
Public Hearing

before

SENATE ENVIRONMENT COMMITTEE

"Testimony on the impact of climate change on the State and how the State should address it. Officials from the California Air Resources Board and Rutgers, The State University have been invited to testify"

LOCATION: Committee Room 10
State House Annex
Trenton, New Jersey

DATE: April 17, 2007
1:00 p.m.

MEMBERS OF COMMITTEE PRESENT:

Senator Bob Smith, Chair
Senator Stephen M. Sweeney, Vice Chair



ALSO PRESENT:

Senator Barbara M. Buono

Judith L. Horowitz
Algis P. Matioska
*Office of Legislative Services
Committee Aides*

Kevil Duhon
*Senate Majority
Committee Aide*

John Hutchison
*Senate Republican
Committee Aide*

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SENATOR BOB SMITH (Chair): Okay, if everybody would take their seats.

Good afternoon, everyone.

First, let me congratulate you and be in awe of your desire to be part of the Legislature's response to global climate change. Because getting in and out of Trenton today is not an easy thing to do. Certainly the last two days have been pretty traumatic to the state. And despite all that, you're here. So we do appreciate your presence.

Today we're going to have our first hearing on global climate change legislation. We intend to have several. Today we're definitely at the talking stage.

That being said, after a few introductory remarks that I'd like to make, I'm going to ask Senator Buono to say a few words about her bill, which is certainly an important part of the global warming response. And after that, we're going to ask Dr. Anthony Broccoli, of Rutgers University, to give us a little overview of what global warming may mean for New Jersey. And then, after that-- We're telephonically connected to the California Air Resources Board. And as you know, in California they've already started a significant global warming response. And the California Air Resources Board is responsible for the regulations to implement the goals that have been set by Governor Schwarzenegger. And then we're going to open up the meeting to anybody who would like to give us some ideas to think about.

It's our intention, at May, to go forward with some of the other global warming legislation. But today we're-- Let's kind of exchange ideas, and communications, and see where everybody thinks we should be going.

By way of some introductory remarks -- and this is just my particular personal remarks -- we actually have been thinking about climate change legislation for a while. And there is, actually, what I think to be a pretty good package of bills that are a holistic approach to global warming for New Jersey. Let me just tell you what they are, because I'd like you to study them between now and the next meeting.

And we're joined by the Commissioner.

Commissioner, you get the front seat. It's no extra charge.
(laughter) All right.

I think we'll insert the Commissioner in here, in terms of some opening remarks.

But just in terms of that overall, holistic global climate change package, we have Senate Bill 2146, which is sponsored by Senator Madden and Senator Weinberg. And it requires new State buildings to be designed and managed to meet silver-level certification under the LEED Green Building rating system. And the theory here is that we're going to -- the State can't ask other people to do things if it's not willing to do them themselves. We have a series of bills that are dealing with construction in New Jersey, not only public buildings, but private development, private new housing. And then we have areas that deal with a number of issues related. For example, what are we going to do about our automobiles, which are such a huge source of carbon dioxide? Can we improve our forests? And what other things we should be doing?

But let me just go through this package so you can start to take a look at them: 2147 is a bill sponsored by Senator Doria, which expands the demand-side management programs in BPU to include low-interest

loans and grants to municipalities for energy-efficient programs and innovative energy technologies.

Senate Bill 2148, which is sponsored by Senator Sarlo and Senator Buono, which requires BPU financial incentives for photovoltaic equipment for residences that are Energy Star compliant.

Senate Bill 2149, which is sponsored by Senator Scutari and Senator Bark, which requires purchasing agents to complete a course in green building, green product purchasing; and requires the Department of the Treasury to compile and maintain a list of green product purchasing sources.

Senate Bill 2150, which is sponsored by Senators Karcher and Singer, authorizes municipal planning boards to adopt green buildings and environmental sustainability as a municipal master plan element. And for those people who do land use, the importance of that is it allows local zoning and planning boards to then use this as an element in their consideration of zoning, and also perhaps provide incentives to encourage green buildings.

Senate Bill 2151, which is sponsored by Senator Smith and Senator Lance, which requires affordable housing to be built to green building standards. It requires the Commissioner of Community Affairs to issue those standards.

Senate Bill 2152, which is sponsored by Senator Vitale and Senator Bark, authorizes the DCA Commissioner to prepare and make available to the public a green building manual.

Senate Bill 2153, which is sponsored by Senator Rice and Senator Bark, facilitates long-term municipal contracts for energy efficiency

service and goals. Under our public-- Our public contract exact in New Jersey actually may discourage energy efficiency contracts for municipal governments. So we want to remove that impediment.

Senate Bill 2154, which authorizes the DCA to enhance the energy subcode, adopted pursuant to the State Uniform Construction Code Act, based upon anticipated energy savings to consumers. And I'm happy to report that that bill is now out of Senator Lesniak's Committee, which is very good.

Senate Bill 2155, which is sponsored by Senator Smith and Senator McNamara. And this permits water and sewer service submetering of multifamily dwellings to promote water conservation. Water conservation is a big part of the global warming problem. And it may, unfortunately, get to be a more severe problem. And the idea here is to have some metering in multifamily dwellings so that people conserve the water that's being consumed.

Senate Bill 2156, sponsored by Senator Smith and Senator McNamara, requires the installation of automatic rain sensors on lawn sprinklers on commercial, retail, and industrial property. How many times have you driven by -- in the rain -- seeing industrial and commercial facilities -- and the sprinklers are on? We need to get the sensors on them.

Senate 2157, sponsored by Senators Smith and McNamara, requires municipal certification of the installation of automatic rain sensors on lawn sprinklers as a condition of the transfer of residential properties. So this would obviously be where you have residential properties that have sprinkler systems. They should put the sensor on them so they're not working in the rain and wasting water. And my understanding is they cost

about a hundred dollars, and so there should be a payback period of months. So it would be a very good thing to do.

Senate 2167, which is Senator Smith and Senator Singer, requires licensed home inspectors to report on energy ratings for each home inspected for a buyer in contemplation of purchase. And as everybody knows, the second biggest decision of your life is the purchase of a home. And that's the point at which you really should know what you're buying. Normally, you have home inspections done. It would be a very good thing for the home inspector to do an energy audit so that if there are energy deficiencies, between the buyer and seller perhaps they could adjust prices or, in the alternative, they set up a master plan to change their house to do capital improvements that will reduce energy consumption.

Senate Bill 2409, which is Senator-- I'm sorry, Senate Bill 2360, which is Senator Karcher and Senator Weinberg, establishes minimum efficiency standards for certain products. This is going back to look at the energy efficiencies of appliances and items like that, so that we can hopefully save some more energy.

Senate Bill 2409, Senator Smith and Senator Sweeney, provides a tax exemption for a portion of the property value attributable to energy cost-saving measures or that reduces consumption of water or energy. And the point there is that you shouldn't be punished for making necessary changes to your home and/or business that's good for the public.

Senate Bill 2418, which is Senator Smith and Senator Sarlo, provides a matching grant program for local governments to facilitate energy efficiency and conservation of resources in public buildings, and appropriates 50 million. And the point here is that an awful lot of our

municipal buildings, and our schools, and county buildings were built years and years ago, when energy efficiency wasn't at the top of the list. And the point here is to help those governments retrofit their buildings, and help the taxpayers to realize tax savings over the years.

Senate Bill 749, which is now out of this Committee, is the Senator Turner-Senator Buono bill. And that bill provides for sales tax exemptions for advanced technology, partial zero-emission vehicles. And it imposes a surcharge on certain automobiles. Which ones do you think it imposes the surcharge on? Those that aren't very, very energy efficient; and very negative to the environment on the global warming issue. And it provides an exemption on the sales tax for those vehicles that are very, very efficient. That's long overdue.

Senate Bill 1925 -- that's Senator Smith and Senator Martin -- and this is back to the future. If you may remember, back in the early '90s we were talking about mandatory employer trip reduction. It got almost to the finish line, and then it was whacked. A huge part of the global climate problem is the emissions from automobiles. And the automobile is really the enemy. We really have to find a way to reduce the emissions from cars. And one of the ways is to reduce the actual traffic.

Then the best global warming cure or antidote is a tree. Only God can make a tree. However, we can, in New Jersey, do more to encourage forest stewardship. Our forests are-- Because there is a requirement that there is \$500 of revenue generated, trees are cut, you end up with a hole in the canopy, you get invasive species, and our forests are actually -- in some places -- at risk. We need to find ways to encourage more forests and to maintain the forests that we have.

And we have Senate Bill 2114, which is Senator Buono's bill, which I think is just a terrific bill. We're going to -- we know we need to make some changes to it -- the Global Warming Response Act, where Senator Buono is setting standards that this State will have to meet statutorily.

And, Senator Buono, if you'd like to say a few words about your bill, and then we'll go to the Commissioner.

SENATOR BUONO: Thank you, Senator Smith. And thank you for holding this hearing on the global warming issue.

I also want to take this opportunity to thank all of the stakeholders that have been involved in this process; not just the environmental groups, but the DEP, the BPU, and all of the staff; as well as the energy producers, who I wanted to thank for not having what I kind of expected to be a knee-jerk reaction to this. You've been very constructive with your comments. And I certainly learned a lot about energy production that I didn't know before I got involved in this process.

