Public Hearing

before

SENATE ENVIRONMENT AND ENERGY COMMITTEE

"The committee will be hearing testimony from the Renewable Energy Stakeholder Working Groups as follows: Mitigating Solar Development Volatility; Achieving Global Warming Response Act Goals; Reconsidering Incentives for Class I Renewables; and Decoupling Utility Regulation"

LOCATION: Committee Room 6
State House Annex
Trenton, New Jersey

DATE: July 10, 2014
9:00 a.m.

MEMBERS OF COMMITTEE PRESENT:

Senator Bob Smith, Chair
Senator Linda R. Greenstein, Vice Chair
Senator Christopher "Kip" Bateman
Senator Samuel D. Thompson

ALSO PRESENT:

Jeffrey T. Climpson
Office of Legislative Services
Committee Aide

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Senate Majority
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Senate Republican
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New Jersey State Legislature

SENATE ENVIRONMENT AND ENERGY COMMITTEE

STATE HOUSE ANNEX
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P U B L I C H E A R I N G N O T I C E

The Senate Environment and Energy Committee will hold a public hearing on Thursday, July 10, 2014 at 9:00 AM in Committee Room 6, 1st Floor, State House Annex, Trenton, New Jersey.

The public may address comments and questions to Judith L. Horowitz or Michael R. Molimock, Committee Aides, or make bill status and scheduling inquiries to Shirley Link, Secretary, at (609)847-3855, fax (609)292-0561, or e-mail: OLSAideSEN@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.

The committee will be hearing testimony from the Renewable Energy Stakeholder Working Groups as follows:

9:00 AM – 11:00 AM Mitigating Solar Development Volatility

11:00 AM – 1:00 PM Achieving Global Warming Response Act Goals

1:00 PM – 3:00 PM Reconsidering Incentives for Class I Renewables

3:00 PM – 5:00 PM Decoupling Utility Regulation

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SENATOR BOB SMITH (Chair): Good morning, good morning. Everybody take a seat.

If you have any chatter, take it outside.

We have an ambitious schedule. Senator Bateman is here; I understand Senator Thompson is coming, Senator Greenstein is coming, and Senator Codey may stop by.

But the most important thing is we're keeping a record today of what's being said, so be careful of what you say. (laughter) There will be a record, and five years from now when your predictions about the end of the world don't occur, you're going to be on record and you're going to be reminded of what you said, all right?

Now, just as a little background to what we're doing today. The members of this Committee and, on the Assembly side, Chairman Chivukula and his members, are constantly approached by the smartest people in New Jersey on energy issues with good ideas. And we said to ourselves, "This is not an efficient way to do energy policy. Why don't we have all of these really smart people get together on their own and see if they can come up with consensus recommendations for legislators to consider for legislation,' hopefully advancing the goals of making New Jersey more energy sustainable; making our planet more sustainable; hopefully providing efficient energy to our citizens, etc., etc., etc.

So what I want to report to Senator Bateman is, I've never seen so much work from a group of stakeholders in my life. Every day-- Unfortunately, I have to take a look at the written stuff -- just the nature of my life is that I have to keep that moving -- you have probably killed about 20 sequoia trees with all of the information. (laughter) And they copy, at

the office, and every day there's more stuff to read. And I kind of feel like I've read 10 *Gone with the Wind*s, seeing all of the interaction between the various members of the stakeholder groups. Which I think is great.

And, by the way, the other wonderful thing, Senator Bateman, about having the stakeholders meet -- you have people of divergent points of view sitting in a room together, trying to persuade people of other points of view why you're an idiot and why my point of view is correct. (laughter) And, as a result, I think we may actually get some really good energy policy ideas for legislation out of this process.

And I do know that all the members of these stakeholder groups have acted very responsibly. I mean, I've seen one stakeholder group -- they had two meetings a week in the last six to eight weeks. They took it very seriously -- the charges that they had -- and they're going to come back with some great ideas.

Now what we did, we set up four times today when we'll be dealing with the four questions that we put to the four different stakeholder groups. We had no idea how much time anybody is going to need, so we separated them by two hours each time. So after we finish the first topic today, we'll adjourn until 11; we'll come back at 11, and we'll take the second topic and take whatever information people want to give; then we'll adjourn to 1:00, etc., etc. And the last one is at 3:00.

So our plan for today: The first topic is going to be mitigating solar development volatility; the second one, at 11, is achieving Global Warming Response Act goals; the third topic, at 1:00, is reconsidering incentives for Class I renewables; and then the fourth topic at 3:00 p.m. is decoupling utility regulation.

So let's take a look at mitigating solar development volatility, our first topic.

And right now, I only have one slip turned in, and that's for Stefanie Brand. But if you would like to speak on this topic--

MR. DUHON (Democratic Committee Aide): I think representatives from the group are going to speak first.

SENATOR SMITH: Okay. Do we have a representative from the stakeholder group first? Who is that person? Who carries that burden?

Actually, the two Chairs, I think, were Lyle Rawlings and Tom Lynch; Tom Lynch by substitution.

T H O M A S P. L Y N C H (off mike): By default.

SENATOR SMITH: Yes, and Al Epstein--

MR. LYNCH: Alan was able to get to and from China without much to do, but is having challenges getting from West Orange to Trenton. (laughter)

SENATOR SMITH: Well, we can totally understand that -- New Jersey traffic.

Come on and pull up a chair, guys.

And just to put this in context, we have had tremendous volatility in the solar development area in this state because we have an incentive program -- Solar Renewable Energy Credits -- the value of which have been unbelievably volatile over the years. In 2012, we did the Solar Energy Act to try and stabilize it, and we have stabilized SRECs to some extent. The whole point of SREC is to see to it that we have nicely growing solar development -- solar electricity in the State of New Jersey.

So the question that was raised is how do we continue our progress, and how do we keep this from becoming a volatile nightmare where you can't finance these projects, and developing solar is harder in New Jersey?

Have you guys flipped a coin as to who goes first?

L Y L E K. R A W L I N G S: I think Tom will.

SENATOR SMITH: Or do you want to do rock, scissors-- (laughter)

MR. LYNCH: No. You know, this was a very cordial working group.

SENATOR SMITH: For the record, start with your name and your title -- you know, where you're from, and that you co-chaired the committee.

MR. LYNCH: Tom Lynch. I'm with KDC Solar, and I'm the Executive Vice President.

MR. RAWLINGS: I'm Lyle Rawlings.

SENATOR SMITH: Red means go in Trenton. (laughter)

MR. RAWLINGS: Okay. Lyle Rawlings, President of the Mid-Atlantic Solar Energy Industries Association and President of Advance Solar Products.

SENATOR SMITH: And you guys had a lot of meetings.

MR. LYNCH: Yes, sir.

MR. RAWLINGS: Yes, we did.

SENATOR SMITH: All right. And were you able to come up with some consensus, or do you have divergent points of view that you want to present?

MR. LYNCH: Well, I think just to give a background, we started where our first meeting was on May 6. And backing up to your Committee meeting, we had 37 individuals representing 31 separate organizations signed up for the Volatility Working Group; and it comprised what we believe was a very diverse representation of all the stakeholders: both owner/operators, equipment suppliers, the utilities, rate council, labor, environmental groups, etc.

Following that we had five telephonic meetings -- basically, from May 16 through July 8. We sent out e-mails to the entire group ahead of any of these calls. And each meeting lasted somewhere between an hour-and-a-half and two hours.

The one thing that we would say is, what clearly happened was it was a much smaller group of true participants on those calls, so we ranged from anywhere from a dozen to no more than 15 folks on the calls. But each call did go for about an hour-and-a-half to two hours. And what we ultimately did, as we got into the latter part of June, is heard -- and we will be presenting later in this session -- two proposals -- actually three proposals. And we came up with -- what we had distributed was our agenda, and there are a number of stakeholders and active participants in those sessions who are going to represent more the consensus and the perspective -- not necessarily their own company's perspective -- as they come forward and discuss what we concluded over the two-month period.

SENATOR SMITH: Great.

MR. RAWLINGS: That was a very good summary. I would just add there was a great variety of different stakeholders involved. There

was active participation from solar developers and investors, large and small -- me being small, Tom being large. I mean, that as investors, not--

SENATOR SMITH: Yes, there will be no weight jokes at this hearing (laughter)

MR. RAWLINGS: And there was overarching consensus on a high-level topic that you'll hear more about. Different points of view, in particular, on response to solar volatility, which was really the specific question asked.

Oh, very good. (responding to Mr. Epstein's arrival)

So we have a show for you, a presentation, and several speakers to talk about those topics.

SENATOR SMITH: Good. And we've been joined by Alan Epstein, who was the actual named co-chair. Tom stepped in for him while he was in China.

Alan, anything you want to do by way of a preliminary remark?

A L A N M. E P S T E I N: Other than I have to go to detention for being late, no. (laughter)

SENATOR SMITH: Okay. So who is going to be making presentations on behalf of the group?

MR. LYNCH: So the first thing is, just, we've asked Pam Frank, along with Lyle, to review the current status of the market. And then we've broken it, following that, into three sections: any considerations to changing the current regulatory structure; then changes to the solar RPS growth curve -- and basically we sort of cut it at energy year 2022. We'll go through how we sort of arrived at sort of dealing with 2017 to 2022. And then a longer term perspective, really going out, not only to-- What we

tried to work through is 2023 to 2030; but candidly, it really goes, in concept, all the way out to Energy Year 2050 and the objectives of both what was in the Energy Master Plan, your objectives stated earlier this year, as far as the percentages of renewables contributing to the electric supply in that point in time. And then, obviously, we'll close it out, hopefully, before 11:00 p.m. -- a.m. -- sorry. (laughter)

SENATOR BATEMAN: If it's 11:00 p.m., you'll be here by yourself. (laughter)

MR. LYNCH: That was intentional.

SENATOR SMITH: All right, so why don't we get Pam up and--

MR. LYNCH: Sure, okay.

I had sent over the agenda to your office. I have some copies printed if you want them.

SENATOR SMITH: Right, and we'll include them in the record. Any written stuff that you'd like in the record--

MR. LYNCH: We're trying to tee up the PowerPoint.

SENATOR SMITH: Okay.

And just for the record: The PowerPoint presentation will be in the record -- we'll have the written form? Okay.

P A M E L A F R A N K: (off mike) Talk amongst yourselves while we work this out. (Indiscernible).

MR. RAWLINGS: Well, while she's teeing it up, I'll just start with kind of an overview of the historical perspective on the SREC market, which really began in earnest in 2004. We can divide the history of the SREC market into certain eras, so to speak, where at first the market was

very short; it was characterized by very, very high SREC prices -- in excess of $600 per megawatt hour. At the time the real cost of production of solar was around $300 per kilowatt hour, so it was greatly in excess of the true cost of production. And in 2010-- Oh, I think she's got it up.

MS. FRANK: Oh, look at that.

MR. RAWLINGS: Okay. And I think you're going to take it from here.

MS. FRANK: Yes, okay.

Sorry -- the miracles of technology.

Good morning. Pam Frank with Gabel Associates.

So as Lyle was saying, we can start further back, but just to properly context where we are in the market today: We've put up this slide which really shows what the market demand looked like with the RPS statute enacted in 2010 -- January 2010 -- and that would be the light gray bar. So you can see sort of a rational, slow, steady increase. This would represent year-over-year, how much solar would be added to the installed base.

And then you'll see the darker gray bar which shows the change in the solar RPS demand curve that was a result of the 2012 legislation that was enacted in July of 2012 -- SREC Act; or Solar Act, for shorthand, I'll call it. And as you can see, that shape of that curve, if you were to draw a line, is not an ascending curve. It's got a bit of a peculiar shape happening, which really was a result of a lot of horse trading. And you'll remember, as I think Lyle was going to discuss, starting in around 2009 the solar industry really experienced -- and in 2010 -- really experienced what we call a *bubble,* a boom in building. And there's a lot of sort of Monday morning

quarterbacking on why that may have been the case. But we did have a confluence of some unusual things that happened in the world. We had declining solar panel prices that started in 2009, 2010; a lot of production coming out of China; and solar panel prices declined precipitously in a two- to three-year period.

We also had the Federal government, which turned its tax credit into a grant program and extended it. So there was a cash grant available in lieu of a tax credit. And that went out to -- that expired in 20-- No, the 1603 Program--

MR. RAWLINGS: Officially, it expired, I think, 2012.

MS. FRANK: In 2012 -- yes, 2012. But that also drove a bit of a building frenzy. And then we had accelerated depreciation schedules that were sort of supercharged, if you would. And we had these three things operating in the market, and -- and -- we had entered that period of time in a relatively short market. In other words, we didn't have enough solar to meet the demand that the RPS required. And we had a relatively high SACP out there from sort of a paradigm that existed prior to these declining solar prices.

So all of that conspired to show the market really high SREC prices, lowering costs to build, and there was huge opportunity. And so there were over 300 solar companies in the market at this time. And I was actually involved in a company -- as a developer, at that time -- and it was crazy.

So there was quite a bit of building going on, and as a result the market overheated. It raced ahead of the RPS by over two times. And so this dark gray graph represents the State's best effort -- with a lot of

different stakeholders involved in what was a very chaotic period -- to essentially rescue the industry from itself, from its success, and essentially take a lot of the growth, that was scheduled to happen in the out years, in a much more moderated, rational fashion and push it up to absorb a lot of that overage.

And as a result of some horse trading -- and, as often, not really reported in the press -- we actually -- *we*, meaning the solar industry -- sacrificed a heck of a lot of growth on the back end. We lost about a gigawatt of total capacity in making this arrangement.

And obviously there were costs involved; the ratepayer was involved; there were a lot of different interests that came together. But that's what we have today.

And so everybody-- And I think it is a fair characterization that there was, in our diverse group, overwhelming consensus on the fact that that dark gray bar, going down starting in 2017, 2018, is not exactly what you would want in an industry that needs to be ramping up to meet the goals of the Global Warming Response Act. So we see some troubling signs there; we knew this, by the way, when the legislation was agreed to. It was just the best that could be done at that time. And the volatility report, I believe, that the BPU commissioned -- that's going to be delivered to the legislature, if it hasn't already been -- actually says that this curve -- that the solar RPS curve -- may actually be a source of solar market volatility over the next several years.

I wanted to kind of paint the picture of where we are today, okay?

Now, Lyle and I are both-- And this is really meant to illustrate the different ways you can look at a crystal ball. So the question is, so now what's going to happen? What's going to happen over the next few years? For those of us who pay attention, every month, what we watch like hawks is the build rate: how much solar is going in the ground every month? And depending on how many megawatts are going in -- and that number that gets released from the BPU -- the markets react to that, actually, pretty carefully. They watch that a lot. Because that monthly install rate is an indication of how we're going to be doing, as compared to the RPS. So you'll see that blue line there, and the blue line is our RPS demand. And in this base case that we -- and when I say *we*, in this case I mean that Gabel Associates came up with a base case; we run a lot of different scenarios and a lot of different models. Lyle is also going to explain some of his that he's run, so you can just see a lot of different ways to look at this. But at least in this base case, things look pretty good -- right? -- pretty balanced.

This is one way things may look, and this assumes -- just to give you some idea in a base case -- that we are running probably at around 22 megawatts a month now through about 2017; and then we ramp down pretty quickly because, as you see, the market overheats to 12.5 megawatts a month in 2018; and then sloughing off to about 9.2 megawatts in 2019. That's one way to look at what may happen over the next few years.

Now, here's another way. This is what we call the *high case*, where we have now blown through the RPS again. The blue line is our RPS; that hasn't changed from the previous side. That's in statute; that's our demand. The high case has us doing 22 megawatts a month in 2015, and 26 megawatts a month in 2016 and 2017. And what's interesting

about that is that, if you look back -- and I said in this last one, in 2017, we're doing 22 megawatts; in this one we're doing 26 megawatts -- it's a small amount, but because these things compound, it actually makes a big difference. You start to see how sensitive this is.

So the way this would have us running is 26 megawatts a month for 2016 and 2017; 16.7 megawatts in 2018; and falling off to 9.2 megawatts in 2019. So by 2020 we're about 35 percent oversupplied. And what that means, what happens to the SREC price when we're that massively oversupplied, one could think, "Well, the solar market could kind of fall off a cliff." Again, not a great position for us to be in, in 2020, if we need a decade more, at least, of robust growth.

So that's one scenario, again, just to illustrate the sensitivities.

I also want to add that in 2016 -- and I think Senator Smith had passed out an article on this topic -- but in 2016, at the end, our Federal investment tax credit of 30 percent goes away and it becomes 10 percent unless our Congress in D.C. does something. That's a big question. And they may drive a lot of frenzied growth up to 2016.

So I'm going to let Lyle go on with some of his crystal ball musings.

MR. RAWLINGS: Okay. Well, a lot of my thunder has been stolen. You can see these graphs are a little bit similar to the ones that you just saw from Gabel Associates. And perhaps one lesson from these graphs is that different models will give you different results.

But this is MSEIA's model, which is published. You can download the fully functional model and put in your own numbers and

stare into your own crystal ball if you like. And we encourage everyone to do so.

But similarly to what Pam said, one thing it shows is how incredibly sensitive this market is to very small changes in the amount of growth that we see over the next couple of years. And the early years are the most important because, as Pam said, one of the reason it's extremely highly sensitive is that any carryover, any excess SREC for a year gets piled on to the following year. So anytime you get a little bit of excess it tends to multiply, year upon year. So if you get a little bit of excess things tend to blow out of control.

Now, if you look at these graphs, the blue line that you see is the amount of solar construction each year; the red line is the demand for the SREC market; and the tops of the bars -- if the tops of the bars are above the red line it means you have an excess, if it's below the red line it means you have a shortage.

Now, what is seen there is, on the high left side there's a low-growth scenario; on the bottom there's a medium-growth scenario; and then on the high right there's a high-growth scenario. You can see that there isn't a whole lot of difference between the low, medium, and high -- 17 megawatts a month for the low scenario, 20 megawatts a month for the medium, and 23 megawatts a month for the high. So only 3 megawatts a month difference between the medium and the low, and between the medium and the high.

And what it shows is, in our model, only in the low-growth scenario do we reach a balanced market, and that happens in 2018 and 2019. We even go a little tiny bit short. Now, under those conditions you

get very high SREC prices that go up close to the SACP. That's bad for ratepayers. Now, in the medium you see that there's an oversupply -- the tops of the bars are above the red line continuously; the market never reaches balance. Under those conditions you can get a crash in the market, which is what was happening in 2010 and 2011, and gave rise to our need to pass the Solar Act of 2012. So under the medium growth scenario that may recur. In other words, another bust could recur.

The high growth scenario, obviously, there's much more oversupply and a much greater chance of a bust on the market. Now, if there were a bust, when would it occur? It occurs when the market starts to perceive that the market will never come into balance. And as soon as the market begins to perceive that the market will never come into balance, then it starts to destabilize and potentially crash.

Now, which of those scenarios is more likely? Now, on that there wasn't agreement among the group. MSEIA believes that the medium or the high growth is more likely than the low growth. In other words, we believe it's more likely that there will be continued oversupply with the market never coming into balance, and conditions for a destabilization as early as a year-and-a-half to two years from now. That was the cause for concern for MSEIA.

MS. FRANK: And I'm just going to add one more note, which is that although there is consensus in our group about this troubling shape of our RPS curve over 2017 around 2022, I'm not sure the sort of will to sort of right that means that one needs to muse, "We're going to go boom, we're going to go bust." Our feeling, I think, is just from the point of view of reaching Global Warming Act goals and moving the market forward with

the economic growth in the sector that we want to see, that that curve should look more upward sloping than it is currently. And we don't necessarily have to get into the machinations of, "are we going to boom or are we going to bust."

MR. RAWLINGS: Well, that's a good point. We did go from an up-sloping curve to a down-sloping curve and built quite a lot less solar energy between now and 2024, with the Solar Act of 2012. Bill Potter calls it the *Solar Phase-Out Act* because we did go into a steep decline with that Act. And that we see as a fundamental problem underlying all of these crystal ball predictions.

Okay, so now we're moving on to the section on considerations to any change in the current regulatory structure. And are we going to bring up all four of the--

MR. LYNCH: It's probably easiest to do it that way.

MR. RAWLINGS: Yes, and so Alan is already up here, and Larry Barth, Michael Flett, and Tom Lynch are planning to give a point of view. So I'm going to vacate the seat here.

MR. EPSTEIN: We can put the lights back on, or not.

SENATOR SMITH: For the point of the view of the record, we need to know which microphone is on.

MR. EPSTEIN: I'm going to start first.

SENATOR SMITH: So why don't we plan -- I guess it's my left to right; will that be the order of speaking?

MR. EPSTEIN: Yes. Except that Tom belongs one seat over.

SENATOR SMITH: All right. So why don't you guys switch chairs. (laughter)

So Alan Epstein is at the first mike; the second mike is--

L A R R Y B A R T H: Larry Barth.

SENATOR SMITH: Larry Barth; third is Mike Flett.

M I C H A E L D. F L E T T: Correct.

SENATOR SMITH: And fourth is Tom Lynch.

Okay, Alan.

MR. EPSTEIN: Good morning. My name is Alan Epstein. I am the President and Chief Operating Officer of KDC Solar. KDC Solar develops, finances, designs, builds, and operates solar power facilities for commercial and industrial customers.

We sell solar electricity; that's what we do. We build facilities. At the present time we have built and own and operate 10 facilities in the State of New Jersey, aggregating 45 megawatts. We have invested approximately $190 million in our projects in New Jersey.

This is a small but not insignificant portion of more than $3 billion that has been invested in New Jersey to date to get to 1.3 gigawatts of solar power -- just to give you some parameters here -- $3 billion has been invested to get us to 1.3 gigawatts.

We're supported by Diamond Castle group, a private equity firm in New York City. We are presently constructing 6.5 megawatts at CentraState's hospital facility in Freehold, New Jersey; and we intend to start constriction on an 11.5 megawatt landfill project in southern New Jersey by the end of this quarter. In addition, we have 80 megawatts of projects in active stages of development, principally engineering and permitting.

One of the things I wanted to comment to all of these slides is that the development cycle, and the numbers, and what happens when -- these projects are not built overnight. So you have a period of time from the time you have committed parties to proceed with the project, sign power purchase agreements, enter into leases, things like that. You then go into permitting, engineering, construction. The actual build cycle -- or from start to finish -- is probably close to 12 months at a minimum for any project. Now, that's important because discussions of prices, SRECs, construction costs move over time. So when you start the project it's one thing; when you complete the project it's something else.

I think one of the most significant things that happened in the Solar Act of 2012 was transparency and visibility into the pipeline. I'll come back to that.

KDC's business plan is based on several factors: private equity from Diamond Castle, 1603 grants in lieu of ITC from the Federal government. Now, the 1603 program required us to invest -- and we did invest over $40 million in buying panels to qualify for the 1603 grant. But this is back in 2011 we did this. We used those panels for each project. However, in order to get the grant, the project has to be operational by December 31, 2016. Now, that puts pressure, obviously, on anyone to get the project complete. But, more importantly, from the perspective of what we're talking about today, I fully expect a rush towards December 31, 2016, of projects to be completed, because if it's not completed by December 31 you don't get the money from the Federal government. And we're talking about 27 percent, basically, of the capital costs of a project. It's an enormous incentive that the Federal government put out there. And they

put it out there as part of the Recovery Act. They wanted investment, and they wanted solar, so we participated in the program. But the key is, I fully expect a spike in installations between now and the end of 2016 because of the -- for no other reason but because of the grant. What happens after that is a different question.

In addition, we rely upon the 1603 grant, and we rely upon the New Jersey SREC program that was enacted by the Solar Act of 2010 -- which is why we got into this business. And those three factors -- private equity, 1603 grants, and the SREC Program in New Jersey, as it existed in 2010 and as it exists today -- are why we're in this business, and what we present to our financial partners in order to finance these projects.

That said, we, together with other owner operators -- owner operators -- have experienced the highs and the lows of the SREC prices during the period of 2010 to 2013. Obviously, we weren't pleased with the precipitous decline of the prices; however, the precipitous decline -- some of it occurred while our projects were in construction, not during operation. More significant than the decline itself was the volatility of the market. Now, the volatility of the market-- To us, volatility in the SREC market is of paramount importance to us. Stability and reliability is of paramount importance to us.

Having said that, we also recognize that New Jersey established a market-based supply-and-demand driven SREC market. In short, we chose to accept this risk when we entered into the market -- a market-based program. The Solar Act of 2012 did some significant things. It helped refine and stabilize the market, in fact. You haven't seen that chart yet. What's happened, what the effect of it was, by adding transparency to the

pipeline -- which I think is critical -- now people can look and see what is in the pipeline, the size of the projects, and then predict, based upon that, what's coming forward. Prior to 2012 we were completely blind as to who was building what.

It also favored -- the 2012 Act did -- a number of other things, including favoring distributive generation, and it brought the RPS forward -- all significant. But the impact of that Act in 2012 was to bring stability to the market. From our perspective, the Solar Act of 2012 did what was intended: it brought recovery and stability to the market.

We've enjoyed relative stable or escalating SREC prices since the implementation of the new RPS standards, which took effect on June 1, 2013 -- 13 months ago. The Act was passed in July of 2012, effective in 2013, as you well know. If you look at the SREC prices during these 13 months, it has been very, very stable and robust.

To us, for a relatively young market, this is extremely significant.

Let me turn for a moment to the subject of financing. We've been fortunate to have a source for construction financing and some access to term financing. Most recently -- and I'm speaking about November of 2013 -- we were in the market to finance four projects -- operating projects -- with our lenders, and we failed to get credit approval. When I asked what the problem was, I was told, "The SREC market has recovered, as you predicted, under the Solar Act of 2012, but it needs seasoning," said one lender. "Come back and see us in the fall. Let me see how many more months of this stability exists," all right.

Equally significantly, the other lender said, "The problem is change-of-law risk." And I said, "Oh, what you mean is really SREC risk. You don't like the SREC risk." And they said, "No, no, change of law risk." And I said, "I don't understand." He then started to cite his credit committee's concern over what was happening in Spain, the Czech Republic, Italy, Romania, and then concluded by saying he thinks that the risk -- and the person, actually, at the credit committee lived in Princeton, the one person -- he thought the risk was that the New Jersey Legislature would abandon the SREC program. And I said, "That's ridiculous." Of course, that was me saying that. And then the ultimate question was, "Is there a guarantee? Can it happen?" I said, "Well, if you want to pose it on the question of can it happen, the answer is of course it can happen. But do I think it will ever happen? No, I do not." However, that was certainly not sufficient to sway the day.

Now, in the mean time, what have we seen happen in the United States? I said, "Oh, that's Europe, they have these high feed-in tariffs." It was a ridiculous assumption what they were doing. And then they started saying, "Well, look what's happening in Kansas, look what's happening in Oklahoma, look what's happening in Arizona." I decided that we'd had enough of that conversation and we moved along.

The reason I'm emphasizing this is we're not acting in a vacuum here; quite to the contrary. The solar financial market is looking at what goes on in every state, and as every state takes action it has an impact. And the lenders who lend, and the financial parties who participate look at this as a total market worldwide, as well as across the United States. Right now, I think it's not unfair to say there are some strong forces across this

country pushing back against solar power -- or renewable energy in general -- in various ways: taxes, rolling back pricing -- all sorts of mechanisms; not outright abandonment. But one of the things -- the most important thing from our perspective is having passed legislation that we believe brought stability to the market. In fact, this is not based on projections; look at what's happened. We believe you need to let the market season, continue acting as it does. If there's action to be taken, I go back to the expiration of the ITC -- the grant in 2016. See what this looks like after all these projects that are taking advantage of this ITC have come to the market.

I would also add, as a side comment, in general, any sort of prognostication on how many projects will come into being based on a pipeline fails to take into account -- it's simply a filing mechanism. You file, and then you're on the list. It means that you need to have permits and you need to have financing. Those are not the requirements to file. The requirement to file is you've signed an EPC contract -- a construction contract. That's very different. And you can sign an EPC contract without having any permits, you can sign an EPC contract without having any financing. So what percent of those will ever get built for a variety of reasons? And I point out in particular not so much the financing; the trend towards permitting in the State of New Jersey is negative to solar -- not positive -- it's negative. Local communities resist it. We, ourselves, are involved in a rather robust conversation in a community, and once that happens, given the 1602 program, time is the enemy here. So all of these numbers and projections are great, but when you get into the weeds here, and how many of these projects have permits and are ready for construction, that's the right question when you look at a pipeline.

So while this market is working, as opposed to basing any action on speculation or projections, we think, frankly, it would be irresponsible to tinker with it. We need stability. It's what we've been telling our financial sources -- that the market is working and it will continue to work.

So we really believe the Solar Act of 2012 addressed what it needed to address in terms of volatility.

SENATOR SMITH: You realize you're telling the Legislature to do nothing? That's what we do best. (laughter)

MR. EPSTEIN: No, that would be the Congress. They are -- that's an art form.

This is a perspective -- and I'm concluding my remarks at this point -- I'm giving you a perspective from an active market participant. We rely on these SREC prices. This is how our business is built. So this is not based upon theory or science or anything else. We put money in the ground, and we expect to get money -- recover a return based on these SREC prices. We're not an installer, we're not an equipment supplier. We're an owner/operator.

So with that, I turn to Larry Barth.

SENATOR SMITH: Larry.

MR. BARTH: Thank you, Alan.

Yes, I'm Larry Barth, representing New Jersey Resources Clean Energy Ventures. Like KDC, we have a substantial solar portfolio in the ground in New Jersey. We're looking to invest quite substantially more in the market.

And I'm here to give some comments from the perspective, like Alan, as an investor -- somebody who needs to rely on the SREC market to compensate us for the investments that we make. And I hope that our comments are reflective of large entities like ourselves, but also all the towns, the schools, the residences that are also relying on the SREC market. And hopefully my comments are going to reflect their concerns as well.

So we're very much in the camp of do nothing now. We believe that because of the Solar Act we can see that the market is working. We have some good metrics from Energy Year 2014, when we saw SREC prices rally from a low of $70 in the prior year; they're up in the $180, $175 range -- so that's working. Installs have come down, so we had 463 megawatts of installs in 2012; 295 in 2013; and this year we just did 200.

The pipeline is down. We had 802 megawatts in the pipeline in July of 2012; we're down to 350 now.

And the new approval rates for net metered projects -- which is now really where the market is going -- is at a reasonable 10 megawatts a month. That's what went into the pipeline last month. So Senator Smith, you said that we always say things here and they could be on the record, and I remember before the Solar Act you said some words that registered with me, which was that the solar industry needed to go on a diet. And I think it has. I think that in response to the Act, things are working.

And so I think we have to ask ourselves a question: With the performance that we've just had, what's wrong? I mean, what's not working, what needs to be fixed?

Some of our other colleagues here have talked about crystal balls, and I think the bottom line is nobody really knows. We can't

necessarily set policy based on some speculation about what could happen. We don't know. If we look at what went into the pipeline last year in terms of net metered projects, it was about 120 megawatts. We know there are about 240 megawatts or so of farmland projects that could get built, so maybe that's 80 a year; certainly that could come in at different time periods during the next couple of years.

We know there are landfill projects -- those are tough to do. There are aggregated net metered projects -- not a lot of those getting done. We've talked about the ITC expiration -- we don't know how that's going to pan out. We can all have different views on that. What we should think about, that's different today than in 2010 and 2011, is ITC investors are a little more sophisticated and disciplined than people who were getting the tax grants. And you can't just go put panels on any field you want now. We have some controls on grid projects. So if we think about the market running wild, you're going to have to get a customer to go along with you -- somebody who has a roof, somebody who wants solar, somebody who doesn't have trees in the way. So it's not the same thing that we had in 2010 and 2011.

