. You just get
2 flat files of data and site addresses, and then the homeowner
3 is, basically, just given a payment either upfront for all of
4 the RECs going forward, or you cash them out at the end of the
5 year, or something like that. But I would certainly like to
6 see that, you know, the Commission try to include these smaller
7 systems into this RPS.

8 In California they are really having this difficulty,
9 and I believe, you know, they potentially could strand a lot of
10 these individual homeowners because they don't have the meters
11 or they don't -- they are less than this size or that size.
12 And, you know, I certainly think that we should try to make
13 every effort that we can to include, you know, RECs for small
14 systems.

15 MR. COOKE: Chris Cooke with SunEdison. If I could
16 just add to that. Colorado and New Jersey use an engineering
17 estimate for their systems less than ten kW equivalent.
18 Maryland's draft rule for its solar program, I think, are going
19 to follow the same, and they were just using engineering
20 estimate for ten kW and less to address those issues that you
21 have raised.

22 MR. GRANIERE: So if I understand what this all said,
23 is it said that some of the RECs will not be verified but will
24 be estimated.

25 MR. JONES: Yes, that's correct. And it is not like

1 we are really departing from DSM programs. Right now you are
2 doing estimates and engineering estimates and performance
3 verification, so it's not like we are really treading in new
4 ground here.

5 MR. GRANIERE: No, no. I'm not saying that. I'm
6 just saying that, you know, it seems to me that the purpose of
7 this particular line of questions was how far down in this
8 effort do you actually verify what the REC -- actually verify
9 the REC. And what I'm hearing is that there is a cut-off point
10 below which it is not necessary to actually verify the REC,
11 estimates are okay.

12 MR. JONES: I agree with that, but with some
13 limitations on how long you give somebody credit. You know,
14 and again, in Colorado's program you are giving them an upfront
15 payment of 2.50 -- I think it's 2.50 a watt, I think.

16 MR. COOKE: It is \$2 a watt.

17 MR. JONES: Two dollars a watt, plus --

18 MR. COOKE: But in consideration of that \$2 a watt,
19 you give up your RECs for 20 years, I believe.

20 MR. JONES: Twenty years, yes.

21 MR. COOKE: Twenty years.

22 MR. JONES: With no real understanding whether 15
23 years from now the system is still there working and so on.
24 Okay.

25 MR. GRANIERE: I understand that. I was just trying

1 to, you know -- what this is reminding me of is the early days
2 of time-of-day pricing. And the Rand Corporation and Richard
3 Mitchell who just couldn't make up his mind whether metering
4 costs were or were not too expensive. You know, he started out
5 saying great idea. Later on he came back and said that is a
6 great idea. And then he came back again and said maybe it is a
7 good idea. And it had all to do with the cost of metering.
8 And that's what I'm hearing.

9 MR. JONES: And I have to tell you I think, you know,
10 as a percent of the total capital cost of a photovoltaic
11 system, the metering is not very much. Because inverters
12 typically nowadays have that metering. It's just easier to
13 meter electricity than thermal energy. Thermal energy you've
14 got two RTDs, you know, very, you know, highly efficient
15 temperature sensors and a flow meter and a calculator. And
16 actually even when it gets down to the accuracies of a thermal
17 energy meter, the best that you can hope for is an accuracy in
18 the range of seven, maybe eight percent accuracy. Whereas,
19 it's two percent for electricity.

20 But then, again, the nice part about it, as we heard
21 before, is that thermal energy is just -- it takes up ten times
22 less roof area and costs roughly ten times less than PV for the
23 same net environmental benefit, and the same net energy
24 savings, the same dollar savings. So there is the good
25 news and the bad news on the thermal.

1 MR. GRANIERE: Mr. Barber left, but the one thing
2 that I wanted to say on that, and I think I just get a chance
3 to say it to you is that I'm just convinced when everyone does
4 the same thing it's bad. So I like to have a whole bunch of
5 things to happen. So I like the idea of having a whole lot of
6 things, different things doing the same thing than having one
7 thing doing the same thing, you know. I just think of things
8 like natural gas in Florida.