But I also want to just take the opportunity to thank the scientists who spoke out on this issue, sometimes at great peril to their careers, because they were accused of advocating something which is not looked upon favorably in the scientific community. So I want to take the opportunity to thank them, because they have certainly legitimized and validated the importance of global warming.

We all know that global warming is upon us. I'm not going to talk a lot today. But I think that it's self-evident by the weather outside today, by the melting glaciers, by disappearing or moving species, by terrible hurricane seasons. But the Bush Administration has completely dismissed

the urgency of global warming. We cannot afford to wait another two years to have an administration that will sign legislation reversing the trend in climate change. Every day we wait, it just makes it harder to have effective strategies to reverse this climate warming trend. If the U.S. as a whole can't get their act together and move forward on global warming, then it's up to the states to take up the gauntlet and forge the path for everyone.

You know, I think former Vice President Gore said it best when he reminds us that when people talk about global warming, they too often go from denial to despair. And the fact is, we have all the tools to solve the problem -- all the tools except the political will. But in America, political will is a renewable resource.

So with that said, I think that the legislation, in its final form -- which I think we're edging toward -- is a crucial step forward in reversing climate change. And I look forward to this hearing and however many hearings we feel is necessary to have a bill that makes sense for all the stakeholders and, more importantly, for future generations.

Thank you, Senator Smith.

SENATOR SMITH: Thank you, Senator Buono.

It's my great pleasure to ask our Commissioner of Environmental Protection, Lisa Jackson, to come forward.

I know your Department is at the forefront of an awful lot of this legislation. And we'd appreciate your comments.

COMMISSIONER LISA P. JACKSON: Thank you, Mr. Chairman, thank you members of the Committee, and thank you Senator Buono.

Thank you for your leadership in holding this hearing, Mr. Chairman. It's very timely. It's actually getting to the point where, as my kids say, you can't turn on the T.V. without hearing about *that global warming thing*. That, I think, is a good thing, except when they turn on the T.V. (laughter), which is a whole other story.

And, Senator Buono, I would like to return the favor and thank you for your leadership.

Clearly, it's politically incorrect not to thank the suite of other people who are working on other bills. But your bill is certainly one that I think is extraordinarily important, as we move forward in dealing with global warming, for our state.

I, too, must echo the fact that-- I'll try to be as brief as the Senator was -- that this is-- I hear all the time, when I go out, questions from people who say, "But this is a global issue by definition, it is a national issue. Why is it falling to the states to do something?" New Jersey is a state with 137 miles of coastline. We have an extremely developed coastline. It's worth a lot of money in tourism dollars, but also in residential value. Because of where we sit, we are an agricultural state. We tend to-- We stand to lose, no matter how you do the equation, in terms of what the potential impacts of climate change are. So for this State, as small and mighty as it is, it is extraordinarily important to us that we fill the void that we see right now on the Federal side, in terms of leadership on this issue.

I think it's also important for us to realize that the Governor's executive order, which he issued in February, was a first step towards making sure that the people of the state understand that, from Governor

Corzine's perspective, we absolutely must move forward decisively and aggressively with not just a short-term goal, but what science tells us is absolutely necessary; which is a goal that looks out into 2050 and projects very significant decreases in the amount of anthropogenic greenhouse gases that are emitted. It is the only way to assure ourselves that we'll actually see changes in CO₂ in the atmosphere that will make a meaningful difference.

And as everyone has said, but I think it bears repeating, with all those changes we will still see climate change and sea level rise. And so one piece that I would urge this Committee to deal with -- maybe not today with all that's before you -- is the adaptation-mitigation end of things. Because we know that as a state, and as the state we are, we will need to adapt and mitigate for the changes we already know are coming. So to the extent we can do that, I urge us to do it.

The Governor's executive order, as you know, gave me and my fellow Commissioners at BPU, DCA, and DOT about six months to work in conjunction with the energy master planning process to make recommendations for reaching 1990 levels of emissions by 2020, and then an 80 percent reduction from current levels by 2050.

I'll talk about the more aggressive goal later, but I do want to say that the 2020 goal is more than doable, thanks to leadership from the Legislature and the advocates in this room, and I think the DEP as well. We are ready and poised to implement -- continue implementing programs like clean cars, like the Regional Greenhouse Gas Initiative -- with our other 10 states in the Northeast -- that are going to be a significant part of meeting the 2020 goal. That is not to say that we should be complacent,

that is not to say that we need to do other work (*sic*). But I think that the State has already been involved, for several years now, in initiatives that put us -- the renewable portfolio standard is another one -- that put us in a good position to move forward and look forward to 2020, instead of being in despair, as Senator Buono said.

The only other things that I'd like to emphasize is that RGGI, while it is an important demonstration of cap and trade, it is a moderate one. It deals only with the power sector. And we have said, and Governor Corzine has said now, several times, that any approach to greenhouse gases and climate change must be multi-sector, and must look across many sectors. So it's not just RGGI alone -- the Greenhouse Gas Initiative. And it looks for a 10 percent reduction by 2019. So while that is a reduction of 16 percent from business as usual, that alone is certainly not going to get us there.

In terms of the Governor's order -- executive order: on the day he announced it, he did say that he encouraged and would welcome legislation that would codify not only the standards in his order, but that would be meaningful in helping us get there. We certainly, at DEP, support Senator Buono's legislation. And we've been working with her and thank her for the opportunity to work with her on improving the bill, from our perspective, which would give us authority -- BPU certain authorities that we need not only to implement RGGI, but to do other work as well as to fund greenhouse gas work.

Again, unfortunately at the national level, not one dime do we get from EPA or the Department of Energy to work on even an inventory for greenhouse gases. The Federal government actually gives money to

other countries to do it, but not to our own states. And so at least for now, in any absence of a Federal program -- which we certainly hope will come and which we certainly hope is good -- we've worked to include potential fee mechanisms in the bill.

I do want to say one other thing, which is the 2050 goal. Governor Corzine made it clear that the reason he thought it was important to have an aggressive 2050 goal is not just because the science says it has to be there, although that should be reason enough. It's because he strongly believes that economic investment, that must and should be made, will only come with some degree of economic certainty about what the State's intentions are. So a bill, and eventually a law, that makes it clear that the State has a very aggressive greenhouse gas standard by 2050 is the only way to make people believe that things are not (*sic*) going to change, that the State is on a path to need to invest significantly in everything from its infrastructure, to technology, to energy efficiency, to transportation. Those are the only ways that we're going to see a real change.

The number one emitter in our state is the transportation sector, as you said, Mr. Chairman. And so we're going to need goals that are aggressive and that look into the future in order to meet it.

With that, I thank you for inviting me. I'm happy to answer questions.

SENATOR SMITH: We're working through this legislative package. And I think Senator Buono's bill, setting standards for the State, is very important. But one thing I think we need some additional help from -- in terms of the DEP and maybe even the BPU -- is, we really need to know what this means for your Department.

Kevil and I have had a chance to call out to the California Air Resources Board. We did that in anticipation of making today's meeting. And one of the things that we found out is that California, right now -- and they're just at the stage of developing regulations -- have over 120 people dedicated to putting the regulations together.

And, Commissioner, this is not a criticism of the DEP, but I do know that in these very tight fiscal times every one of our Departments has been shrunk. And there's some question about whether we can perform all the functions and tasks that we now have. So one of the things I need before we release this -- the bill -- I need to know from both you and the BPU: What does this mean for staffing and resources for your Departments, for you to effectively carry out your tasks under the final legislation? We don't want to set the DEP or the BPU up for failure. We want you to have the resources and staff you need to get the job done.

So that's not an answer that we need today. But before we put the bill out there, we want to know what it really means for State government, for what you need to get the job done.

Are there any other questions or comments for the Commissioner? (no response)

Commissioner, thank you for participating today.

COMMISSIONER JACKSON: Thank you.

SENATOR SMITH: Our next witness is Mr. Anthony J. Broccoli. And I'm not sure if I'm pronouncing it right.

Is it Dr. Broccoli or Mr. Broccoli?

ANTHONY J. BROCCOLI, Ph.D.: Dr. Broccoli.

SENATOR SMITH: Dr. Broccoli is an Associate Professor with the Department of Environmental Sciences at Rutgers, The State University, and is considered one of the -- this country's experts on climate change.

Doctor, if you'd tell us where you think the situation is and what it means for New Jersey, we'd really appreciate it.

DR. BROCCOLI: I'd be very pleased to do that.

And I'd like to thank the Chair and the members of the Committee.

HEARING REPORTER: Press the button. (referring to PA microphone)

DR. BROCCOLI: Thank you.

I'd be very pleased to do that.

And I'd like to thank the Chair and the members of the Committee for inviting me to speak today.

(begin PowerPoint presentation)

The subject of climate change is one that we all know more about now than we did just a few years ago. But I thought I'd start with some of the basics.

Carbon dioxide has been increasing in the atmosphere as long as we've been measuring it. The measurements go back to the mid-1950s. The measurements are made at the Mauna Loa Observatory, in Hawaii, pictured here. That spot is chosen because it's a long way from any smokestacks or tailpipes. The trade winds carry fresh air across the Pacific Ocean several thousand miles. And even in that clean, relatively pristine air, the amounts of carbon dioxide have been increasing from about 315

parts per million in the mid-1950s, when the measurements began, to close to 380 parts per million today.