And we just have to kind of see how the market is moving. Quite frankly, I think one of the biggest risks as we look forward is the EDC long-term contracting programs that were put in place. We now have 222 megawatts of projects that the BPU approved, that can come in under long-term contracts from the utilities, where the ratepayers are given a guaranteed payment. And that has a potential to add to the numbers that we've been seeing. And so I think we have to be really mindful of this as we think about that as a potential solution. Think about that as a potential

problem -- how is that undermining what we're trying to do in the market? In 2014 we had no effect of those programs in the market. What we saw was what the market wanted. Now these programs are going to start to ramp up again, and I think that that is what I see could be the biggest risk.

So not knowing where the market exactly is going to go, I think all we can say is that it's going to go up and it's going to go down. It's going to have its cycles. And when it goes down, it's painful. Prices fall, people have to be laid off; it's not something you like to do, but it means that instead of a regulator telling you to slow down, the market is telling you to slow down and we have to slow down. And then, guess what? It's going to come back up at some point.

And so it's important, I think, rather than for regulators and policy makers to take a speculative position on where the market is going to go, it ought to say how are we going to make that market work as effectively as it can -- be transparent, be fair, accomplish the goals that we set forth in policy.

And so some of the things that are being talked about in the working group were of concern to us with regard to acting now. I think at the beginning of this process we were told that there might be some difficulty getting change through right now. And given how the market is actually working, we should be aware that all these discussions that are going on now do have the effect of creating uncertainty in the market. So a market that's working-- Of course, we always have the right and responsibility to be looking at how do we do things better. We have to be really careful and judicious about exercising that.

I am very concerned about, again, crystal balls and setting policy based on crystal balls. And I just go back long enough to remember, in 2008 and 2009, sort of the mantra was that SREC prices are too high, we're going to be short, we're going to be short forever. And policies were put in place to lift the net metering cap from 2 megawatts and allow grid projects to get SRECs and to open up the EDC programs. And those are both stimulative efforts. And those stimuli came in at the wrong time -- by the time those policies were enacted, it contributed to an already overheated market.

And so I think we have to be very careful about what we think we see and the timing of when these things can be enacted, and realize that maybe it'll have the opposite effect that we intended.

And then again, back to the long-term contracts. I have nothing against long-term contracts. If we sat down with a clean sheet of paper and said, "What's the best incentive structure for solar projects?" maybe that would get to the top of the list. The issue that we have is, overlaying that into the existing SREC market undermines that market -- whether it was 2013 where we saw elevated install rates despite SREC prices, and people were questioning, "What's going on? This market must be irrational." Well, in fact, the market was working off about 100 to 150 megawatts of long-term contracts that were approved in 2010 and 2012, and they were coming into the install rates. But people couldn't understand what was going on in the market.

Last year we had a good result in the market, and there were none of these long-term contracts in the market. And as I said before, my view is, as we look forward, how are these things going to add risk that

we're going to oversupply in the future? So a long-term contract -- that's not an SREC, from my standpoint. It's different than an SREC, and I think we have to be questioning: does that fit underneath the same RPS that people who take SREC risk have to face? I think it's a challenge.

Finally, I think there's some really good work in our group on thinking about RPS curves and how to shape those curves; and just encourage that we do that mindful of an endgame with solar, as opposed to this being just another tweak or another Band-aid. So where do we really want to go, what will the world look like 10 years from now? And well-intended stakeholders with day jobs could probably be helped with some expertise and concentrated resources to kind of figure that out.

Thank you very much.

SENATOR SMITH: Thank you, Larry.

Mike.

MR. FLETT: Good morning, Senators. Thank you for providing the opportunity for members of the solar industry and the public alike to discuss solar development volatility in New Jersey, and to provide this testimony.

My name is Michael Flett, and I'm President of Flett Exchange. Fleet Exchange operates in the Internet marketplace and brokerage for New Jersey solar credits. Our SREC trading platform has been available to buyers and sellers of SRECs 24 hours a day, 7 days a week, since June 2007. Over 6,000 New Jersey solar owners, who are registered to sell SRECs in our marketplace, have relied on us to sell their SRECs in a competitive and transparent manner. Many of the largest energy companies in New Jersey

who have to buy SRECs to avoid paying penalties to the State procure their SRECs from our solar owners in our marketplace.

Our daily REC settlement price is used by the majority of SREC buyers, sellers, brokers as a benchmark to negotiate spot SREC transactions, along with investors looking to build new solar in New Jersey.

Based on our experience, we suggest to continue supporting the current market structure for the development of solar in New Jersey. It is a market-based structure which is self-regulating, based on supply and demand, put in place by the renewable portfolio standard. This is especially important in an industry in which costs continue to decrease with increased competition and ingenuity.

The majority of the New Jersey SREC market structure is an open marketplace. The price of SRECs are based upon competition and supply and demand, except for about 20 percent of the closed market, which Larry referred to, which is backed by BPU-sanctioned long-term contracts in which the losses are divided amongst the ratepayers of New Jersey.

The open and competitive SREC portion of this structure is the reason for the success of the solar industry in New Jersey and the achievement of the renewable portfolio standard set by law.

Aside from the 20 percent structured market backed by the ratepayer, the open and competitive SREC market consists of three major sections. They are the stock market -- those are SRECs that are delivered and paid for immediately by the buyer; you have a bilateral market, which is a long-term market in which buyers contract with solar owners to freely negotiate a price for multi-year contracts; and you have a new, developed

futures market that was opened a year ago by Intercontinental Exchange in which they have a New Jersey SREC futures contract.

All three segments of the competitive SREC market have steadily grown in trading volume. There is a healthy group of competing businesses providing SREC services to the New Jersey solar industry. These consist of exchanges such as Flett Exchange, auction companies, aggregators, and environmental brokerages. I'd like to briefly touch on all three segments of the open and competitive SREC market, and highlight the year-over-year growth.

The stock market: According to Charlie Garrison of the New Jersey Clean Energy Program Division of the BPU, its SREC trading price report shows SREC trading volumes consistently growing between 34 and 100 percent per year in the July to May period for the past 4 years. For example, in July 2010 to May 2011, 202,000 SRECs were traded. The BPU reported in the last year, from July 2013 to May 2014, we now have traded 1,203,000 contracts -- SRECs.

The second segment is the bilateral, long-term market, consisting of willing counterparties contracting for multi-year SREC contracts. We have witnessed increasing liquidity in volume. Prices for SRECs in future years have traded at par for the first time in New Jersey SREC history. For example, SRECs generated, for reporting year 2018, are traded at only a $10 discount to the spot price. Future years used to always trade at a deep discount. This forward curve points towards stability in the marketplace. A three-year contract is the most active; five-year contracts exist for sellers willing to guarantee performance.

The third aspect is the new futures market contract opened by Intercontinental Exchange. Just a little bit of background: The establishment of a successful futures contract is proof of a successful competitive marketplace. For example, heating oil futures were not established until 1980; natural gas futures were not established until 1990 after deep natural gas deregulation. The fact that New Jersey SRECs have a growing futures market is concrete proof of a maturing industry. No other state's solar market has a successful futures market. New Jersey does continue to be a pioneer in solar in that sense.

Intercontinental Exchange is the leading network of regulated exchanges and clearing houses for financial and commodity markets. They operate 11 regulated exchanges; they have 5 central clearing houses, and trade over 12,000 traded contracts and securities.

s opposed to the proposal we hear to transition the SREC market to a structured, long-term market, all losses in a regulated futures market are borne by willing market players and guaranteed by clearing houses. The structured market you'll hear about places all market risk and losses on unwilling ratepayers in New Jersey.

The New Jersey SREC futures contract was launched by Intercontinental Exchange in mid-2013. The first trade was executed on May 30, 2013. To date, 16,480 contracts have traded, representing 164,480 SRECs. Based on the price and volume data, this represents $26,480,000 in SRECs. Futures are currently available out to Energy Year 2019, and can be expanded upon industry demand.

Flett Exchange recommends keeping the growth of the current open and competitive SREC market in place. The SREC market structure

is the reason why New Jersey has a growing solar infrastructure which supports a solar industry. It is the most efficient structure to ensure development of solar as a growing electricity source in New Jersey. Most importantly, it balances risk and reward between solar owners and ratepayers best.

Proposals to abandon the competitive market for a long-term, forced annuity for the ratepayers in New Jersey is a dangerous proposal. Policies such as this benefit short-term solar development profits at the expense of locking the ratepayers of New Jersey into decade-long commitments. New Jersey citizens deserve the benefit of decreasing costs of solar and increasing spread through a competitive market.

As a member of the solar volatility working group, I urge you to continue the course with a competitive SREC market, and support the ratepayer and solar owners alike.

Thank you.

SENATOR SMITH: Thanks, Mike.

Tom.

MR. LYNCH: Tom Lynch with KDC Solar.

I was prepared to actually go into a little more detail on some of this stuff that Larry had spoken about. But given that we're already at 10:15, I would just make the--

SENATOR SMITH: Why don't you turn that stuff in, and we'll put it as part of the record?

MR. LYNCH: Okay. But what I was-- Suffice it to say, most of that material and analysis comes from the Office of Clean Energy. And it's important to note that as recently as this past Tuesday's monthly

meeting they have acknowledged the completion of the various items that they were charged with. As you know, the BPU is responsible for implementing the legislation that was passed in 2012. So they have now just completed all of the work with regards to that legislation. There were a couple of pieces that they need to deal with -- some subsection, our stuff, etc. But the point being, is that we've all talked today about 2012's Solar Act and allowing it to be seasoned, and allowing it to take effect. And by the admissions and statements of our own BPU staff, they've only completed their work.

So I will put forward the information. I think, as Larry had pointed out, and we can go through in detail, you are seeing a marketplace and, in particular, some of the large behind-the-meter entities. And as you go through the pipeline, that's where the pull back has been. People are looking at -- given now the transparency, given the data collection, and the publication of that on a regular basis -- working their business plans accordingly.

So thank you for the time.

SENATOR SMITH: Thanks, Tom.

I think next on your list is Katie Rever and Fred DeSanti.

MR. LYNCH: No, Lyle.

SENATOR SMITH: I'm sorry -- Lyle, proposed structural changes. So this group is saying, "Don't you dare touch anything," and Lyle's coming in with the revolution.

So Lyle, if you would pull up a chair.

MR. RAWLINGS: Okay, yes. This is where we had different points of view on the committee, and we'll get to that overarching consensus a little bit later.

So yes, we will be presenting the point of view of *do* touch something.

Like Alan and like Larry, I'm also an investor and owner of solar assets -- much smaller than either of the two of them, but relative to my company's asset, I'm probably every bit as much at risk in investments in solar assets. In addition to being a developer and builder of solar, we also own solar assets.

And we know that if we did talk about adjusting the framework for solar incentivization in New Jersey, we can't say that it's risk free to do something and to change it. There is risk in doing that. But there's also risk in doing nothing -- in leaving it the way it is. And our analysis of it is that there's much greater risk in doing nothing. And I'm going to refer back to these slides a little bit and explain that.

The current rate of construction of solar in New Jersey from January until now is about 23 megawatts a month. Now, if you look over the slides you'll see that that is our high growth scenario -- is 23 megawatts a month -- which puts you in a massively oversupplied market continuously from now until the end of the RPS; in other words, conditions that will give you a crash-prone or destabilized market.

Currently, the rate of construction in New Jersey is accelerating; it's been accelerating over the last five months. But this is indicating that even if that acceleration stopped right now and we just held steady at the

average over the last five months, this high growth scenario is what results -- the conditions for a market crash.

In addition to that, as mentioned primarily by Larry, there are new accelerators that will come online in the near future. That's the grid supply projects that were recently approved -- 240 megawatts of them. Maybe only two-thirds of those actually get financed and built, but even two-thirds of 240 megawatts -- that's a lot.

There's the long-term contract programs that have just recently begun, and another one for JCP&L and ACE that are about to begin. That's another market accelerator that will come on. And then the landfills and brownfields, as Larry mentioned, are hard to do; but as Alan mentioned, they're getting done. That's another accelerator.

Even without acceleration, we have the high-growth scenario. So we look at this -- maybe it's a crystal ball -- but this is based on what is expected. We have conditions for a market crash. That's one of the reasons why we think there should be an adjustment to the market -- to the market framework. The other is the point of view of the ratepayers.

Now, Delaware has a market for incentivizing solar that's based on competitive procurement -- competitive procurement of long-term contracts, which is what we're suggesting moving toward. The average price in Delaware for SRECs has been $60 -- $60, $65; whereas it's $175, $180 in New Jersey. So that's an indication -- kind of an historical indication that this kind of mechanism can produce dramatically lower prices to SRECs while satisfying investors and bringing in investment into the state.

Recently, the BPU hired a consultant -- a Meister consultant -- to consider solar development volatility. They considered several different ways of moving forward. And they also found that competitive procurement of long-term contracts would produce lower prices to ratepayers over time. So the BPU's consultant is saying lower costs to ratepayers was all from moving toward these long-term contracts. Now, seven years ago the BPU had another consultant, Summit Blue, that did a study of all the different market frameworks that we could adopt. That was before we really got too deep into it. And they found that competitive procurement of long-term contracts would produce dramatically lower prices for our ratepayers. Worldwide, there are a number of studies by Ernst and Young, by international energy agencies, by the *Stern Review* in Britain that similarly found that these long-term instruments for incentivizing solar produce lower prices for ratepayers.

So from the point of view of us as an investor -- and we believe from the point of view of Larry and Alan as investors -- we're much better off with a change. And from the point of ratepayers, we believe that we're better off with a change.

Now, we are not talking about abandoning the SREC program; not at all. We're not talking about doing anything right away. What we're talking about is instituting a new program starting in 2017 that would really take effect -- in other words, really affect the SREC market post-2018 -- that would start to change the portfolio, with more competitive procurement and leave the SREC market with less or no growth. So we're not talking about abandoning or deleting the SREC market, but limiting its growth. In this way, with a greater portfolio of long-term contracts, we

believe we'll deliver lower costs to ratepayers and deliver a better investment atmosphere for the SREC investors like Alan and Larry.

I would point out that the only other major market -- the only other one of the top 10 markets in the country for solar to have an SREC commodity market-style framework is Massachusetts. They have now decided that they are going to transition away from the SREC market, not after 2018 as we're suggesting, but right upfront in 2015. And there's a bill that has already moved through the Energy Committee and the Budget Committee in Massachusetts -- it's now on the floor and expected to pass -- that would stop the growth of the SREC market in 2015. The primary reason cited for doing this was the point of view of the ratepayers. It was to save the ratepayers money in Massachusetts with their very large-scale solar build-out that's expected in the next few years.

And I would also point out that the probability of that bill passing, and the SREC market in Massachusetts stopping its growth -- not being abandoned, but stopping its growth -- has not affected the SREC markets in Massachusetts. The SREC market has not panicked, it's been rock steady. There are two SREC markets in Massachusetts -- there is SREC 1 and SREC 2 -- they have both been rock steady as this bill has gone through the process in Massachusetts.

So we think that investors should not be concerned that if we take this delayed and gradual adjustment -- not an abandonment, but adjustment -- to the SREC growth curve, and put more into long-term contracts, the experience in Massachusetts suggests that this would not panic the SREC markets in the short term.

That's all I have.

SENATOR SMITH: Thank you for your comments.

I believe we have Katie Rever and Fred DeSanti next, no?

MR. EPSTEIN: Yes, that's correct.

I want to give some context to what this committee did -- this group.

You just heard two divergent views.

SENATOR SMITH: Please, pull up a chair.

MR. EPSTEIN: Two divergent views as to what should be done.

SENATOR SMITH: Right.

MR. EPSTEIN: We had a discussion prior to today, at the last meeting, of what is the majority view versus the minority view. And what you heard first was the overwhelming majority view versus the minority view.

Now, these next presentations present if something is to be done, and you're going to hear another divergence of what various curves should look like. So we are a working group, as designed, with varying opinions. And I think it's important that the Committee understand: is there a consensus or is there an overwhelming unanimity on any issue, or is there a majority, or are there completely--

SENATOR SMITH: Got it.

MR. EPSTEIN: Done. Now--

SENATOR SMITH: So is there consensus on these two?

KATIE BOLCAR REVER: We--

MR. EPSTEIN: Close.

MS. REVER: Close.

SENATOR SMITH: Close.

MS. REVER: We'll explain.

So we'll try to keep it--

SENATOR SMITH: Simple. (laughter)

MS. REVER: Yes. We're a verbose group. I'm sure you can imagine what the hour-and-a-half to two-hour phone calls were like.

SENATOR SMITH: Yes.

Katie, if you could identify yourself.

MS. REVER: Sure. My name is Katie Rever. I'm the Director for State Affairs with the Solar Energy Industries Association. We're the national trade association for the U.S. solar industry, and our members are wide and varied in various market segments and different types -- from manufacturers, all the way down to installers.

So as folks were saying, the overwhelming sense at the initial start of the conversation was that the market is still settling from the Solar Act of 2012. We need to let it, kind of, continue to settle.

When we turn to-- Okay, so then what is the fundamental driver of volatility that we can all agree on? There was broad agreement with one of the findings in the BPU Solar Development Volatility Report -- which the Legislature asked them to do -- which was the shape of the demand curve. You guys have seen this already; Pam presented this. The original was a strong growth curve really showing growing industry momentum towards a post-SREC world. The curve we have today, granted, is the outcome of a lot of compromise, but it does point to a fundamental aspect of the market. The demand curve is a fundamental aspect of the market and it sets it up for volatility. It also shows a rapidly declining

industry that stagnates -- where demand via the SREC program stagnates at about 80 megawatts a year.

So taking this into consideration, the market is still settling, but recognizing the need to discuss the implications of the curve starting particularly in Energy Year 2017. The two curves that-- Fred and I are going to present two different curves for 2017 forward. And I think, at this point, I just want to take a step back and talk about the importance of timing on legislation. You guys all know this, but I just want to reiterate it, both in terms of introduction of the legislation and the signals that that sends to the market. In terms of the curve adjustments and when legislation is actually able to get passed and implemented at the BPU, those are -- as we think about when and how to introduce legislation, thinking about timing is critical.

So the curve that I'm about to present I think has the majority of support from the various stakeholders. We talked at length about these various shapes. So this graph shows a short-term growth curve starting in Energy Year 2017 and going through Energy Year 2022. This recognizes both past and future cost declines by ending the SREC demand growth about four years before the original curve. And this is commensurate with the pull forward that we had in 2012. This shape of a curve encourages business investment and the corresponding job creation and cost reduction. It really sends a signal to businesses that this is a growing industry. It aligns the solar RPS with the Global Response Act goals, and positions the industry for the growth required to meet these goals. It also enables New Jersey policy makers to reassess the need for the SREC or other incentive programs, post-Energy Year 2022. And it aligns New Jersey with the

regional market. In New York they just announced 3 gigawatts, I think, by 2020; Massachusetts, 1.6 gigawatts by 2020; in Pennsylvania and Maryland, their RPS curve grows through 2021 in Pennsylvania, and 2022 in Maryland.

It's also -- the shape of this curve is also reflective of a growth industry, and it's reflective of the trends that we're seeing, both globally and nationally, in the U.S. solar industry.

And I think with that I will turn it over to Fred.

SENATOR SMITH: Just before you do, Katie, so I understand. Are you saying that under existing legislation the signals to the market is one of growth; that there is not a need for change?

MS. REVER: No. Under existing legislation, the dark gray is the signal to the market. That's the estimated annual megawatt growth required to meet the RPS. So every year we were in balance. Those are the extra megawatts each year you would need to meet the incremental growth.

SENATOR SMITH: So that's a no-growth; it's basically a steady state.

MS. REVER: This is--

F R E D D. D e S A N T I: That's what it is now.

MS. REVER: This is-- So in Energy Year 2015 we have a growth in the demand curve of about 250 megawatts; Energy Year 2016 it goes down to about 200 megawatts; Energy Year 2017, 175; Energy Year 2018, 150 megawatts; and then Energy Year 2019 and beyond it's about 80 megawatts a year. So that would be about 7 megawatts a month. That's the current growth signal that the curve gives to the market.

SENATOR SMITH: Okay.

MS. REVER: And the blue line is the growth signal that we're proposing -- or suggesting. Starting in Energy Year 2017 you have a compound annual growth rate of about 13 or 14 percent. This is similar-- You can see the slope of the curve is similar to the original curve.

SENATOR SMITH: Right, all right. So how do we make that curve happen?

MS. REVER: You would have to change the percentage in the RPS.

SENATOR SMITH: Okay. All right, I'm sure we're going to hear from Fred on how we should do that.

MR. DeSANTI: You sure are, Senator, you sure are.

Thank you. I appreciate the opportunity to appear today on behalf of the New Jersey Solar Energy Coalition.

We operated kind of as a sub-subcommittee. We participated on the calls and then had separate meetings of, basically, New Jersey developers and other actors who are all New Jersey based to kind of form a consensus around where we would like to come out.

We want to really make this as simple as possible, because I know you've heard a tremendous amount of economic theory this morning. And, as you know, if you take all the economists in the world and put them head-to-foot you would never reach a conclusion anyway. But what I want to do is boil this down to simple things that we can understand and discuss together.

First of all, we start off with the premise that New Jerseyans like the solar program and that it should continue as it is now. And yet we are facing, I think -- if you look at the curve, we are facing the end of the

solar program. It's coming up in 2017 or 2018 -- depending upon how you parse it -- but we come down to the point where we're at 57 megawatts per year, and that is simply not enough to sustain any kind of New Jersey industry that makes sense. We're basically, at that point, replacing what's broken.

So we start off with the premise that New Jersey would like to continue. We also look to the point that this is a contrived marketplace -- this is something that was invented by the Legislature. This doesn't exist; there is nobody out there who is demanding these things. And, as a result of that, we think it's very, very important-- I mean, everybody likes solar. The only issue is, how much do you want to spend on it? How much can consumers afford? What really makes sense in New Jersey in terms of the size of this marketplace?

So we took those principals and kind of put them together. And what I'm going to present is a model that really reflects a lot on the economics of this thing. Because, again, I think that is really the main driver: Everybody likes solar. It's a tremendous benefit in terms of being the most benign form of energy production, I think, that you can imagine. But it's not cheap, and we have to balance those issues.

So that's what I'm going to be presenting. Now, to begin with, I think we would like to articulate the position that the New Jersey Solar Energy Coalition is happy -- very happy with the way the current law is operating. We don't see any need to make any market changes at this point. We think that it is operating-- The SREC prices are certainly supportive of the industry. We're perking along right now at, probably, 200

to 250 megawatts, which we think is a sustainable and reasonably sized market for New Jersey. So that we want to put out first.

As we talk about the model that we're going to put forward, we made it real simple. We said, "Look, we're going to drop down to 57 megawatts, that's not enough to sustain an industry." We like what we see this year; we think this year it's not a mad rush. People aren't going out and doing crazy things like they did a couple of years ago. We think 250 megawatts is about the right size for what New Jersey can support, going forward, and I'm going to try to prove that, economically.

So our first slide talks about the model assumptions. Again, you're going to have to do something in the next 24 to 26 months. If that doesn't occur, this industry is, basically, going to be parked. So we start off with the notion that we're going toward a 4.1 percent of retail sales; that's the size of the market, and that becomes the asymptoter, or cap, and you've seen that in the slides. We're flat at that point.

So let's move forward to the next slide and talk about, again, the assumption that, I think it is fair to say, New Jersey would like to see a continuing solar program. But we, again, are very cognizant of the amount of money that ratepayers -- and the financial resources for that support.

So consistent with those, we're going to look at a model metrics. Now, commencing in Energy Year 2017, the incremental capacity added to the existing renewable portfolio standard to achieve a constant demand of 250 megawatts would be (indiscernible). And what that means is, as we continue to ride down the curve -- and you're going to see some curves in a minute -- we're going to get to 57 megawatts. At that point in

time, when we get to 57, we want to add back another 193 megawatts a year, going forward.

Next we're going to talk about -- and that's basically what this slide says, is that's how that works.

All right, now, in terms of paying for this. We spent a lot of time talking about how we could mitigate ratepayer costs, and we think there's a couple of ways to do that. One is, as you know, the Class I Renewable Energy Credit, right now, as divined by the Board of Public Utilities -- and as projected to increase over the next several years -- is going to get us to about 17.88 percent of retail sales in New Jersey. That represents, roughly, about 16 million RECs. Now, those RECs right now are selling for $15; I think a couple of weeks ago they were $17.50. But that's certainly a lot less than the SRECs. But it is a chunk of money that goes toward renewable resources which, as we're going to talk about this afternoon, is largely flowing out of state. So one of the notions that we pick up in this model is we say, "Why don't we take some of those RECs, multiply them by 10" -- because that's really the difference between a Class I REC and an SREC today -- "and let's import that into a solar program in New Jersey." Not all of them, but some of them, just to mitigate the cost to New Jersey ratepayers.

The next issue we want to take into account is, we go out into 2028 because, as you know, the SREC life right now is 15 years. We put in a lot of solar, as was discussed this morning -- there are 1.23 gigawatts in the ground right now in New Jersey. The SREC eligibility for those existing projects is going to start to fall off the shelf beginning in 2021. So what we wanted to do was say, "Look, let's look at this from an incremental

ratepayer cost and set a baseline of today's cost being zero. And let's take a look at what that might look like." Again, just to give you some of the assumptions, today we have SREC prices at about $170 per megawatt hour; the total retail sales in New Jersey is about 76.3 terawatt hours, which is a lot of energy.

I can't predict what the growth of energy is going to be in New Jersey, so what I said was, basically you take the low growth over the longer period, a recovering economy balanced against additional gains in energy efficiency -- let's say it's going to be flat for the next 10 years. It certainly isn't going to be much more than 1 percent up or down of that.

New Jersey solar production is 1,200 megawatt hours per megawatt installed. And, again, the current price is for Class I.

So let's look at the first set of data. The first column, of course, is Energy Year 2014, which has just ended; we are now in Energy Year 2015. And as you can see from the first column, the proposed RPS is the number of megawatts that we are proposing. So this year there is a 191; next year it falls down to 159; and then beginning in Energy Year 2017 -- if the Legislature were to approve this -- we would go back up to 250 and basically maintain a flat supply from that point forward.

The third column is the incremental add of megawatts required. So again, we don't really do anything until 2017, where we need 123. And then, of course, it goes up from there. And this shows, in column 3, the puts and takes. Because as we add additional megawatts, beginning in 2025 you can see that we're actually reducing the number of megawatts because we're retiring the existing SREC program.

The third is a carry-- The fifth column is Class I transfers. This is the number of Class I RECs that we're going to multiply by 10 and import into the solar program.

And finally, the last column is the incremental ratepayer cost. Now, again, this is based upon current pricing; this is based upon today's current level of solar energy production. And as we can see, the way this model works, from 2015 through 2018 there would be no net increase to ratepayer contribution. We begin to pick up ratepayer contribution in 2019; it will cost $116 million that year. It goes up to $245 million. It peaks in 2024 at over $1 billion -- $1.17 billion -- but then as the existing SREC eligibility or retirements begin to take effect, we begin to see the ratepayer costs coming down; wherein 2028 we are $275 million below where we are now.

Let's take a look at that, in terms of-- This is the number of transfers. Here's the curve that showed the actual incremental cost. Again, the baseline at zero dollars is today's current level of costs. So through 2018 this model would say, "No more dollars from ratepayers." Beginning in 2019 it would start to go up, and then peak in 2024, and then as the retirements begin to take effect, we end up in 2028 actually about $300 million below where we are today.

So that's the cost of putting together something that we feel would reasonably jumpstart the solar industry, keep it moving at a modest rate -- 250 megawatts is certainly nowhere near some of the numbers that are being bandied about today. We think that what we're doing right now, this year, we probably are at the level of 250 megawatts. So this would basically continue for the next 10 years. Again, the assumption is that the

people of New Jersey would support this kind of build-out; but I do think that this is probably a way to show that it's affordable. And it's a way to take money from other areas and other jurisdictions to try to balance those costs.

The last slide here is the impact to the retirements and, as you can see, beginning in 2024 we start to retire a significant amount of SRECs, peaking in 2027, which reflects the bubble that occurred in 2012.

So that, principally, is it. This is a comparison chart; it shows the blue -- the solid blue is essentially the 250 straight build-out; the red is the existing statute which provides the 57 megawatts; and the green was the original 2009 situation that we had before it was changed.

So again, it's a snapshot; it's something that we think is a reasonable balance of, this is the cost of continuing this industry at a modest rate.

SENATOR SMITH: How does that translate into an increase in the ratepayers' bills? Stefanie is going to get up and start to slap you in a second.

MR. DeSANTI: I'm sure she will. I look forward to that. (laughter)

SENATOR SMITH: What is the-- It peaked at $2 billion and change?

MR. DeSANTI: It peaked at $1.17 billion.

SENATOR SMITH: All right. What does that mean to the average utility bill?

MR. DeSANTI: Well, you know, we look at the size of the program today. We've got -- and maybe I could get some help on this,

because I don't have a calculator -- but I would think we're probably looking in the 1 to 2 percent increase range, but probably not more than that based upon the number of megawatt hours that are--

SENATOR SMITH: Does this solve -- also predict a decrease at some point?

MR. DeSANTI: Oh, yes. It keeps us at 250 -- it's a straight 250 build-out. It's what we're doing today -- basically a snapshot of where the industry is today and saying, "This is the right size for New Jersey -- let's go for it."

SENATOR SMITH: Great. And was this a consensus?

MR. DeSANTI: Among the New Jersey Solar Energy Coalition, I would say it was absolutely a consensus. We vetted this thing for quite a while. In terms of the group that's the stakeholder group, I think that Katie's view and my view are not very, very different in terms of the size of the industry that we're talking about.

SENATOR SMITH: She's frowning. (laughter)

MR. DeSANTI: (Indiscernible) a smile.

SENATOR SMITH: Yes, Katie, what is your issue with his?

MS. REVER: Sure. Let me-- So this graph overlays the four different curves we're been talking about. The light gray is the 2009 solar advance math; the dark gray is the current; the blue is the growth scenario through 2022; and the purple is what Fred was talking about -- the 250 megawatt-a-year flat line. And this is, essentially, the additional growth in the solar industry needed to make the RPS.

So there are two different visions for the solar industry and the growth in the solar industry, going forward. Fred also mentioned two

different suggestions on ways to balance the budget for ratepayers, right? Taking Class I RECs and switching them out, and as projects start to roll off -- because there's this 15-year qualification life: a project was built 10 years ago; 5 years from now that's going to drop off and you're going to need additional growth -- additional megawatts in the ground to meet the RPS. Both of those balancing mechanisms could be used on either of these curves. So if the Legislature wanted to use those balancing mechanisms, they could use it on either of these growth scenarios. I mean, the blue line shows a growth industry between now and Energy Year 2022. It says, "Companies, we want a growing industry, and we want you to invest and have job creation and the reduction in cost that comes from that sort of growth. But we're going to stop in 2022 and take a look and see how we're doing with reduction in the requirement for incentives; what does the program look like, post-2022," versus saying, "Well, we're going to do this through 2028," and then not have a chance to take a look at it until after 2028.

And as I mentioned, the 2022 timeframe really does align with New York, Massachusetts, Pennsylvania, Maryland, in terms of their current solar growth curves.

Alan, did you want to add anything?

MR. EPSTEIN: And that, Senator, is the difference between the next subject and this subject. Fred spans between 2022 and 2028, where Katie is going is the 2022, and then Pam Frank will speak to 2022 to 2030. So you've got two different sets of statistics, both getting you to either 2028 or 2030. So after Pam speaks to you about what we deem the

longer curve, you'll then be able to compare Fred's 10 years to the two bites of the apple, Katie-plus-Pam's approach.