9 My very first economics course which said the fallacy
10 of composition, which basically said if everyone saves, we're
11 in trouble. If everyone spends, we're in trouble. And the
12 deal was if everyone does the same thing, we're in trouble. So
13 that's why I just like to have the multiple stuff going on.

14 MR. GALLAGHER: Bill Gallagher with the Florida Solar
15 Energy Industries Association. I would just like to add to
16 this a little bit.

17 One of the comments was, I'm paraphrasing, if solar
18 water heating is so good, why doesn't everybody have it? And I
19 really don't think it is money. I think it's education. You
20 know, we have been in the industry 32 years, have made a lot of
21 experience, and we are giving seminars maybe once a week, and
22 it all starts out the same way: Ladies and gentlemen, thanks
23 for much for coming. May I ask how many people in the audience
24 today are familiar with the state and federal energy credits?
25 One hand. Okay. And this is not an isolated instance. This

1 is throughout. There is no public knowledge, and it's kind of
2 left to local contractors to get the word out.

3 You know, I brought up at one of the meetings that,
4 you know, possibly a public service message, something to get
5 the word out here, because they have got tremendous programs.
6 You take a domestic hot water system -- I think somebody said
7 \$4,000 is a typical price. Well, if you have \$500 from the
8 state and another \$1,000 from the federal, you are looking at a
9 \$2,500 investment. Well, if you are saving \$400 a year, that
10 is an 18 percent tax free return, tax free on your money.

11 When we sit down with the homeowner and we ask them
12 if that makes sense, they say, well, geez, yes. Why didn't you
13 contact me last week? The problem is that we can't sit down
14 with enough homeowners to educate them. So we need your help
15 to get the message across. It is the most viable. It is the
16 least excessive energy option we have. And, you know, a
17 typical solar water heating system, an 80-gallon system is the
18 equivalent of a two kW electric system. That pretty much says
19 it all. And there is really no reason that people in Florida
20 don't have this.

21 If you think about this, and this has bothered me
22 because I hear it all the time, well, we can't meet Governor
23 Crist's initiative. They are too aggressive. And I scratch my
24 head, and I go, wait a minute. This doesn't make sense. You
25 know, if a solar water heating system would gave 15, 18, 20

1 percent of your utility bill, why can't we meet the Governor's
2 initiative? It's just simply a matter of understanding that
3 these technologies are there. They are inexpensive. They are
4 available. We need to offer them to the public. They need to
5 be made aware.

6 Thank you.

7 MS. HARLOW: Mr. Gallagher, we have had a lot of
8 conversation today about funds that might come from alternative
9 compliance payments or penalties or other things. And it
10 sounds to me like you would be in favor of some of those funds
11 being used for consumer education. Is that true?

12 MR. GALLAGHER: Absolutely. Absolutely, ma'am. I
13 think that is critical to moving this initiative forward. It
14 is probably the single most important thing in Florida.

15 MS. HARLOW: Thank you. I'm looking again at all of
16 these questions I spouted out at the beginning of this
17 workshop, and let me bring up something we haven't touched on
18 yet. But it, again, is on REC verification. Could anyone
19 speak to how we would include multi-fuel facilities? And we
20 have been talking a lot about REC markets, so would those RECs
21 be based on -- how would those RECs be created from a
22 multi-fuel facility, an example comes to mind of co-firing
23 biomass in a coal plant.

24 SPEAKER: I can speak to this. At least at JEA we
25 had postulated how we might deal with that in a co-firing

1 situation. And, basically, you know, just doing a fuel
2 analysis on the eligible fuel that would be going into the
3 co-fire unit, and then put some sort of factor times the heat
4 rate, and there you go. I mean, it is not real rocket science,
5 but if you are going to co-fire, I think -- you know, that
6 blending of the different fuels, you know, it is a good thing.