And we know, unequivocally, that these increases in carbon dioxide are a result of human activities. We can even look farther back in time, thanks to the work of geologists who have sampled ice in the glaciers of Greenland and Antarctica. That ice traps little bits of air from hundreds and thousands of years ago. And by chemically analyzing the composition of the air in that -- in those bubbles in the ice -- we can say that the amount of carbon dioxide in the atmosphere was very steady from the middle ages -- on the left-hand side of this diagram -- right up until the time that Washington crossed the Delaware not very far from here.

And then, with the onset of the Industrial Revolution, as our society began to burn coal and then oil in the 19th century, the amounts of carbon dioxide in the atmosphere rose. And during the period where these ice bubble measurements and the direct measurements from Hawaii overlap, we can see that they're very accurate estimates. These ice bubble measurements, in fact, go back even farther in time now, about 650,000 years. And we can say from those measurements that at no time during the past 650,000 years has the level of carbon dioxide in the atmosphere been higher than it is today.

Now, why are greenhouse gases, like carbon dioxide, important? They're important because even though they are transparent to the light from the sun that heats the Earth, they absorb some of the infrared light that's emitted by the Earth's surface. And it's the balance between the heating of the Earth by the visible light from the sun and the emission of infrared light to space that maintains the temperature of the Earth.

Greenhouse gases intercept some of this infrared light, absorb it, and radiate it in all directions, but partly back towards the Earth; and that makes the Earth's surface warmer than it would be without greenhouse gases.

Now, without the naturally occurring greenhouse gases, the Earth would be much colder than it is today. But by increasing the amount of greenhouse gases in the atmosphere, that's effectively the same as turning up the Earth's thermostat.

When we look at what the Earth's temperatures have done, we have reasonably good measurements from thermometers going back about 125 years. And over that period of time, the Earth's temperature has risen by about eight-tenths of a degree Celsius, or roughly a degree-and-a-half Fahrenheit. That warming hasn't been steady. There was a moderate rate of warming in the early part of the 20th century, then a little bit of a lull from the 1940s into the late-1960s. But since, roughly, 1970, the Earth has begun to warm more rapidly.

In fact, of the 10 warmest years, most of them have happened since 2000. And 2005 was the warmest year on record, at least according to this data set; 2006 not too far behind. And based on the first three months, 2007 is on track to be even warmer than any of the previous years.

Now, it's not just because the temperature has been going up and carbon dioxide has been going up that we believe that the two things are related. In fact, there's a tremendous body of scientific evidence that relates the two things that I don't have time to go into today. But the relationship between climate and carbon dioxide has been under consideration by a group under the auspices of the United Nations called the Intergovernmental Panel on Climate Change, or IPCC. And as this

slide indicates, most of the world's climate scientists have been involved in evaluating the scientific evidence and drawing conclusions about climate change, and what role, if any, humans play in climate change. And I've been fortunate enough to be among the expert reviewers and contributing authors that are referred to in this slide. And, of course, many of my colleagues at Rutgers and elsewhere have also been involved in trying to understand climate change.

This slide indicates that the report that was issued in Paris earlier this year is the fourth assessment. And so I just wanted to briefly cover what some of the previous assessments have said.

The first assessment was in 1990. And the conclusion of that assessment was that, "The unequivocal detection of the enhanced greenhouse effect from observations is not likely for a decade or more."

Five years later, a somewhat stronger statement that -- "The balance of evidence suggests a discernible human influence on global climate," still a very cautiously worded statement.

By 2000, the IPCC reported that, "Most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations." And IPCC defines *likely* as between a 66 and 90 percent probability.

And just this year, a much stronger statement that "most of the observed increase in globally average temperature since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." *Very likely* meaning more than 90 percent probability.

Now, this has enabled the IPCC and scientists as a whole to make projections about future climate change. But in order to do that, we have to have estimates of how the greenhouse gases in the atmosphere will change.

This is a busy slide with lots of colored lines. But each one of those colored lines represents a different plausible scenario for the future evolution of the amount of greenhouse gases emitted into our atmosphere. The picture on the left shows emissions. The picture on the right shows concentrations. And that distinction is important, because CO₂ accumulates in the Earth's atmosphere. So the concentration at any time is a result of emissions that have taken place up to that time.

A couple of things to note about this slide: All of the scenarios show increasing emissions during the next several decades. These are global emissions, of course. And the IPCC assumed that while there might be different rates of evolution of population technology and other factors, they did not explicitly assume any attempts to regulate CO₂. So in the absence of regulation, all these scenarios show increasing emissions during the next several decades. But some-- Not all, but some of the scenarios show decreased emissions in the latter half of the 21st century.

But even for the green line, the scenario that shows emissions decreasing most rapidly, CO₂ would still rise to double pre-industrial levels by the end of this century. And that just highlights what Commissioner Jackson said a few minutes ago about the need to adapt. Because the climate is going to change. Our goal should be to try to limit the magnitude of those changes so that they're easier for our society to cope with.

When we project forward the changes in temperature, each one of these different scenarios leads to a different colored line or a gray bar. And I will just say a little bit about them.

The gold line shows what would happen, hypothetically, if we stopped all emissions today. And even then the climate would warm a little bit. That's because the amount of carbon dioxide in the atmosphere today would produce a climate that's slightly warmer. And our climate is trying to catch up or come into equilibrium with that.

A low-end scenario -- that's the one that was colored green in the previous slide -- would produce a best-estimate warming of about 1.8 degrees Celsius, or roughly double what happened during the course of the 20th century. And there's a range of uncertainty from about 1.1 to 2.9 degrees, because we're still trying to fully understand the details of how the climate system works.

Under a high-end scenario, the most likely change would be about 4 degrees Celsius, or five times what we've seen during the 20th century -- and, again, a range of uncertainty. But even with all these uncertainties, the expectation is very high that the climate change during the course of the 20th century will be considerably larger than what we've seen during the -- during the 21st century, rather, will be larger than what we've seen during the 20th century.

Now, this slide shows many potential impacts of climate change. And we don't have time to talk about all of them today. But I want to highlight some that I think may be particularly important in New Jersey.

A more complete treatment of the impacts of climate change comes from Working Group II of the IPCC, that released their executive summary of their report just about a week-and-a-half ago. And to summarize their report, there will be some winners, but more losers. Densely populated coastal regions will face increased pressures from sea level rise and more extreme weather. Poor communities and stressed ecosystems will suffer most, as they are already living on the edge. And 60 percent of the world's species are already responding to climate and environmental change.

In New Jersey-- One of the conclusions of IPCC that is relevant to us is that it is very likely that hot extremes and heat waves will continue to become more frequent. The chart on the left shows a black bar. That's the number of 90-degree days that were experienced in New York City during the late 20th century, roughly 15 or so per year. Under even the low-end scenario, that number would more than double to nearly 40 by the end of the 21st century. And by the high-end scenario, as many as 70.

On the right, these are the number of 100-degree days -- maybe just one or two per year, based on the late 20th century climate. This could increase to as many as 20 or 25 under the high-emission scenario, which would make 100-degree days as common as 90-degree days are now.

When we take into account the effects of humidity in a quantity called the *heat index*, that means that under a high-end scenario, the climate of the New York metropolitan area would become similar to the current Summer climate of Savannah, Georgia. Now, Savannah is a nice place to visit, especially during the Spring and Fall. But certainly the

impact that this greater heat and humidity would have during the Summer would probably be most unwelcome.

Changes in heat and humidity also have effects on ozone and ozone-related mortality. And I apologize to the citizens of New Jersey from the southern half of the state for not being explicitly considered in this figure, but this is from a study done of the New York City metropolitan area. And it shows that even with no changes in pollutants, the amount of ozone and the mortality -- the health effects that that ozone would have would be expected to rise measurably by the end of the 21st century; again because ozone builds up during periods of high temperature and stagnant atmospheric conditions. And these are expected to become more common.

But sea level rise is probably the impact of climate change that is of most concern in New Jersey. This is stretch of coastline in Ocean County, very densely developed, a lot of property, a lot of valuable property very close to sea level. And so the rise in sea level would -- expect it to be a large impact on our coastal areas.

Sea level has been rising. This is a chart from Atlantic City. Based on data since about 1912, sea level has risen about a foot. Roughly half of that rise is due to the rise in global sea level. The other half is due to the fact that the land in New Jersey is sinking for reasons that are related to geology and related to the fact that we had an ice age about 20,000 years ago.

But global sea level is rising because warmer water is less dense than cold water. So as the ocean warms, the volume of the ocean expands. Glaciers and ice caps are melting. And that melted water enters the ocean and increases its volume. And the ice sheets -- the huge ice sheets on

Greenland and Antarctica can also be melting and calving. *Calving* means when a piece breaks off and drops into the ocean. And there's a lot more we need to learn about those processes, because they depend on how the ice flows. And that's still an area of active research. But based on our best estimates, IPCC projects increases in sea level during the 21st century that are roughly about double, based on their best estimates of what happened during the 20th century.

Now, if we apply those estimates to New Jersey -- this is a study done by Beevers, et al, in conjunction with Princeton University -- a middle-of-the-road estimate is about a two-foot sea level rise. And the areas in red on this map show places that would be inundated -- that means perpetually under water as a result of a two-foot sea level rise. And that includes coastal regions on Delaware Bay, and also along Cape May, Atlantic, and Ocean counties. If Greenland and Antarctica contribute more to sea level rise than we currently expect, then the blue areas could become involved also.