SENATOR SMITH: Okay.

MR. DeSANTI: Just one last quick comment.

SENATOR SMITH: Very quick.

MR. DeSANTI: All right. The Class I RECs that we're borrowing, I just want to make it clear that we, right now, are reserving about 9 million megawatts of offshore wind. Now, we're going to talk about this this afternoon. I don't think it's ever going to show up. But those are priced at about $270 a megawatt hour. So making these transfers to solar actually saves our ratepayers money -- if that's what we intend to do -- and it's also, I think, a good way of -- it's still renewable energy, pure renewable energy. Solar and wind are absolutely pure renewable, but this development would occur in New Jersey.

SENATOR SMITH: Okay, thank you.

We want to try and finish the stakeholders group. Pam -- changes to the solar RPS growth curve for long-term. I need you to do it very quickly because we're coming up to the magic hour.

MR. RAWLINGS: And that's me too on this part.

SENATOR SMITH: Okay, go ahead. But you have to be quick.

MR. RAWLINGS: We will be quick. And by this time you've probably heard more numbers and seen more graphs than you can possibly digest.

But here's the good news: You've heard a number of different and divergent points of views, but we did promise that there was an item of

consensus -- and this is regarding the overall, overarching topic of responding to the increasingly urgent global problem of global warming. And on our last call we did have a consensus; in fact, there were no dissenters on the phone at the time, although you may hear dissenters later. But around one subject there was this consensus that New Jersey should commit to a long-term transition to renewable energy, including strong, steady growth for our solar power. And Pam and I will talk about some possible scenarios for making that happen.

SENATOR SMITH: Quickly.

MS. FRANK: We're going to do this quick and try to be mindful of the time.

I'm just going to throw up a graph for visioning purposes. This shows, essentially, a path to -- one possible path to robust solar growth through 2030, and is meant to really align with some of the goals in the Global Warming Response Act, which Senator Smith started this whole process off, I believe.

I think it's important -- because you've heard a lot of testimony this morning -- to really try to underscore where we have points of consensus. And Lyle will keep me honest in case I say something that is not the consensus of the group. But first and foremost, this group did agree -- and I'll say I'll make an exception with the ratepayer advocates. They are going to speak for themselves. But this group, minus the ratepayer advocate, did agree-- Actually, no, I misspoke. Ratepayer advocate was on the call where there was consensus about the need and the desire to have a long-term signal to the market for robust solar growth through the next -- at

least to 2030 and, perhaps, even out to 2050. But there was consensus on that point.

It is important to understand that the group understands the complexity of the economics, the technology implicated in this kind of robust growth, the disruption to the distribution system. There's a lot more work that needs to be done, but most importantly -- and I think this remark should really, sort of, take into account all the work that's being done this full day -- we're going to need what I'm going to call *new math.* And when I say new math, I mean, what's the role of the utility? What's the value of solar? What happens with regard to decoupling, if at all? I mean, all these conversations are related, and the ability to be able to really set the stage for this type of growth is going to require a lot more work, on behalf of stakeholders, to come up with a new economic paradigm that makes sense.

So I think there was also consensus on that point. We don't come here today, Senator Smith, with answers on new math, but we say it's going to be required. And that's, I think, work that's going to need to be done over the next several years.

I think there was also consensus on the fact that we have a kink in our RPS chain -- in our solar RPS chain from 2017 to about 2022. So there seems to be widespread consensus on that piece.

And the last thing I'm going to say -- this is probably the point that's most sensitive, and you heard a little bit of different points of view -- is I believe that there was consensus on the idea that the solar industry and the participants are open to talking about structural changes to the market to get to this place. But there's a lot of concern about how that conversation happens, the timing of any changes contemplated. And you

heard from KDC, NJR, and Flett Exchange on the one hand, that they are exquisitely sensitive to the timing of considering market structure changes. You hear from Lyle that he would like to sort of go quickly into that conversation and start something sooner than later -- which may not take effect until the mid-2020s, but he would kind of like to accomplish something sooner. So there's definitely tension in the group that exists there. But I believe, with some more conversation and discussion, we can probably figure out some consensus points.

So that's the good news. I think it was a worthwhile exercise for everybody who was involved. It kind of ruined some summers, (laughter) but there was communication and consensus building, and I think it gets us off to a really good start for the work ahead.

I'm going to let Lyle talk a little bit about the challenges of putting forward a growth curve -- some of the technical challenges, some of the cost implications, some of the economic challenges to that too.

MR. RAWLINGS: Oops, and we lost the-- Oh, the slide's not there?

MS. FRANK: That's a year-over-year growth slide for 2030.

MR. RAWLINGS: Yes, the last one -- not there.

Okay, well, all right. I don't have the slide; I'll be very quick.

Pam is right about the new math -- changing the utility role, that sort of thing. The new math is also recognizing that you've heard a lot of figures about cost, but that left out the subject of the value that's delivered. We're not paying for nothing, so the cost is not in a vacuum. We're paying for something; we have to do better math on figuring out that value delivered, which is the value of the energy, the value of decreasing

peak prices on the wholesale market, the environmental and global warming value, and the jobs and economic growth, the health effects, etc. We've got to do a better math than that. We can't just look at the cost without looking at the value that we had delivered.

But the graph that I was going to put up was about looking forward to 2050. And that's where we're looking at the timeframe over which we're looking at having a transition to renewable energy and what would that take. What we believe is, we have to have a very gradual approach to this. Too much economic disruption happens if you try to do it suddenly. You've got to start making decisions about infrastructure that has to be built -- long-distance transmission, demand-side management, etc. That infrastructure has to be created gradually, and we have to make the decisions about how many natural gas plants do we build, how many coal plants do we build? All of those decisions are going to be made by those investors in the context of what is the long-term signal. If we send a signal that we're going to gradually transition to 80 percent renewable energy, for instance, by 2050, that is going to drive decisions on investing in fossil fuel resources, in investing in what kind of infrastructure, what kind of future energy are we building infrastructure for. So the slide also talked about, what would it take to get to 80 percent renewable electricity by 2050? It would take an average of about 425 megawatts of solar a year, plus about 4.5 gigawatts of offshore wind. If we did that and a smattering of other small renewables, we would get to this 80 percent by 2050 goal. It's actually a modest amount of building per year if we start soon, and if we build this out very gradually.

That's it.

SENATOR SMITH: I appreciate everybody's hard work on this.

And that concludes the speakers from the working group.

The interesting thing is that we have only three witnesses, which is a wonderful thing. And I think we should give due deference to our Ratepayer Advocate. And as Stefanie's walking up, let me recognize the presence of Senator Thompson and Senator Greenstein, who were here about an hour and 45 minutes ago. But this is the first chance I've had to recognize your presence.

Stefanie, so what does the ratepayer think, other than, "Don't raise my rates"?

S T E F AN I E A. B R A N D, Esq.: Well, I would like to thank all of you, and I would like to thank the Committee for a very interesting and very balanced, I think, presentation.

SENATOR SMITH: And, by the way, I want to thank you for the memo that you sent us, I think, over the last two days on topic 1 and topic 3.

MS. BRAND: And also on the decoupling.

SENATOR SMITH: Right. So you don't have to read a thing.

MS. BRAND: No, no I'm not reading anything.

SENATOR SMITH: If you would, if you could kind of summarize everything, I would appreciate it. (laughter)

MS. BRAND: No, no. I'm going to be brief. Most of what I'm going to do is sort of respond to what was presented today.

We did participate in the work group. I did hear for the first time today that there were, I guess, splinter groups or subgroups that went

off and created the charts that you saw on what the curve should be in the next, I guess, 10 years or so. I saw those charts for the first time today, so I don't have a specific response to Mr. DeSanti's proposal or to Ms. Rever's proposal. I would love to get that information; I don't have those slides, I don't have that information. And I certainly would be very happy to have our experts take a look at it and get you real numbers on what that will cost.

And I mostly want to just respond to a few things today. We fall into the category of, "don't do anything for now." We agree with a lot of what some of the speakers were talking about -- that we think the Solar Energy Act made a lot of very good changes. We think that the market is working, it's percolating, things are settling down. And I also think that one of the very important provisions of the Solar Energy Act was the provision that asked the BPU to commission a study on solar volatility and its causes. And that study-- Although some people cited it here today, it's still in draft form, is my understanding, and it will be released finally on July 23, I believe is the due date.

But what's important, I think, about that study is that it's being conducted by an independent consulting firm working with the Rutgers Center for Energy, Environmental and Economic Policy. It's not being done by the solar industry, it's not being done by the ratepayer advocate, it's not being done by anyone who has a particular interest in a particular outcome. And I would strongly urge that nothing be done until you look at that report, until you can really see what is it that is causing volatility, or is there volatility.

The other thing I wanted to talk about is that in some of these charts that we've seen today, there's a fundamental assumption that I don't personally agree with -- and that is that without SRECs there is no development of solar. And that is not really what SRECs were about. There was a decision made, frankly, during the Corzine Administration that this State was going to rely on a market structure for the development of solar energy, and not on what's called a *feed-in tariff,* which basically guarantees a certain level of income for the solar industry. And the theory was that if you spur an industry that they would do things to create innovation, and that they would create a situation where solar would get cheaper, and there would be new ways of doing solar so that it would get to the point where they didn't need SRECs in order to survive.

And so SRECs were never supposed to be permanent; they were never supposed to be the only way that this market got stimulated. And one chart that's not on here is how significantly the cost of solar has dropped during this period. The cost of actually-- The cost of the panels, the cost of installation, the cost of building a solar facility has dropped tremendously and, hopefully, will continue to drop. We're hearing things like solar shingles, we're hearing about new innovations that should get the industry to the point where they can operate just like any other industry operates -- without the need for renewable energy credits.

And that's why, when the Solar Energy Act was being negotiated -- and it was a negotiation, as we all know -- Rate Counsel actually supported the numbers in that bill; we supported continuing the RPS through 2028 at a cost-- I don't think-- We submitted a chart; I'm not sure if it made it to the presentation, but it's attached to the letter that

was sent. And what this shows is that Rate Counsel signed on to a $6 billion contribution from the ratepayers to build this industry out through 2028. So no one is saying that we're not interested in seeing the industry developed; no one is saying we don't want to see the industry be healthy. However, we do want to see an industry that is based on a market structure, not on a feed-in tariff. And that means, at some point, this industry should be able to operate without the need for SRECs. We're willing to live with the negotiations, with the deal that was struck in the Solar Energy Act. We think that ratepayers gave up some things, and the industry gave up some things. I'm a little disappointed that now we're being asked to -- having given the benefit of the bargain, which were the increased RPS numbers in the early years, we're back at the table having to defend getting the part of the bargain that we got for that.

But I think it's important to remember that SRECs were a mechanism for getting this industry started. The industry has started, the industry is ongoing. Many people believe we will reach a point where solar costs go down to the grid parity by the end of this decade. Our numbers go out -- our RPS numbers go out to 2028 just in case that is not the case. And we don't support extending it beyond that date.

We also think that there is no evidence that the market is not working. I think you've seen some people talk today about how the market is working. And I think that if we try to change it every two years, if we change the structure every two years, if we change the RPS every two years, we are creating the volatility that we're trying to solve.

So it's important not to be the volatility, and to make sure that there is some staying power here. And that the decisions that were made to go with a market structure are vindicated.

SENATOR SMITH: Let me ask a question.

MS. BRAND: Yes.

SENATOR SMITH: I take the representation from the group was that one thing everybody agreed with was that renewables should be a much greater portion of our energy portfolio; I think the number was 80 percent by the year 2050.

MR. RAWLINGS: (off mike) Well, that particular number was not a consensus.

SENATOR SMITH: All right, that's not it. But the concept of bigger--

MR. RAWLINGS: (Indiscernible) long-term transition--

SENATOR SMITH: Right. How did the Ratepayer Advocate-- Forgetting rates for a second.

MS. BRAND: Yes.

SENATOR SMITH: But the concept of having a greater proportion of renewable, where are you on this?

MS. BRAND: I don't need to forget rates -- I don't need to forget rates to say that Rate Counsel supports a gradual transition to a more renewable portfolio.

SENATOR SMITH: Okay.

MS. BRAND: I do think that's the future; I think that there are costs associated with fossil fuel technologies that have to be taken into account.

SENATOR SMITH: The new math.

MS. BRAND: The new math. Well, I don't necessarily agree with the new math. I don't know what the new math is right now, but what I do believe, I think math is math and I think we have to recognize that math is math. I think we have to recognize also that there is not a unlimited pot of money to pay for all of this -- that there is a breaking point.

AARP commissioned a poll -- I think it was last year -- that said 60 percent of those polled believed that their elected officials weren't doing enough to keep their electricity rates down. So there is, certainly, a tipping point at which consumers are going to feel as though what they're paying for is not worth it. I don't know that we're there, and I hope we never get there. But I do think that you have to assume, as you're looking -- as we go through today, you have to assume that a dollar that you put towards solar is a dollar you may not be able to put towards energy efficiency, or electric vehicles, or whatever. There are many, many good programs you're going to hear about today, but it's a wish list in a lot of ways. And there are choices that are going to have to be made as to what gives us the greatest benefit, what's worth paying for, and how much ratepayers can truly tolerate.

So then, in closing, I think that the rush-- I think one of the things I heard today was that in some ways volatility is caused by the rush for incentives, and the fact that when the tax breaks are expiring everybody rushes to build. And when the RPS-- Everybody rushes to build. And I think that we need to think about letting the market be a market. And also not assuming that just because the RPS is at a particular number that there

will be no building beyond that. Because I think that the industry really is starting to walk on its own and there will be development even without extreme increases in the RPS.

And in closing, I would just like to say that we would appreciate -- we would like an opportunity to respond to some of the programs -- some of the proposals that were made today. We don't have any of the information related to those, but we would be happy to give you some real cost estimates of what they would cost. I can tell you that $1.7 billion -- if you just strictly divide it by the number of people in New Jersey, works out to $190 a person. So that's on top of everything else we're doing. So we are talking a significant amount of money. You can't really do it that way when you're doing rates, but I'm happy to have our experts really figure out what the actual numbers are.

SENATOR SMITH: You know, you bring up a really good point, which is, people should have a chance to react to whatever they've heard today. So you know what we're going to do? We're going to keep the record open for two more weeks. Anybody who wants to do a supplemental letter, suggestion, idea, criticism of something you've heard today -- that record will be kept open. You want to send your cards and letters to Jeff Climpson at OLS (laughter) and we'll add it to the record. You know, hopefully, a lot of the good ideas today we will be able to go forward with, but you may be hearing some of this stuff for the first time. So we should give anybody who wants an opportunity to react. So we'll keep the record for two more weeks.

MS. BRAND: That would be great. And also if we could have the slides, or the information that was presented today, because we don't have it.

SENATOR SMITH: Yes, and I think we're on Memorex here, right? Where you can tune in to rebroadcasts of this, or not?

MR. DUHON: I think so.

SENATOR SMITH: Yes? This is available if you hit the right button on the Internet, and you can hear it. So the audio is definitely available. It may take more than two weeks to get the--

MR. CLIMPSON (Committee Aide): Slides.

MS. BRAND: Great, okay. Well, I can try to get it from the people who made the slides.

SENATOR SMITH: Sam, did you want to say anything?

SENATOR THOMPSON: Yes, I did have one question here.

We did have one witness earlier who indicated that increasing the portfolio of long-term contracts, he felt, would have saved ratepayers substantial money. Do you agree with that assessment?

MS. BRAND: Increasing long-term contracts?

SENATOR THOMPSON: The amount of long-term contracts in the portfolio.

MS. BRAND: Well, increasing the portfolio standard, no, never saves us money; it always costs us money.

SENATOR THOMPSON: I'm sorry?

MS. BRAND: Increasing the portfolio standard costs ratepayers money; it always will. If you were to take a portion of the RPS

and move it into the long-term contracting programs, I think, overall, that would actually, probably, cost us less -- the ratepayers less money.

SENATOR THOMPSON: That's what he's saying.

MS. BRAND: Yes. We like those long-term contracting programs because the ratepayer contribution is only the delta between what the utilities buy the SRECs for and what they sell them for. Because they buy them, and they immediately sell them. So all we pay is the delta, and we pay the utility's administrative costs.

Now, I do also understand, though, the argument that that skews the market. And I understand that, and that's why we've advocated for only having those long-term contracting programs for the smaller projects -- because they, I think, are not necessarily on the same playing field as larger projects. And so we've advocated for not increasing the size of the installations that are eligible for the long-term contracting programs. It should be a limited thing, otherwise it is true -- you will skew the market. But it is cheaper for us.

SENATOR THOMPSON: Thank you.

SENATOR SMITH: Okay, thank you very much.

Elvin Montero, Chemistry Council of New Jersey.

Elvin.

E L V I N M O N T E R O: Thank you, Mr. Chairman.

I'm Elvin Montero. Just for the record, we weren't part of the stakeholder group, so I'm hearing a lot of this for the first time. But my comments are really related to when we were here two years ago.

SENATOR SMITH: That shows you have to attend every meeting of the Senate Environment and Energy Committee, because we announced this-- (laughter)

MR. MONTERO: I'll leave it up to my colleagues for not telling me.

SENATOR SMITH: And I said everybody's welcome. So--

MR. MONTERO: Okay. Well, we certainly appreciate the opportunity to share some thoughts. And we would certainly be a part of that group that says not to do anything at this time. Let the bill that was put into place two years ago do its job and we'll see the reports.

When our members make decisions to be here, energy rates are considered. They continue to be high; they are 10 percent higher for the industrial players than they were two years ago when we met with this bill.

We certainly support solar; we make a lot of the products that are in it. But something I did hear today, throughout, was something we consider when we make decisions on investment in our State -- was stability and reliability. And I think that's something you hear before your Committee often. And I think the term was *certainty and predictability* for this group.

So if that's the case, then let's let the legislation that was put into place do its job, see what the BPU has to say. I don't think our members -- who are large industrial energy users that use up 60 percent of the energy, pay 60 percent of the energy costs in this state -- can afford higher energy rates at this time. And, again, that's why we keep our eye on these types of policies. And while we support solar, we are concerned that we're already exposed by $6 billion; we don't want to see that increase.

Thank you.

SENATOR SMITH: Thank you, Mr. Montero.

Our last witness on the first topic of the day -- Jeff Tittel from the Sierra Club.

Jeff.

J E F F T I T T E L: (off mike) I will be very brief; I'll have more comments later.

Thank you.

I just wanted to start off real quickly saying that we strongly disagree -- that expanding the RPS does not necessarily raise rates, and it could actually lower rates as renewable energy becomes more competitive and cheaper.

But I just wanted to just start out and say, as we try to plan for the future it is critical for the Legislature and government to play a role. We were not a big fan of going to a market-based SREC system. We favored feed-in tariffs and other things which we thought would be more stable. However, you need to have a role to start to keep the peaks and valleys from occurring -- whether it's peaks in prices, or valleys in the number of solar installations going forward. New Jersey was second in the country, we are now sixth; we had 10,000 jobs in solar, we now have 6,500. So what happened has had consequences.

A couple of points I just wanted to add on the amount of solar. I think the RPS should be expanded, and I tend to agree with the consensus, where we should be at least up to around 40 megawatts a month. I think New Jersey can handle it. But there are other ways to help us get there, and I think we need to look, as part of this, at other

mechanisms to help long-term contracts we support. We believe we that we need to develop and allow for community solar, and to allow for more competition within the solar sector by allowing towns and other governmental agencies to be able to put in at least utility-scale solar systems. We believe that impediments at the local level -- we need to remove some of them. One thing that we did support -- a rule that we oppose -- is the current CAFR rule that's out. They have a general permit for small solar to go on peoples' lawns in the CAFR zone. It's only for a small amount. But again, we need to look at removing some of those impediments.

New York state is looking at developing a Clean Energy Bank to give loans to businesses to do solar above and beyond their RPS and for other renewable energy sources. We think that we need to have an overall plan for this state on how we're going to reach these goals and where solar should go. One thing we'd like to see is to allow clustering on farmland under municipal land use law. It would allow 15 or 20 percent of a farm being set aside for utility-scale solar while preserving the rest of it. We would also like to see, as part of this, the ability of government to do more with solar when they're putting money out for parking decks, or new development, or subsidizing development through the Economic Opportunity Act -- to include a piece for renewable energy. Because I think if the government is going to be helping businesses go forward, one way to deal with Elvin's issue is the more electricity the business community can generate for themselves through renewable energy, the more their bills will actually be lowered. And so we think that we should be tying solar into those things. And if we ever get the Transportation Trust Fund, and other

places -- sound barriers and other -- train stations and other places for solar, where the State can be putting them in--

So I think we have a great opportunity here, and I'll give more formal comments later. But I think we need to start looking beyond our-- One of the problems I saw is that each solar company or group has blinders on. We have to remove the blinders, expand the pie, and look for more innovative solutions.

SENATOR SMITH: That's one good reason why this process that we've just gone through is a very good thing. We have people talking to each other who don't generally talk to each other, and that's a good thing.

MR. TITTEL: Absolutely.

SENATOR SMITH: Okay, thank you for your comments.

That concludes hearing number one -- Mitigating Solar Development Volatility.

And we're now ready to go into topic number two: Achieving Global Warming Response Act Goals.

How about the stakeholder group for that? I see Ed Potosnak.

Okay. If everybody would introduce themselves starting with Ed.

E D P O T O S N A K III: Ed Potosnak with New Jersey League of Conservation Voters.

SENATOR SMITH: You were the Co-Chair of this group?

MR. POTOSNAK: I was.

M A R I S S A B A C H: Marissa Bach with Direct Energy. Chris Kallaher, who I work with, was also a Co-Chair that I helped out with. He was unable to make it today.

MR. TITTEL: Jeff Tittel, Sierra Club, being here for a certain section that we worked on all together.

SENATOR SMITH: Okay. Mr. Ed, take it away.

MR. POTOSNAK: I have copies of a report that we generated; I don't know if you guys have them. I can provide them for the Committee.

We'll get started.

SENATOR SMITH: For the benefit of the audience, this is an 18-page report and Ed is not reading it. (laughter)

All right, Ed, in summary fashion, tell us what your group came up with.

MR. POTOSNAK: Yes, sir, we have three speakers today to sort of break down recommendations from the Global Warming Response Act group. As you're aware, there's broad scientific evidence that global warming is caused by human activity, and it negatively impacts the public health, New Jersey's economy, the homes and businesses that reside here. And New Jersey really was a pioneer with the Global Warming Response Act. And just to sort of overview for folks in the audience, the goals of the Global Warming Response Act are to ensure, by 2050, that we reduce our greenhouse gas emissions to 80 percent of 2006 levels.

And the charge of our group of stakeholders -- which was very diverse -- was to look and identify actions that we can take to get on track for the Global Warming Response Act goals. And our group focused on existing technologies, with the recognition that in the course of 40 years

new technologies will come online. But we don't have a way to, sort of, quantify those.

And so the report that we put together is a culmination of work by many individuals and organizations. And I just want to start out by thanking all of the stakeholders for putting their best foot forward to meet the challenge that you set out, and also to thank you for the opportunity and your commitment to addressing climate change.

The participants included a long list, which is at the end of the report in the acknowledgement section. But they did want to, sort of, stress one thing, and that is: We have recommendations listed -- and we're going to go through those; in most cases, there was a lot of agreement; but in some, there wasn't. And in some cases we footnoted the disagreement; and in others, folks just kind of stayed quiet for the good of the group -- that they weren't so opposed that they felt like they had to sink the ship, as it were, to not include it as a recommendation.

So most of the things you're going to hear there is general consensus around; but just in the back of your mind to know that the participants didn't want say on the document -- where they had to sign off on every single thing, or we would have had nothing to give to you. We trust that the Committee will be able to make the judgments based on where different folks stand, and realities of the fiscal climate and the net benefits for addressing climate change with these recommendations.

So that's kind of the general overview of who was involved.

And then I'll turn it over to Marissa to explain a little bit about the process that we used, and then we'll dive into the details.

SENATOR SMITH: Great.

Marissa.

MS. BACH: So we started off with a-- I have to apologize; I don't have much voice. We started off with a large group meeting where we did some brainstorming of ideas on how we can reduce greenhouse gas emissions in the state. And during the meeting we recognized that the three main reasons for greenhouse gas emissions in New Jersey are transportation, electricity generation, and combined fossil fuel use and facilities.

So after we had done this big brainstorming exercise as a group, we decided to break into smaller subgroups to focus on each of these three different areas. And that's how the report is organized. We recognize that there are other things that cause greenhouse gas emissions, but these are the three major ones, so that's what we decided to spend our time focusing on.

We had a diverse group of individuals, as Ed was talking about. We had everybody from industry, to utilities, to environmentalists, and concerned citizens working with us -- sometimes multiple meetings a week. And we had a lot of discussion about the full life-cycle costs of greenhouse gas emissions and how to balance the cost of reducing greenhouse gas emissions to ratepayers, versus the health and societal cost that it's going to cost all of us in the long run.

Unfortunately, we haven't come to a solution on how best to balance that; we're going to leave that hard one to you. But we did our best, and we did consider that in every one of our proposals.

Interestingly, the greatest challenge that we see in meeting our greenhouse gas emissions reduction is not a lack of technology. We have the technology, but the greatest challenge is reaching these goals without putting an unfair burden on New Jersey's citizens and businesses, and the

ability of our businesses to compete against other states and other countries.

So what we're going to share with you today are ideas that we focused on that the majority of the group agreed on. And we spent a lot of time trying to come to consensus and take into account considerations like cost.

MR. POTOSNAK: And the key thing here is that we really focused on the intersections among the stakeholders. They have the best potential for us to come up with nontraditional, bold, and creative measures to reduce the greenhouse gas emissions.

There was also an acknowledgement that in addition to solutions coming from the government -- from the public sector -- businesses also have untapped and, in some cases, tapped potential for addressing climate change. And many businesses, some in New Jersey, are taking action and steps to reduce carbon emissions. And they're doing it for a number of reasons: to reduce costs; to improve their image with the public -- which has benefits, almost like advertising, to generate more support, more profits; to secure and strengthen the supply chain; to meet the demands of their shareholders who are putting more and more pressure on companies to be corporate stewards of the environment; and also, just basically, to do the right thing. And we believe that the Committee can look at ways to encourage -- this is overall, the different sectors that we're going to talk about -- encouraging more businesses by highlighting and rewarding voluntary actions that they're taking to reduce greenhouse gas emissions. And that will play an important role in meeting the targets of the Global Warming Response Act.

One example is New Jersey DEP's Sustainable Business Initiative. And that can help, but I think we could also look beyond that. And there were some folks in the group who felt very strongly -- looking at what other countries are doing, as well, to support business in helping to reduce global warming greenhouse gasses.

Before we get into the solutions, it's really important to, sort of, reiterate why we're here and what's at stake. The challenge of global warming -- it's really not a battle between factions in the present. It's a question from the future. And this is what we set out when we started our first meeting. The question we asked ourselves, "What would it feel like when you tell your children you were at a meeting where you could do something about the global climate battle?" And so the question really is, "What did you do when there was still time?"

And with that in mind, that's how we moved forward, and we were happy, and the participants were honored, to help New Jersey answer this question.

So we're going to get into some specifics about three leading sections and sectors -- we broke into subgroups -- of reducing greenhouse gas emissions.

So I'll just ask you to fasten your seat belts, because you're going to hear a lot of actionable items that we came up with in this area of intersection to reduce greenhouse gas emissions. And the first one is transportation and land use as a subsection; and Marissa was part of that, and Jeff was part of that group. Being the largest sector, or the largest contributor to greenhouse gas emissions, transportation was a large focus for

the group. So we have ordered them, sort of, in hierarchical order by their contribution to the problem.

MR. TITTEL: I just want to thank Senator Smith and the Committee for holding this hearing, and for pushing forward such an ambitious agenda.

When we look at climate change and the impacts from global warming to our state -- we just saw a $60 billion hit, economically and financially, to our State. So we know failure to move forward will cost us, not only in public safety and public health, but will also hurt our economy and will make New Jersey a state where companies may not want to invest. So reduction of greenhouse gasses is critical for our future as we recover from Hurricane Sandy, and Irene, and all the other storms that we have seen.

One of the biggest areas that has not really been covered in programs-- We have certain areas where we have gone after emissions from power plants, we've gone after better pollution controls from businesses, we've done other things that will reduce greenhouse gasses. But the biggest area other than passing the California car legislation -- or Clean Car -- has really been mobile sources and land use. When we look at the overall numbers in the State, 42 percent of our greenhouse gas emissions come from the transportation sector; it's the largest area, and it's the area where it's, maybe in some ways, hardest to reduce.

So we're looking at it from a multiple strategy. First and foremost, in order to help reduce pollution we need to also reduce vehicle miles travelled. We're a state that spends a lot of time in our cars and that adds to a lot of pollution. So one of the things we strongly believe in

helping to expand -- or helping to reduce (indiscernible) as we expand our Transportation Trust Fund -- that we go back to the standard that was in place from the DeFrancesco Administration, which was having a cap on road expansion of 3 percent, with the rest of the funds going for rehabilitation and mass transit.

One area we didn't get complete agreement on was how-- Well, we had agreement on a trip reduction program, and we need to do it. What we came out with was a consensus, which was by using incentives or the carrot approach, through creating tax incentives and other things to help encourage van and carpooling -- there are others who believe that it should be more mandatory, but that was the consensus opinion. Looking at public facilities to become multi-modal accessible, so that we can not have to drive to the train station; that we could actually take jitneys and other things; that people can bike to work -- and to do other ways to help -- or bike to train stations so that we can help reduce congestion, as well as the overall VMTs. We never came out with a consensus figure on what that number should be, but my own is we should be looking what the overall reduction (indiscernible) sector are and then target it that way.

Another big area that we see is land use. We have developed land use patterns in the state where, for decades, most of the growth was happening in areas that are not served by transit, where we end up having congested highways, and we end up having a lot of pollution. So one of the things that we were looking at is that we need -- especially since there's been more of a paradigm shift with younger people who want to live in more urban or small town-type settings -- that we need to be promoting more transit-oriented development; that we need to be looking in a way

that ties new developments to transit, as they do in Oregon and other places.

So, you know, we would like to see -- use (indiscernible) law help -- to require smart growth planning as part of our towns' development; we need to look at retrofitting our built environments to make them more walkable, as well as bringing in transit. We think that it's critical.

You know, again, we also need to have better overall land use planning in this State, which we seem to be getting away from. I will say that by preserving open space and limiting sprawl in rural areas, not only do we keep farmland viable but we help soak up some of that carbon we produce. So I think having real planning and real incentives to try to get people out of their cars is critical to land use, and critical to reducing greenhouse gasses.

SENATOR SMITH: Open space funding wouldn't be bad, either.

MR. TITTEL: Yes, well I thought you'd pick up on that on your own. (laughter)

We need, critically, to expand mass transit in this state. New Jersey actually is better than many states. About 10 percent of the people do take mass transit to work every day, but we need to expand that capacity; we need to develop capacity into New York City. We are blocked. Whether we come up with a way of expanding the 7th Avenue Subway or the Gateway Project -- but we need to develop that capacity. And maybe we need multiple approaches. We need to, again, incentivize some of the land use for transit. In Oregon, in their model for transportation planning, they actually encourage new developments along

new transit. We should be thinking about that. We don't really do that. We need to expand funding, of course, for mass transit; and we need look at-- There are other programs that we can develop to help move people around better, especially in rural areas, through van pooling and jitney service, and things like that that, we can actually utilize and could actually help get people out of their cars.