7 I mean, from an operations point of view, it creates
8 some, you know, operational challenges to operate some of these
9 plants with that, but, you know, I think if you just, you know,
10 take account of the biomass fuel, or the biofuel that goes into
11 it with some sort of fuel analysis and the known heat rate on
12 the plant, you know, I don't think you really need to make it
13 very, very complicated.

14 MS. HARLOW: And in preparation for today, I read
15 several articles that said that line losses should be
16 considered in these type markets, and I just wonder if anyone
17 here had an opinion on that.

18 MR. COOKE: This is Chris Cooke from SunEdison. I
19 think if you look at a tiered structure, particularly a tier
20 that addresses distributed generation as a separate tier from
21 others, you do address that. If you don't have that kind of
22 tier, I think it's incumbent on the Commission's rules to
23 consider the fact that a central station renewable facility
24 versus delivered renewable facility has to incorporate line
25 losses. In addition, there are peaking values and other things

1 that occur when you provide power point of load versus power at
2 a central station facility.

3 One of the things that comes to mind, and this is a
4 decision actually that FERC made in their regional transmission
5 groups, is that for high voltage transmission which serves
6 large central station power plants, those costs are spread out
7 over all the people in the region served by the 500 kilovolt
8 and above market. If you were to take a distributed technology
9 that said we can install plants here where the load pocket is
10 and offset the need for that transmission, that cost is borne
11 fully by the person who offsets the loading. It's a cheaper
12 cost. So we have a lot of disparities built into the system
13 currently that I think are important to keep in mind when you
14 look at these costs and not say let's pretend busbar costs
15 versus busbar costs of different technologies are equal when it
16 comes to the delivered power.

17 MS. HARLOW: What I'm not understanding is if you did
18 take line losses into account, and a REC system was used, and
19 we have had some discussion today about using RECs from other
20 states even, how are those line losses taken into account with
21 a REC market? It seems to me that the REC is just based purely
22 on energy produced.

23 MR. COOKE: And other states have looked at an RPS
24 and both tiers, whether it is a distributed tier or a tier that
25 involves transmission, they usually have a delivery point, and

1 so in order to get a REC, for instance, in most of the states
2 in the mid-Atlantic, the power has to be delivered to the PJM
3 grid. So if it is produced within the grid, it qualifies. If
4 it is produced from outside that grid area, there has to be
5 some demonstration to show that the power actually got to the
6 grid, and then you only get a REC for what you delivered to the
7 grid. So, in theory, if you have wind generators in Minnesota,
8 and you said I am going to ship it across the Midwest ISO to
9 get to PJM, you are going to have to show in PJM what actually
10 got there and get RECs for that, not what you produced at your
11 facility in Minnesota.

12 On the distributed side, they limit it to those
13 plants that are connected and serving the distribution grid in
14 the state. So, again, they are all treated equal. If you had
15 a facility outside the state, you would have to demonstrate how
16 it got to the distribution grid not utilizing transmission in
17 order to qualify for a REC. So they create the equality by the
18 definition of the REC.

19 MR. GRANIERE: I have a question just to go -- before
20 you get really down deeply into this stuff in this part of this
21 metering and verification. Has anybody given thought to an RPS
22 that really doesn't have a REC? Why do you need a REC for any
23 of this stuff?

24 MR. COOKE: You don't. And I think the California
25 RPS is probably the prime example of a major renewable

1 portfolio standard that doesn't involve REC trading. They
2 simply provide incentives through other mechanisms, or on the
3 solar side provide a performance-based incentive that says
4 through a system benefits charge the state will pay you this
5 much for producing power for a five-year period. For their
6 other larger facilities, they simply go to the utilities and
7 say you shall procure next year X numbers of megawatts of these
8 types of renewable facilities, and leave it up to them to find
9 the facilities and how much it's going to cost, and then come
10 in and say this is what we found. We would like approval for
11 this, to put this amount into rates as part of our resource
12 plan.