But as we've seen with the recent storm, it's not just the areas that are under water all of the time, but also the areas that are affected by storm surges. And when we add into our calculations the effect of the 30-year storm -- and we're talking about coastal flooding here, not river flooding -- then the areas affected by the middle-of-the-road estimate are the areas in red, which are much more extensive; the area in blue affected by the higher-end estimate, if Greenland and Antarctica misbehave. And that would include regions well inland, including that little blue area, northeastern Ocean and southeastern Essex County, which is Newark Airport.

Now, we've seen some of the effects of climate on water resources quite recently. This slide shows the flooding from Hurricane Floyd in New Brunswick in 1999, in the upper left, and one of the New York City reservoirs nearly empty just a couple of years later in December 2001. Of course, since I started putting this talk together, we've had another event. This is a picture from yesterday of downtown New Brunswick, and the Raritan River, and Route 18, and the areas that have been flooded by it. And, of course, water resources are crucially important in New Jersey, both as public water supply and because of the effects that floods can have.

The hydrologic cycle is the cycle in which water evaporates from the ocean, forms clouds in the atmosphere, and then those clouds produce raindrops or snowflakes that fall to Earth, accumulate in rivers and lakes, and flow back into the ocean in a continuing cycle. Global warming is expected to affect this cycle, because in a warmer climate there will be both more evaporation and more precipitation. So we have floods during times when there's a lot of precipitation all at once. We have droughts when we have periods without precipitation and only evaporation is occurring. And so the prospect of more precipitation and more evaporation makes it plausible that there could be both, ironically, more floods and more droughts in the future.

These two pictures show changes in precipitation: on the left, during Winter; on the right, during Summer -- northern hemisphere Winter and Summer, that is -- for the late 21st century relative to the late 20th century. The blue areas will become wetter, the reddish areas will become drier. Here in New Jersey, we're on the edge of the wetter area in Winter,

but maybe a little bit closer to the drier areas in Summer. But irrespective of whether or not the total precipitation goes up and down, IPCC feels it's increasingly likely that the frequency of heavy precipitation events will go up. They call that very likely, more than 90 percent; and that it's likely -- 66 to 90 percent probable that there will be more areas affected by drought.

And, of course, we've seen the effects of floods and droughts recently in this area. These are flood statistics for Trenton -- a river gauge not very far from here. Each circle represents the maximum flood level in a particular year. And three of the seven biggest flood events happened between 2004 and 2006.

Now, we can't say by any means that this is a result of climate change, but it could be a harbinger of the increased frequency of floods and droughts that we can expect in the future. Fortunately today's flooding, while it is reaching the parking garage, is just at flood stage. So on the Delaware, at least, it's not producing the kinds of impacts that we saw from these earlier floods. But elsewhere in New Jersey -- on the Raritan River and Millstone River basins -- this is the second largest flood on record, second only to Floyd.

Now, as has been discussed, energy in the United States comes primarily from fossil fuel burning, roughly 77 percent. And this is where a lot of the emissions of carbon dioxide come from -- virtually all of them. In the United States, we use more fossil fuel per capita than any of the other 20 largest countries in the world. And so that means both good things and bad things.

The good thing is that there is plenty of room for our fossil fuel usage per capita to go down. Many of the other countries depicted here are

economically well-developed countries like the United States, but their fossil fuel efficiency is greater. But it also means that we have our work cut out for us.

Now, in my view, there are a number of ways of managing climate change. And Senator Buono and Commissioner Jackson have already mentioned some of them. Mitigation: reducing the emissions of carbon dioxide and other greenhouse gases so we don't make the problem any bigger than it has to be. But as the Commissioner noted, adaptation is also important. There are going to be changes in climate. We need to anticipate them and prepare for them. And leadership is important, because the public needs to be made aware of the very important challenges that are posed by climate change, the need to limit its magnitude and prepare for its consequences.

At Rutgers, we're trying to help in this area by providing knowledge through the Rutgers Energy Institute, which is looking at different ways of finding energy sources that are not as important in producing greenhouse gases as our current means; and also through a climate environmental change initiative, where we want to become a center for understanding the effects of climate change on our environment and society, using the large number of scholars and educators that are already involved in climate-related research activities at Rutgers; and hopefully providing benefits to all of New Jersey's stakeholders and decision makers, by providing the better information we need to make better decisions.

So I thank you for the opportunity to speak today, and would gladly take any of your questions.

SENATOR SMITH: Professor, with regard to the relative sources of carbon dioxide -- comparing energy production and transportation -- which is the larger source?

DR. BROCCOLI: Well, globally, transportation represents about 25 percent of the pie, and energy production is about one-third of the pie. In New Jersey, where we have a very high density of transportation, I would expect the transportation contribution to be greater.

SENATOR SMITH: All right. As we're trying to formulate legislation to deal with the greenhouse gas emissions and mitigation reduction of the amount of carbon dioxide, do you have any specific suggestions that we might want to consider?

DR. BROCCOLI: Well, I think that this is an issue that's going to require working in a lot of different areas. Some of the legislation you've already mentioned, for instance, touches upon the area of energy efficiency. And that's a very important part of the picture.

Alternative energy sources are also important. There are technologies available that can produce energy with little or no greenhouse footprint. But scaling up those energy sources to make them useful on a large scale is something that requires engineering effort and, perhaps, some incentives to make it worthwhile to do those things.

And, in addition, there are technologies to try to capture the carbon that's emitted when fossil fuels are burned. There are experts at Princeton that have been working a great deal on this particular area. And those may be useful for big, stationary sources like power plants, where a lot of carbon dioxide is generated in one place. And it would be relatively simple to capture it and store it.

SENATOR SMITH: When you look at the energy side of the equation, the production of carbon dioxide -- which you indicated, worldwide, was one-third of the source. In this country, after Three Mile Island and Chernobyl, there has been a decided aversion to nuclear power. Is that something that should be reconsidered by this country?

DR. BROCCOLI: Well, I'm certainly not an expert on nuclear power and don't have an expert's opinion on what should or shouldn't be considered, except to say that I think this problem is going to require us to make choices. There are a number of different strategies that can be used to reduce our greenhouse footprint, and the use of nuclear energy is one of them. That's, in part, the reason why some of the developed countries of western Europe have a smaller greenhouse footprint than we do here in the United States. But that's a decision that's up to the citizens and their elected representatives to make. But I certainly think it is worth thinking about.

SENATOR SMITH: Are there other questions for Dr. Broccoli? (no response)

All right, if not, let me thank you for your contribution here today.

DR. BROCCOLI: Thank you again.

SENATOR SMITH: And we appreciate yours and Rutgers' assistance on this very important issue.

Our next--

Oh, we need to give them 10--

MR. DUHON (Committee Aide): They're ready.

SENATOR SMITH: They have the 10-minute notice.

MR. DUHON: They're ready.

SENATOR SMITH: All right. Could we put on the California Air Resources Board?

CHUCK SHULOCK: Good afternoon.

Can you hear me?

SENATOR SMITH: Yes, we can.

Can you hear us?

MR. SHULOCK: I can hear you.

SENATOR SMITH: Outstanding.

MR. SHULOCK: And I can see you.

SENATOR SMITH: Outstanding. We can see you too.

(laughter)

Are you Chuck Shulock?

MR. SHULOCK: Yes, I am, sir.

SENATOR SMITH: All right.

And, Chuck, just for the members who are here -- both legislative and public -- would you tell us what you do at the California Air Resources Board?

MR. SHULOCK: Yes, I am the Manager of Greenhouse Gas Programs at the California Air Resources Board, which at the moment primarily means that I am responsible for organizing the implementation of AB-32, our recent climate change legislation.

SENATOR SMITH: All right. And as I understand AB-32, it sets some very important limits on greenhouse gas emissions for the state of California. Would you give us a 30-second rundown on what AB-32 requires that you do?

MR. SHULOCK: Yes, I would.

And before doing that, I would like to say that Catherine Witherspoon, our Executive Officer, also -- I expect that she will be joining us. She's not here at the moment. But I wanted to let you know that she's aware of this, and I expect her to be coming down.

In response to your question, as far as the overall requirements in a nutshell -- it's that California's greenhouse gas emissions, by 2020, should be reduced to our levels in 1990. And there are a number of operational, and administrative, and analytical steps along the way. But fundamentally, it's to reduce our emissions down to 1990 levels by 2020.

SENATOR SMITH: All right. And my understanding is that California is significantly different than New Jersey in the way in which these changes get implemented. My understanding is that your legislature and Governor delegate to you the responsibility to figure out how to do it, and then you do it by regulation. Or am I incorrect in that?

MR. SHULOCK: You are exactly correct. AB-32 gives the Air Resources Board authority to adopt regulations. First of all, it requires us to adopt the 2020 limit, which is equivalent to 1990 emissions. And then it gives us the authority to adopt regulations to achieve that limit in whatever way we see makes the most sense.

One caveat I would throw in on that is that there are other state agencies that also play a role here. So, for instance, transportation planning, or agricultural issues, or forestry issues-- There will be other state agencies implementing measures that will also help achieve this cap. So the Air Resources Board does not 100 percent, all by ourselves, implement

these measures. But we are responsible for the overall planning, the identification of the various reductions, and the accounting for them.