We need to look at how to expand mass transit into some of the more suburban/rural areas where the densities could develop in the appropriate places that help support that transit.

The other big area we see, for not only air pollution and greenhouse gasses, is the expansion of a freight rail system is critical, not only to get trucks off the road, but to help reduce those truck trips and air pollution. And it really is important there, and especially along our ports, To have the ability to go from container to rail is critical to keep our ports. economically viable against competition from Baltimore and Nova Scotia. And also, looking at electrifying movement within the ports, so that we're not using diesel all over the place, is part of that. But I think freight rail is a critical piece of it.

But the biggest problem with everything I just mentioned-- We have all these great solutions out there. We can have more mass transit, more buses, more trains, more freight -- you have no way to fund it. And that's the big question. How do we come up with a stabilized funding for transportation? And I think that's the biggest question out there. You know, we looked at expanding the gas tax, and many of us support adding the sales tax to gasoline. We looked at user fees and things like cash-out parking and other incentives that other states do for helping to pay for mass

transit. Boston has a small fee on parking downtown to help pay for the operation and maintenance of the T system. You know, we have to look beyond our just narrow focus. But without the money and without the capital, we're not going anywhere, and I think that's really critical.

And the other thing is that DOT needs to be actually brought in; they have not signed on to the Global Warming Response Act. They kind of do their own thing, and they need to be brought in. Just like Oregon brought their transportation into their growth management plan, we need to bring DOT into global warming.

There was a lot of support -- and we'll talk about that later -- for cleaner car technology, and the developing of a system for plug-ins and how to do that. But the one area that there was no consensus on was on natural gas vehicles. Many believe that gas vehicles being part of a fleet system would work -- for delivery trucks and for towns, picking up garbage. But there are concerns about methane not being a real bridge fuel; that leakage of methane is somewhere between 28 to 105 times greater than CO2. The biggest concern that many of us had is that, especially when it comes to automobiles, that using natural gas would undermine other technologies -- plug-in electrics, and pure electrics, the development of hydrogen fuel cells, and other things -- because it would be cheaper. You get a little reduction, but not enough; and it could be -- actually, supplant better technologies that we want to encourage.

And we think that we have to get New Jersey moving, but we have to do it in a way that reduces greenhouse gasses.

Thank you.

SENATOR THOMPSON: Mr. Chairman.

SENATOR SMITH: Yes, sir -- Sam.

SENATOR THOMPSON: Two comments for Mr. Tittel.

I've looked over the recommendation you came up with regarding reducing vehicle miles travelled, land use planning, alternative fuel vehicles. And, of course, looking at the overall goal here: The overall goal was to reduce by 20 percent the amount of emissions, etc., and of course recognizing that transportation accounts for 42 percent of the total emissions.

As I looked at the various recommendations, I don't see any way that, if all of these were implemented, you would be reducing by 20 percent all of the emissions from vehicles and so on, etc.

You have some good ideas here. But I think that the Committee needs to start doing more out-of-the box thinking -- beyond the scope of what's available today. Because even, as I say, if you implement every one of these, I don't think they would result in that goal you're shooting for of 20 percent reduction. I mean, start thinking in terms of -- well, we said mass transit. But think of an entirely different system of mass transit. For example, if we design people movers as opposed to, "Oh, we could catch a train." We have escalators, for example. Well, if you have people movers in the city along the roads where, "Hey, let's hop on this thing," and it's just continuously moving -- conveying people, so you don't need a car. Because as it is -- okay, maybe cut down use of the car here or there a little bit, but still it's going to be so much car use unless you have people movers -- more so than just a bus that they can get on, because that may (indiscernible) get on a bus.

Or when we talk about electric cars, for example -- getting them in place. I was thinking last night about, you know, we have trolley systems. Well, a trolley system you have a designated line for the trolley, and that one trolley car comes along once every half hour or whatever. Suppose we had such a system set up for electric cars so they have a cable system that they could hook into, rather than they have to plug in somewhere and recharge, etc.

That's thinking out-of-the-box. So some of your folks need to get into some out-of-the box ideas if you want to reach that goal. You're not going to reach it with these.

MR. TITTEL: Yes, I agree. But we do believe in the expansion of the clean car technology -- electric and, hopefully, fuel cells will help get us there.

SENATOR THOMPSON: It will help.

MR. TITTEL: And I'll talk about something my wife worked on many years ago, which was this idea of community commuter -- I almost never say it -- where you can actually just e-mail in, and you get picked up by a jitney to go to the train station, versus having the jitney service run a fixed route. You know, we could do that type of out-of-the-box transportation planning in rural areas where, instead of having giant buses which are very expensive to operate, you could have a smaller system and use the ability to be able to have flexible routes by having people with other technology -- with their cell phone -- basically being able to say, "Come pick me up." And again, I think the people mover systems -- there are talks in certain cities; but, again, you need the density of population in order to support them economically. And that's why you have to tie land use and

transportation together -- so that if you build a rail line into the middle of nowhere, or even a people mover, and there are no people, it's not going to help.

SENATOR THOMPSON: Well, that's the other part of it. You mentioned, of course, that a number of your proposals here -- the problem is finding the money to fund it. So as you look at various proposals, you have to bring in the economics of it as well, because, yes, there is going to be limited dollars-- The return on investment has to be adequate. I mean, you know, the amount that you're going to gain from doing it has to be proportional to what you're going to be putting out for it.

SENATOR SMITH: Ed, next.

MS. BACH: I had one other thing to say to Senator Thompson.

I agree that we need more out-of-the box thinking. I don't think that we think that our proposals are going to get us all the way, but this was a start. And we're hoping that you guys are, maybe, creating a task force or something -- can create something out-of-the box. But this is to lay the ground work to get us there, because I think we need a combination of both. We need to try and do some of these, and it's not going to get us all the way. We're going to need some more ideas. And maybe looking at what other states and other countries have done, maybe that can give us some of those out-of-the-box ideas.

I co-chaired the Heating and Building subgroup. As mentioned earlier, the facilities usage mainly related to heating is one of the leading causes for New Jersey greenhouse gas emissions. This can account for up to 33 percent of our statewide emissions today. So reducing the energy

consumption by building is a necessary part of a realistic plan to meet the State's greenhouse gas emissions goals.

As with other subgroups -- kind of once again saying what Senator Thompson was just saying -- we remain concerned about how to reduce these emissions at a low-cost fashion. The recommendations that we came up with were ones that we felt would help reduce emissions in the most low-cost and effective manner, and anywhere that we felt, or the Rate Counsel felt, that there was a concern about cost it is stated so in our paper.

The first recommendation that we came up with was to encourage sustainability in bid specifications for public sector projects. We think that this can be a voluntary section on all public RFPs. And my understanding is, currently you can earn points through RFPs, and if a winning bidder completed this section they would be able to earn points for including this voluntary sustainability portion.

Another idea we had was to encourage the State to adopt the Green Construction Code as a standard for New Jersey building codes. It's currently under review by the Department of Community Affairs. We're not recommending that you adopt all of it, maybe just pieces; but it's something to look at, going forward.

We also recommend the use of tax policies and financial incentives to encourage green building practices. One idea was to create a pilot program for the New Jersey Clean Energy Program, utilizing $10 million of existing funds to retrofit leased commercial and industrial programs. This pilot program would allow leases to apply to make energy efficient changes to the building. This is one of the areas that we think is

lacking -- our owners can make changes to become more energy efficient, but if you're leasing a building you are not eligible to do so.

Another idea was to start incentives for buildings to become more energy efficient. Programs such as the SmartStart Buildings should be utilized as a model for evaluating eligible buildings.

We also recommend the creation of a DCA/BPU/DEP-led net zero buildings task force to examine the feasibility of making 100 percent of all new construction projects subject to rehab code to be net zero by 2030. Some of the things that we think should be considered are looking at existing buildings, urban districts and cities, building projects, and climate relevant financial incentives.

We also recommend creating incentives towards energy efficiency for both residents and businesses, such as allowing green projects to receive expedited permit review and establishing tax credits for homes built to higher efficiency standards.

We also recommend examining competitive solutions for achieving greenhouse gas emissions reductions -- perhaps establishing a program similar to the ENERGY STAR industrial challenge, designing a tool to help energy managers and industrial sites improve energy performance and set goals.

We also would like to see an improvement in education and engagement of customers to focus on smart grid technologies. We think there should be a development of educational materials on the BPU website; and perhaps doing a pilot program that targets State universities -- energy efficient resident halls or school classrooms. There is a pilot program

done at Dartmouth just like this to investigate how students would modify their energy usage in real time effect.

And finally, we recommend once again that you investigate what options have worked in other states. And we recommend that you review the Roadmap to Zero Emissions Architecture 2030, which covers areas such as building products, reduced demand for energy in buildings, and encouraging the global architecture and building community to implement innovative, sustainable design strategies.

SENATOR SMITH: Thank you.

MR. POTOSNAK: And just sort of to reiterate, all the recommendations that are here are the product of lengthy conversations and negotiated, carefully crafted wording examined versus things like, maybe, mandate or require. So we just put that out there for the Committee. The last section of the subgroup that we looked at was energy production and distribution, which is the third-largest contributor to New Jersey's greenhouse gas emissions, accounting for about 20 percent -- and that's 23.5 million tons -- of greenhouse gas.

It's also important to note that since the last inventory in 2009, the energy production section -- utilities that are producing energy -- in just that five years, have reduced the greenhouse gas emissions by 30 percent. So I think to Senator Thompson's, "How do we get there and how do we quantify?" that's a pretty good reduction in a short amount of time. To get to the 80 percent, we still have more to do. And in this section, we look at, for production and distribution of energy, what are some ideas to help prepare for a renewable energy future, make sure the infrastructure is there;

and then also reduce the greenhouse gases that are being emitted as the ultimate goal.

We recognize that there is a constant flux of power generations coming online and going offline. And that presents unique opportunities and also challenges for us, in looking down the road, in how we're going to reduce our greenhouse gas emissions. The group-- These are just general, sort of, philosophies that, as we were making our discussion, before we went into specifics, we also felt a strong desire to prioritize in-state renewables --. knowing that New Jersey imports anywhere from, some folks would say, 20 percent of its power from out-of-state; I've heard 50 be used earlier today. We are not keeping up with demand of in-state production. We'd like to see more of New Jersey power being consumed and produced here, understanding that has to be on balance with the costs and the benefits received for using out-of-state power. So it has to be competitive, is sort of the summary there.

There's also a sense, and people felt generally on the same page, about making sure that meeting the Global Warming Response Act goals also is balanced with the cost to ratepayers -- that we really want to make sure that the benefits justify the cost. And there was a discussion Marissa highlighted a little bit earlier about full life-cost considerations -- cost to health, cost to disposing of toxic materials -- all those things -- that help to balance it. We didn't come up with a specific proposal there, but that would be very, very helpful, and then it's quantifiable.

The biggest tool we have in the energy production and distribution sector to meet the goals is really energy efficiency. If we have

to produce less, then we have less of a greenhouse gas that's being emitted and through the cost distribution.

So a little bit of an overview: There was a sense that we really need a unified framework among all the different utility providers, the producers, and folks doing the distribution. New Jersey operates under a PJM grid; it's under Federal, State and grid regulations. And if we're going to meet the Global Warming Response Act greenhouse gas reduction goals, these are some of the things that are going to need to happen for the energy future: transition expansion, as needed; putting together -- this is all under a plan, a unifying framework for getting there -- looking at demand management; robust grid control methods for two-way and intermittent power flow; expanding energy services for customers; and then, finally, expanding the deployment of distributed energy resources and clean energy solutions, including the rapidly developing energy storage technologies.

So the idea is that, as we're bringing on these renewable energy sources, there are some challenges in our current grid that need to be addressed for them to work well. The framework would help meet these goals, but it would also improve the overall efficiency of the system, the reliability, and the resiliency -- which has been a big issue in the wake of all these catastrophic storms we're seeing with an increase in intensity and frequency.

Obviously, a big part of production and distribution in the energy sector is going to be what we produce. And there was a general sense that renewable energy is going to play a huge role in getting us to those goals.

And so these numbers here are somewhat aligned with the earlier presentation, in that we're assuming a 30 percent reduction in power need through energy efficiency measures. The numbers that come up for goals for solar and wind are based on that and getting to the Global Warming Response Act goals. So building 423 (*sic*) megawatts per year of solar power through 2050; by comparison, in 2012 we built 463 megawatts of solar power. To build a total of 4,500 megawatts of offshore wind between now and 2050 -- in the current master plan, it calls for 3,000 megawatts by 2020. So this is a larger time horizon.

And helping to expand renewables, obviously offshore wind has been stalled. We need to get moving with that as soon as possible. There was strong support for making sure the OREC system is moving. Implementing the requirements of Offshore Wind Development Act (*sic*) that Governor Christie signed early in his tenure as our Governor; advocating for expedition of Federal leases beyond the 3-mile mean tide low. The Federal government has jurisdiction. So there is a role for the Legislature there.

And then, in addition to expanding renewable energy production, here are some other things that folks felt could help. Enhancing the tax benefits, helping to recruit renewable energy companies to the Garden Sate and keeping us competitive; clearing obstacles to allow for favorable permitting. Actually, the U.S. Department of Energy cited red tape as one of the largest contributors to the higher cost of renewable energy in the U.S., versus European countries. So we could look at simplifying the process, making it consistent, allowing it to be online across the whole state to help attract these renewable energy providers.

Also financing is an option. These things cost money, and we want to look at ways to enhance the public/private partnerships we need more. New York is looking at a Green Bank to help support the private industry and doing more renewables.

Another item that's really important is improving investor confidence. We heard earlier certainty is really critical. And so we need to do more to attract efficient sources of low-cost capital. And there is an opportunity for the Legislature to put in place tools to address the credit risk to bring in more of the investors -- guaranteed loans, etc., which are articulated more specifically in the report. But, again, bringing these providers, these producers of renewable technologies and renewable energy here to the Garden State.

Then we get into, sort of, the production and distribution sort of generally -- beyond renewables. And some of things are related. Requiring the installation of -- and I'm going to emphasize this because it was a lengthy conversation -- cost-effective smart grid equipment. In order for renewable suppliers to be able to provide energy the grid needs to be smarter. There was the cost to consumer raised, and we thought it was really important that we make sure that if we're requiring something like this, that it's cost-effective and it's allowing the rates to be lower, and also reliance on more diverse supply of energy.

We also think it's really important in the Garden State-- We have a long tradition of being very innovative. Thomas Edison and Tesla -- all kinds of folks -- were working here. And so we need to encourage research and development of clean, renewable energy alternatives, as well as new energy distribution technologies. Which I think goes to Senator

Thompson's point of staying outside the box. We want to encourage that, and there are things the Legislature can do to help businesses to be more creative and bold outside the box.

And then greatly expanding the electric charging stations, because we do have electric vehicles coming online. And we need to make sure that rest stops on toll roads, government buildings, train stations, hospitals, schools, parking decks, large office parks have the ability to plug in and charge your car while you're at work. And that's something we can do today; we don't need some new thing to do. They're available.

And then we have reassessing the harm of fugitive methane emissions and modernizing that infrastructure.

So energy production and distribution: Obviously natural gas is -- we have pipes all over the state. And, in fact, there are about 7,000 miles; we have some of the oldest pipes -- and they leak. And when methane leaks, it's 35 to 105 times more potent than carbon dioxide, which is the main contributor to our greenhouse gas global warming problem. So stopping these leaks is important, and so there are some recommendations along that: instituting long-term programs to accelerate the rate at which gas utilities replace older natural mains -- looking at, sort of, the leakiest pipes. We want to maintain the program for safety, but we also want to make sure that we're not leaking in advance. And the Legislature can help with that.

And then the last thing -- a lot of things cost money. So this was not the most comfortable sort of peer (indiscernible) at the end here. Although it's been shown to be effective, sometimes penalties and disincentives can help us get these solutions that we named above paid for.

Things like taxing leaks on methane, you could imagine, would quickly spur utilities to plug holes. Things like increasing the fees for development of exploration of oil and gas; putting a price on carbon -- these are not things the group looked at, you know, and said, "Those are things we want to do." But when you penalize these behaviors, you shift to the good behaviors and that helps pay for other things to happen and other investments. Putting a price on sulfur emissions.

So those are some of the recommendations.

In the Production and Energy Group we did have some debate around a couple of issues, and so I'm going to highlight those very quickly. You can read more about them in there.

This has the most text on the PowerPoint, but nuclear came up as something to be discussed in looking at how we--

SENATOR SMITH: Non-carbon fuel.

MR. POTOSNAK: Non-carbon fuel. And so 50 percent of our power that we generate in New Jersey is produced in nuclear facilities. And, again, we import about 20 percent of our power, so most customers, if they're just buying general power off the grid, are actually consuming less than 50 percent of their power from nuclear. There was support among labor, the utilities, and industry that it's a cheap, clean, base-load power. We found conflicting reports about the total life-cycle cost; in some cases it showed that it was cheaper than oil and gas; and in other cases it showed that it was actually competitive, and wind and solar and geothermal power could compete with the total life-cycle cost. And that means when they shut off the nuclear power plant it takes decades to actually shut off. And all the rods have to be stored, and there are people there. And then what

do you do for centuries and centuries and generations to keep that? That's a cost, and so total life-cycle cost takes that into consideration.

And there were some opponents that cited concerns over cost, as mentioned, health and safety, the environment, sea level rise, and terrorism threats. So we didn't make a recommendation either way on that. But that sort of gives you the lay of the land, because I think it's helpful for the Committee.

Another area which Jeff talked about, which I'm not going to get too much into, is natural gas. Natural gas produces less carbon dioxide and less sulfur dioxide than coal. And so it's part of the mix as far as the President's Climate Action Plan of ways to reduce our greenhouse gas emissions. We didn't include it as a recommendation because primarily it's coming from hydraulic fracking, which has major health and environmental concerns. There were folks with the Ratepayer Advocate, businesses, labor, the energy production sector that see the natural gas as a job creator, as a strong bridge fuel, as was highlighted a little bit earlier, to get us into the clean energy future; less costly; and when you look at the total cost there were some folks on the environmental side that felt like the benefits didn't outweigh the risks due to the supply. And I mentioned earlier that methane is more potent than carbon dioxide as a greenhouse gas over the range of 20 to 100 years.

There was one other area that we couldn't find agreement on, and that was the Regional Greenhouse Gas Initiative. There were folks on both sides of, sort of, getting us back into that, or looking at some other way. Just to review: The RGGI aimed to create a regional cap on greenhouse gas emissions by auctioning carbon credits. And the revenues

would have funded clean energy programs -- some of the things that were listed in the solutions. We withdrew -- the State -- in 2011, and the business sector was joined by ratepayer advocates in questioning possible reentry, especially since there were concerns over Pennsylvania and Ohio, which blow their toxic air, both mercury and other things, as well as carbon dioxide, into us. And they're not part of RGGI.

Others have called for the reentry into RGGI because the program helps ensure lifetime costs reflect the impact on our land, our water, medical expenses, and pollution-related illnesses like asthma and cancer; and because independent studies have found that RGGI has provided a variety of net economic benefits.

So the last three were things where you could sort of see both sides, and we leave it up to the Legislature to make a decision. On some of these, you've already spoken, and we're happy about that. But there are sort of dissenting views.

And then, sort of, in summary -- where's my little pointer? -- I want to thank you. You asked us to come up with solutions, and we took this responsibility extremely seriously. As you can see in an 18-page report, tremendous work went into this. People made compromise; they stayed silent on things that upset them; (indiscernible) accept it as much as other things where they were loud, potentially. But there was a real willingness on the part of the participants -- who were diverse stakeholders -- to meet that challenge. And I want to thank you for setting us up for that, but also to reach out to my colleagues and thank them for coming to the table, really in a professional and dedicated way, remaining open to hear countervailing perspectives.

I think it was articulated multiple times that people really learned a lot in this process from each other. They saw things a little bit differently. And we worked towards the goals of the Global Warming Response Act. And I want to thank you and them for that opportunity. And I think we stand ready to assist in the development of legislation that helps us to put these solutions into effect to address the climate crisis.

SENATOR SMITH: Terrific. And let me thank the work group -- the stakeholder working group for what is clearly a lot of hard work and some really terrific ideas.

Let me ask reverend Craig Hirshberg to come forward -- Legislative Ministry of New Jersey.

Now, I know you didn't mean this, but it says, "Wish to speak on global warming," and then the check mark is "in favor." (laughter)

REVEREND CRAIG HIRSHBERG: My role is to provide a little levity for the group.

SENATOR SMITH: Yes, you did. Go right ahead.

REVEREND HIRSHBERG: My name is Reverend Craig Hirshberg, and I'm the Executive Director of the Unitarian Universalist Legislative Ministry of New Jersey. I represent Unitarian Universalist congregations throughout our state.

As Unitarian Universalists, we believe in the independent web of all existence. And what we do to the earth we are doing to our children, our children's children, as well as ourselves.

Global warming threatens the long-term health of our state and our country, as you all know.

I would like to thank Senator Smith for bringing together such a diverse group of stakeholders so that honest, collaborative recommendations, representing the broad-based concerns, can be presented.

The willing cooperation of so many parties is an indication of the shared concern for New Jersey's environmental health. Global warming is real and it's affecting the environmental quality of our state.

New Jersey has to move swiftly to implement corrective strategies in order to protect its people, and we strongly support a bold and rapid response to global warming that is consistent with the recommendations of this report.

This legislative body has the power and the responsibility to act to protect our state and almost 9 million people who live within it. Strong political will, I understand, is necessary to move these proposals forward with adequate support and funding. And without immediate and bold imaginative action as indicated in this report, New Jersey's ecosystem may be irreparably harmed, directly affecting the health and the well being for generations to come.

So we ask that this report become the cornerstone of the Committee's global warming work, resulting in legislation that will positively impact and protect our human habitat.

As a minister we look to the moral questions here, not just all of the facts and the figures that we've heard -- that something has to be done. And we're looking to you to protect the people of New Jersey.

Thank you.

SENATOR SMITH: Thank you, Reverend.

Joe Sullivan, Concord Engineering.

Joe -- former BPU guy, right?

J O S E P H S U L L I V A N: Yes, I am.

SENATOR SMITH: All right.

MR. SULLIVAN: And former DEP guy, and Treasury guy, and God knows what else. (laughter)

Good afternoon, now. Joe Sullivan; I currently work for Concord Engineers, but my comments are my own comments for you, based upon my own experience in dealing with a lot of these issues.

One of the things I found very interesting about this is that nobody here today debated the reality of global warming. I personally accept the science that stands behind global warming as a fact. That science also tells us -- not ironically, but very importantly -- that the problem with global warming is very much focused on short-term, major reductions in carbon and long-term strategies to move us away from a high-carbon emissions technology and basis for human endeavors.

This is really important when we look at what are the solutions we should really be pursuing. Keep in mind it's that short-term, large reductions we desperately need as a global issue, not just as a State issue. We also have to recognize that what New Jersey does is important; it's important that we participate in this, but it's not changing the world. It provides us a leadership position and a moral position to do this, but we also have to recognize economics and other things that go into this.

A comment earlier today I thought was very interesting -- and I wanted to -- I sort of structured some of my comments around this, is that how much we guess the future and how often we're wrong. And the only

thing you can guarantee when you predict the future is you're going to be wrong -- the only question is, how much.

So let's talk about some of the things that were either personal, or energy master plan, or global warming plan issues that were brought up that have not turned out.

When I was working for the BPU I had a long-standing debate with my colleagues that the SREC market was going to stay high, it was going to stay inflated and superheated, and we were going to continue paying through the nose for SRECs. It crashed, so my predictions of the future was very wrong in that particular case. I just wished they hadn't been quite so right, because it was very disruptive how much it dropped. I think we really need to be careful of our actions, and I think some of the discussions earlier today were very important -- about minor changes may be appropriate, but radical changes can cause major market disruptions. And what we really need when we're talking about markets and business development is stability.

One of the things that was in the Energy Master Plan, also, was that offshore wind would be available now and in the near-term -- that we would get 3,000 megawatts of it. We haven't built one offshore wind turbine; we haven't built one near-shore wind turbine.

SENATOR SMITH: Do you think we ever will?

MR. SULLIVAN: I think long-term there's a good chance of this, but that is speculative. No one has built large, offshore wind plants in the depth of waters that are ideal. Off the Jersey coast is where our wind resources lie; it's fairly far off the coast. There are technologies that say they can do this. I personally reviewed a lot of the stuff that's been

recommended -- the different types of platforms and structures. We can't build quite the way they have in Europe because our waters are deeper, so it's going to require different technology.

I'm more disappointed in the near-shore project not actually coming to fruition, because that would have given us information and knowledge that might have helped us, but it was interpreted under the strict guidelines of OWEDA. We did set standards -- or the Legislature set standards for us in the Offshore Wind Energy Act that said it had to be economically advantageous to New Jersey. This was not set for the solar industry and for other industries in the past, but it was set for the offshore wind industry. So they were not able to show that this had any net benefit at this time. It's a very difficult threshold to meet. It is something that is certainly worthy of discussion.

SENATOR SMITH: Joe, you think that would change the paradigm in wind energy?

MR. SULLIVAN: I think it might give us-- If we were able to adopt a pilot or something that allowed us to go put out some wind turbines-- I mean, we really don't know. We're working on something that we're saying, "We're going to project spending $50 billion, and we're going to anticipate 3,000 megawatts of power," and we have never built one. It might be really nice to build a small cluster so that we actually know the challenges, and we know the difficulties, and we know the consequences.

SENATOR SMITH: Do us a favor on that, and do some follow-up correspondence to us about what the changes should be to the wind legislation that would, maybe, get us in a position where we can do a pilot.

MR. SULLIVAN: There was only one major offshore deepwater structure ever built. It was an offshore radar installation that the U.S. military put up, and it's now a real neat attraction for scuba divers and deep divers off the coast. Because in a hurricane it couldn't survive the ocean. So we have to really recognize that, and Superstorm Sandy was very instructive in just how powerful nature can be. So it can be hubris when we say, "Oh, we can do this," and, "We know we can," and we haven't done it. I think we need to do things to know what our limitations are.

Another one was that renewables and solar would achieve large CO2 reductions. I'll forward you a copy of the studies done in Germany that indicate that some of the goals that they thought they were going to achieve weren't achieved, at the scale they expected, from their large solar programs. I think that the focus on this, as we go forward, is understanding cause and effect, and actually looking at other institutions in other countries where this has happened.

Another thing that we expected that hasn't come to pass -- or has actually reversed -- is that nuclear, as described, is 50 percent of our energy source. That's one of the reasons why New Jersey enjoys one of the lowest carbon-per-kilowatt hour energy ratios in the country. We actually are very challenged to reduce our carbon in the energy sector because we're actually pretty damn good at it.

SENATOR SMITH: Right. Because of the nuclear, right?

MR. SULLIVAN: And that's not because of our renewables, it's because of the nuclear.

SENATOR SMITH: Right.

MR. SULLIVAN: We have to recognize that that is a really, really critical issue as we go forward. Because nuclear doesn't-- Solar gets added in megawatts or KWs, a 100 KW at a time, or even at 1 megawatt at a time. When we shut down one of the nukes, we lose 640 megawatts. Compensating for that is going to be really complicated and very difficult. Oyster Creek was scheduled to shut down in 2019. A scary thing that happened recently was Exelon bit into the PJM forward market and didn't clear. So that threatens major sources-- That one power plant alone provides 6 percent of all New Jersey's electricity. If that comes off and has to be-- And the way the grid works, if that shuts down tomorrow, other plants ramp up. Guaranteed they are not nuclear plants, because they're already running baseload.

SENATOR SMITH: Right.

MR. SULLIVAN: Guaranteed they're not coal plants because they're running baseload. It's going to be natural gas plants and marginal plants, and peakers. And some of those are resources we really don't want to see dispatched. So that does present a problem for us, and it was not something we anticipated. Nobody, in looking at this a few years ago, was going to project that these plants weren't going to clear the PJM forward capacity auctions.

The other thing that we thought, and I bear some guilt or responsibility for this -- is that we thought (indiscernible) power, distribute generation, energy storage, microgrids, and all this stuff were going to deploy if we provided some incentives. The problem we've run into is that hasn't happened at the rate that we thought it would -- and I think that will be part of the discussion this afternoon -- is that businesses, unlike

government, have a very short-term look at the world. They look at 3-to-5-year paybacks; we're looking at 10-year-to-15-year equipment systems. Those things don't jive. The one institution that has a long-term view of the future is government, and we haven't built any ourselves in New Jersey. We really have not been able to deploy these technologies effectively as of yet. That's something that could take a focused effort; it could be something that the Legislature could influence.

The Federal government is moving forward on this in some places. My company right now is working on projects in Aberdeen, NIST, Norfolk, and various other Federal jurisdictions where we're building systems. And hopefully they will start doing them; we hope to see one or two occur at the plants in New Jersey. We're doing some consulting work in that area, so it's something we hope happens.

One of the things I would like to emphasize to you today, and ask you to consider, is that this discussion on global warming is about carbon. It's looking at a low-carbon future. It's not saying, "We want a renewable future, we want this future, we want that future." If we're serious about global warming, recognize what global warming is all about. It's about the global warming chemicals -- and those can be methane, they can be fluorocarbons, they can be any number of different compounds in the atmosphere that are infrared absorbers. But it's about carbon, it's about infrared absorption, it's about problems in the environment.

Renewables are strategies, and they are only strategies. So solar, we don't do because we like solar; we don't do biomass because we like biomass. We're doing these things because they lead us to a lower carbon future. And to the extent that they compete with each other, that

could be a good thing. One of the things that we do right now that is somewhat irrational is that we take all our trash and bury it in a big hole in the ground, cover it with dirt, and let it decompose. We collect the methane and we burn it -- which is much better than letting it go into the air; as these people said earlier, it's 20 times, at least, worse than carbon dioxide as an infrared absorber. It's renewable; it's a Class I renewable. If I take that same waste, and separate it, and pick out the stuff that has the capability of being converted to methane or natural gas or hydrogen, it's a Class II renewable at best. We're throwing out huge amounts of resources because of the way we interpret these things. That is an inherent problem in the way we approach solutions.

We are seeing some progress in the food side, in food waste. Waste Management and a few others have instituted programs where they're collecting food waste separately; they slurry it; that slurry can then be added to anaerobic digesters at wastewater treatment plants -- peaks methane output. That methane can be turned around and used in generators there, in the cogen mode, preferably, to keep the digesters warm so the bugs are happy. It also generates the power they need so we don't have wastewater treatment plants going down without power resources.

So we are moving forward in a lot of technology. And I think a lot of this has been very good. Something, again, I would suggest you guys take a look at -- and we can get you a copy of it -- there's a proceeding going on in New York state called *Restructuring the Energy Vision*. It's being done under the New York PSC. And what they're saying is they need to completely reexamine the paradigm of how we generate and distribute power. Their belief in this proposal is that it should be a much more

distributed future, and that could be microgrids, it can be fuel cells, it can be anything. But the idea that it can only -- that energy needs can only be met by large central plants, they're trying to move away from.

And I think the idea of microgrids and district energy and cogeneration -- other technologies that enable us to leverage our resources with lower emissions and better outcomes -- has a real place in this. At the same time they're doing this Restructuring of the Energy Vision, they are recognizing that this would require major changes in the relationship between utilities, and consumers, and cities, and others because it does restructure the way revenues are done; it does restructure the way a lot of work is done. So we can't do one thing without recognizing the other.