13 MR. GRANIERE: I mean, I have always wondered that,
14 because it seems to me that what RECs do is -- I just went back
15 to the history of the RECs, and the REC wasn't a renewable
16 energy credit. It was a renewable energy certificate. And the
17 reason it was called a renewable energy certificate, it was
18 something that those people with public -- whatever they have,
19 public citizenry, or whatever they call it, they would go out
20 and put on a solar something or other. And then this renewable
21 energy credit was something that they could sell to like-minded
22 people, essentially, who didn't do that, and then everybody
23 would be happy, right.

24 But, as a renewable energy credit, it now looks like
25 an emissions credit from the old SOX and NOX days, and cap and

1 trade, and all that other stuff. But you really only want to
2 do that when the REC becomes a -- when that thing becomes a
3 cost minimization strategy, and that's it. That's what it
4 does. It does cost minimization. So I always wondered why we
5 needed these things if we had an affordability cap, to be
6 honest. Because what the REC does is it says under the
7 affordability cap you can buy renewables that are somewhere
8 else. That's what it boils down to.

9 MR. COOKE: One of the advantages of the REC
10 programs, in my opinion, is that it does bring diversity to
11 your portfolio. For instance, in circumstances where a utility
12 goes out and says I want to procure a technology, they set a
13 lot of parameters in that. How much do they have to bid in as
14 a minimum lot? What is going to be the time period I'm going
15 to pay you? And you choke off a little bit of innovation,
16 because perhaps if they say the minimum threshold to bid into
17 this is a 50-megawatt chunk, but you have got very
18 cost-effective five megawatt chunks of solar that you do, you
19 don't even qualify to respond to the RFP in that. And that
20 information never gets to the utility because they said we are
21 only interested in people who can build us 50-megawatt units.
22 It turns out the cheaper result was five megawatts.

23 In the SREC program if the cheaper way to build it is
24 five megawatts, somebody is going to build that and say my SREC
25 is cheaper than your 50-megawatt plant. Therefore, my

1 technology gets built and not yours.

2 MR. GRANIERE: I think I understand -- well,
3 actually, I don't. I mean, all I'm simply saying is that you
4 have a plan, there is so much that needs to be saved. You go
5 out and you get the stuff that can do that, and these tiers or
6 multipliers, they are the same thing as putting some kind of
7 constraint on somebody. You know, it's the same thing to say
8 I'm going to put a multiplier on this technology or I'm going
9 to put this technology in this tier. That says that you have
10 to get so much of it. It doesn't say -- and so it is just the
11 same thing as putting blocks on.

12 So, basically, when someone puts a block on
13 something, 50 megawatts, they are saying, we have a policy. We
14 want big ones. We don't want little ones. That's their
15 policy. But you can have a policy that says we like big ones
16 and little ones, right? So they will have to do that. I'm
17 just -- you know, when I think of RECs, I just think of
18 transaction costs. They have their transaction costs; they
19 have their transaction costs. And I think of metering costs,
20 and I think of all of these things, and all in the name of
21 minimizing cost. And that's great. I mean, you know, all of
22 these costs in the name of minimizing costs. I just wonder why
23 we need to do that.

24 MR. TRAPP: Well, I thought we discussed at the last
25 workshop, which was focused on rates, that they provided a

1 certain level of fungibility in the marketplace to the extent
2 that one company had produced more than it needed, and a REC
3 was a convenient mechanism by which to transfer the value of
4 that over to the other company that didn't quite produce
5 enough. I mean, I think we also discussed command and control
6 is a possibility in a state like Florida where we are
7 regulated, not deregulated. So, you know, I don't think there
8 is a clear-cut answer to whether we need them or whether we
9 don't, but it seems to me that we did discuss in the last
10 session that there were attributes to RECs that might have some
11 value. And with respect to metering, whether you contract it,
12 or REC it, or however, it is going to have to be accounted for
13 somehow by a meter, or a certificate, or something.