SENATOR SMITH: Okay. And in terms of this portion of the California Air Resources Board, do you have a staff that is working under you, or under Catherine, to develop these regulations?

MR. SHULOCK: We have a small group now that is actually doing three things simultaneously. And we're stretched fairly thin. The first thing that we're doing is the planning work to implement the requirements of the bill. The second thing that we're doing is building our internal capacity. We have a budget request in front of the state legislature right now for 100 -- roughly 100-personnel-years of additional staff resources, plus some contract money for our next fiscal year. So that fiscal year begins in July. So we are expecting that, beginning July of 2007, we'll get a substantial increase in our resources to implement this bill.

At the moment, we're working with existing resources and some internal redirection. So we're starting to build capacity and do some hiring internally to sort of get a jump start on when the new resources show up in July.

And then the third thing that we're doing -- and it takes a fair amount of time, but it's absolutely essential -- is, we're constantly meeting with interested parties from the outside who want to know what it is that we're up to, what are we doing. So we have a lot of back and forth with stakeholders from industry groups, from environmental groups, from environmental justice, local communities, other states, other nations. We have a lot of -- just a lot of conversations going on with other people that are interested in these issues.

SENATOR SMITH: How big is the current planning group?
How many people?

MR. SHULOCK: In terms-- I'm hesitating, because we have a lot of different things going. And when you say *planning*, do you mean the entire effort?

SENATOR SMITH: Not all of CARB, but the people who are currently dedicated to global warming. What would you say--

MR. SHULOCK: Okay. Great.

The one early focus is on inventory -- developing an inventory and developing regulations for mandatory reporting. Those are some early deadlines under the bill. And, right now, we have probably about 10 staff already in place devoted to that kind of work.

Another area involves identifying measures that could possibly be implemented to reduce the greenhouse gas emissions. We have about another 10 staff, that we got in the current year budget, who are doing that sort of work. That's going to be augmented pretty significantly.

And then the central management portion of it, which is me and my group-- We have about five people right now doing the sort of management and planning work. But I'm going to be hiring two more rapidly. So by the end of the fiscal year, we'd have about 10 people doing that.

SENATOR SMITH: So, right now, you have about 30 people in this very initial effort, it sounds like. And you're hoping to hire about another hundred next year, as a result of your request in the budget.

MR. SHULOCK: That is correct.

SENATOR SMITH: All right. And as I understand AB-32, you're also mandated to do some short-term things to try to get some handle on this. Is that just the inventory, or is it the imposition of some immediate controls?

MR. SHULOCK: Immediate controls--

Before getting into that, one other point I would want to make is, as I said earlier, when you're thinking about the staffing that's in place, there are also activities at other state agencies, other than the Air Resources Board. And, in particular, there's something called the Climate Action Team, which is run out of the California EPA Secretary's office. And there's two or three staff directly managing that climate action team. And then there's activities across a number of other state agencies. For instance, our Public Utilities Commission is pretty heavily involved on electricity-sector issues.

With regard to your question on early actions, one of the requirements of AB-32 is that by June 30 of this year our Board publish a list of what are called *discrete early actions*. And the logic of this is that AB-32 sets up an incremental planning process to get to that 2020 goal. And there's a number of milestones along the way. But the ultimate regulations aren't called for until January of 2011. And so part of the thinking when the bill was going through was, surely there are some other things we can do right away to begin to make progress towards these goals, while the longer, more elaborate planning process is underway.

So there's a requirement to publish an early action list by June 30. We've been working on that now for several months. We had a workshop in January. We have another workshop scheduled, actually, for

Monday of next week. We've identified, tentatively, a couple of things publicly, one of which is something called a *low-carbon fuel standard*, which is a requirement to reduce the carbon content of fuel by 10 percent by 2020 through low-carbon fuels. And we also have talked about placing a ban on the do-it-yourself refrigerants that are used to repair motor vehicle air conditioners. Those small cans of what are called HFCs, which are very potent greenhouse gases-- We're looking at banning the sale of these small cans, such that those repairs would need to be done at qualified facilities.

So those are two things that we've publicly identified. We're in the process of evaluating that whole issue. And as I said, we have a workshop next Monday.

SENATOR SMITH: California, as I understand it, has a pretty long history of that particular system, where the legislature hands off to the regulatory board the authority to develop regulations and pretty much says, "You figure it out." How long have you been doing it that way at CARB?

MR. SHULOCK: Since I've been here, certainly. I mean, that is generally the process -- 15 or 20 years -- where we get general direction to do what's feasible and cost-effective. And then we figure it out.

So one specific example: our motor vehicle greenhouse gas regulations -- which your State has also adopted. The direction to us was to achieve the "maximum feasible and cost-effective reduction." And it was up to us to figure out exactly what that meant. So we did extensive engineering work and figured out this is what we thought the manufacturers could achieve over a certain period of time. And we adopted the rules that made that specific. But the statutory guidance was really that phrase

“maximum feasible and cost-effective.” And that’s generally how it works here.

SENATOR SMITH: When you develop -- and this is across the spectrum, not just global warming -- but when you develop the various air pollution reduction or other types of regulations that CARB does, have you ever had a firestorm on your hands or rebellion in the populous? Have you ever had to backtrack? Or is it pretty much, once you make the decision, everyone lives with it?

MR. SHULOCK: No, some of the things we do can be very unpopular. And I must confess that I’ve been focused on one piece of the program prior to now -- the motor vehicle regulations -- and can’t speak to you personally of the history. But I do know that many of the rules that we adopt are controversial. But I will also say that our Board is well-respected by the business community and by the environmental community as a, sort of, honest broker and a scientific and engineering-driven organization. So we get the benefit of the doubt in a lot of situations where, even though people might not agree with us 100 percent, they respect the process.

SENATOR SMITH: Good.

To your knowledge, no one has been hung in effigy yet?
(laughter)

MR. SHULOCK: No, although one joke that I’ve made on some of these pending greenhouse gas regulations is that we would need to take into account the offsetting emissions from the torches as people storm our building. (laughter)

SENATOR SMITH: Good point.

Has California started to think anything about the actual reduction in vehicle miles traveled? It seems that transportation is a huge source of the carbon dioxide gases.

MR. SHULOCK: Yes, indeed. And maybe one other piece of backdrop. Before AB-32 was passed, there was a Governor's executive order, in June of 2005, that set in place goals which -- the 2020 goal, ultimately, was statutorily established in AB-32. But there was a Governor's executive order that set in place goals. And he created something called the Climate Action Team, which I've mentioned, which is led by our Secretary for Environmental Protection. It includes all of the state agencies that are relevant here. And in the Governor's executive order, one of the directives was for that Climate Action Team to figure out ways to hit that 2020 goal.

So we've had one planning process already, which culminated in a report issued in March of 2006, that was called the *Climate Action Plan*. And that had in it, I think, 43 measures that could be used to achieve greenhouse gas reductions. And it was a variety of things.

But one big piece did have to do with what was called *intelligent transportation*, and -- not the exact phrase *Smart Growth* -- but basically job/housing balance. And there was a substantial 2020 reduction identified that would come from better use of transportation -- mass transportation in California, and also measures to reduce vehicle miles traveled.

Now, in California, those issues are primarily-- The zoning and growth management issues are handled at the local and regional level, rather than the state level. So this is an area where there would be state policies adopted to be implemented, then, at the local level. But I guess the direct

answer is: Certainly we see reduction in travel as essential -- an essential component of the long-term plan.

SENATOR SMITH: One of the things that New Jersey may be considering in its reduction of greenhouse gases is, perhaps, a mandatory employer trip reduction program, which would require our industries with a hundred or more employees to find ways to reduce the trips traveled by 25 percent: either you're vanpooling, carpooling, telecommuting, whatever.

Does California do anything like that now?

MR. SHULOCK: We have had measures like that.

I must confess that I'm not personally familiar-- Our Legislative Director, Rob Oglesby, is here. And I think he may be able to speak more concretely to those sorts of things.

SENATOR SMITH: Rob.

ROBERT OGLESBY: We don't have mandatory--

SENATOR SMITH: We can't hear Rob. He needs to talk into the other microphone.

MR. OGLESBY: At this point in time, we don't have mandatory ridesharing as part of our state program. We have local air districts, which are not subdivisions of the Air Resources Board, but kind of regional government responsible for things that relate to land use. And they have, as part of their program, various incentives and programs to encourage ridesharing programs. We have an extensive carpooling network, which is common, and some of the other things. But we have not adopted a state policy requiring mandatory ridesharing or reductions in VMT.

SENATOR SMITH: Have you, in California, done anything with green buildings and sustainability as an effort to reduce carbon dioxide emissions?

MR. OGLESBY: Yes. In fact, I'm speaking to you from the Cal/EPA building, which is a LEED certified building, platinum -- a 25-story modern office building, very comfortable. And we have, through actions through our executive branch-- We are in the process of implementing green building standards that relate to state agency buildings. And that's part of the activities that are being undertaken as part of our Climate Action Team.

SENATOR SMITH: How about your building codes for residential or commercial housing, nongovernmental? Have you done anything in that area?