It was said earlier that the energy sector -- which is primarily utilities and generators -- have reduced their carbon footprint by 30 percent. That's an incredible achievement, when you come right down to it. And we can continue to see that sector step up, but we also need to recognize that some of the business rules we placed on them prevent them, perhaps, from deploying the best solutions or supporting those solutions. I can't ask a utility executive to support something that fundamentally undermines their business model and their revenue. They have serious responsibilities to their stockholders, and they take them seriously, and they do a good job.

SENATOR SMITH: Joe, do you know of any state that has put forward a successful decoupling program where the utilities' economic incentives are in the wrong direction?

MR. SULLIVAN: Massachusetts has a program under National Grid where they have decoupled the revenues for National Grid in Massachusetts. And they actually have something interesting that happens

with this decoupling, is that they have a non-wires business and it says, "Okay, we have a power need in this town, or this sector. And we're going to have to build more transmission and/or substations to meet it." Well, is there another way to do it? And National Grid can come to the table and say, "Look, what we can do is, we can have a focused energy efficiency program; maybe we can support somebody doing a cogen plant. Maybe we can do something other than building wires and transmission to meet that need." And they can present that to their Public Service Commission and win approval to have a non-wires solution to the need.

Right now, if any one of our utilities proposed that, they would be prohibited from doing it -- the way our structures are right now. And I think that as you look at decoupling, and you look at alternate ways of regulation, you need to start understanding that there is a lot of creativity that, right now, is handicapped from being brought to the table. One of the funnier things I think about in my way-too-long career, at this point, is that under Governor Kean I worked on his global warming strategy plan; and the guy who led the effort was a Rhodes scholar, scientist kind of guy who was working as a policy advisor to the Governor. That was Ralph Izzo. He's now-- He was smarter than me, so that helps, and he's done much better in the long run. But he also articulated in that plan many of the same things that we're talking about today. Unfortunately, that was 28 years ago, and we still haven't done a lot of the commonsense things that were included in that plan.

So the ability to do things-- You know, the enemy of the possible is the perfect. We try and get perfect; we try and say, "We're going to do all of this." That doesn't tend to work. I think that when we look at

these opportunities, we say-- Look, I personally don't care if it's going to be a biomass, if it's going to be wind, if it's going to be solar. It doesn't matter to me. I want to see a technology that's cost-effective, I want to see one that can meet the needs, one that's reliable -- because reliability is a big issue. And as we get more and more diverse resources -- distributive resources -- we're going to really have to fight the reliability issue and work on this, and that's where energy storage and other technologies become part of this plan.

So as we move forward, this is a complex problem, but we have some really good minds and some really good people in this state who are willing to work on it.

So I'd like to thank you for having the opportunity to talk to you. If you have any questions, I would try and answer them. But this is a topic that I'm pleased to see that you're trying to take opinions and comments on.

SENATOR SMITH: Joe, thank you for the comments. Very stimulating; some really good ideas.

Stefanie Brand -- don't raise my rates. (laughter)

MS. BRAND: Hello, again.

I don't have a lot to say on this group because most of our comments and out concerns were incorporated into the report that you already have -- so, they're in there, and you will be able to find them.

I did just want to talk about a couple of things, very briefly.

First of all, again, there are a lot of great ideas in this report. And what has to happen now are the hard choices that come along with that, which is, where are our priorities? What do we truly want to spend

our ratepayer dollars on? Do we truly want to find some other way to fund?

So that, unfortunately, does have to happen. But this is a great start, and we think there are some very, very good ideas in this report.

I did want to talk for a moment about the issue regarding natural gas mains, because I would not leave you with the thought that there are natural gas mains all over the state that are leaking methane and nobody is doing anything about it. The fact is there are comprehensive Federal regulations, State regulations that require the utilities to monitor their system. When they see a leak, they fix it -- and there is no question that they do that.

We have also, in the last several years-- Repairs (*sic*) are going to be paying $1.7 billion worth of programs to accelerate the replacement of cast iron and unprotected steel mains in New Jersey. And that's on top of the work that the utilities are doing through their normal capital spending.

So in terms of methane leaks from the natural gas system, we really do have a program in place, and it's one that I really do believe that the utilities take very, very seriously. And, on top of that, we already have programs in which ratepayers are going to pay for an accelerated replacement program for those pipes. So I wanted to make sure you understood that.

SENATOR SMITH: Great.

MS. BRAND: Thank you.

SENATOR SMITH: Thank you, Stefanie.

Dave Pringle, Clean Water Action.

We have Matt Polsky, Achieving Global-- Matt, are you here? I don't know if Pringle's here.

David.

D A V E P R I N G L E: Thank you, Mr. Chairman, and thank you for convening this process that has been painful, but I think very constructive and helpful for everyone involved.

SENATOR SMITH: What's been painful about it? (laughter) I think it's been terrific.

MR. PRINGLE: Too many conference calls, too many e-mails.

SENATOR SMITH: You know, it's a good thing that the stakeholders have to work hard, not just the Legislators. (laughter)

MR. PRINGLE: There was testimony earlier about a crystal ball, and it's our position that whether we like crystal balls or not, we don't have a choice. Because we don't know the answers now, and by the time we know the answers about sea level rise and more severe storms and all, it will be too late to do anything about it.

So I think the work groups summed it up very well with their question about, "What did you do when there was still time?"

There is a lot of consensus at the broadest level; there's not a -- big surprise -- consensus in the details. Everybody agrees we need to do a lot; how much, how soon, exactly how is a problem. We would like to see there have been a lot more details and a lot more hard numbers, and more *mandates* and *requires*, not *consider*; but at least we're starting the debate and getting the conversation going.

We think the idea of requiring 30 percent energy efficiency and 80 percent renewable by 2050 is absolutely critical. It's very doable under

existing technology today. Stanford and Cornell have released studies of breakdowns for every state -- how they can be 100 percent renewable by 2050 using existing technologies, including dealing with the issues of storage, and at competitive rates, creating jobs, and everything else. I have sent that information a couple of times to the Committee, and the work group, and I'm happy to send that along again, if folks desire.

I'd like to focus -- and the folks in the working group know, I kept harping on full life-cycle costs, full (indiscernible) costs. There's not a level playing field when it comes to electricity production today. The U.S. taxpayer is the insurer for the nuclear industry. If there was no Price-Anderson Act we wouldn't have nuclear industry today because it wouldn't be cost-competitive.

We subsidize fossil fuels incredibly through healthcare costs in any way, shape, or form. So we very much reject the sense that we need to get rid of SRECs, which we don't think is really subsidy; they can be quite competitive, but we shouldn't be getting rid of them unless we're also getting rid of all the other subsidies so there is a truly even playing field. When there is a truly even playing field -- which is what the Stanford and Cornell scientists demonstrate -- the renewables are very competitive.

We recognize, though, that New Jersey is not an island. We import power; many of the decisions are made out of our hands or we, at best, have indirect control or say. We have an influence, but PJM and the FERC are obviously making major decisions.

But we make major decisions here in the State every day. We passed major legislation in packing the markets in the last four years, between LCAP for gas plants, and the Solar Bill and offshore wind --

although the Governor is too busy doing other things than implementing it right now. We do impact that, and somebody needs to lead -- that's why we passed a Global Warming Response Act, and that's why we're so glad that you're pushing this here, now.

There hasn't been-- I wish accounting for all these costs was easy; I've done a lot of work and research on it, and it's in the report. I'd like to highlight three studies that start going along the road to compare different costs and different technologies, and how they shape up. And there are a lot of variables, but I think they can help inform the discussion.

There's a very good study by the U.S. Department of Energy that looks at -- compares nuclear and fossil fuels, and their costs. But it's only looking at direct costs; it doesn't look at the indirect costs. I mean, it looks at the costs from extracting nuclear fuel, to manufacturing it, to burning it, to dealing with the waste, etc. But it doesn't factor in all the other indirect costs.

There is a second U.S. DOE study that did a much better study, more comprehensive. It looked at more than direct costs, but they only looked at carbon dioxide -- very relevant to this -- but there are a lot of other environmental, and socioeconomic impacts on other things that need to be factored in when you're looking at the true cost of any source of energy.

A study by some private scientists, published in the annals of *The New York Academy of Sciences,* did an excellent job documenting the total cost of coal. And it's excellent, but it's only looking at coal; it's not looking at all the other sources of energy. It concluded that if the true costs of coal were reflected in the price we pay in our rates; it would be-- We are paying

it, it just isn't reflected on our electric bill. The costs of coal electricity would be two to three times higher. It's costing-- They did a low, average, and medium range, and it's costing the U.S. economy anywhere from $150 billion to $500 billion a year -- approaching $1 trillion.

When all those costs are involved, we think it not only makes sense -- given the climate crisis and all that -- that we, obviously, need to do it very carefully, but we don't have a moment to spare. And we need to be very aggressive in pushing all this forward.

We're never going to get all the answers. My father's last job, before he passed away, was working for a company that was, in the 1980s, on the cutting edge of 3D technology, and the Defense Department was particularly interested in it to train their troops on how to drive tanks, and fly planes, and such. The scientist -- he was the treasurer of the company -- the scientist and founder, who had the technology, kept tinkering with it and kept tinkering with it. He was 5 to 10 years ahead of everybody else. He kept stalling on actually producing anything, and by the time he was ready to produce something, everybody had caught up and passed him.

So we can wait until everything is perfected and be too late, or we can take action now.

So thank you, again, for this hearing and this process. And we look forward to continuing pushing forward.

SENATOR SMITH: Thank you, Dave.

Matt Polsky.

Matt.

M A T T P O L S K Y: Thank you.

I'm Matt Polsky. For the purposes of this testimony, I'm just representing myself as a citizen -- although I've been involved in this issue for, probably, 30-some-odd years in various roles as an adjunct professor. I was the Sustainability Team Leader at DEP for many years. I'm a Senior Fellow at Farleigh Dickinson's Institute for Sustainable Enterprise, where we follow and promote the greening of industry at levels that really nobody could have ever thought possible; and a few other things. But, again, here -- I'm just here as a citizen.

I want to, kind of, put things in perspective -- a bit of a history lesson, and just some observations that I've noticed over the years that I think have relevance. I remember what Joe had said -- Joe Sullivan -- the Governor Kean Executive Order of so many years ago, some of which sounds like some echoes I heard today in what we heard. I remember a couple of legislative hearings I went to in, probably, the early 1990s. I remember one that my former colleagues, Ogden and Bennett, ran. I remember the early Commissioner Shinn years at DEP, where a few of the staffers and I were frustrated that we weren't doing anything on this issue. So we sought and won a grant to get -- an EPA grant to inventory carbon emissions with the goal of, basically, freezing total emissions at 1990 levels, which we did.

And one day Commissioner Shinn surprised us and he was very, very interested in this issue. And I was with him when he reasoned through that we needed, at the time, a very revolutionary goal of 3.5 percent reduction in our state greenhouse gas emissions. And he set up an interesting framework on how to go about achieving it.

Then you have RGGI and solar power that you talk a lot about. And in the last few years, the post-Sandy with the emphasis on adaptation and resiliency.

I'm probably leaving out a few things.

It seems -- it's a common pattern I've noticed -- that in any given time or over these three decades we have -- this is like a stop; we don't do anything. We start something up, we stop; sometimes we restart often at a more advanced level. And then it seems to, in my view, just repeat like that -- although in the last couple of years, I think, we've kind of slowed down and really haven't restarted since the last stop, and I don't totally know why that is.

It seemed like in the beginning the feeling was, "Well, we can just do things within government, within government operations and buildings. And then we said, "Well," a few years later, "we can go passed that. We can ask people to do some modest things as long as they are cost-effective from their perspective. If it would save them money, we can encourage them to do it." Then, again, you had the -- for its time -- the stretch goals in the Shinn years. We had the RGGI cap on power plant emissions -- something a little bit of a higher scale. And then you had the sheer boldness of the Global Warming Response Act.

So we kept on moving forward -- again, with some stop/starts. Once we realized some of the assumptions that we were making, they needed to be questioned.

You know what happened with RGGI. The Global Warming Response Act, strangely, in my view and with my contacts, has been largely

a secret. When I talk to my students, I said, "This is not the way public policy is supposed to work. I don't really know what happened here."

When I've asked DEP in recent years, "What are you doing to implement the Global Warming Response Act?" I don't get an answer back.

About a year-and-a-half ago DEP had a hearing at which their Clean Air Act Advisory Council took testimony from the public and from DEP on what they should be advising DEP to do on climate change. And until the end of the hearing, nobody mentioned the Global Warming Response Act. So I did. And their response was, "I never heard of it." This is prominent scientists in New Jersey. "Tell me more. What is this Act?" So I sent them the Act and something that they could be doing. And they ultimately sent the report to DEP -- I'm not quite sure where that's going now.

Anyway, I don't know what the problem has been on this issue in the past. But I think the Global Warming Response Act is the ray of hope here.

Possibly two of the problems-- I guess there's this feeling over the years that dealing with global warming is bad for business. And the green business press is full of stories on why this just is not true, and I've written a number of articles on why this isn't true. With more and more companies seeing what's coming, it's affecting them, and they're beginning to react in very creative and novel ways. And there's a lot out there that I could send you on this.

The second thing, that's maybe more subtle: I don't think we fully grasp the boldness of this Act, that it's really something that -- I could be wrong about this, not everybody agrees with me -- but I don't think it's

something we can achieve within our generation. This is a toughie. I don't think we can get there with just business-as-usual assumptions. And I think one of you said that.

The way I look at the 80 percent -- yes, we have to do a lot of the things that we talked about today. They're important. I also think we need to rethink the limitations that we think that we're under and begin to question at least some of them. And I agree totally with what Dave said about the full life-cycle costing. The focus on costs for the ratepayer are totally accurate; I don't disagree with them. But I think we have to figure out in the years ahead how to move to the full-cost life-cycle pricing that Dave talks about, because I don't know that we're going to get there without it and we need to figure out ways to transition towards it.

I think with the 80 percent-- Again, thinking that we're not going to get there on our own, I look at it more as a covenant that we make with the next generation and the generation after that. We can start out on a, I think, transition path. We do the easy stuff, we can do the intermediate stuff, but I think we have to keep in mind that we have to, also, at the same time, make a start on the harder stuff. So that when it's their watch, they'll have a much easier time of it and they'll be able to achieve that 80 percent -- at least, that's the way I look at it.

Senator Smith, I was once there when you received an award for your environmental work. And I went to talk to you later to congratulate you. But one of your grandchildren walked by, and I missed my opportunity. (laughter) But I totally understood, because grandchildren come first.

SENATOR SMITH: It's about the grandchildren.

MR. POLSKY: Excuse me?

SENATOR SMITH: It's about the grandchildren.

MR. POLSKY: Yes, it is.

And lots of us either are, or want to be, grandparents someday. The problem is increasingly realized as urgent, and it's no longer coming -- it is here. And we can't forget that context in terms of what we all do. We owe it to them. So I'm hoping that this time we all stay on it, and we don't forget.

Thank you.

SENATOR SMITH: Matt, our last panel of four is going to be business interests in the state. And I'd like you to send them all those articles about how dealing with the Global Warming Response Act is good for business.

MR. POLSKY: Who should I send it to? I may even be able to stay.

SENATOR SMITH: Well, let me call them up: Is Mike Egenton here? Mike Egenton, State Chamber; Dave Brogan, NJBIA; Scott Ross, New Jersey Petroleum Council; and Bob Marshall, New Jersey Energy Coalition. They wanted to come up as a panel of four because they didn't want to be beat up individually. (laughter)

UNIDENTIFIED MEMBER OF AUDIENCE: That's correct.

SENATOR SMITH: But take their names and numbers and send them this stuff about why this is good for business.

MR. POLSKY: Online?

SENATOR SMITH: Yes.

MR. POLSKY: I just want to make sure folks-- You know, I sent around the article to you that France, which is seen as leading nuclear power in terms of production, has announced that they are not doing any new nukes, and are decreasing their reliance by 33 percent and replacing with renewables.

SENATOR SMITH: Okay, Mike, Dave, Scott, Bob.

R O B E R T M A R S H A L L: Red means go, right?

SENATOR SMITH: Right, red means go.

MR. MARSHALL: Good morning, Chairman Smith -- or, good afternoon, Chairman Smith and members of the Committee. On behalf of the New Jersey Energy Coalition members, thank you for the opportunity to speak this morning.

I'm going to talk to the need for baseload capacity and the case for nuclear.

In terms of the Energy Coalition, our members include generators, utilities, engineering firms, labor, as well as energy technology companies. Also, let me thank you for convening the working groups, because I think some people have said already we have begun to share ideas and find areas of common ground as we begin to tackle the extremely important issues that are associated with climate change.

We did participate in the working groups and would like to present some of our viewpoints to you today.

As you know and as you've heard, New Jersey has done a very good job reducing emissions from the power plants in-state. And as you are also very aware -- because you've been a leader in the Legislature in tackling the larger sources of emissions from transportation-related sources -- we

must develop a sound, cost-effective, long-term plan that addresses these issues and meets the goals of the Global Warming Response Act.

Let me just say that New Jersey needs a reliable, cost-effective, baseload supply of electricity to meet the needs of its residents and businesses. We cannot lose sight of the need for reliable 24/7 electricity, and thus must consider the most readily available, dependable supplies we have at our disposal. That would be nuclear and natural gas-fired baseload units.

As we move toward a cleaner supply of electricity, following sound, well-thought-out plans and considering the most cost-effective, environmentally sound alternatives, we must not forget that New Jersey has been producing clean, reliable baseload power from its generating fleet, particularly from the nuclear units located in Ocean and Salem counties. New Jersey's nuclear plants have high capacity factors and provide reliable baseload electricity 24/7; nuclear plants provide -- and you've heard this before -- over 50 percent of the electricity, and that's followed by natural gas at 42 percent; while nationally nuclear energy is the largest source of clean air, carbon free electricity, and it produces no greenhouse gases or air pollutants. And it provides 19 percent of our country's electricity.

In terms of climate change, let me talk about the EPA and their recently unveiled draft rules.

They, for the first time, would limit carbon emissions from existing power plants nationwide as a major component of Federal efforts to combat the threat of global climate change. Under the proposed Clean Power Plan rules, EPA proposed guidelines for cutting emissions while leaving it to each state to develop their own plan to meet those guidelines.

Accounting for about one-third of domestic greenhouse gasses nationally, the electricity sector proposes to reduce carbon emissions from the power sector by 30 percent over previous levels.

Let me just close with a quote from EPA Administrator Gina McCarthy, who said, "The rule will be implemented again by allowing states to choose their best mix of generation to meet the Federal guidelines, using emission-free sources such as nuclear and renewable technologies, energy efficiencies, and other power plant improvements," that you've heard about today. At her June 2 press conference, she said that this strategy gives the states the opportunity to shift their reliance to no-carbon sources like nuclear energy, noting that, and I'll quote, "Our nuclear fleet continues to supply zero-carbon baseload power." There have been carbon mitigation strategies from Princeton University, Columbia University, Harvard, and the Pugh Center on Global Climate Change that have reached a similar conclusion.

A clear path towards meeting the global challenge of reducing greenhouse gases relies, in part, on the expanded portfolio of low emission sources of electricity, including nuclear power.

Thank you.

SENATOR SMITH: Bob, does your position on -- suggesting that we should look at nuclear reflect the opinions of the rest of the people on your panel?

MR. MARSHALL: It does not necessarily--

SENATOR SMITH: I see one nod.

UNIDENTIFIED MEMBER OF AUDIENCE: I don't see why not.

SENATOR SMITH: And that's Scott from Petroleum Council. You're in favor?

SCOTT ROSS: Yes.

SENATOR SMITH: Mike?

MICHAEL EGENTON: Yes, sir

SENATOR SMITH: State Chamber's in favor?

MR. EGENTON: Yes.

SENATOR SMITH: Dave, BIA?

DAVID BROGAN: Yes.

SENATOR SMITH: All right. Now, what if it means your rates are going to go higher?

MR. EGENTON: Well, we'll cross that bridge when we get to it. (laughter)

SENATOR SMITH: Okay. So there's not necessarily (indiscernible)

MR. MARSHALL: Our rates are going to go higher--

SENATOR SMITH: Bob, how are you going to finance it?

MR. MARSHALL: Well, that's the key. I think we have to think about, when we list the kinds of things that need to be incented, I think we should incent any kind of clean energy source. And nuclear would be one of those items that I would encourage incenting.

SENATOR SMITH: Yes, I understand that. But I understand that the utilities of this state really don't have this on their front burner -- no pun intended -- because the cost of natural gas is so much cheaper--

MR. MARSHALL: They do; that's correct.

SENATOR SMITH: --and as a result, it's not economically feasible to do expanded nuclear. So what specific way do you see this being financed?

MR. MARSHALL: I see it being financed from support from the State in terms of guarantees; support from the Federal government in terms of guarantees, because I think we need to think of carbon-free electricity.

I will tell you, to your point, it isn't necessarily the electric utilities -- the construction of generation in this state and in the region is generally a competitive endeavor and is a function of the business market, as you pointed out.

SENATOR SMITH: Right.

MR. MARSHALL: And if you can't finance it, it can't be built.

SENATOR SMITH: Right.

MR. EGENTON: Chairman, I might add--

SENATOR SMITH: Whoa, whoa, whoa, just-- Because Bob brought it up, I want to stay with Bob for a second.

What do you believe to be the credibility of an earlier statement that Exelon is on the verge of shutting down Oyster Creek?

MR. MARSHALL: I wouldn't want to comment for Exelon, but the statements that I think Joe Sullivan made about not clearing the capacity market, and potentially not operating nuclear units, is going on across the country. The low cost of natural gas is, in fact, affecting the economics of all power supplies.

SENATOR SMITH: Right. But he also pointed out that if you replace that 6 percent with peaking plants, that's going to be-- Considering

the environmental impact on the one side, which is the higher carbon footprint, probably the rates are going to be dramatically affected as well.

MR. MARSHALL: We in this state do begin to think about the long-term, and I think that's what you're doing here. And we have to have a plan.

I will tell you that the normal peaking units that were typically operated on the high load days -- many of those are shutting down as well. So it's not just 600 megawatts of nuclear; it's also peaking facilities that run on diesel or kerosene that are not going to be able to comply with DEP requirements. So we have a bigger hole to fill than just that. Gas-fired combined cycle units can be cycled up and down so you can consider them to be a peaking unit, but they, basically, run 24/7 as well because they're economic. And it is an economic proposition in New Jersey, and in PJM, to generate electricity at the lowest cost first.

SENATOR SMITH: Are there any new nukes being proposed in the PJM system?

MR. MARSHALL: There are not.

SENATOR SMITH: Okay, all right.

Next -- yes, sir.

MR. ROSS: Good afternoon, Chairman Smith and members of the Committee, My name is Scott Ross, Associate Director of the New Jersey Petroleum Council, a division of the American Petroleum Institute.

API is the only national trade association representing all facets of the oil and natural gas industry, which supports 9.8 million U.S. jobs and 8 percent of the U.S. economy. API's more than 600 members include large integrated companies; as well as exploration and production, refining,

marketing, pipeline, marine businesses; and service and supply firms. They provide most of the nation's energy and are backed by a growing grassroots movement of more than 20 million Americans.

First, let me add my thanks to you for convening this meeting today, and all the stakeholder meetings, to discuss the issue of climate change and to share ideas on how industry, State government, and the public can work together collectively to find common ground on managing these challenges.

While I can discuss natural gas and all of its benefits, I would like to focus on the primary issue of concern in the Global Warming Response Act working group's report as it relates to natural gas production and distribution -- that would be methane leakage.

Methane is the natural gas that we use in our homes and businesses, which means operators have a strong incentive to bring all methane to market. Industry has led the way by developing new technology to capture gas, maintaining equipment to minimize leaks, as well as avoiding process releases. In some remote regions, if gas cannot be recovered, flaring -- which is burning the gas in a controlled fashion -- is preferable to venting -- which is releasing it into the atmosphere -- from both a greenhouse gas and a safety perspective. In many situations, it may be required by State regulations.

In terms of the total greenhouse gases, methane comprises only about 9 percent of the total U.S. greenhouse gas emissions. Each year the U.S. EPA calculates an annual greenhouse gas emissions inventory for the nation based heavily on estimates and extrapolations from very limited measurements in the field. EPA's estimates of GHG emissions include both

gas released into the atmosphere as a result of regular operations, as well as leakage. EPA's current inventory estimates show that methane leakage rate per natural gas systems is under 2 percent. This is less than the 3 percent cited for immediate climate benefits for the use of natural gas in power plants, and well under the 8 percent estimates cited for delivering long-term benefits as compared to coal.

API's companies are constantly developing and implementing new technologies that will allow them to bring more gas to market and simultaneously reduce emissions. Sometimes these practices even become prevalent enough to be incorporated into regulations. For example, by January of 2015, all new natural gas wells are required to include green completions -- which are also known as *reduced emissions completions*, or RECs -- thereby further reducing emissions.

Additional requirements will also impact tanks, pneumatic devices, leak detection, and leak control. RECs have both economic and environmental benefits because they allow air emissions to be recaptured and reused. It is clear that private sector investment toward improving the environment will outweigh government-mandated initiatives toward improving our climate.

Also, API is the official endorser of the Natural Gas STAR Program, a voluntary partnership between EPA and the oil and natural gas industry designed to cost effectively reduce methane emissions. Together, API and Natural Gas STAR are working to promote the common goal of profitably reducing methane emissions in the oil and natural gas industry.

Furthermore, the EPA is also proposing a voluntary methane reduction program for leading oil and gas companies, as an addition to the successful Natural Gas STAR program I just mentioned.

The Gas STAR Gold Program will recognize facilities that implement a comprehensive suite of protocols to reduce methane emissions through available cost-effective technologies throughout the oil production and natural gas value chain, which includes offshore and onshore production, gathering and boosting, processing, transmission, storage, LNG storage, LNG import and export, and distribution. The key goals of this Gas STAR Gold program are to showcase facilities that are already achieving reductions in methane emissions; to encourage facilities to identify and implement opportunities to achieve further reductions; to create a framework for credible, transparent, and consistent reporting on facilities that can be easily understood and compared; and to recognize progress that companies are achieving in emission reductions relative to their overall operations.

EPA plans to evaluate and incorporate stakeholder feedback into a revised final framework document to be published in the fall of this year, and anticipates formally launching the program by the end of 2014, with annual reporting and Gas STAR Gold recognition to follow.

So as you can see, the oil and natural gas industry recognizes the issue of methane emissions and leakage, and will continue to address the concerns in an environmentally sensitive fashion.

SENATOR SMITH: Scott, do you think you'd be able to supply us with an estimate of the quantity of methane leaks in New Jersey?

MR. ROSS: Sure, I think I can run that down.

SENATOR SMITH: Could you forward that to us?

MR. ROSS: Yes, sure.

SENATOR SMITH: That'd be great.

MR. ROSS: In total, Chairman, or--

SENATOR SMITH: Yes, the total for the state.

MR. ROSS: Total, okay.

SENATOR SMITH: Well, related to the pipelines, tanks--

MR. ROSS: Right.

SENATOR SMITH: --whatever. You know, I mean--

MR. ROSS: Yes, yes.

SENATOR SMITH: Yes, sir.

MR. EGENTON: All right, Chairman. Michael Egenton, Senior Vice President, New Jersey State Chamber of Commerce.

As the longest-serving member of the New Jersey Clean Air Council, I thought it was timely and appropriate to present to this Committee our annual report, entitled *Reducing Air Emissions Through Alternative Transportation Strategies* -- it's handed out to you.

We just completed the report, Chairman, and presented our findings and recommendations to DEP Commissioner Bob Martin just this past Tuesday, July 8. We found that transportation contributes 50 percent of New Jersey's ozone; 30 percent of New Jersey's fine particulate matter; and approximately 42 percent of New Jersey's greenhouse gas inventory -- making it the largest contributor to the State's air pollution and health risks.

Although State government has several ongoing efforts to reduce emissions from mobile sources, additional strategies will be needed to be implemented to meet current and future air quality standards.

Based upon the testimony received, and discussion by the Council, the following are some of the recommendations to the Commissioner at DEP and to the State Legislature for reducing air emissions.

While we recognize that DEP cannot implement measures to significantly reduce air emissions from the transportation sector, the recommendations that we listed in our report are designed to be implemented across several State agencies. Additionally, the Clean Air Council recognizes that the State is experiencing difficult fiscal times and certain recommendations may not be actionable at this time, but should be added as long-term objectives.

The recommendations have been grouped into categories to aid in implementation, but are not in any specific order. I won't read them all, Chairman, but I just wanted to highlight a few.

We recommend developing and encouraging incentives to reduce emissions from travel. That would include encouraging expansion of complete street projects in more counties and municipalities which are designed for multiple modes of transportation, including bikes, powered vehicles, and pedestrian traffic.

We encourage the development of more transit-oriented development -- or transit villages communities.

SENATOR SMITH: Mike, let me interrupt for just a second.

MR. EGENTON: Sure.

SENATOR SMITH: And I'm going to have you continue in 30 seconds.

MR. EGENTON: Yes.

SENATOR SMITH: I'm going to ask Sam to take over the Committee meeting.

MR. EGENTON: Okay.

SENATOR SMITH: I have to run down to join the Senate President for a quick press conference -- 10 minutes.

MR. EGENTON: Do you need us there at the press conference?

SENATOR SMITH: What's that?

MR. EGENTON: Do you need us there at the press conference? (laughter)

SENATOR SMITH: No, I'd rather keep you here, actually. But Sam, this panel of four is the last one before the -- the last witnesses for the second group. When they're finished, we'll recess for 10 minutes, and then we'll start the third panel, okay?

So Sam, if I can, I'm going to give you the slip. You're in charge. Don't run away with the environment while I'm gone, all right? (laughter)

Thank you, sir.

MR. EGENTON: Let me begin again, Chairman Thompson. (laughter)

So I'm just going to highlight very quickly-- I appreciate the time that you'll wait here. So I'll go over just some of the recommendations.

Again, the last recommendation -- encourage the development of more transit-oriented development -- transit village communities; work with partners that have like-minded goals and objectives, such as Sustainable Jersey, to promote and expand these programs. Develop public transportation alternatives in high population communities where rail transportation currently does not exist; maybe even consider reactivating defunct and abandoned rail lines to connect passengers to major rail lines, such as the old West Trenton line that used to be open about 25 or 20 years ago.

Obviously, a great focus in the report was promoting the purchase and use of alternative fuels vehicles. Developing greater financial incentives: continued sales tax exemptions, consider grants and rebates; and consider reinstating the Cash for Clunkers programs to expedite the removal of old vehicles; consider incentives to delivery trucking and bus companies; promote green fleets in government by including EVEs as bid preferences on State and local purchasing contracts, expand infrastructure for alternative fuel vehicles. We also recommended to DEP this week that they should add -- in their annual award to the Governor's Environmental Excellence Award -- a recognition to companies that made significant reductions in emissions by changing their vehicle choices.

Chairman Thompson, Chairman Smith brought up, prior on the nuclear question, one of the things that I wanted to add to that mix -- was that several European countries are looking at public/private partnerships to help fund the expansion of nuclear power. So I think, again, in the area of transportation, public/private partnerships seems like the new norm that should be investigated.

Consider additional development of traffic signal optimization.

Just a couple -- a few brief words on the Transportation Trust Fund renewal, because obviously, without a replenished, vibrant TTF we're not going to be able to see improvements in the roads, the bridges, the transit system. And as many of you know, one of New Jersey's main strengths has always been, compared to other states, our superior transportation network for moving goods and moving employees; passenger transit is concentrated throughout the state. But our eroding infrastructure is decaying right before our eyes and we're at a critical point. So we believe that we need to improve this state of transportation in New Jersey by raising public awareness and advocating for a stable, long-term transportation funding program that is continuously maintained and improved, encouraging continuing growth and investment.