14 MR. JONES: This is Dale Jones. I think it's
15 important to understand some of the discussion that is going on
16 internationally now with regard to RECs and CDMs on clean
17 development mechanisms, and it is this notion of additionality.
18 And the one thing that I don't think the Commission really
19 wants to be involved in is end up, you know, having compliance
20 measures be things that were going to happen anyway, you know.
21 So one of the notions of perhaps, you know, some of the green
22 power programs and the costs of the RECs, you know, in some
23 cases you have, you know, very, very low-cost RECs that, you
24 know, come from projects where they are throwing off -- you
25 know, there is no off taker for those RECs on a wind project,

1 let's say, in Washington state. And they might be bought out
2 on the market for two and three dollars a REC, and then sold in
3 a green power program for, you know, eight, nine, ten dollars.

4 So, you know, the notion I think that -- it goes back
5 to what we should be doing is putting this technology in the
6 state of Florida where there is clearly a need to build up the
7 capacity in Florida, and not be paying for RECs in Kansas where
8 the project developer was going to go ahead and do the project
9 anyway, and he just happened to have, you know -- he could make
10 his project fly just on the energy sales and the REC was just
11 sort of a free, you know, bonus. And then now they get sold to
12 Florida.

13 MR. TRAPP: I agree and I disagree. I'm torn. I
14 don't know what to do. Your premise was the wind guy out in
15 Kansas, you know, didn't need the RECs, didn't need to sell the
16 RECs. It was just bonus profit for him. But what about the
17 case where he does need the RECs to get his thing going? It
18 goes back to the very first workshop. What is our purpose? If
19 our purpose is climate control, then I have no problem
20 whatsoever with out-of-state RECs, because climate control is a
21 global phenomena, and then we ought to be buying RECs from
22 China.

23 If our purpose is economic development in Florida --
24 and, you know they used to call it nationalism, I think. I
25 don't know what you call it at the state level, statism or

1 something. Then I tend to agree, we ought to just do it in
2 Florida.

3 So it seems to me that there ought to be some mix. I
4 mean, you know, if we have multiple purposes, which I think we
5 do, we ought to have a mix of, you know, some reliance on
6 foreign RECs, but not too much reliance on foreign RECs,
7 because we are principally concerned with Florida. It seems to
8 me it has to be a balance.

9 MR. JONES: By point was only that you really try to
10 strive for additionality, you know. And that was my point.

11 MR. GRANIERE: So I guess one way we could sort of
12 get it down to a practical level, we could say things like no
13 more than three percent of the renewable portfolio standard can
14 be satisfied by out-of-state RECs. You could say things
15 like -- basically, what happens is you just put a whole bunch
16 of ceilings on things. And then when you are done putting all
17 of your ceilings on things, what is left is what you do in the
18 marketplace, sort of. But that is how that works. Wouldn't
19 that be how it works?

20 MR. JONES: And really when you look at the REC
21 programs, you know, developed in other states, you know, the
22 stakeholders get around and they define what technologies are
23 applicable and geographic boundaries. I mean, we have an
24 opportunity, like I say, to craft a program that makes sense
25 for Floridians, and benefits that include -- again, we talked

1 about this job creation. And, you know, maybe the idea is that
2 functionally we are trying to create this climate change
3 hedging, but we also should rank, you know, each of these
4 technologies based on some of their unique benefits. You know,
5 some technologies might have much more job creation per
6 megawatt hour. And so like when you are bidding on it, you
7 know, you are responding to potential proposals you might have
8 ranking at, well, this is 20 percent of the criteria, and this
9 is 20 percent of the criteria, and this is 20 percent, and how
10 does each of these technologies, and the duration, how do they
11 rank and stand up to that? So it's definitely dynamic.

12 And also the complexity, too, of the federal
13 government, whether there is a tax credit. And, you know, it
14 passed the House, I guess, today and maybe the Senate, maybe it
15 won't. And, you know, you're going to have to, you know,
16 redirect based on the dynamics of the renewable industry. And
17 there may be tax credits this year, but not next year or the
18 year after.