MR. OGLESBY: We have another state agency called the California Energy Commission. It has led the way in our state for improvements in energy efficiencies in not only some of the electricity demand in housing and office buildings, but also for appliances like refrigerators and so forth. They have the assignment to implement the global warming goals in this area. But essentially, whatever policies would be developed as part of the Climate Action Team -- again, which is the umbrella steering team that is guiding the multiagency implementation of AB-32 -- would come through the activities of the Climate Action Team, ultimately ending up in the various agencies that regulate building standards.

SENATOR SMITH: I thought it was very interesting that you had Agriculture as part of your global action team. What was the-- Have you any initial thoughts on how agriculture plays into this?

MR. OGLESBY: We have an understanding -- at least a beginning understanding -- of their contribution to the global warming issues. It's an area that's going to require a lot more work to define. Agriculture is a very large industry in our state, a very important industry in our state. Clearly there are emissions associated with the operation of agricultural equipment that we'll be taking a look at. There's always the discussion about the role of methane. So it's under discussion. It's part of the team, it's part of the strategy.

SENATOR SMITH: Do you have any-- One of the things that Mr. Shulock mentioned was that one of your early actions was the banning of the do-it-yourself refrigerants. Are you anticipating any kind of an interstate commerce problem on that?

MR. OGLESBY: Let me say where we are in early actions. I think we should expand on that just a little bit.

During the debate on AB-32, our bill, a number of examples came out of things that could be done ahead of the schedule, things that might be ripe, relatively easy, and result in global warming emission reductions. The home do-it-yourself refrigerants were identified as a candidate for the early-action measure. And the AB-32, our bill, required a full list of potential early action measures to be adopted by June of this year.

So we have not banned the cans at this point. We have a couple of items on a potential list that includes the restriction of the use of

those refrigerants. But it's only part of a number of issues that we're going to be looking at. And it will be before our governing board -- the Air Resources Board -- in June of this year.

SENATOR SMITH: Great.

Are there staff or members-- Any other questions that we have at the moment? (no response)

Well, let us thank you for participating today. Don't be surprised if you get a follow-up phone call, because we're very interested in what you're doing.

And I always hate being Number 2. New Jersey always seems to be following you guys in California. So one of the-- And I guess that's because we're the most densely populated state. But for whatever reason, you have this huge environmentally sensitive history out there. And I'm sure there will be a day, one day, when California calls us to ask what we're doing. But, unfortunately, it probably won't be for the -- in the near future.

We are probably going to be calling you back and maybe asking you to participate again. We're trying to figure out what we're doing here in New Jersey. And you are, obviously, on the frontier in an awful lot of this. And we appreciate what you're doing.

SENATOR SMITH: No other questions for the California people? (no response)

Oh, I'm sorry, how about Catherine Witherspoon? Did she show up?

MR. OGLESBY: I think she is tied up, and I know she is working on global warming as we speak. (laughter)

And let me close, if I could--

SENATOR SMITH: Well then, we don't want to take her away from that important work. Tell her, hopefully the next time we set this up and contact you fellows and gals -- that hopefully we'll be able to meet her over the T.V.

And thank you again for your hard work on this project.

MR. OGLESBY: Thank you. It's been an honor to be able to participate in this event.

SENATOR SMITH: Thanks so much.

MR. SHULOCK: Thank you very much, Senator.

SENATOR SMITH: Thank you.

And somebody needs to write down, I think, the fact that we need to get Agriculture in this. Right now we have BPU and DEP in this. But it sounds like Agriculture should be a part of the global warming team.

Okay. Our last scheduled witness is Lance Miller, from the BPU.

And then, after that, if anybody wants to give us a couple of ideas, we'd be happy to hear them.

Lance, welcome today.

LANCE R. MILLER: Thank you, Senator.

It's been a long time since I've had the pleasure of being in front of the Senate Environment Committee.

Right, Judy? (affirmative response)

We go back quite a few years on something called ISRA, or something like that.

I do want to--

SENATOR SMITH: By the way, we're relooking at all that.

MR. MILLER: Okay. Absolutely. We should always do that.

Just to start off, I'm going to cover what we are working on in the Energy Master Plan, which does cover a lot of ideas in terms of how we are going to meet the greenhouse gas target that the Governor set for 2020.

In Ag -- the Department of Agriculture is part of the Energy Master Planning committee, not by legislation, but Governor Corzine recognized that agriculture is an important part of this. We've been working on biofuels with agriculture, before we even started the Energy Master Plan work last October. So they are a critical partner with us.

The Energy Master Plan -- the Governor kicked it off last October. It's a planning effort that focuses on the desired outcomes that we are looking to achieve. And we have some pretty basic ones that we started with that are very, very important. It's easier to set these desired outcomes than it is to figure out how we actually will come about doing that. And that's what we've been working on since October. And I will go over that also.

But back in October, we said, "We want to reduce our future energy needs in 2020 by 20 percent." So we had to project out what we thought they would be, and then we said, "All right, we're going to develop strategies to reduce those by 20 percent." That was one of the outcomes we wanted to achieve. We have our renewable portfolio standard that requires, by 2020, for us to have 22.5 percent of our electricity coming from Class 1 and Class 2 renewable energy resources. We also included in the plan, up front, that as we evaluated this plan -- as we complete the plan, we would evaluate it on both economic and environmental criteria. Those are both very, very important. And then, of course, in February -- with Executive

Order 54 -- the Governor set forth the greenhouse gas targets and directed that the Energy Master Plan will address how the 2020 target is going to be addressed from the energy side. And working very closely with DEP on this, we know that about 87 percent of our greenhouse gas emissions are related to energy production and use. So you can see how important the Energy Master Plan is in addressing the overall, and achieving the overall, target.

As was indicated in California, we have been having a tremendous amount of stakeholder participation in this process. We started off with a number of public meetings right back in October, and then we've moved into working groups and electronic submission of comments on various topics. There's been a tremendous interest in the Energy Master Plan. We have received a lot of ideas and great suggestions on how to achieve reductions in energy use, or increase our use of renewable energy. And we're working, and will continue to work, very closely with those stakeholders.

What we're focusing on right now is developing a couple of key scenarios. One is our business-as-usual scenario, which is: What are, again, the environmental and economic impacts of staying on our current course? And since we're complementing Rutgers today -- or we're having Rutgers up here -- we are working with Rutgers University. They are the ones that are doing our modeling. Out of the Bloustein School, the Rutgers Economic Model -- the macroeconomic model for the State -- is what we are using. And we'll be able to look at these various scenarios and see how they are impacting the overall State's economy, as well as giving us environmental impacts -- as well -- in terms of emission levels.

Our business-as-usual scenario isn't a worst-case type of scenario though. It does include the Regional Greenhouse Gas Initiative and the renewable portfolio standard that Commissioner Jackson referred to. But the big difference is, with the alternative scenario, is it has energy growth -- or energy demand continuing to increase from the present time through 2020. And that increase is what creates problems for us.

So we've developed an alternative policy bundle that focuses on reducing demand, reducing electricity use. And that's the one aspect that we are really focusing on. The best unit of energy is the one we actually don't use, through conservation or avoidance. So these demand policies include appliance and vehicle standards.

Senator, you mentioned the one bill, 2360. It is certainly a key part of that. We have legislation that we did in 2005 on appliance standards. Those have benefits. Commissioner Jackson talked about the clean cars initiative -- a tremendous impact on the transportation side; the building codes legislation, S-2154.

And on renewables, what we focus on in this policy-- Because, again, the emphasis is on achieving both economic growth -- the Governor, of course, has his economic growth strategy -- as well as dealing with reducing our greenhouse gas emissions. And while the Federal administration doesn't seem to think that those two things can be done concurrently, we happen to disagree with that. And we think there are opportunities to grow both our economy and do environmental protection at the same time.

So our renewable policies, in the alternative, focus on: How can we get more of those renewables actually generated in New Jersey?

And, of course, that brings up issues such as off-shore wind, that will have to be addressed in the final aspects of the Energy Master Plan, as to whether or not we are going to utilize our off-shore wind resource -- which is one of our most significant renewable resources that we have in the state.

We are also looking at biofuels -- I mentioned agriculture before -- and how we can utilize either some of our crops or our waste materials to generate biofuels. And we're also looking at distributed generation resources, small combined heat and power units that are very, very efficient. These can run off of either biogas or natural gas, which, of course, does have a greenhouse gas contribution. But it would be less than burning fuels in a central power plant, because of the efficiency of the CHP units. And then, also, a demand response program to focus on reducing our peak demand. And it's that peak demand that causes the whole system to be built at a larger capacity. And also, from an environmental standpoint -- again, working with DEP -- it's those hot Summer days, where we're pushing the total capacity of the system to its limit, that also cause the most environmental problems. So if there are things that we can do to reduce that peak demand, we save on electricity costs, and we also save on health impacts as well, of -- a little bit better air quality.

SENATOR SMITH: Is the Energy Master Plan taking into account the potential for global warming?

MR. MILLER: Yes.

SENATOR SMITH: Okay. So the number-- When the Professor talked about the increase in the number of hot days, we're taking that into account?