Examine legislative and constitutional provisions to provide a stable funding source and solvency to the Transportation Trust Fund, which greatly will reduce emissions by funding public transportation and reducing congestion on our roadways.

And finally, weigh a one-time payment of vehicle registration fees for the alternative fuel vehicles into the Transportation Trust Fund, to offset the reduced collection of gas tax funds from these vehicles, with the disincentives such payment may have for the purchase and use of alternative fuel vehicles.

We want to see increased education and outreach, and we can do that, for example, by use of public service announcements, utilizing local access TV channels, school programs on pollution mitigation from mobile sources.

Finally, taking my Clean Air Council hat off and speaking on behalf of the employer community -- one area I would caution in the category of "we've been there, we've done that, and it didn't work," is mandating -- and let me emphasize *mandating* -- mandating that the business community implement an employer trip reduction program.

I'm sure I don't have to remind folks that there were very sneaky and crafty individuals who were going so far as to abuse the HOV lanes by travelling with fake passengers, such as mannequins, in their car. Times have changed in the last decade, especially with regard to technology and having the ability to work from various locations, as opposed to at a physical work station. Several of our members provide flex time and have created staggered work hours. Employers have also engaged in the new norm -- sustainability -- and are working to share best practices that equate to a win/win all around. The company gets kudos, the company saves money, and it creates a healthier environment.

There are better ways to tackle the mobile side of the equation from what I just highlighted in our annual Clean Air Council report. We encourage the Senate Environment Committee to read our findings, to work with us, to work with the DEP and other State agencies, and to meet achievable goals in reducing emissions from the mobile sector.

Thank you for the opportunity to express our views.

SENATOR THOMPSON: Thank you, Michael, and thank you for the work of your committee, and so on. Very good recommendations that you came up with.

Of course, when you talk about the problems with the Transportation Trust Fund, that's not just a State problem -- it's a Federal

problem too. They're having a lot of problems trying to figure out how to keep funding transportation at the Federal level.

At this time we will recognize David Brogan from NJBIA.

MR. BROGAN: Thank you, Mr. Chairman.

Dave Brogan, First Vice President, New Jersey Business and Industry Association.

As you know, NJBIA represents over 20,000 member companies, statewide. And we wanted to highlight the potential fiscal impacts facing the business community and our economy.

NJBIA recognizes the need for diversity in electric generation sources. But the fact remains that businesses need reliable baseload power. NJBIA supports both energy efficiency and lower emissions; however, these goals should be accomplished in a way that keeps costs in mind.

Unfortunately, New Jersey's power rates are among the highest in the nation, and that's due to a variety of factors including government-imposed fees and taxes. To that point, currently nearly 27 percent of an electricity bill comes from government-imposed taxes.

Also, as it pertains to New Jersey's commercial and industrial customers, they consume about 65 percent of the electricity in the state and are greatly impacted by any changes in cost.

The working groups that were created here will provide a myriad of choices on policy decisions impacting energy markets, the cost of energy, renewables, etc. NJBIA would simply ask that, as the Legislature deliberates over these issues and priorities, it's done in a manner that's mindful of the costs to ratepayers. Decisions that increase the cost of

energy in our state have much broader implications than simply creating larger electric bills. It affects our competitiveness.

As you know, we're a high taxed, high cost of living state. We have the fifth-highest gross marginal income tax rate; we have the sixth-highest corporate business tax rate; and we have the highest property taxes in the nation. We're in competition with other states on a daily basis for jobs, investments, and ratables. We can't look at the cost of energy in a vacuum. When we lose on these factors we lose on a multitude of levels: First, energy costs rise in our state, which increases the cost of doing business and makes our companies less competitive. We lose potential businesses, and investment, and ratables, and jobs if companies are considering coming to this state or going to another state; and if a company locates to a state like Pennsylvania or further west they take power from the PJM grid, and sometimes that power is generated from older, less-efficient power sources -- and as we've seen, time and time again, those emissions flow eastward and affect our air quality.

NJBIA appreciates your hard work on these issues, and we hope to continue to take part in the dialogue on any environmental and energy-related legislation. But once again, we'd ask that a true cost-benefit analysis take place on any proposal stemming from these reports. We must not only look at the direct costs of changing environmental or energy policies, which includes the increase in the energy bills for ratepayers. We must also contemplate the ancillary or opportunity costs of taking such steps, such as lost jobs, lost investment, lost ratables, and the negative impact on our quality of life.

Thank you.

SENATOR THOMPSON: Thank you, David. I agree with you. That's the point I was trying to make earlier, that as we consider these various alternatives, yes, we need to work on our reduction -- use of more renewable energy, (indiscernible) with global warming. But every one of the proposals brought forward has to be reviewed with regards to cost-effectiveness as well.

The Chairman had indicated at this point we will take a minimum of a 10 minute recess. I say a minimum because, of course, he said he was going to press conference and said he'd be back in 10 minutes. That's the question. (laughter)

At that time, of course, at 1:00 we are -- well, it's after 1:00. Reconsidering Incentives for Class I Renewables. I will point out that while that starts at 1:00 and is scheduled until 3:00, of course I know we also have party caucuses scheduled at 2:30, and we have a voting session at 3:00. So we'll see what happens on that session.

Thank you.

MR. BROGAN: Thank you.

(recess)

(return from recess)

SENATOR SMITH: Okay, thanks for everyone's indulgence.

We're back in business, and we're going to topic number 3, which is Reconsidering Incentives for Class I Renewables.

Who led the stakeholder group on that one?

MR. DeSANTI: There were two of us, Senator -- myself and Jim Spano.

SENATOR SMITH: All right. So that's Fred DeSanti, Jim Spano.

MR. DeSANTI: Fred DeSanti and Jim Spano.

SENATOR SMITH: Is Jim here?

MR. DeSANTI: Jim was taken hostage by the minority group of our caucus. (laughter) No, I'm kidding. He's not here today; I'm sorry.

SENATOR SMITH: You know, that's--

MR. DeSANTI: I know that's okay.

SENATOR SMITH: --now on the official records of the State of New Jersey.

MR. DeSANTI: That's all right.

SENATOR SMITH: All right. So would you speak to us in terms of what the group -- if there was any consensus; and, if not, tell us what kinds of things the group came up with.

MR. DeSANTI: Sure, sure. I'd be very happy to do that.

I'm going to start very quickly with a quick outline of what we're going to talk about.

First, we'll talk about the structure of the discussions, and the fact that this really represents a minority proposal -- a minority report -- from myself; because, literally, almost everybody on the committee did not agree with this position. (laughter) So this is a single minority report. (applause)

Secondly, I want to spend a few minutes talking about Class I RECs, the statutory eligibility, the market structure -- how it works. I want

to talk about offshore wind; I call it *Waiting for Godot*. Balancing interests, weighing values. Because, really, what this whole thing is about, is making some significant judgments about what to do with money.

And finally, the importance of investing in New Jersey's critical assets.

So I will begin by speaking to the fact that the committee probably was composed of about 30 people. We first met at Jim Spano's office on May 15, and went on for about two or three hours and discussed a whole host of issues -- which we're going to cover.

The overall consensus and findings are as follows: the super majority of participants would not recommend the transfer of Class I renewable energy credits to a new Class III. Supermajority; almost everybody on the committee--

SENATOR SMITH: All but Fred.

MR. DeSANTI: All but myself, Joe Sullivan here, and--

SENATOR SMITH: And Tom Lynch.

MR. LYNCH (off mike): I supported you, Fred.

MR. DeSANTI: Thank you, Tom. Okay, Tom. Good -- so it was three of us. (laughter) Take out *supermajority*--

SENATOR SMITH: So it's 27 to 3. I got it.

MR. DeSANTI: It was 27 to 3; okay.

However, we did listen to a number of arguments that were made against this, and I listened very hard to those arguments because they talked about PJM Class I market and how this would fracture it further; regional environmental benefit arguments, which I think we have to take stock of; the development of land-based wind sources, which I think are

very important; and thoughtful observations that clearly deserve appropriate consideration. I think that a lot of the information that was brought forward about the fact the Federal government has not put together any kind of system that makes sense, and rationalizes the different regulations across the states, is also very important.

The next finding is that any offshore wind project that clears required approvals could not possibly be in service before 2021, which means that we're going to spending a lot of money until then that's not going to be useful and used towards any projects in New Jersey.

Finally, I think everybody did agree that resilient combined heat and power from New Jersey's critical assets was a priority, although they wanted to see funding mechanisms other than the economic transfer of Class I's.

So that's pretty much where we ended up with all of our discussions.

SENATOR SMITH: By the way, did you ever get into detail about the degree to which you were suggesting the transfer of Class I's to Class III?

MR. DeSANTI: Yes.

SENATOR SMITH: I mean, what kind of proportion are you talking about?

MR. DeSANTI: I'll get into that, but we're talking about 20 percent transfers.

SENATOR SMITH: Okay, thank you.

MR. DeSANTI: Okay. Just to spend a minute on Class I's, because it really is not a well-known renewable energy credit. Everybody

knows about SRECs; we talk about them all the time. But under EDECA, New Jersey has set one of the country's most aggressive renewable portfolio standards. As you all well know -- because you voted for it -- it's 22.5 percent by 2021.

As you also know, we've carved out about 4.1 percent of that to go into solar. So what is left is about 17.88 percent by 2021, which has to be met with renewable resources from the PJM trading area. The PJM trading area is nine states.

Now, we're going to talk a lot about offshore wind. To carve out for offshore wind, based upon the Offshore Wind Economic Development Act, was for a minimum of 1,100 megawatts, with a goal in the State Energy Master Plan of 3,000 megawatts by 2021. And, of course, that was passed in 2010.

Now, for comparison purposes, just to put, kind of, a number on this, right now -- and we just checked this with Lyle -- there is 6,500 megawatts of offshore wind on the entire earth. That includes the North Sea -- every place that you have offshore wind. And so I think it was a little bit aggressive for New Jersey alone to say, "We're going to economically finance 3,000," or half of what the entire earth has already done -- just as a point.

SENATOR SMITH: We always have big goals in New Jersey.

MR. DeSANTI: We do have big goals, yes. But we have to pay for them -- that's the other issue.

Now, in the current year, Energy Year, which is 2015, which started literally June 1, the New Jersey Renewable Portfolio Standard requires that 8.8 percent of all retail sales in New Jersey -- electric retail

sales -- come from Class I renewable energy generation. Now, if you do the multiplication, that's about 7 million RECs; the current cost in today's stock market is about $15. So that means that today, and this year, the people of New Jersey can expect to pay about $102 million that will be embedded in their energy rates just to pay for Class I. It's $102 million.

Now, of course the market structure is such that you can trade these credits any place; you can sell them in Pennsylvania, Illinois, Ohio. But New Jersey has to pay for 8.8 percent, or 7 million of them.

You should also know that based upon New Jersey's aggressive goals, we represent about 50 percent of the demand for Class I credits in the nine-state area; 7 million of the current 15 million that are generated in PJM were purchased by New Jersey. So we are the lion's share of this whole trading program -- because we set such high goals. If we look at Pennsylvania, they're now at 4 percent, they're only going to 8 percent. So when you talk about the equity of -- we're doing regional renewable resources, which I think is important -- New Jersey is putting approximately $3 in for every $1 that Pennsylvania residents are putting in. So we are substantially, and by far, paying for most of this.

Now, of course, the load serving entities, who are the generators, have to buy all these credits in order to sell at retail -- so that's how the money goes through -- or they put that into the bid price.

So I wanted to spend a few minutes on that, just because I think that it's important to talk about how the Class I structure is set up.

Now, this chart was put together by one of the traders, and it's very simple. If you multiply this across, this will tell you exactly what the liability is going to be for New Jersey ratepayers each year based upon

today's current price. I can't tell you what the price is going to be next year; it could go to $50, it could go down to $5. It's been jumping around quite a bit. But as for right now, at $15, if you take these 8.807, multiply it by the 77 terawatt hours, you come up with $6.8 million; you multiply it by $15, you come to $102 million. As you can see, that grows and comes up with a total by 2021 -- the total cost of this program, at today's prices, would be about $1.16 billion.

Okay, let's now go to the definition of what are eligible technologies under New Jersey's statutes, because these are the technologies that have to be met if you're going to make Class I's in New Jersey. I want to read this, because I think it's very, very limiting.

Class I renewable energy means electric energy produced from solar -- we know we have a 4 percent carve-out of photovoltaic technologies; wind energy, fuel cells, geothermal technologies, wave and tidal actions, small scale hydropower of a capacity of under 3 megawatts; and methane gas from landfills or biomass facilities, provided that they are cultivated and harvested in a sustainable manner. That's what you have to do to get a New Jersey Class I REC done in New Jersey.

So let's first go through and look at these technologies and assess what we can really do in New Jersey.

Can we do geothermal technology? No, we don't have any, and it's just simply a matter of the fact that it does not exist in New Jersey.

Can we do small-scale hydro? We can, but essentially it is the old mill-type refurbishments that occur on some of our rivers, but clearly nowhere near the number of megawatts hours that we're going to need.

Wave and tidal action is still at the research stage of development. I don't believe there are any real opportunities that currently exist, and certainly while we can have hope for this, it's not in the near-term offing.

Biomass cultivated and harvested in a sustainable manner: Huge land area requirements for this; certainly New Jersey doesn't have the land mass for that.

And fuel cells, finally, are required, under the statute, to use bio gases for input fuel -- not natural gas. There are currently none in use, and the capital cost of fuel cells are very high.

So that leaves us with solar, which we've done a good job with -- we have a 4 percent carve-out right now -- and wind. So let's first talk about onshore wind, because clearly onshore wind is a terrific resource.

This map shows where onshore wind exists in New Jersey. And, as you can see, it's the coastal regions of New Jersey. As you well know, Senator, I was involved in trying to get one in Union Beach -- unsuccessfully, you might remember that. I worked on it for three years, and we never got it off the ground. So my observation would be, good luck with obtaining permits if you want to put these on New Jersey's beaches.

SENATOR SMITH: Do you have any idea how much onshore wind we actually have?

MR. DeSANTI: Probably in the neighborhood of about 3 to 4 megawatts, or maybe 5. There are so some very small ones that you've seen; I know that Bayonne has one that's probably a 1.5 megawatts. But outside of that, you have to really be in the coastal region, and there's no way you're going to get that permitted, as I know.

So really the only technology that Class I's can really be generated with in New Jersey are from landfills. And, as you can see from this, we have about 100 megawatts of landfills; 700,000 renewable energy credits are generated from those requirements. And, of course, out of 7 million that doesn't represent a very big number.

As we also know -- and as you know, certainly, sponsoring S-2076 -- New Jersey holds its landfills to twice the environmental requirements of other states, which makes it very difficult to operate these. And we're trying to do something about that.

So conclusion on Class I -- again, my own conclusion -- New Jersey will require the purchase of 13.6 million Class I RECs -- and that does not include the 3.1 SRECs that are out there right now -- annually, by 2021. The cost is going to be about $240 million, if you look at today's spot prices; but if the market moves up to the alternative compliance payment -- which it can do if there's a shortage -- you could be talking about $682 million, which would be the cost to New Jersey ratepayers.

The next bullet is, in the very, very unlikely event that 3,000 megawatts of offshore wind are constructed by 2021, absorbing approximately 9.1 million Class I RECs, New Jersey will still be supporting 3 million Class I RECs from out-of-state. So even if we do all 3,000 megawatts of offshore wind by 2021, we're still going to be purchasing 3 million RECs from out-of-state projects.

In the far-more-likely event that no offshore wind is developed, more than 12 million Class I RECs will go to support out-of-state projects, simply because we can't generate them here at home. We don't have the technologies, we don't have the resources to do it.

Let's talk about New Jersey offshore wind. Now, I know there's been this one-dimensional analysis of whether or not offshore wind will produce, over the 20-year life, a positive net benefit. And this has been the subject of litigation, constant churning at the BPU and elsewhere. A couple of questions come to my mind: first, if western PJM states are producing significant Class I wind power -- and they are; they have big wind facilities out in Illinois, Ohio, and Pennsylvania -- and New Jersey ratepayers are contributing $15 per megawatt hour for that production, why wouldn't we, first, exploit that market fully before we begin charging our own ratepayers approximately $207 per megawatt hour for offshore wind? That's the question. I don't think the earth knows the difference of whether wind power's coming from an on-land source that's to our west, or from an offshore source to our east. I don't know that that question has ever been asked, but I know that the net positive benefits test doesn't even begin to take into account the fact that these resources -- we could buy many, many more renewable resources if we spent our money there. And, again, I have no objection to that, within the limits of what we're going to talk about.

Next, if all nine trading states support regional onshore wind in Illinois and Pennsylvania -- and we do -- why have we forced a similar regional offshore resource to be shouldered solely by New Jersey ratepayers? Why haven't we fostered cooperation from these other nine states to call offshore wind a regional resource, just like we call the onshore wind in Ohio and Illinois and Pennsylvania regional resources? If we have millions of more ratepayers paying for this, maybe we can get some pilots off the ground. But to think that New Jersey wants to build -- has a goal of building 3,000 megawatts, which is currently what is half of what's on the

globe, and paying for it just with our ratepayers, doesn't seem to make much sense to me.

SENATOR SMITH: Stop.

MR. DeSANTI: Yes, sir.

SENATOR SMITH: Would State legislation make offshore -- could State legislation make offshore wind a regional resource, or is that something that requires--

MR. DeSANTI: It would require the legislatures of the other states to be cooperative.

SENATOR SMITH: Why would they want to be?

MR. DeSANTI: Because it's the right thing to do. And because New Jersey's paying $3 for their $1, and they're getting all the jobs, they're getting all the economic development.

SENATOR SMITH: So why would they want to sign that into law?

MR. DeSANTI: Well, maybe we can hold that hostage.

SENATOR THOMSPON: I think maybe the question comes down to--

SENATOR SMITH: The question, Sam, was--

SENATOR THOMSPON: No, I'm saying why don't we say, "If you won't take offshore that way, then, okay, well, forget about onshore and we'll just go offshore," whatever.

MR. DeSANTI: That's the quid pro quo.

SENATOR THOMSPON: Sort of a quid pro quo, as he said. We're taking theirs, why don't they take ours?

SENATOR SMITH: All right. Let me do another question. As I understand the discussion, the problem with our offshore is that the depth that's required has some engineering issues. Why can't it be done closer to shore, or why aren't we doing more on land?

MR. DeSANTI: Senator, I would love to see more--

SENATOR SMITH: And you said that you can't get the permit. What permit can't you get?

MR. DeSANTI: You have to build a wind where the wind is. That's, basically-- You have to go on the coastal areas. If you go inland even a mile, it's over. And--

SENATOR SMITH: So you're saying land-based wind would not work in New Jersey?

MR. DeSANTI: Land-based wind in New Jersey can only work in the coastal areas.

MR. SULLIVAN: Even where the wind resource is adequate, in terms of speed and duration, the avian studies and the bat studies tend to preclude you being able to build anything, because in those near-shore areas -- which is where we actually have pretty good wind resources -- it's also the migratory bird pathways. So at this point in time, once you pay for a very expensive avian study, the conclusion was already reached before you had the study done that you're not going to be allowed to build it.

SENATOR SMITH: So there's going to be no land-based wind?

MR. DeSANTI: I don't think so.

SENATOR SMITH: Not where you have sufficient wind to pass--

MR. DeSANTI: If you went down, literally, down to some of the beach communities and said, "This is where we have to locate these things," I think you'd be ridden out of there on a rail. I mean, it's just not going to happen. But what I want to do is say, "Look, okay, we can't do these things; there are better ways to spend money to create greater value," and that's really what this whole discussion is about.

SENATOR SMITH: And your contention also is that this money is going out of state.

MR. DeSANTI: Absolutely -- because it can't go anywhere else. If we're not spending it in state, and we have to spend it, it has to go elsewhere. And we know the paper trail where it's going -- it's going to Pennsylvania, it's going to Illinois, it's going to Ohio. I mean, it's a great thing that we're building regional resources, and I'm not saying that we shouldn't. But I'm saying let's rethink and recalibrate this balance, because my judgment is that we can get more value for New Jersey ratepayers if we do that.

SENATOR SMITH: Okay, go ahead.

MR. DeSANTI: You can't see this, but I just wanted to show you this, you know, to put a final nail into this issue with offshore. These are the projects that are still active in the queue with respect to offshore wind. And I don't think you can read it, but there's really only about 395 megawatts which are still sitting there under study. They've been in there since 2011; nobody's touched them. They're languishing. And the biggest one, which is a 348 megawatt facility, is on suspension, which means it's just about to be withdrawn.

The larger list is on the next slide, and this shows all of the projects that have been withdrawn. And, as you can see, this is where we had the 3,000 megawatts. The developers of these projects have said, "It's not going to happen in New Jersey," and they've withdrawn the application.

So from PJM's perspective, right now there are no projects on the horizon -- absent Fisherman's Energy, which is still active, and the two other small ones. And yet--

SENATOR SMITH: Fisherman's was just--

MR. DeSANTI: It was denied by the Board.

SENATOR SMITH: --denied by the Board of Public Utilities, right?

MR. DeSANTI: That's correct, that's correct.

Now, this comes from Lazard Freres which did a study on the levelized cost of energy from various new generation sources. And as you can see, the cheapest generation source -- all the way to the left, there -- is onshore wind, with a production task credit at $54. That says to me, "We have to build onshore wind; it makes sense; it's the most cost-effective renewable thing to do."

Now, when you start to go up, you say, "Okay, the next one is onshore wind without the production tax credit," which is a Federal tax credit of $22.50 per megawatt hour. Next, you get the combined cycle natural gas, which is really the mainstay of what's in PJM. Then you get solar; solar is halfway in between. Nuclear, which I don't think we're ever going to see any more of; coal; solar thermal. And the most expensive thing that you can do, according to Lazard Freres, is building offshore wind. You

can't do anything more expensive; there is no other technology that you can do -- maybe better, but not more expensive

So let's look at the economics of offshore wind. OREC production -- we have a capacity factor with wind-- A capacity factor, by the way, is the number of hours that it is expected to run in a year, divided by 8,760. That's 35 percent for wind. Wind runs about a third of the time; that's all it can be expected to run, and nationally -- and I think globally -- that's what the capacity factor is.

So if we take the 3,000 megawatt goal, multiply it by 8,760 hours, we come up with 9.2 million RECs. Now, the deepwater proposals that were made were looking for a 20-year contract with the ratepayers of New Jersey at $270 per megawatt hour. That means that the New Jersey ratepayers, if we build this, will be obligated to pay $2.5 billion a year for the next 20 years. And my question, of course, is, have we really done the due diligence necessary to make a $50 billion investment over the next 20 years? Because to your point, I think we should try some of these. I think there should be a pilot -- something closer in. Let's see how they work. Let's see if this really makes sense, and it can be part of the equation.

Of course, the other thing I have is that, you know, we've got 120 times-- The project that was just denied by the Board was only 25 megawatts. And here we're still saying we have a goal of 3,000. I mean, if it doesn't work for something at 25, how is it going to work for something at 3,000, in deeper water, which is further out?

So the bottom line on this, for me, is New Jersey ratepayers are looking at offshore wind; it's a resource that we can all hope can do something and can be a part of this mix in the future. But I just don't think

its time is ready. And to put a $50 billion commitment on the people of New Jersey at this point in time, when money could be spent on things like energy efficiency and some of the other things we're going to talk about, it just pales in comparison in terms of making an investment in New Jersey for energy efficiency that's going to help businesses, that's going to help make this a more reasonable place to live.

SENATOR SMITH: I need a counterpoint here.

MR. DeSANTI: Sure.

SENATOR SMITH: Is there anybody here who wants to defend offshore wind?

Mr. Tittel, come on up.

What Mr. DeSanti is saying is we're waiting for Godot; it's never going to happen. (laughter)

MR. TITTEL: Yes.

SENATOR SMITH: Why is it going to happen?

MR. TITTEL: It's going to happen-- First of all, there were a couple of things I heard -- and I missed part of it, because I came back a little late from lunch -- but first of all, New Jersey's offshore wind -- the area that they want to put it in is under 30 meters; it's mostly about 80 feet of water. And that's the median in Europe where the offshore wind is going. So it's very doable.

Secondly, the DEP has done the baseline studies off our coast of where the most sustainable winds are, and the least amount of critters, and out of the shallows -- and that's already been mapped and done. There needs to be further tuning for when we do it. So we actually know where the good wind is, and where the least impacts to birds are. Secondly--

SENATOR SMITH: All right, stop for a sec.

MR. TITTEL: Okay.

SENATOR SMITH: Jeff says it can be done; we just have to go shallow.

MR. DeSANTI: Well, it can be done. My issue--

SENATOR SMITH: Why can't it be done?

Mr. TITTEL: The risk and the cost.

SENATOR SMITH: What's the risk?

MR. DeSANTI: The risk is nobody has had these things out in the ocean for 20 years. I don't know if the blades are going to fall off with the corrosion, if the coatings are there. I don't know if these things are going to be able to stand up to the hurricane-force winds. I think this is something you want to try first before you--

SENATOR SMITH: You've already said the pilot idea.

MR. DeSANTI: Yes, I like the-- The pilot idea's fine. But to commit to 3,000 megawatts, based upon what we know right now, when we can spend money on other things which will be much more productive--

SENATOR SMITH: I got that.

MR. TITTEL: Okay, let me go back-- The weather in the North Sea -- in Scotland, and also in the Baltic and Germany, is a lot worse than our weather. I mean, you're talking about winter storms and constant blowing, and they've been able to do it. So I don't buy that. I think the technology is there.

The other thing is, the difference is if a windmill off the coast breaks down, maybe it will land on a seagull -- I don't know, I mean, versus a power plant or something else. So I don't see the harm, but I think it's

there. And then the cost stuff -- and I will go get it for you, since we have time -- but when we looked at the costs per kilowatt it was about 26 cents. So I will go make sure that we get those financials--

SENATOR SMITH: Let me ask the obvious question -- or at least it's obvious to me. If it can be built in the shallows, and we do have wind -- areas with sufficient wind, why hasn't it been built?

MR. TITTEL: The main reason it hasn't been built is that the market -- because the Governor has not gone forward with the Offshore Wind Economic Development rules financial plan -- you know, the financial rules for the--

SENATOR SMITH: Is this BPU?

MR. TITTEL: Yes, because those rules are not there, there's no financial insurances to get those investments. And without those rules, no one is going to go forward.

I will say, and Stefanie could even testify, that Fisherman's Energy, which was an inshore one -- which we don't even think is that cost-effective -- it did pass the net balancing test, and it did get a Federal grant. But the BPU still turned it down.

SENATOR SMITH: The net balancing test is the one that says in 20 years you have to have a positive net?

MR. TITTEL: Yes.

SENATOR SMITH: Yes, okay.

MR. DeSANTI: Can I just ask one question of my colleague here?

SENATOR SMITH: Sure, yes. Listen, we're into, "Jane Curtain, you ignorant slut," Saturday Night Live. (laughter) As long as you do it in a civil way, we're happy to have--

MR. DeSANTI: If I can just--

MR. TITTEL: It just shows our age. Half the kids here won't even -- they won't get that. (laughter)

SENATOR SMITH: They don't understand it, right?

MR. TITTEL: Everybody under 30 will go, "Huh?"

MR. DeSANTI: If I can buy megawatts of wind power that is land-based in Pennsylvania, Illinois, and Ohio for $17.50, why wouldn't I buy 10 of those before I buy one offshore wind REC? I can do 10 times the environmental benefit.

MR. TITTEL: I'm not necessarily going to disagree, other than the fact that we want to encourage wind off our coasts, and we think long-term wind will be much more cost-effective.

The major difference is that off-coast, compared to Pennsylvania, will be the reliability issue. When you're out about 15 miles you get wind about 65 percent of the time. In places like Pennsylvania, it's about a third; it's about-- The amount of wind off the coast is about double the available compared to the best on land.

It's also 2 cents a kilowatt for generation in Kansas, but it will cost you $20 billion to move the power east. So it kind of balances -- it doesn't balance out.

MR. DeSANTI: The only observation I would make is, if we're really on a burning platform, and we're concerned about global warming, we should buy as many of these things now as we can afford. And if I can buy

10 in Illinois, rather than 1 off the coast of New Jersey, I should be compelled to spend -- exploit that resource fully before I spend more.

MR. TITTEL: Yes.

SENATOR SMITH: All right, I got your point. Let me ask you this.

MR. TITTEL: But the cost of transmission--

SENATOR SMITH: This has been in the hands of the BPU for, at least--

MR. TITTEL: Four years.

SENATOR SMITH: Yes, I was going to three, but four sounds right.

MR. DeSANTI: Six?

SENATOR SMITH: Fred says six. Can either of the two of you, or both, tell me why you think they haven't adopted the rules?

MR. TITTEL: Yes. Because the Governor doesn't want to have offshore wind adopted in the middle of national campaigns. It's unfortunate, but I think that's the only reason. I mean, the BPU cannot be that incompetent. I mean, we all have stories about BPU being incompetent, but this goes beyond.

SENATOR THOMPSON: Quite frankly, I'm tired of hearing everything the Governor does is because of a national campaign. I think the Governor does have other things he thinks about other than a national campaign.

MR. TITTEL: Well, I hope so.

SENATOR THOMPSON: So come up with some other excuse.

MR. TITTEL: Well, then, I would just say this, through the Chair. Since the rules are not that hard to do, why has it taken -- it will be five years in August to get the rules? Something is wrong.

SENATOR SMITH: Has there been any--

MR. TITTEL: I just know when this Administration wants something, they'll get it done.

MR. DeSANTI: It's the economics.

SENATOR SMITH: Has there been any official statement from BPU as to why they haven't adopted them?

MR. TITTEL: They keep saying they're working on them.

MR. SULLIVAN: The bottom line, that there's one thing-- You know, OWEDA says it has to be economically beneficial. And the only way anyone's been able to show the equation that this is economically beneficial is if you have manufacturing, and support, and onshore businesses that are going to generate income within the state. And there's not been one manufacturer that's been willing to come to the state. And all the major developers who have looked at this -- and these are some pretty serious people, including NRG, which is the second-largest generating company in the country. They had an offshore wind subsidiary that was looking at this, and they all determined themselves that they couldn't find a way to make the equation work. They weren't told not to submit projects; they basically went through-- They had proposed projects. They had gotten in the queue at PJM. They just were not able to make the numbers work for themselves.

We'd like to see it happen. I think the BPU, I believe, would like to see this happen. But at the end of the day, the rules in OWEDA say

"net positive economic benefit;" and they're very liberal, but they haven't been able to see a project that passes muster. That was the basis for the rejection of the Fisherman's Energy, is that Fisherman's Energy wasn't able to meet the litmus test, in their opinion.

MR. DeSANTI: I agree. I don't think it was political, I think it was economics. I think the BPU looked at this and said, "This is not a good deal for the ratepayer." And you know, when you go out 20 years on any kind of a spreadsheet, I start to really think about, "Does that make sense?" I mean, nobody can project 20 years, and yet we're going to commit people to 20 years of payments at a price that they're going to fix now. That's a big risk.

MR. TITTEL: I would like to respond to both. One, it did pass the net benefits test; and, again, Stefanie Brand could attest to it. And we don't even think it's a great project, because it was too small and it was too far inland. But it still passed it. Secondly, as someone who has been involved with the Offshore Wind Coalition -- the different wind providers -- the reason -- and I know this from meeting with the wind providers and listening to them and their problems, more than you have to listen to my problems, which I know you've heard enough of mine in your life -- the main thing is the financial insurance; either long-term contracts or having the financing mechanism in place so they could borrow the money to get their projects. And without that, they cannot go forward. And that's been the stumbling block all along.