19 MR. TRAPP: That was my biggest fear. I want to
20 avoid recreating the tax code. We can't make this system so
21 complicated that nobody understands it, and, therefore, it
22 doesn't work. We need to have some common sense in developing
23 this program. And the thrust is we need it to work, so let's
24 make it work.

25 But, you know, before we get too much further along

1 the line, I did want to announce that the model of simplicity
2 and bureaucracy is now on the streets. If you would like to
3 stop by the clerk's office and order you a copy of the net
4 metering recommendation, it's on the street, and it is a
5 perfect compromise, I assure you.

6 MS. HARLOW: After that advertisement, I believe Jeff
7 Curry wanted to jump in. And also, Jeff, before you speak, let
8 me just say we are going to have to wrap it up pretty soon
9 because I've gotten a note that a certain court reporter would
10 like to take a break at 5:15, and that sounds like an excellent
11 break time for all of us.

12 MR. CURRY: That's okay. Regarding the question do
13 we have to have RECs at all, and quite often -- I'm Jeff Curry
14 with Lakeland Electric, by the way, which is in Central
15 Florida, and that will play into my comments here in a minute.

16 Of course, we tend to focus on trading RECs with
17 out-of-state sources, and the evils associated with sending
18 Florida's money to midwest wind facilities and things like
19 that, and the disadvantage that the southeast region has over
20 other regions because of the lack of resources that we have
21 compared to what they have.

22 But regional imbalances don't exist just nationwide;
23 they also exist within the state of Florida. For example, our
24 agricultural industries are broken into three major zones, if
25 you want to call it that. The northern third of the state of

1 Florida is really rich with biomass in the form of waste wood
2 byproducts from the paper and wood lumber industries. And the
3 southern third of the state is very rich in waste biomass
4 material from the sugarcane industry. But in the central part
5 of the state, the citrus industry thrives there, and they
6 produce very little waste biomass feedstock for energy
7 production.

8 And should a utility in Central Florida choose to
9 partner, let's say, in the production of renewable energy using
10 a waste wood byproduct, it would almost have to be built in the
11 northern third of the state, which means the transfer of the
12 RECs from that facility, the partnering, the hosting utility.
13 Perhaps it would be one of the northern utilities. The
14 transferability of those RECs to a utility in Central Florida
15 would be necessary. And in-state REC trading is absolutely
16 necessary, and I would recommend that there be no restrictions
17 on in-state REC trading between utilities.

18 MS. HARLOW: I sense a lull.

19 MR. GRANIERE: No.

20 MS. HARLOW: No?

21 MR. GRANIERE: No, there is no lull.

22 MR. CURRY: It's getting late.

23 MR. GRANIERE: So is it your position that the
24 in-state trading smooths out differences in resource imbalance?

25 MR. CURRY: We definitely have resource imbalances

1 within the state of Florida when it comes to renewable
2 generation capacity. And, yes, it would. To answer your
3 question it would smooth that out.

4 MR. GRANIERE: So, basically, the argument becomes
5 restrictions to only in-state RECs. So the only RECs that work
6 are the in-state RECs?

7 MR. CURRY: No, I'm not recommending against
8 out-of-state RECs. No, I'm not at all, not at all. Okay? But
9 I'm saying don't put any restrictions on in-state RECs because
10 I heard you mention something about a three percent cap on
11 out-of-state RECs. I hope that cap does not apply to in-state
12 RECs. That should be treated as a separate issue.

13 MR. GRANIERE: Where I am trying to get to is that I
14 think I understand what you are saying, and I think that is
15 consistent with what I was talking about as to why we need
16 RECs. That was the question. It seems to me that if the issue
17 is to get the proper amount of renewable energy in Florida
18 built in Florida and working in Florida, then that cost
19 minimization strategy works as long as the only thing that is
20 moving about is a REC that was generated in Florida, then it
21 does that, right? Then that will be a least-cost solution to
22 getting the desired amount of renewable energy in the state.