MR. MILLER: To the extent that we can. Our projections of increasing demand, our trend analysis-- And we did those trends over the last few years -- not going way back 40 years, but in a more recent time period, which would reflect those hotter, more recent years that we've had. And that does push up our energy use. And it really pushes it up on peak demand -- again, those hot Summer days -- of which there would be more of. If we have programs in place that are designed to reduce that peak demand, or utilize renewable resources that are coincident with peak demand -- which is, to a degree, solar power and also off-shore wind -- those-- If we had those types of resources, we would have the ability to meet our peak demand without relying on fossil fuel-based sources to do that.

SENATOR SMITH: Okay.

MR. MILLER: Just to give you a little-- We're in the stage now of getting to the point of -- where we're going to start developing the environmental and economic impacts. But just to give you, on the electricity side -- which we are also, I should mention, working very, very closely with the Department of Transportation on all the transportation aspects of this: vehicle miles traveled, efficiency of vehicles, fuels going into those vehicles -- those three aspects. But the team that we're working -- have working on this at the BPU is focusing mostly on electricity and heat.

And just to give you an idea of what this alternative scenario would mean in terms of impact-- Right now, we utilize about 80,000 gigawatt hours of electricity a year in the state. That's projected to increase to about 100,000. With the energy efficiency policies that we've identified, we feel we can reduce that back to 80,000. So we could cover all of the

future growth that is projected to occur through energy efficiency. And a key aspect of that-- We've talked about-- We've heard about building codes and appliance standards. We have to design a program to deal with the existing building stock, because that's the one that uses, obviously, most of the energy. And we have some ideas on how we can do that.

We can take that 80,000 gigawatt hours and generate about 15,000 gigawatt hours of electricity from renewable sources. And then, through our distributed generation program, we feel we can generate another 10,000 gigawatt hours of electricity. So you combine all those policies together, and we have the potential to reduce our electricity from conventional sources from 80,000 today down to about 55,000 by 2020. And that would have a drastic impact on greenhouse gas emissions. And that's what we'll be modeling to actually define what those are, and also what would be the impact of implementing those policies on the economy.

The plan will be identifying what needs to be done, who needs to do it, when do they need to do it by, how much are these policies going to cost, where would that money come from, and what are the interim performance matrixes that we're going to utilize to judge performance. Because one of the things that we have failed to do in the past-- And we have a requirement to do an Energy Master Plan every three years by legislation. The last full Energy Master Plan was done in 1991.

SENATOR SMITH: Which leads to the obvious question: Why do you think that this master plan will work?

MR. MILLER: The reason this one--

SENATOR SMITH: When we set our own standards for ourselves to do something -- saying we have to do it every three years -- and

now we're saying to the public and to the industry, "You have to do the following things" -- why do you believe it's going to work?

MR. MILLER: I think this one is going to work because we recognize those past failures. There's been very good work done in past Energy Master Plans. It's been the implementation that's lacked and the follow-up that's lacked. We have a Governor that's very committed to this. We have-- The rest of the Executive Branch understands this. We know how important this is for greenhouse gas emissions. So the way we're setting up the plan is to have, then, an annual report done each year: Are the things that were supposed to get done in the past year done? If not, why not? How do we get back on track? That type of follow-up that the Governor is demanding will, in my opinion -- and I've been doing this for a long time now -- will be the fundamental change in the way that planning is done in State government to ensure that it does get implemented and the strategies that it lays out do become reality.

And if I could just close-- A little bit about what Commissioner Jackson -- occurred.

The change that is going to have to occur in our energy use to get to the 2050 greenhouse gas target, I think, can just be summed up as *fundamental*. We are going to have to completely relook at how we use energy. And what we're trying to do in this Energy Master Plan is give us the next decade-plus to figure out what some of those long-term answers are, so that we don't keep utilizing the technologies that have created this problem going forward; and having that be our interim solution until we can get to the longer-term solutions to get us to the 2050 target.

Thank you very much for having me here today. And I'd be happy to answer any of your questions.

SENATOR SMITH: We appreciate you coming by and updating us on what BPU is doing.

Thank you so much.

SENATOR BUONO: I did have one question on a narrow issue.

SENATOR SMITH: Sure.

MR. MILLER: Sure.

SENATOR BUONO: There's so much talk about-- There's a lot of venture capital, for example, going into biodiesel fuel. But what will the impact be, once the California Clean Car standards kick in, in 2009?

MR. MILLER: The California Clean Cars will do a tremendous amount. And I would defer to anybody here from DEP to help better answer this question. I think they deal more with the gasoline-powered engines.

And one of our main areas, when we look at biofuels, is for biodiesel; and getting 5 percent, 10 percent of the diesel fuel used in the state to be a biofuel, as well.

SENATOR BUONO: I guess what I'm saying in a round-about way is, is it going to be clean enough to be able to have a car, in New Jersey, burn that biodiesel fuel in 2009? I know in New York state, for example, you can't really register a car, because the California standards are already in effect.

MR. MILLER: I'm not sure, Senator.

SENATOR BUONO: Maybe somebody from DEP, later on, can answer that.

Thank you.

SENATOR SMITH: Okay.

Anyway, did you give the Senator an answer on that -- that you thought it would be clean enough?

SENATOR BUONO: No.

MR. MILLER: No, we're going to have to get back to her from the -- with DEP.

SENATOR SMITH: You're going to get back to her? All right. Send it to all of us, okay?

MR. MILLER: Okay.

SENATOR SMITH: Great. Thank you so much.

MR. MILLER: You're certainly welcome.

SENATOR SMITH: Mr. Rick Thigpen, Don McCloskey, Chip Gerrity. And you haven't signed up either in favor or opposed to global warming. Does that mean you're neutral on the issue? (laughter)

SENATOR BUONO: Neutral.

R I C H A R D T. T H I G P E N: We're opposed.

SENATOR SMITH: You are opposed. It's official.

MR. THIGPEN: It's official.

SENATOR SMITH: Okay.

And by the way -- and this is for everybody that's coming up -- no one has to get up and say, "We're opposed to global warming." Tell us specifically what you want us to think about. Let's be focused here.

Okay, Mr. Thigpen.

MR. THIGPEN: Thank you, Mr. Chairman.

Good afternoon, members of the Committee.

I'm Rick Thigpen, Vice President for State Government Affairs with Public Service Enterprise Group, parent company of New Jersey's largest electric and natural gas utility, and commercial power generator. I'm here today with my colleague Don McCloskey, Director of Environmental Strategy and Policy, who is over here; and Chip Gerrity, President of IBEW Local 94. We appreciate the opportunity to provide comments on this important issue of global climate change.

On March 29, 2007, Ralph Izzo, PSEG's Chairman and Chief Executive Officer, testified before the U.S. House Energy and Commerce Committee, calling on our Federal government to take immediate and aggressive action to address the threat of climate change, including enactment of a mandatory program to regulate electric-sector global warming emissions.

In New Jersey, PSEG has been an active participant in the development of the State's Energy Master Plan. Meeting Governor Corzine's goals of reducing energy consumption 20 percent and supplying 20 percent of the state's electricity needs with renewable resources by the year 2020 would significantly reduce our state's CO₂ emissions.

These goals present an enormous challenge which will likely require that you take a new look at the role of the State's utilities and energy companies. Utilities have the brand recognition and relationships with customers to successfully implement energy savings programs and technologies on a broad scale. And utilities have the ability to develop

patient capital. By this I mean we have the ability to make longer-term investments, and serve the public interest, that the markets may not make.

By implementing innovative, new rate-making policies, the State can maximize the penetration of efficiency in conservation measures to New Jerseyans much quicker than would otherwise be possible.

PSEG recognizes global climate change as a real threat, and we are committed to actively participating with the State to develop solutions. PSEG understands that the challenge of global climate change demands that we pay closer attention to the important connection between energy consumption, energy production, and the environment.

In the area of energy consumption, PSEG continues to explore new ways to encourage its customers to use energy-efficient devices, as well as adopting new technologies that consume less energy. In this regard, we are also learning that we must practice what we preach. As part of an ongoing effort, and as part of our participation in the State's Energy Master Plan process, PSEG is committed to increasing infrastructure efficiency by achieving greater fuel economy, including the use of hybrids in our fleet of vehicles, and deriving greater energy savings in operating our facilities. Greener cars and greener buildings will be our goal.

PSEG also understands its obligation to provide the State with adequate supplies of clean energy. And we are continuing to make significant investments in our central power stations to reduce emissions.

PSEG has been a leader in climate change policy for the past decade, and Don will talk more about that. We are committed to being a partner in increasing the use of renewable energy sources, including providing incentives. We have developed a new solar initiative designed to

significantly increase access to solar energy for New Jersey residents, and we are committed to nuclear energy as a viable, carbon-free way to generate electricity.

As I have said, energy and the environment are inextricably linked. PSEG is ready to help the State develop an integrated approach to meeting our energy needs, encompassing policies that will facilitate the development of the technologies and infrastructure that will allow energy efficiency to be a realistic first choice for consumers and businesses, and will also allow for the widespread use of renewable energy supplies.

Pursuing these goals, as well as ensuring a long-term foundation of reliable, carbon-friendly, central station power will provide significant environmental benefits by reducing greenhouse gases. PSEG does have concerns about the effectiveness of efforts to cap power plant emissions at the regional or State level.

We look forward to working with members of this Committee to call on our Governor, members of our Federal delegation, and the White House to make addressing climate change a national priority.

Thank you.

DONALD M. McCLOSKEY JR.: Thank you, Rick.