MR. DeSANTI: Try it. Senator, I don't think anybody here doesn't think that the offshore resources are something that we have to do something about in the future. Try it. But to commit to 3,000 megawatts

right now I think would be absolutely foolhardy. And $50 billion can be better spent on energy efficiency that's going to help this State a hell of a lot more.

SENATOR SMITH: Okay. Listen, I appreciate everybody fleshing out the issue.

Fred, you were in the middle of a presentation.

MR. DeSANTI: All right, let's go, here we go.

Well, I'm not going to come to any conclusions on this in terms of the offshore wind, but I think we've stated it all. It's something that we have to look at, but not at the level we are.

Now, the next point is balancing interest in wind values. And really, that's what I think is at the crux of this whole issue. We're not talking about right or wrong answers, we're talking about picking directions that are going to create the best positive net value for customers, for the people of New Jersey, that's going to help us.

I think we can say with considerable certainty that there's no way that we're going to meet the Class I program that will create job creation, in-state investment based upon our ability to do Class I renewables. We're just not going to do it; it can't happen. We also know that New Jersey is shouldering a disproportionate amount, or share, of the cost of the regional program. I mean, I'd feel a lot better about this if Pennsylvania mirrored our 22.5 percent aggressive goals; and Ohio, and Illinois, and all the other trading states. But that's not the case. We're paying the lion's share of this and, unfortunately, we're seeing most of those values being created out-of-state.

We know that regional development of renewable energy will help clean air in the region, but you know if we do projects locally we can actually clean the air for the people who are paying for the program. I mean, the people who are living around public hospitals who can take advantage of CHP would get cleaner, regional, local air; and they're paying for it. So my observation there is, I think it's not only an economic benefit, but also a local environmental benefit that has to be weighed.

Next we know that states have crafted laws that mandate certain percentages of renewable Class I's. New Jersey has created 4 percent carve-out for solar, but makes no other similar requirement for in-state Class I's. If you go to Ohio, you go to Illinois, you go to Pennsylvania, there's a mandate that a certain percentage of the Class I's generated occur in-ate. We don't have that.

We also know that New Jersey cannot simply create in-state Class I-eligible projects and come anywhere near the 6 million to 13 million of renewable energy credits that we're going to require.

We know that our economy has been lagging other states. You've just been through a budget situation, and you know how dire this situation is. I think we need to invest in New Jersey--

SENATOR SMITH: Fred--

MR. DeSANTI: Yes.

SENATOR SMITH: When you say that other states have mandated certain percentages of renewable Class I's generated from projects in their state -- they didn't have a commerce clause issue?

MR. DeSANTI: I don't know, but it's on the books that they're actually doing that in the other states.

SENATOR SMITH: Yes, we need to take a look at that to see if-- I mean, if you're talking about more of the money coming to us--

E R I C T H U M M A: (off mike): That's not accurate.

SENATOR SMITH: That's not accurate? Who's speaking?

MR. THUMMA: Oh, hi. I'm Eric Thumma, I'm with Iberdrola Renewables.

SENATOR SMITH: Eric, I didn't hear your last name,

MR. THUMMA: Eric Thumma, Iberdrola Renewables, and also Mid-Atlantic Renewable Energy Coalition.

SENATOR SMITH: You need to repeat it on the microphone. Hit it so it's red.

MR. THUMMA: Sure. Good afternoon. I'm Eric Thumma. I am with Iberdrola Renewables; we're a wind developer. And I'm also the President of the Mid-Atlantic Renewable Energy Coalition.

So as per the question of other states that have in-state Class I requirements, the Illinois preference expired in 2012; it was not reinstated. Ohio did have an in-state requirement that was just revoked by the legislature in the last session. Those were the only two PJM--

SENATOR SMITH: Why did they revoke it?

MR. THUMMA: That's a complex question. I'd say they primarily revoked it based on cost concerns; that they felt that-- It was a 50 percent of the requirement for Ohio -- RPS had to come from projects located in Ohio. And I think there was a view among the members of that legislature that that was a premium that may unduly burden ratepayers in Ohio, and that they preferred to have a more regional approach to renewable acquisition.

SENATOR SMITH: Okay, as long as you're up here, let me ask you the earlier question raised. Do you agree or disagree with the comment that the reason offshore wind has not gotten to the finish line in New Jersey is because the BPU hasn't adopted the rules required in terms of, I guess, reimbursement? Or is there another reason why wind is not happening off the coast of New Jersey?

MR. THUMMA: I should note, for the record, that we're a land-base developer; we're not developing offshore so I'm not the most qualified person to comment on that. I would say, based on my personal experience, the lack of ability to have a financing mechanism appears to be the primary reason that it hasn't advanced. So I presume--

SENATOR SMITH: Which is the adoption of those rules.

MR. THUMMA: That's correct.

SENATOR SMITH: Okay.

MR. THUMMA: That's my presumption.

SENATOR SMITH: Do you think-- I mean, we heard a comment earlier -- the land-base is not going that far in New Jersey. What's your opinion on that?

MR. THUMMA: I would agree. We have looked very closely at projects in New Jersey. We would love to do a project in New Jersey because of the supportive nature of the State for renewable energy. The reality is the State is just too populated to do large-scale commercial wind projects. So there may be opportunities to do smaller scale projects; I mean, if you've been to Massachusetts there are many projects that are between maybe 1 and 4 megawatts that are coastal projects. I think, as was reflected earlier, those can be difficult to site; communities do, occasionally,

or at times, have problems with the siting of commercial-scale wind turbines in their communities. But if there were supportive communities, then I think it is possible to do smaller projects. The type of larger, commercial-scale projects that we would like to do, frankly, the state is too populated where the wind is for us to be able to do them. And that's regrettable; I wish that wasn't the case.

SENATOR SMITH: Thank you for your comments.

MR. THUMMA: You're welcome.

MR. DeSANTI: I just want to-- I did not know that they repealed that law. I was under the impression that it was still on the books. But it wasn't a mandate--

MR. THUMMA: That's correct.

MR. DeSANTI: Okay.

MR. THUMMA: It was just repealed on that one.

MR. SULLIVAN: Another one that--- Yes, it's similar to the way in New Jersey said that our solar has to be connected to the distribution system in New Jersey to try and keep it as an in-state resource. It hasn't been seriously challenged. We've sort of managed to get along with that one. Pennsylvania, as part of their portfolio standards, includes waste coal as a resource. Now, them including waste coal -- I don't know if it says Pennsylvania waste coal, but I don't think we have a whole lot of waste coal in New Jersey, so it effectively says that those resources can only be Pennsylvania resources. And it's tailored around one of their local environmental problems. So there are ways of crafting these, and legislators can be very crafty at times, and so can regulators.

SENATOR SMITH: Well, if there are any crafty stakeholders out there who can come up with ways to keep more of this money in New Jersey -- if anybody has any suggestions, please send in your cards and letters.

All right. Fred, I keep interrupting you.

MR. DeSANTI: No, no, it's no problem.

SENATOR SMITH: Take that as a sign that it's a very interesting presentation.

MR. DeSANTI: You know, where I go now is basically to: Can we spend this money better in-state? Will it provide greater benefits, both environmentally, locally, and economically for the people of New Jersey if we rethink the Class I program and redirect some of these funds elsewhere?

mean, I've chosen to look at New Jersey's critical assets because I'm most concerned about the state of these assets. I don't think it's unfair to say that most of our public hospitals, correctional facilities, critical care facilities, and wastewater treatment facilities are generally among the State's worst maintained, energy inefficient, undercapitalized, uneconomic, and, in some cases, even dangerous facilities in New Jersey. They're horrendous. I mean, witness the system that heats this building. We've already had two catastrophic pipe failures because this system hasn't been maintained.

The HUD application that was made by the State of New Jersey, by DCA, identified $17 billion worth of energy infrastructure projects that needed to be handled. I mean, there's an enormous requirement to make an investment in New Jersey, and it's very serious.

So anyway, I make the argument that we can take some of this money, we can move it into a new Class III; it's not renewable -- I'm not purporting that this is renewable energy -- but if we take that investment and clean up the energy infrastructure in our critical facilities, I think we're doing a lot better with the money for the people of New Jersey; we're cleaning their environment -- that's where they live -- and we're helping them and they're paying for it. I think it's a better use of the money. And I also think that the completely disproportionate share that we have right now, where 10 of these credits are being used out-of-state versus 1 in state -- we have to rebalance this and rethink about it. I'm not saying we abandon the PJM system; I'm not saying we abandon all the renewable energy that can occur in the other states. Let's take 20 percent of this money and let's bend it into New Jersey so we can create jobs and create the kind of investment that we need.

I know the State has $200 million coming form HUD that's going to be used for this energy resilience bank. We don't know the rules yet; we know that they're Federal loans, we know that there's going to be a lot of requirements. I can tell you that I know they're going to put wastewater treatment at the top of the list. If you take Passaic Valley Sewage Authority -- which is a 25 megawatt facility -- that's going to cost $40 million to make that a resilient structure. That's 20 percent of this money. We don't have enough. If we take 4 percent of the 18 percent that we're going to continue to require for our 22.5 percent, take 4 percent of that we can create a fund of about $150 million a year that can be used to generate 500 megawatts of CHP, energy storage, energy efficiency -- you tell me how we can best use that money. But it would be used in state to help

make New Jersey more productive, more competitive with other states and, quite frankly, I think is a better use of the capital.

The last slide just goes basically through this again. I think we're talking about a very significant amount of money. I think it's totally appropriate for the Legislature to revisit how this program is working, and I think it's totally appropriate to make some live judgments, based upon the needs of this state in comparison with how this money is being spent elsewhere.

I'm not here to make awful arguments about renewable energy; I value renewable energy. I represent the New Jersey Solar Energy Coalition. I love onshore wind; I think it makes a whole lot of sense. I just think that New Jersey can do better with this money, and it's time now to reevaluate that.

SENATOR SMITH: Okay, any questions?

Joe, you were up here for--

MR. SULLIVAN: I was just brought up to keep Fred company. (laughter)

MR. DeSANTI: And to start my car.

MR. SULLIVAN: And to start his car -- just in case it blows up.

These are initiatives that we as an industry have supported. I mean, I like-- Renewables are a great thing, and where we can do them, or can do them economically, fantastic. But we're not doing the other things. And when you look at some of this technology-- When we do things and we used combined heat and power -- use other technologies -- waste energy recovery is, essentially, a renewable resource. It is energy that's not being

use for anything; it's going into the air and we don't need to do that. We need to actually do a much better job of raising our efficiency thresholds, capturing waste energy where we can, because that's no burden to the environment to take that out.

SENATOR SMITH: I appreciate the comments.

MR. SULLIVAN: Thank you.

SENATOR SMITH: Eric Thumma. Eric, you were up before -- Mid-Atlantic Renewable Energy Coalition.

And that's Diana Rivera -- okay.

Take it away, guys.

MR. THUMMA: Thank you, Mr. Chairman and members of the Committee for the-- Oh, yes. We do have a few handouts, just very briefly, to provide.

Thanks for the opportunity to speak today. In the interest of time I will not read verbatim my written testimony; I can submit that for the record and we'll simply summarize.

I had a short introduction already. I am Eric Thumma; I'm the Director of Policy and Regulatory Affairs for Iberdrola Renewables. Iberdrola Renewables is the second-largest owner and operator of renewable energy in the United States. I'm also the President of the Mid-Atlantic Renewable Energy Coalition. Our members are wind developers, manufacturers, and transmission developers, and other associated services for renewable energy -- primarily wind energy -- in PJM.

Our comments today focus on maximizing the benefits of Class I least-cost, longer term renewable procurement.

I think the first set of folks did a great job of, sort of, setting up the challenge, and that is that even with the 1,100 megawatts of offshore we'll still have a substantial amount of Class I to achieve. And we have the EPA rules. So the EPA is estimating that in order to meet the new rules on carbon from existing power plants, New Jersey would need to have about 16 percent renewables. The New Jersey Class I g- cost proposition I think is important to everyone, as we have heard today.

So the challenge that I'm here to just talk about briefly today is how New Jersey is currently procuring RECs for Class I. And that is primarily through short-term procurement through the BGS auction. And I think this has not been an issue, because it's been working; it's been relatively inexpensive, and I don't think people have thought a lot about it compared to the SREC process.

But I would note that there is a least four challenges with the way that that procurement has been undertaken. First of all, when you're buying RECs only, that means you're always going to pay a premium because the price of the REC is going to be based on REC supply and demand, not necessarily on the all-in costs of a new renewable project.

In the long term, short-term procurements are not going to be sufficient to support capital investments. So I think a lot of projects, frankly, have been getting built because the Federal subsidies. And as those diminish over time, the State markets are going to need to be more robust and send a longer term price signal in order to get new renewables built.

You're also not getting the real benefits of renewable energy. The real benefit of renewable energy is that you get a fixed price over a long time. And so we saw this winter, for example, during the polar vortex when

prices were $500 -- you should have been saving money by having renewables in your portfolio; and you weren't saving money because you're not buying energy, you're just buying the RECs.

And then the last point -- which I think is well documented in the last group -- is that there are concerns that you're paying a lot for out-of-state resources, and you're not getting the in-state benefits. New Jersey is a leader; it is really a linchpin of this region in order to get renewables investment.

So what we have thought about is how we can, kind of, address all of those concerns at one time and ensure that we're getting investment; ensure that we're getting fixed, stable pricing; and then also address some of these concerns that we aren't getting the amount of in-state benefits that New Jerseyans want for the money that they're paying.

So what we are proposing is not really that novel. It is something that is happening in Illinois, it's happened in Massachusetts and Connecticut. And the beauty of a system like PJM is, while projects might not actually be physically located in New Jersey, from a financial standpoint you can make them look like they're in New Jersey by having developers and owners of renewable energy projects take the risk of transmission between the point that the renewable energy project is located and a zone in New Jersey.

So our proposal is simply to consider doing something that the other states I described have done, which is set up a contracting program; admittedly it is a longer term program -- it's not a short-term program -- it's 10 to 15 years in which renewable energy generators in other states would sell -- or it could be New Jersey too if they are eligible projects -- would sell

energy and RECs to New Jersey at a fixed price based on the load zone prices in New Jersey. And that's a way to financially make the projects look like they're in New Jersey.

So I have a very simple example of this possibly more complex topic that I'm talking about on page 4, and this is very simple; and it's possibly, maybe, overly beneficial to my point of view, since I'm presenting it. But what this would basically look like is: The blue line would be a fixed price that would be offered to load-serving entities in New Jersey. We would take all the transmission risk -- if we're coming from Pennsylvania, or Illinois, or Ohio, or wherever. And (indiscernible) the benefits are the deltas between the other lines. So the green line really represents the cost if you're just buying RECs only, right? You're always buying RECs, and I'm assuming that's a $15 premium in perpetuity. And as energy prices rise, that premium on that REC rises as it goes out. So that delta between the blue line and the green line is actually savings from this program.

The red line is sort of an estimate of energy prices, escalating at 3 percent each year. And so you can see in the out-years the renewables are actually cheaper than actual energy. And this is something Illinois has looked at, Massachusetts has looked at, Connecticut has looked at. And while today the price of renewable energy does require a premium -- because, basically, the existing power plants are already paid for and they're amortized -- here is an expectation that a fixed price over a long term for renewables can be competitive in the future.

So we think this is something to think about, as you go forward and you're thinking about how can we cost effectively meet these EPA rules, but also bring benefits to electricity consumers in New Jersey.

So with that, I just wanted to summarize that we do encourage a balanced portfolio of resources. We know that New Jersey needs to balance the needs for economic development with least-cost, and we think this is a good way to do that.

So I thank you for the opportunity to provide my testimony today. I'm happy to answer questions now or after Diane speaks.

SENATOR SMITH: Yes, how do you take the risk of transmission?

MR. THUMMA: So the way the transmission works in PJM is, it's not physical, it's financial. And there's something called *congestion,* and that will represent maybe the difference between prices in a place in western Pennsylvania and in New Jersey. So what that means is that we would take that financial risk if there happens to be congestion between-- Let's say we have a project in Somerset County, Pennsylvania and the PSE&G zone. If there ends up being $40 worth of congestion at a certain time interval, that's a cost that we will assume.

So what that would mean, of course, though--

SENATOR SMITH: We don't have this arrangement now?

MR. THUMMA: Well, you can do this -- you can do this deal right now, right? That's the beauty of PJM. What we are suggesting is that this should become an option -- or at the risk of maybe using a dirty word -- a mandated option for RPS compliance. Because right now the only thing that you're doing in New Jersey is short-term procurement of RECs only through the BGS auction. That's the primary compliance mechanism. We are suggesting this could be another compliance mechanism that would be used for some portion -- not the entire portion of Class I, but for some

portion of Class I so you have a hedge against energy prices rising and you're getting more of a direct benefit.

SENATOR SMITH: Well, only with regard to the transmission costs, though, right?

MR. THUMMA: Well, I mean, yes--

SENATOR SMITH: There's no hedge on the actual prices going up.

MR. THUMMA: Well, you're paying a fixed price for energy, and it's a financial swap, essentially. So if you're paying me -- in this example, the load-serving entity is paying me $65; if energy in New Jersey goes up to $70, they are going to be $5 to the good. So they're getting a financial hedge against energy prices rising.

SENATOR SMITH: And that's only if they have a long-term contract.

MR. THUMMA: That's correct. And that's, I think, the rub. To be perfectly honest with you, that is the rub of this proposal. This proposal is requiring there to be some form of long-term contracting for Class I -- just to be completely explicit. I would suspect that that would be the rub of this proposal.

SENATOR SMITH: So Lyle will shake your hand, Alan will punch you out.

MR. THUMMA: Okay. (laughter)

SENATOR SMITH: All right.

MR. THUMMA: Well, we know it's New Jersey; it's tough business.

SENATOR SMITH: It's a tough business.

MR. THUMMA: So I'm ready to be indoctrinated. I'm a Pennsylvanian, and I'm ready to step it up to the next level.

SENATOR SMITH: Your proposal is, let's have long-term contracts with a hedge against transmission rates.

MR. THUMMA: For some portion of your portfolio. I wouldn't recommend that you should do this for 100 percent of Class I; but for some portion, we think this makes sense. And it makes sense for the four reasons we outlined. It's not just to get the hedge to the ratepayers; but it's also to recognize that these are large capital projects. And it was recognized with the offshore that they need a long-term contract to be able to support their cost of capital. It's going to be the same for a 100 megawatt wind farm. That's a $200 million capital cost; that needs to have a longer term.

SENATOR SMITH: And you're already Class I.

MR. THUMMA: Yes, that's correct.

SENATOR SMITH: But most of your constituency is out-of-state.

MR. THUMMA: That's correct -- that's right, that's right; because for the reasons that we discussed. That is correct. So we're trying to, sort of-- We're sort of recognizing that there's a concern that New Jerseyans are not getting enough in-state benefit for what they're paying. So how can we combine the benefits of the low-cost resource that's out-of-state with a benefit for New Jerseyans? So that's what we were trying to think about. So, okay, the way to do that is to give them this hedge against rising prices.

SENATOR SMITH: Got it; thank you.

MR. THUMMA: You're welcome.

SENATOR SMITH: Diana, you're a tag team.

D I A N A R I V E R A: Yes. Good afternoon.

Hi, I'm Diana Rivera with Clean Line Energy Partners. Clean Line is a member of MAREC, that's why I came up with him. We're a developer of long-distance transmission lines to bring low-cost renewable energy to market. And I participated in this working group, but my comments also apply to the Global Warming Response Act goals.

And I just wanted to share with you projects that we're working on that can help New Jersey meet its carbon reduction and RPS mandates cost effectively.

We're developing-- Clean Line is developing long-distance direct current transmission lines to bring the lowest cost wind, referenced earlier, in Kansas, for example, where renewable resources are being offered at a fixed price -- for $20 for 25 years, flat. And we are developing transmission to bring that energy -- physical transmission to bring that energy to PJM, where, under existing mandates, it would qualify for the Class I RECs. And we hope that that stays that way, because it could be a very cost-effective means for New Jersey to meet its carbon reduction and renewable goals at a delivered price of wind energy of near $40 per megawatt hour, including the wind and the transmission. And that includes the production tax credit.

And that compares to the other generation sources that you saw earlier on the screen from that Lazard study. It shows that that's quite competitive with any other type of new generation.

Now, the challenge is it's competing with existing generation. So the mechanism that MAREC proposes would certainly help to not only allow those projects to come online and reduce REC and energy prices with this low-cost new resource, but also to add a local benefit of that delivered energy -- that's illustrated here on this picture, of where it would be. It could add that local benefit of hedging local energy prices through this proposal that MAREC is suggesting.

I just also wanted to echo some of the comments earlier today from the New Jersey Business and Industrial Association -- that as New Jersey considers ways to clean up its energy future, we just hope that you continue to allow out-of-state, low-cost, renewable resources to meet your energy future goals. And at low-cost and stable prices, it could be benefited by MAREC's long-term contracting proposal, support local jobs and economic development -- even if the projects that are being built are not built in this state. There is a way to create local benefits through low, stable energy prices with regional solutions like the ones that Clean Line is working on, and to help New Jersey meet its clean energy goals.

SENATOR SMITH: Thank you, Diana.

MS. RIVERA: Thank you.

SENATOR SMITH: Dave Pringle.

MR. PRINGLE: Thank you, Chairman.

I was a member of this work group as well, and I'll keep my comments limited to that.

I wasn't here at the beginning when Fred made his presentation, but I understand he made it very clear that his was very much the minority opinion of the work group, and I appreciate that.

Jim Spano -- who was the Co-Chair with Fred -- who was in the majority, wasn't able to be here today and we just got word of that. So I just want to read into the record what his intensions were had he been here.

SENATOR SMITH: How long is that statement?

MR. PRINGLE: It's two paragraphs.

SENATOR SMITH: Two paragraphs?

MR. PRINGLE: Yes.

SENATOR SMITH: Okay.

MR. PRINGLE: So this one is dated June 24 -- an e-mail from Jim to the full work group.

"I sent out a survey, which was addressed during our last call, although there were only 15 people on the call. The entire group opined that they would not support the suggested change to the Class I REC program or any change that resulted in non-renewables, CHP, or energy storage being eligible under any form of REC program. This was consistent with the result of the survey as well. Although only 8 people responded to the survey, there were about twice that many on the conference call -- all of whom agreed.

"Hence, it was decided that Fred would pursue it on his own with the support of anyone who wanted to work with him. I expressed that to Fred, and Fred is working on his own proposal" -- and we've seen that today. "It was decided that there would be no need for further conference calls. Several group members noted that there are other sources of revenue to provide a program for CHP and ES. And, if I recall correctly, Lyle agreed to work with a small group to look into as an alternative. I believe there is so much activity outside normal business that we all have a bit too much on

our plates right now. But I also agreed to work on that group. I'm not sure we can get anything done prior to July 10," and, as an editor's note, we haven't -- "but I will let others opine on that. If anyone has anything to add or suggest, please feel free to e-mail me and I will pass it on to the group. As of now, it seems that Fred will work on his own draft. If others strongly object, they can certainly opine to that effect and I will provide it to Senator Smith, along with any proposal that Fred puts together. But as a group, there seemed to be a strong opinion that CHP and energy storage do not belong in a REC program, but there was lot of support for an alternative program. And the volunteers that agreed to work on an alternative have not yet gotten together."

And then yesterday -- and this is a very short paragraph -- he e-mailed to a smaller group, "In my group, reconsidering Class I carve-outs, there was also consensus to do nothing. But we are making a presentation that highlights that a super majority were against any carve-out, but then presented what was proposed and why so. There is a clear acknowledgement from the stakeholder majority position, but still a full report to provide context to what they are against and noting their objections to particulars of the proposal and why it was proposed. That will give the Senator full and accurate feedback."

In summary, we think Class I is for renewables and CHP is not renewables. We support CHP, but not at the expense of renewables. We don't want to re-divvy up the Class I pie; we want to expand it.

That last part was my -- Pringle, Clean Water Action comment.

SENATOR SMITH: What's the expansion you're referring to?

MR. PRINGLE: Over time, it could be increasing the RPS; we could be creating a -- this is me speaking, now--

SENATOR SMITH: Right.

MR. PRINGLE: There are a plethora of capital programs in this State that could be supporting the kinds of projects -- the hospitals, and schools, and such; the Economic Growth Act, CREDA, the Environmental Infrastructure Trust. All these capital programs are-- Although they're flawed and we're strapped for money, we're still spending billions in capital programs every year in this State -- School Development Authority, Health Care Financing Authority (*sic*) -- so there is a lot of money that we could be making contingent as we're doing these projects, that they could be powered by CHP.

SENATOR SMITH: Okay, thank you.

Jeff Tittel -- last slip on this topic.

MR. TITTEL: Yes, well, that was my -- part of that was my suggestion to the Committee on how to fund CHP.

I just wanted to-- I know you have to go do a vote, so I just want to mention that we checked with the European Wind Association, and it's 17 cents a kilowatt off the coast of Europe right now. When I mentioned earlier about the 26 cents, that was when we first did the 3,000 megawatts, we thought the cost would be. And the cost is dropping, and in a couple of years it's going to be down about 12 cents for offshore wind. So prices are coming down in Europe dramatically in offshore wind.

SENATOR SMITH: Okay.

MR. TITTEL: Okay, that's all.

SENATOR SMITH: Thank you for your comments.

There were no other witnesses, right?

MR. CLIMPSON: I don't think so.

SENATOR SMITH: Okay, so the 1:00 group, Reconsidering Incentives for Class I Renewables, is now complete.

The 3:00 group, which is Decoupling Utility Regulations, we'll have it start at 3:15. We have to go do a vote, and the session is supposed to start at 3:00. So we'll get our votes done and we'll be back at 3:15.

(recess)

(return from recess)

SENATOR SMITH: Okay, let me thank everybody for participating today.

It was a tough start. I was just telling Judiciary -- where they're still meeting, discussing nominees of the Port Authority, and they said, "Where were you?" I said, "We just did six hours of the most interesting energy policy testimony you can imagine." And you know what they said? "What are you, nuts?" (laughter)

So in any case, thanks to everybody in the room for staying, and for participating, and, hopefully, helping to develop that energy policy in our State.

Our last topic is Decoupling Utility Regulation. And who were the co-chairs on that stakeholder group? Anybody remember?

E V E L Y N L I E B M A N (off mike): Mr. Chairman--

SENATOR SMITH: Come on up.

MS. LIEBMAN: Hi, Mr. Chairman. I'm Evelyn Liebman from AARP. And the Chairs of the Decoupling Work Group are Andrew Hendry from the Utilities Association, and Doug O'Malley. They did a fabulous job, but Doug is on vacation and Andrew--

SENATOR SMITH: Where are his priorities? (laughter)

MS. LIEBMAN: I know, I asked him, but you know.

And Andrew, who represents the Utility Association, felt it might be inappropriate for him to speak--

SENATOR SMITH: Sure.

MS. LIEBMAN: --because the Association does not have a united view of their own. So I was -- I volunteered to give the summary.

SENATOR SMITH: That's great; if you would, that would be great.

MS. LIEBMAN: Sure.

SENATOR SMITH: By the way, did you sign in a slip, or not?

MS. LIEBMAN: I did.

SENATOR SMITH: You did -- all right.

Evelyn, if you would go forward.

MS. LIEBMAN: So as I said, I'm Evelyn Liebman from AARP. We were a member -- are a member of the Decoupling Work Group. Thank you very much for inviting us.

The group met once on May 23. We had about a two-hour meeting. I think it was well represented, in terms of the diversity of stakeholders who were there. And Andrew and Doug have provided you with a summary, which I'll just summarize.

And probably the best way I can summarize it is, there was only one consensus, and there was consensus that there was no consensus pretty much on anything. And I was reminded of a quote--

SENATOR SMITH: So you know what? That means that your group was the typical New Jersey committee. (laughter)

MS. LIEBMAN: It might have been, but I might also say, by way of quoting H. L. Mencken, that, "Every complex problem has a simple solution too good to be true, and it usually is." And I think that's probably how I might describe decoupling.

We were charged with two questions: One was how do we implement distributive generation while maintaining the reliability of the current transmission system? We did not get to the question. (laughter)

The second question was how do we reward utilities with profits, based not on energy commodity sales, but on how well a utility meets its customers' energy service needs? And I'm sorry to report we didn't get up to that question, either.

We were not able to reach agreement even on what the definition of *decoupling* is.

AARP certainly came into the work group with a point of view; I don't really want to -- we've provided you with our comments as well. I don't want to get into that too much until I, at least, summarize the work group.

As I said, there was really no agreement on the definition of decoupling. We did hear from Stefanie Brand, Rate Counsel Director, who's also, I think, going to be testifying on what New Jersey's statutes may or may not permit with respect to decoupling. It's her view that there

would need to be some modification to current statute to expand decoupling beyond what we currently do with energy efficiency and renewable energy projects.

Given that we couldn't actually even agree on a definition of decoupling, we asked ourselves several questions: one was, given the requirements of the Global Warming Response Act-- And I should add that I think that everyone who came into the work group supports the need and the desire to expand and promote energy efficiency and renewable energy. It's just that there was absolutely no consensus on whether or not decoupling is appropriate; whether it's one of a number of mechanisms that we may want to pursue.

But the question was: Given the requirements of the Global Warming Response Act, do you believe that adoption of decoupling is warranted? Again, there was just no consensus.

My own personal view, as I think the topic-- The issue is so complicated and, at times, technical that it's difficult to really even have an opinion unless there was a lot more information available.

The other question that we asked ourselves was: Given the requirements of the Global Warming Response Act, would the business model for utilities have to be restructured to meet the goals of the Act? There was agreement that it is likely that significant changes in the business model would need to be made to meet those ambitious goals. But that's as far as it went. There was no agreement or no consensus on what the changes would or should be.

Again, I thought that it was a productive discussion. The group didn't feel that there really was a need to meet again, and wanted to just

relay to you, I think, that it's such a complicated issue that it would need a lot more study and a lot more deliberation.

So that's my summary of the work group. I know Stefanie Brand is going to testify; her views are very close to our own at AARP, and I'll let her summarize the concerns that we, representing 1.3 million consumers in New Jersey, have.

I would just say, by way of example -- and this is the way I described decoupling to people who asked me, our members, others who are not in this business. It is essentially trying to break the connection between a utility's earnings and sales, and a way to immunize a utility against fluctuations in its earnings based on fluctuations in sales. Some consider it a disincentive -- our current way of rate making -- because we do connect earnings with sales as a disincentive for a utility to invest in energy efficiency and renewable. That may or may not be true; there's a lot of experience around the country in different states with decoupling. Perhaps we could say it might remove a disincentive, but that is not the same as establishing an incentive.

And we, for example, looked at the state of Florida, which presented a report to its legislature about their experiments in decoupling and found that, at the end of the day, it really didn't produce more efficiency or significant benefits for consumers. New York, which is pursuing a very ambitious program to look at restructuring their industries and has some experience with decoupling, is, I would suggest, at best tepid on whether or not decoupling is an appropriate or worthwhile mechanism to pursue. Their experience, that they describe a bit in their report, is that

it, at best, makes a utility indifferent -- not necessarily incentivized to invest.

And from our perspective representing consumers, what we were very concerned about is that it sends the wrong message to consumers who may find themselves saving more, only to pay more under some decoupling scenarios. So for example, I'm not very good at it, but I'll use a sports analogy. I'm going to go to a baseball game this Saturday; I normally get a hot dog, it costs me $5. The stadium is packed. The following week I go to the baseball game, and it's not such a great game; there's only half the crowd, and the hot dog salesperson is now charging $15 for that hot dog in order to recoup his earnings, based on a much smaller number of hot dogs sales. And if I'm in that stadium, I can choose not to buy a hot dog for $15 that would otherwise cost me $5, but I can't do the same thing with electricity.