23 The question about -- but, on the other hand, what my
24 point is, is on the other hand that generates a significant
25 amount of transactions cost, and somebody has to pay for those

1 things. While Florida doesn't have an RTO or an ISO -- I've
2 had a little experience with that, and one of the really great
3 things about that cost minimizing solution is it has created
4 one of the biggest bureaucracies of all times with transactions
5 costs running rampant. And I just wouldn't want to see that
6 happen again. And all of these metering costs and verification
7 costs and all of this other stuff coming in. And that is just
8 my point of view on those.

9 MR. CURRY: Well, there is always administrative
10 costs associated with any program, and you just mentioned a few
11 of them. And we expect them regardless of -- you know, there
12 is always paper transactions necessary to backup and verify
13 compliance issues. So I don't see any getting out of that
14 anyway, really.

15 MR. TOTH: Yeah. Bill Toth with All Source Energy.
16 I would just caution everyone about being short-sighted on how
17 you develop this program, because once the industry starts
18 maturing, and we start getting some development, we may want to
19 be able to sell these RECs to other places that don't have the
20 capacity like we do. And if you create a situation that
21 precludes that from happening, then you have got to redevelop
22 this whole system again in the future, and that can be a
23 cumbersome process. I have been through it in the
24 environmental arena before. That is my only comment to that.

25 MS. HARLOW: I think the interaction between any RPS

1 we have in Florida and other RPSs is an important issue that
2 needs to be considered.

3 MR. TOTH: In the long-term.

4 MS. HARLOW: Right. I agree with you.

5 I'm going to pretend I sense a lull and take
6 advantage of that. We have had a long day and certainly have
7 appreciated all of your input and the presentations. And it is
8 a lot to absorb, and the staff would like to take time to do
9 that.

10 I would like to remind you that we have a sign-up
11 sheet in the back of the room that has been so helpful to us.
12 We have a list of over 300 contacts now that we are sending
13 e-mails to, and that has facilitated the process greatly. I
14 would like to remind you that we have a transcript estimated
15 date of the 14th. You can contact me about that, and I can
16 send you a link to our website.

17 And, also, if you would like to provide written
18 comments, those are very helpful to the staff. I would ask
19 that you glance at my slides as a template and anything else
20 you would like to discuss that you have heard here today, we
21 would appreciate in writing. And thank you again so much.

22 Oh, excuse me. The date for those comments is the
23 21st of December. Thank you.

24 MR. KRASOWSKI: I would like to say thank you very
25 much for this great discussion, and that goes out to everybody

1 that participated, but to you especially for this great
2 meeting. Okay.

3 MS. HARLOW: Thank you.

4 MR. KRASOWSKI: Sure.

5 (The workshop concluded at 5:07 p.m.)
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1 STATE OF FLORIDA)

2 : CERTIFICATE OF REPORTER

3 COUNTY OF LEON)

4

5 I, JANE FAUROT, RPR, Chief, Hearing Reporter Services
6 Section, FPSC Division of Commission Clerk, do hereby certify
7 that the foregoing proceeding was heard at the time and place
8 herein stated.

9

10 IT IS FURTHER CERTIFIED that I stenographically
11 reported the said proceedings; that the same has been
12 transcribed under my direct supervision; and that this
13 transcript constitutes a true transcription of my notes of said
14 proceedings.

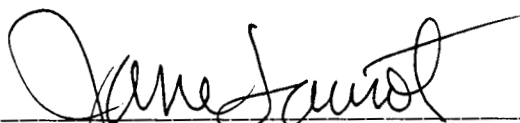
15

16 I FURTHER CERTIFY that I am not a relative, employee,
17 attorney or counsel of any of the parties, nor am I a relative
18 or employee of any of the parties' attorney or counsel
19 connected with the action, nor am I financially interested in
20 the action.

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DATED THIS 14TH DAY OF DECEMBER, 2007.

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JANE FAUROT, RPR

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