We have members who are trying to survive in the State of New Jersey on $15,000 a year -- a little more than the average Social Security income for many retirees-- who are already spending $150 to $200 a month on their utility bills; who really can't afford to pay more, especially if they're saving more.

So I think I'll end there. I know it's been a long day, but you have our concerns. And I think you'll hear also from Stefanie who will talk a little bit about what experience New Jersey already has with decoupling, and some of the other mechanisms that we have in place to incentivize energy efficiency and renewable energy programs.

SENATOR SMITH: You mentioned a written submission, a summary?

MS. LIEBMAN: Yes.

SENATOR SMITH: I don't know that we've received it. Oh, we did get it?

All right, I'm sorry, we did get it. Thank you.

MS. LIEBMAN: Okay.

SENATOR SMITH: Thank you so much for your contribution here.

Stefanie, Rate Counsel, let's get you up and hear what you have to say. We did get your statement; it will be attached to the record.

MS. BRAND: Right. And I'm not going to repeat it; it's available, actually, if anyone else wants it as well. We have extra copies with us today.

I do want to hit a couple of the highlights, though, because I think that it, in some ways, the committee-- It sounds, when we say we can't even agree on the definition of decoupling, as though this committee didn't have as deep a dialogue as it actually did have. We all, I think, understood that it's a very complicated issue. And really, I think, it's important to phrase the question in a way that I think captures what we're trying to accomplish.

So rather than say-- I really think the question is, "What can we do to provide incentives for utilities to participate in this transition to a more renewable and sustainable future?" And that question, I think, can be answered, and I think we have some history in this State of how to answer that question.

We have, in fact, been through this before. There has been legislation for formula rates, and decoupling; there's been a variety of bills

that have been proposed over the years. And back in, I think, it was 2010 -- or no, it was probably 2008 -- the Legislature passed the RGGI legislation. And included in that was Section 13, which I will freely admit I was opposed to when it was passed. Because what it did, for the very first time since deregulation, was allow utilities to undertake programs in renewable energy -- or in energy efficiency. Once deregulation had occurred, they were no longer permitted to participate in areas that were considered competitive services, so that if they were a generation company they couldn't do renewable energy because all of that was separated.

So what Section 13 did was allow them to, and instead of trying to find ways to remove disincentives, it provided just an incentive. And that incentive is that if they do a program for energy efficiency or renewable energy they get paid -- they get paid their full weighted average cost of capital; it's as if they were building a transmission -- well, it's not like a transmission line, because that they get paid way too much by FERC for it -- but it's as if they were building a distribution line. It's the same as their pipes and wires -- they get their full weighted average cost to cap.

And it's been rather successful. Certainly, PSE&G has done many solar programs, energy efficiency programs. I understand they're coming in for more energy efficiency. The gas companies have all done energy efficiency programs. And it has been successful. And this is laid out in my letter -- I talk about, more specifically, what programs they're all doing.

So the idea of having to do decoupling, I think, maybe should no longer be the issue in New Jersey. I think that we have come up with a different system, a different way of providing an incentive that allows us the

transparency that ratepayers ask for. I mean, I think you talk to a lot of ratepayers and they say, "I don't know what I'm paying for anymore." Some companies will lay out all the different charges, and they're like, "Well, what's this?" And others don't. And so you just have a number, and you don't even know what's going into that number.

So when you do a program where you're just providing a straight incentive, like some of the Section 13 programs, people can see. You can break it down. We get asked all the time, "What is this charge, what is that charge?" and we can answer that question.

If you decouple, then what you're doing is you're not only removing their earnings from how much they sell; but you're also separating their earnings from their cost of service. So it starts to become a question of -- essentially, a guarantee of a particular level of earnings no matter what their costs are. And that's where we get very concerned, because between rate cases, a utility's costs go up and down in all different ways. And the way that the system of doing rate cases is designed, it allows us to get credit for where their costs have gone down, and for them to get credit where their costs have gone up. And then as a result, they are then given an incentive to operate in an efficient manner between rate cases, because if they lower their costs, they get to keep it. If their costs go higher, then they're going to have to either come in for another rate case or they're going to have to find a way to lower their costs.

SENATOR SMITH: And has there been only perspective from that point forward?

MS. BRAND: Yes, rates are always perspective, because there's a prohibition against retroactive ratemaking.

So the system actually works quite well, because what it means is that when a utility comes in for a rate increase they only get what they really need. They don't get a windfall if their pension costs have gone down or if something else has gone down. That's all taken into account. And what they get in rate increase is only what they actually need in order to earn a particular rate of return.

And yes, the rate of return -- what they'll actually earn -- will vary over time, but they always have the ability to come back in if they're not earning what they need to earn; whereas ratepayers also get the credit for where their costs have gone down. And it's not decoupled in a way that we'll never see it again.

And some of the proposals for decoupling do vary. I know that one of them is that -- to have the company come in every year and there will be a review that will look at whether or not they are earning what their approved rate of return was. Well, if you're going to do that, though, you have to look at everything. You have look at where their costs went down, you have to look at where their costs went up, you have to really make it a comprehensive analysis or else you're not really doing that. And then it becomes a rate case every year, and I don't think that's something that the utilities necessarily want.

So it's a very, very complicated process, and I think we realized that when legislation was passed a while back -- was introduced a while back and it wasn't passed. And instead, Section 13 was the sort of compromise that resulted. And I don't think there's any indication that it's not working, and I think that it is an effective way of providing an incentive for utilities to participate in energy efficiency and renewable energy.

SENATOR SMITH: Okay.

I think it was Joe Sullivan who mentioned that there's a program in Massachusetts where they're doing some decoupling there. Are you familiar with it at all?

MS. BRAND: Well, there are programs in a lot of states that have some form of decoupling. There are as many forms of decoupling as there probably are states.

SENATOR SMITH: Are you hearing anything that is ringing the gong anyplace?

MS. BRAND: I've heard of nothing that's been considered a huge success. I know that a lot of these programs are very early on, so you may not be able to tell.

SENATOR SMITH: Okay, all right. Well, if you hear of any, don't keep it a secret.

MS. BRAND: Oh, I will not keep it a secret.

MS. LIEBMAN: And if I could just add -- as Stefanie said, there are probably as many versions of decoupling as there are states. I think what we learned from Florida is there are as many versions of the decoupling as there are utilities. And they learned that establishing decoupling programs are very utility-specific; there are real differences between gas and electric utilities in and of itself. One of the concerns about decoupling in the electric industry is we don't want to set up a system that would reward a utility company for simply fluctuations in weather, for example -- that usage goes down because of weather. It has nothing to do with efficiency programs. But even within the electric sector there are differences among the utilities -- the gas and other types of utilities. And so

it's not that it can't be considered, or it can't be figured out, in some situations. You'll see in Stefanie's comments, she talks a little bit about a gas program that's operating in New Jersey right now.

But what you have to do, in terms of figuring out if it will work, is very complex. And there would need to be significant consumer protections in place. And I think, also, from a consumer point of view, since decoupling, essentially -- minimally it shifts risk from the utility to consumers, if not completely eliminates risk from the utility. Certainly we would want to consider whether or not return on equity should be significantly lowered for that as well.

And I think that those are some of the complicated questions that really give rise to the lack of consensus around how to approach it.

SENATOR SMITH: We appreciate your comments.

Elvin Montero, Chemistry Council of New Jersey.

Elvin.

MR. MONTERO: Thank you, Mr. Chairman. I appreciate the opportunity to address you and the Committee.

I represent the Chemistry Council of New Jersey, as you know, and we represent large energy users in our state. And we continue to be concerned with the cost of energy.

But particular with this program -- because of the reasons you heard earlier -- there really doesn't seem to be a consensus of what decoupling is. It seems to mean different things to different folks.

The few times we've seen it surface in bills or legislation here -- several years -- it meant that, perhaps, in some, opportunity -- it was a guaranteed profit for some of our utilities that already have a captive

audience in terms of those who are ratepayers and are buying the electricity from them. So we're concerned that-- For example, many of our member companies have invested millions of dollars in energy efficiency programs, not only to reduce their greenhouse gas emissions, but in an effort to use less energy and lower their bills. So if a-- From what I understand, and the different variations of decoupling were to be considered, if that were policy and they made these million dollars of investments in their companies and their processes, they can potentially still see the same bill -- energy bill after they've done this investment; because then that particular utility is still guaranteed that profit level. So that is a concern for us. So if we made the investments to reduce our energy usage, we want to benefit from it -- not only to reduce our greenhouse gas emissions, but also the potential of lowering our energy bills.

I was quickly just looking-- You had asked earlier about what other states have. According to the Energy Information Administration, they have something here from May 2011. And from what I can tell, California, Nevada, New York, and maybe two other states have some type of decoupling in place. Everyone else -- someone mentioned Massachusetts, and I'm looking, and it's a pilot program. So some of this is not even fully tested.

So again, we remain concerned. We -- in terms of the bills that we've seen -- have opposed this and continue to oppose decoupling. There are other more creative ways to promote energy efficiencies.

And again, thank you for the opportunity.

SENATOR SMITH: Thank you for coming in.

Steve Goldenberg, New Jersey Large Energy Users Coalition.

Steve.

S T E V E N G O L D E N B E R G, Esq.: Thank you, Mr. Chairman, members of the Committee.

My name is Steven Goldenberg. I am an attorney with Fox Rothschild. I represent the New Jersey Large Energy Users Coalition. You can tell from the name that they are comprised of some of the state's largest businesses and largest consumers of energy.

We did not participate initially in these working groups, but, as I'm sure some of you know, we've been quite active in energy issues throughout our 12 year existence.

Just to pick up on some of the concepts that you've heard from Evelyn, Stefanie, and Elvin. Rate decoupling is not a new concept. You can go back to the 1970s with the original energy crisis -- that's the roots of rate decoupling. So apart from the current experience, and who's in an early stage, and who's accepted, and who's rejected, there's a fairly rich history demonstrating a very checkered history with these sorts of programs. I remember in particular, from prior research, the state of Maine adopted an aggressive revenue decoupling program in 2007, I believe, which, unfortunately, coincided with a recession. And as a result of that, the pressure on the Administration to end that experiment was extreme and well documented in a number of reports that were issued. Because what happened was there was very little evidence to demonstrate that actual conservation occurred. But the windfall that accrued to the utilities in Maine, year after year, because of all of the decreased usage that occurred as a result of the recession -- and not through any energy efficiency efforts -- was dramatic. It was a very hot political issue in Maine.

New Jersey, as we've mentioned, has had its own experience with it. In 2009, I and some of the others here opposed the 21st Century Infrastructure Investment Act, which some of you will recall was withdrawn by its sponsor, Senator Lesniak. I recall very vividly Senator Lesniak asking if anyone had a camera so he could take a picture of all the diverse interests that lined up against that bill. It was the *Kumbaya* moment of people who normally don't agree on anything -- everybody agreed they didn't like rate decoupling.

The same occurred with RGGI Section 13, as Stefanie has indicated.

We're still out here, and we remain opposed to decoupling as it's being discussed here today. Why the opposition? It's a very complicated topic; I really don't want to get into the weeds and bore you with the nuances of it. But at bottom, decoupling essentially undermines century-old ratemaking principals that we've had here since 1911 -- principals that were enacted to protect ratepayers. Decoupling would, for the first time, guarantee utilities revenues. This is in contrast to the historic opportunity that's given to a utility to demonstrate the reasonableness and prudence of its investments in a rate proceeding. And rate decoupling would also considerably erode the BPU's jurisdiction over utilities.

While some may not like rate cases -- and there are a few -- their purpose is to protect ratepayers and to prevent utility overearning and excesses. Rate cases only guarantee fair treatment -- nothing more.

No other businesses in New Jersey benefit from guaranteed revenues. I represent some big companies, and I can assure you that they

would do cartwheels if they could operate in an insulated economic environment like rate decoupling.

But the point today is that there's really nothing that's been put on the table here that would justify decoupled rates. Utility indifference to additional solar projects is simply too high a price to pay for ratepayers who are already paying $6 billion in subsidies to this industry.

And as you've heard, I think it's ironic that even the utilities are divided about whether they want decoupling, and they appear to be pretty unanimous that they don't want to revisit their business model as the quid pro quo to get it.

Now, contrary to what's been said by some -- and I did have the opportunity to review some of the comments that have been put in -- rate decoupling without (indiscernible) does not incentivize utilities to do anything; at most, it makes them indifferent to reductions in sales volumes -- here caused by increased solar penetration -- which would no longer threaten utility profits. Without additional incentives -- such as energy reduction targets, penalties for nonperformance -- no impetus is provided for the utilities to foster energy efficiency. They can simply sit back now, being assured of guaranteed revenues; and apparently in some states that did occur, and regulators took notice.

Another concern is that decoupling also insulates utilities from reductions in sales volumes that are caused by factors completely unrelated to any energy conservation efforts they undertake. Decoupling would insulate utilities against losses of sales attributed to economic downturns, as I mentioned, losses of customers due to business failures or migration,

independent customer conservation efforts, even changes in weather patterns.

Decoupling also creates perverse incentives, as Ev was talking about. Customers who reduce their usage aren't necessarily rewarded for their efforts because what they find at the back end is increased utility rates. Even worse, if customers increased their usage, contrary to the conservation effort being undertaken, that would result in lower utility rates.

So any use of decoupling has to protect ratepayer interests and require utilities to actively promote energy efficiency and conservation measures -- as has been the case with the two gas utilities in New Jersey.

If we were to go down this road, I have a couple of suggestions -- and by no means advocate it -- but just to indicate the sort of analysis that should occur here. I would offer the following: As with the two existing gas programs, specific energy efficiency goals should be established for the utilities, and objective measures established to assure that energy efficiency gains credited to the utilities result from utility conservation efforts rather than exogenous factors, such as the weather.

Rate cases have to be used to establish utilities' baseline revenue requirement, and rate cases have to occur at regular intervals to protect ratepayers; and assure that all of the utilities' economics are analyzed, and not engage in single-issue ratemaking.

We should determine whether further utility conservation initiatives -- such as those under RGGI's Section 13 -- should be permitted in a decoupled rate environment. Essentially, that would allow utilities to

double dip. They win twice: on what they actually do, and on the back end as a result of the reduced usage.

Finally, if we're to be truly forward thinking, as suggested by some, the decoupling debate should be expanded beyond the narrow issue of reducing energy consumption. The entire utility business model should be reexamined, and the utilities allowable revenues should be tied to a broad range of desired utility outcomes. The decoupling debate, such that it is, should provide a platform to discuss the services that a 21st century utility should be tasked with delivering, including facilitating, managing, and coordinating distributed resources developed to enhance system reliability and resiliency -- including microgrids, about which you've heard much lately -- rather than simply focusing on the core services that were originally identified for a 19th century utility.

I suggest, respectfully, in closing, that the utilities' inability to agree about decoupling, and their failure to address any potential changes in the business utility model -- that they reject as beyond the scope of this proceeding -- should underscore that we're not yet prepared for that debate. Therefore, we remain opposed to rate decoupling in the form that it's presented, which requires ratepayers to sacrifice far too much and receive far too little in return.

Thank you.

SENATOR SMITH: Steve, thank you for your comments.

Jeff Tittel.

MR. TITTEL (off mike): I actually kind of agree with most of what he said. (laughter)

MR. GOLDENBERG: I told Jeff before -- we find ourselves in--

SENATOR SMITH: You are now both discredited.

MR. TITTEL: So that means it's time to go.

But I will just say it this way. I'll start out a little differently, but it's like, wow; it's like--

Okay, we actually support the concept of decoupling. The problem is making it work in a way that is equitable and fair, and doesn't lead to excess profits at the expense of the ratepayer. So we actually-- Take everything he says, but turn it the other way. We think we need to explore how to do it, because we need to have a paradigm in how we deal with rates and electricity. It's a hundred-year-old system that never really worked properly, but it's the only one we have. And it's even worse now that we have deregulation. We have basically deregulated monopolies where they still have almost exclusive franchise areas and no real competition, and yet they're guaranteed a certain rate of return. There is no real deregulation. We have a system that's really broken, and I think my disappointment with the committee -- when people were just fighting over decoupling, no one wants to look at trying to shift and change the incomplete paradigm. Because we have a system of, basically, perverse incentives. The more you waste, the cheaper your rate.

I won't say who, for public purposes, but we actually had a meeting with one of the heads of a fairly large utility on the concept of the leaky gas lines. And labor folks, who are part of the Blue/Green Alliance, wanted to develop a proposal to help repair those leaky pipes. And in the conversation where we were talking about rate of return, and they were talking about a 12, 13 percent rate of return, we were saying, well, 7 percent seemed, you know-- And I said, "Well, all the gas that you're losing you

could sell and make extra money." And he says, "The ratepayers pay for it anyway." That's the perverse incentive. They don't have to fix the pipe because they're not losing money by wasting all that gas. Just like the more a company uses, the more money they make and they lower their rates. People are trying to be energy efficient, and we've seen it happen -- not so much in the electrical sector, but in the water sector -- when people were doing energy conservation during a drought, the utilities came in and asked for a rate increase because people were using less water. And so we need to change that. We need to incentivize saving energy. And we need to maybe allow it for aggregation and pooling resources, and allowing competition. If we go into decoupling, we should allow competition between the utilities and private companies, and who can get the best bang of their buck in energy efficiency.

And I will say that energy efficiency decoupling has worked in California. But in California they have very strict oversight of the decoupling process, where they have performance standards that are in place; they have modifiers to make sure it's not because of, you know, a drought or, I mean, because of cooler or warmer winters or whatever. And they actually have to look at benefits. So you have to have efficiency targets that you have to meet, you have to look at the benefit to the ratepayer as part of that. And it actually has worked, because California -- which has seen tremendous population growth -- has not increased their electrical use, while in the rest of the country it's gone up about 50 percent over the same time period.

So I think there are things we can do, but I think we need to look at ways of doing it to make sure that we're doing it in a way that

protects the ratepayers. It actually gets us benefits that exceeds the cost and saves people money in the long term.

Thank you.

SENATOR SMITH: I appreciate the comments. And we'll look into California.

Eric DeGesero, Fuel Merchants.

E R I C D e G E S E R O: Good afternoon, Chairman Smith, members of the Committee. Eric DeGesero, Fuel Merchants Association of New Jersey, wearing my HVAC contractor hat this afternoon.

And I am glad that there was no consensus as to the definition of decoupling, because I, quite frankly, didn't know what it was either -- I thought I had somewhat of an idea -- and would ask a little bit of latitude in terms of my testimony, relative to what the working group worked on.

SENATOR SMITH: We'll give you latitude, if you give us longitude. (laughter)

MR. DeGESERO: Deal.

The issue that we bring before you today is one that was debated during the EDECA legislation in 1999, and that is the utilities providing HVAC services competing with small businesses that provide the same services. And EDECA tried to split the baby, if you will, relative to how the utilities can get into the business, how they allocate ratepayer assets that are used in competing against competitive businesses. And, quite honestly, we just don't think that that works.

There's no way that-- The whole theory behind it is that it's a way for the utility to actually assist the ratepayer, by deploying assets that aren't otherwise being used at the time to a productive money-making

entity, competing unfairly against those who do it. For example, if you buy a service contract for a utility, they have the ability to finance it on your bill. Well, that isn't something that a small business has the ability to do. And that there are many, many, many anecdotal examples where you have a utility service contract, and when it's really hot outside or really cold outside, they say, "Yes, we will honor that service contract 5 days from now, 3 days from now" -- not immediately like our members and any other competitive enterprise would have to.

And we think that if the Legislature, going forward, is looking at fundamental aspects of utility law -- getting the utilities completely out of the business. If the holding company thinks it's a great idea to offer competitive services, we have some of the best managed holding company utilities in the country that are headquartered in New Jersey -- they're fantastic, they're the darlings of Wall Street. And they should have no problem going to raise money from investors to buy some trucks and some tools, and to get folks trained to go install heaters and air conditioners, and fix them. It's not that heavy a lift. And we think that it's time that they should be out of it altogether, especially in light of the fact that, as we sit here today, we're in the process for the first time ever of licensing heating and air conditioning contractors in the state. By the end of this year, air conditioning and heating contractors will be licensed, just as plumbers and electricians are. And guess who is completely exempt from the requirements of that licensure? Public utilities.

And we think that it seems good to have it both ways all the time, and that we would just reiterate that if you're looking to make changes, that we have this on the table, going forward.

Thank you.

SENATOR SMITH: Eric, do you have any idea how they do it in California? (laughter)

MR. DeGESERO: No.

SENATOR SMITH: Well, we're going to get some more information on it, but maybe you should check on it too. Supposedly, it's a good decoupling program; we're going to see how they do it, all right?

MR. DeGESERO: I will; thank you.

SENATOR SMITH: Thank you so much.

And last, but not least, Dennis Wilson from MSEIA.

Dennis -- and Lyle Rawlings.

D E N N I S W I L S O N: You're used to seeing us together, so why change now?

I did bring some handouts; I had sent it e-mail but it was late, so--

The revenue decoupling task force had one meeting of two hours, and that was it. There was really no follow-up, no later phone conversations. So there certainly seemed to be a--

SENATOR SMITH: By the way, you know the risk in that. If you don't give us suggestions, we go looking for our own.

MR. WILSON: Right.

SENATOR SMITH: All right, go ahead, Dennis.

MR. WILSON: So there certainly seemed to be reluctance to take on the issue. And having read a number of reports and studies about it during this past few months, there's a few points I'd like to clarify.

There are 25 states that have decoupling for some or all their utilities -- 25. And--

SENATOR SMITH: What do you think is the most successful program?

MR. WILSON: I think California is probably--

SENATOR SMITH: Okay.

MR. WILSON: They started the earliest, and they produce the lowest energy consumption per capita of any state in the country.

SENATOR SMITH: Have they saved their ratepayers money?

MR. WILSON: Yes.

SENATOR SMITH: Okay.

MR. WILSON: Yes.

So a revenue decoupling mechanism is not a guarantee of utility revenues. All it is, is an adjustment mechanism that aligns the revenues received by the utility to how they do, based upon how they're directed to perform.

So we're really on the brink of a transformation of the electric utility industry. We're talking about 80 percent renewables by 2050. Some countries are getting there much faster. And that requires a transformation of electric utilities. And it means, if we continue along with net metering at the pace we are, significantly declining sales; and that needs to be addressed in order to keep the electric grid reliable.

You know, revenue decoupling mechanisms are structured in some states where there's actually a monthly adjustment; others semi-annually; and others annually. Here, we're still in the old paradigm of a rate case every once in a while -- every few years or so -- with the attorneys,

and the experts, and the consultants all arguing for their positions of what should be earned. Properly set up, a revenue decoupling mechanism adjusts for weather, whether up or down. It was mentioned by the prior speakers that there can be refunds if there are more sales, like we had in the polar vortex the first quarter. If there were more sales than predicted, and it produces more revenue for the utilities, the customer -- the ratepayer would actually get a refund, they would get a reduction. So it works both ways.

The report, that I will get to you, that studies revenue decoupling over the last 20 years indicates that the typical rate change, in three-quarters of the cases, was no more than 2 percent. And that goes up and down; it doesn't just go up.

So the impact on rates was essentially neutral amongst all this group of 25 states. It really didn't raise rates. It adjusted rates much more frequently than we do now -- both for weather as well as performance; along with the goals that those utilities are given to achieve, whether it be energy efficiency, whether it be keeping the grid reliable. Because I don't believe that our current rate structure adequately aligns the performance of the utilities. As we saw with some of the disasters we had after storms, once you set rates there's actually a disincentive to keep the grid reliable, because if they cut on tree trimming, or cut on maintenance of the wires, they make more money. Does that help our state? No, it doesn't.

So our current structure is 100 years old. We're in the new technology era. I did a job for a warehouse where we did a lighting upgrade and solar. And now they buy 13 percent of the electric they used to buy -- 13 percent. So we're going to see dramatic changes. Many homeowners have solar systems that can produce 100 percent of their needs for the area.

So we really do need to realign how utilities are regulated, because we're going to see dramatic changes. And contrary to what some of the statements made earlier, actually some of the senior execs say utilities in New Jersey are willing to engage in creating a revenue decoupling mechanism. They're just not necessarily willing to do so in the middle of the rate case.

So there is more sentiment to addressing this and changing how utilities are regulated. They're not going to make more money under revenue decoupling, but they're going to have the interests of the State and the interests of the transformation of the electric grid -- to make it more reliable, to make it more renewable powered, to make customers more energy efficient. And they're going to have targets that they have to meet, otherwise their revenues get adjusted downward.

So the political part needs to be a part of this. You know, I'm an attorney by training and I haven't practiced in 30 years or so. But I've participated in regulatory proceedings since about 1990, starting in New York when DSM -- demand-side management -- got a lot of support. And I've participated in those proceedings. And as an example, Con Ed was given an incentive to reduce load -- extra profit incentive; actually, a share of the difference between what it cost to achieve savings and their avoidant costs of building a plant and fueling it for 10 years. And they were given a little bit too much of an incentive. They actually spent $300 million in energy efficiency incentives in one year, reduced their peak demand by 1.5 percent in one year, and they made an extra $100 million above their normal allowed rate of return. This happened in the early 1990s.

Well, that was too rich, it appeared, so the Public Service Commission, in their wisdom, cut it back, and Con Ed cut back their energy efficiency programs. They're now back in favor, if you will, because they have revenue decoupling for some of the programs that they have.

So we really do need to realign the electric utilities to make the investments -- not necessarily a new transmission line that costs three-quarters of a billion dollars, but rather to monitor each of the substations and see actually how close are they to their limit Most substations are not monitored; they haven't been for decades. And so sometimes justification for transmission lines or system upgrades don't have as much data behind them as they really should.

One of the mechanisms that other states have done is what's called *targeted demand-side management.* So when you identify an area that is in need of additional capacity, instead of building more substations or more transmission lines, they say, "Let's put some additional incentives to get those customers to use less," or to shift their air conditioning load from day to night, or to put in solar with batteries to provide more peak demand capacity.

So these are new technologies that will be part of our future. And we really need to align the electric utilities with the proper direction and the proper mechanism that links their revenues to how well they perform, in making the appropriate investments to support much more energy efficiency, more renewable power, a more reliable grid, islanding as appropriate.

You know, I understand it's a complex task. We're looking at changing something that rewards utilities during most of a hundred years of

continued load growth, continued sales growth. Well, that's changed just in the last few years, and it's changed because of renewables, it's changed because of new energy efficiency technologies. You know, LED lights -- 80 percent of homes still use incandescent. LEDs use 15 percent of what an incandescent does. They have yet to penetrate the residential marketplace.

So we have enormous changes coming; and we need to align the utilities to address climate change, to make those investments no longer just in bringing in more capacity, but rather to address the needs of the residents of New Jersey in a way that's smarter, and that moves us toward the renewable and high energy efficiency future that is here. It's just that the utilities aren't aligned yet to strongly support it. They can be with revenue decoupling, when it's paired with putting in place the direction that we want the utilities to take with measureable results.

And those rates will go up and down on a monthly, quarterly, biannual basis, but by no means does it mean the rates will increase.

SENATOR SMITH: I appreciate the comments.

And I think for three-quarters of this presentation I thought this was not worth talking about. Maybe we don't have a decoupling future, but I'm starting to get very excited about it, and interested in whatever they're doing in California. I've now heard from a couple of people that it's a good program.

So if you would, we're going to have OLS check into California a little bit more. If you see any good programs out there, something that would be adaptable to New Jersey, please get those cards and letters in.

MR. WILSON: I've found an extensive report on revenue decoupling in 25 states that I'll get in your hands.

SENATOR SMITH: The Committee members would appreciate seeing it.

Lyle, did you have anything you wanted to add?

MR. RAWLINGS: Yes, Senator. We in the solar industry, many years ago, met with a U.S. Congressman who told us there are three kinds of legislation that he sees, because they're all good ideas.

SENATOR SMITH: Good, bad, and indifferent.

MR. RAWLINGS: No, he said they were good, but he divides them into must do, should do, and it'd be nice to do.

For a lot of years now, decoupling has been talked about, but it's basically been a "it'd be nice to do." But that's changing. As was said before, we've relied on the centuries-old regulatory compact that has worked very well -- and, indeed, it has, but that's because it has covered an electric generation and transmission system that is also centuries old -- where all we had was big central plants, transmitted out, and you sell it to the users; and that's all there was to it.

Now we're changing very radically, and I think it needs to be bumped up from a "it'd be nice to do" to a "must do." Because let's step back and look at where we are. If we do renewable energy transitions, and we get to 80 percent renewable electricity by 2050, plus a 30 percent reduction in real usage because of energy efficiency-- Well, 30 percent reduction -- that's a 30 percent reduction in through-put right off the bat. And then of the 80 percent renewables, let's say half of that is distributive generation. So now you have 40 percent plus 30 percent, so that's 70 percent reduction in through-put. That's a scale that we've never imagined before, even. And what's that look like to a utility company, 70 percent

reduction in through-put, potentially? It looks pretty terrible, if I were a utility executive.

Now EPRI reports that, on average, utility credit ratings across the U.S. have dropped substantially in the last two decades. And EPRI has also said that there's an existential threat to the existence of the investor-owned utility community coming from distributive generation and efficiency. At the same time, when we look at a renewable energy future, and we look at what would it take to technically make it feasible to have it happen, to provide reliable baseload as well as peak, we know that it can be done. The work is out there, and the technology is out there to do it, but it requires a whole lot of new transmission so that we can even out the variability of renewables between regions and take renewable energy from where we must generate it -- because we must generate it where it is -- to where it's being used. Lots of new transmission is required, lots of storage in the future is going to be required. Those are both natural utility roles, roles that the utility must perform.

And we're going to need some other things, like robust demand management, and new ways of controlling this two-way flow and intermittent flow in the grid -- robust new grid management practices.

So we have to ask the utilities to do all of this. It's not a diminished role for utilities in a renewable energy future; it's an enhanced role.

So how are we going to ask them to make all of these investments and take on this enhanced role and, at the same time, with a 70 percent reduction in through-put? So it's an impossible thing to ask of utilities; that's why we don't see how you can look at this transformation

that we're talking about for the future without a substantial change in the utility model. Now, PSE&G is already participating deeply in this in New York -- now that they're part of the New York market -- in their Reforming the Energy Vision, or REV, otherwise known as Utility 2.0. New York is taking this very seriously -- that we must have a revolution in the utility model of business. We need to take it just as seriously here.

SENATOR SMITH: Have they adapted the changes in New York, or are they in the process of studying changes?

MR. RAWLINGS: They're in the process. It's a collaborative stakeholder process right now that's ongoing. But everything's on the table. It's a clean slate there of how utilities should do business.

SENATOR SMITH: Okay.

I appreciate your comments.

There are no other witnesses. What time of day is it?

UNIDENTIFIED MEMBER OF COMMITTEE: It is 4:20.

MR. CLIMPSON: 4:20.

SENATOR SMITH: 4:20. Can you imagine? We finished before 4:30. I thought we'd go to about 6:00 tonight.

Anyway, I want to thank everybody again for participating in the process. I've got at least eight bills I'm excited about putting together, but I'm sure after we look at the record-- And you remember the record is open for another two weeks; if there's anything you want to send in to Jeff, please do so -- we'll add to it.

And when other legislators look at this stuff I'm sure there's going to be more bills. We're going to have a package, hopefully, in

September. And we value your participation. And, if you're not careful, we may have you do it again. (laughter)

Everybody have a great summer.

(HEARING CONCLUDED)