Good afternoon, Mr. Chairman.

PSEG has submitted very extensive written comments, but I have summarized those comments into a few key remarks that I would like to leave with the Committee.

As Rick indicated in his remarks, addressing climate change is a huge undertaking and will require an integrated approach. We believe New Jersey needs an approach that enables energy efficiency; that implements

renewable supplies; and it ensures a long-term foundation of reliable, carbon-friendly, central station power. There are a number of options available to shape an integrated approach and develop programs that provide environmental benefits by reducing greenhouse gases.

The electric power sector contributes a significant share of the air emissions associated with environmental concerns. And PSEG has taken a leadership role in educating the public and policymakers about this contribution. Since 1990, we've implemented a significant number of voluntary reductions, including repowering our facilities, converting from coal to natural gas, improving nuclear plant performance, and technology upgrades that have resulted in over \$3 billion invested in our fossil fleet in New Jersey.

PSEG believes New Jersey's utilities are uniquely positioned to invest in technology such as advanced metering infrastructure. That would enable and empower customers to achieve energy efficiency gains on a large scale. This kind of technology investment would be a logical extension of our pilot program, which is MyPower Connection. MyPower automatically adjusts central air conditioning units in response to electricity price changes, and provides customers access to time-of-use pricing.

We also think utilities should be involved in financing efficient equipment on the customer side of the meter, as Rick has already described.

We've also developed a strategy that will facilitate large-scale solar photovoltaic installations. And we continue to vet this idea with various constituencies. We believe this program has the potential to develop significant amounts of solar power by 2020.

On the transportation side, hybrid electric vehicles and plug-in hybrids offer the ability to decrease fuel use and air emissions associated with publicly and privately owned fleets. PSEG is currently working in partnership with the Electric Power Research Institute on a project that is evaluating potential for plug-in hybrid vehicles for our own electric and gas delivery business.

As the Committee is aware, New Jersey is a full participant in the Regional Greenhouse Gas Initiative. PSEG has been supportive of RGGI in concept, as we understand its intent, and that is to encourage Federal action. We have a long history of advocating a mandatory national policy on climate change. Modeling done by RGGI staff indicates that the implementation of RGGI, under certain assumptions, could result in significant decline in New Jersey's electric generation, with a commensurate increase in generation to our west. The result is leakage, increased emissions outside of our borders because of the increased operating costs imposed by RGGI on New Jersey power plants.

We recommend to New Jersey policymakers that a resolution to leakage be defined before going forward with RGGI. And a commitment should be made to harmonize and sunset RGGI requirements into a national program, once a national plan becomes a reality.

SENATOR SMITH: Okay. Hold on for one second.

MR. McCLOSKEY: Yes, sir.

SENATOR SMITH: Mr. Miller, what's BPU's position on leakage?

MR. MILLER: That it's an issue that needs to be addressed. It's being worked on as part of the regulations with DEP. And one of the

most potential solutions to leakage is actually energy efficiency. And if we reduce the amount of electricity that we consume in this state, some of the -- or a lot of the leakage issues would disappear.

SENATOR SMITH: Okay.

Go ahead.

MR. McCLOSKEY: In addition to leakage, another issue at the center of the RGGI dialogue is consideration of 100 percent open auction of allowances. We strongly recommend that allowances should only be made available to regulated sources, and any consideration of moving toward 100 percent auction should be done very slowly.

From PSEG's perspective, the successful implementation of RGGI can be measured by an effective method of controlling leakage, a fair and phased-in allocation of emission allowances, and finally the sunseting of the RGGI program once a national program is in place.

PSEG strongly believes an essential task of our company, the energy industry, and State policymakers is to maintain the reliability of our electric system. This will require developing new baseload electric generating capacity in New Jersey. There are, however, some major issues to be considered in doing that.

We believe that as a matter of public policy, existing coal-fired power plants must continue to be an important part of the energy resources in the U.S. New, clean coal technologies, such as integrated gasification-combined cycle, IGCC, are still on the cusp of commercial and technical viability.

Nuclear power is a proven, emissions-free electric generation technology that is available. But nuclear power has its own set of risks:

siting issues, the unresolved issue of spent fuel storage, and an exceptionally long licensing and construction time frame. But any plan for a carbon-constrained future must include the benefits of nuclear power.

I'll conclude by emphasizing that there is no silver-bullet solution when it comes to addressing global climate change. An integrated approach is needed, and should favor efficiency and renewables. But these resources will not be enough. It will take many diverse actions: from increased investment in energy efficiency, in energy-savings technologies, as well as increased investments in renewable energy; distributed energy; zero- and low-carbon emitting conventional generation technologies, including nuclear power; and technologies with carbon capture and storage; to cars that are able to get more miles per gallon than current designs; to planting new forests; decarbonized fuels; new buildings; and appliance standards. All are part of the solution.

PSEG stands ready to work with New Jersey policymakers to develop the infrastructure that enables energy efficiency for our consumers and businesses, that implements renewable supplies for our customers, and ensures a long-term foundation of reliable, efficient, central station power.

Thank you, sir.

SENATOR SMITH: How do you prove the negative? BPU says, if I understand Mr. Miller correctly, that through the use of alternatives, and efficiencies, and reductions, that there is no need for, necessarily, new infrastructure. And I think you said you don't agree with that. And you did it in a nice way. But I think you said, "I disagree with it. We, PSEG, disagree with that position. We don't think that that's being entirely accurate" -- that you do need new facilities, new infrastructure.

How do we, as legislators, figure it out? Because it seems like we're only going to get one chance at this, in terms of global greenhouse emissions.

MR. McCLOSKEY: I understand the question. I don't believe that we're at cross purposes. I think that there are a number of policy options that are available to deal with the leakage issue. And we're in the early discussions on that. But the idea that all electricity sold in New Jersey should be at a certain standard -- certain emission portfolio standards is one way of dealing with that. Energy efficiency -- reducing the amount of electricity that's required in the state is a contribution toward reducing emissions overall, and to the leakage issue. So it's a combination of policy options that can get us there. And, again, I don't believe that we're at cross purposes.

SENATOR SMITH: Thank you.

MR. McCLOSKEY: Thank you.

CHIP GERRITY: Senator Smith, members of the Committee, my name is Chip Gerrity. I am the President of IBEW Local 94, representing 3,500 employees of PSEG. And they work in electric and gas distribution, as well as fossil and nuclear generating stations. And I'm also President of IBEW for New Jersey; that has 23 locals, about 35,000--

And if I could just take a second and just try to address that last piece you had, from a real layman's perspective-- The generation issue that we have right now is, sort of, a perfect storm of trying to move to alternate energy sources at the same time you're trying to supply everybody with electric; which is an issue.

Local 94 supports the positions taken by the company as a right way to reduce the impact of greenhouse gases. You've heard Rick and Don describe the company's plans to put a billion dollars into making Hudson Generating Station and Mercer Generating Station cleaner -- much cleaner than similar plants in Pennsylvania and Ohio. You have heard him describe the company's plans to improve efficiency. And they will have all the benefits to PSEG customers.

Brothers and sisters of Local 94 are the ones who will operate the cleaner generating stations and make the company's energy delivery system more efficient. We all agree that global warming is a real problem and needs to be addressed. But it makes no sense to me to consider a plan that will put people out of work, make the electric distribution system less reliable, and still do nothing for the environment here.

If Hudson and Mercer have to be closed, that would put nearly 300 members of Local 94 out of work. And also tied to that, if -- and we are at a perfect storm, again, in light of the fact this is a consent decree for Hudson and Mercer. So there's a timeline that's in effect right now -- that the company has to weigh whether to keep the plants or put the money into the plants -- keep them open -- or not. And they have all of the knocks, and socks, and baghouses -- all the requirements under the consent decree have to be done starting-- Well, the equipment purchases have to start June 4 of this year, and then proceed on. And if the-- From a business perspective, if it doesn't make sense to do it, then the plants are in jeopardy. If it goes forward, we maintain electric -- especially in the north, the Hudson Station -- and we also have jobs of between 600 and 800 construction workers to do all of the work that's associated with the upgrades for the equipment.

Not having electric power from Hudson and Mercer, where the power is needed in the state, means greater chances for brownouts. And also, to make the problem worse, some of those same people who are asking you to adopt greenhouse gas controls that would shut down Hudson and Mercer are also lobbying to shut down the nuclear stations: Oyster Creek, as well as Salem.

We all agree that renewable energy is a good thing. In fact, many members of New Jersey IBEW work to install solar panels and the like. But I can guarantee you that there aren't enough solar panels around to make up the difference. New Jersey is not going to solve the problem of global warming by itself. But whatever you do, don't try to solve the problem by putting people out of work and turning out the lights.

Thank you very much.

SENATOR SMITH: We appreciate your comments.

MR. McCLOSKEY: Thank you, Mr. Chairman.

SENATOR SMITH: Thank you.

And thanks to that panel.

George Hunt, Alaska Wilderness League.

George, you didn't travel from Alaska, did you?

G E O R G E H U N T: No.

SENATOR SMITH: I was going to say, wow.

MR. HUNT: No, I got an e-mail from that organization. And I'm not really speaking for them. I'm speaking as an individual.

SENATOR SMITH: Okay.

MR. HUNT: Mr. Chairman, Senators, my name is George Hunt. I'm a retired electrical engineer, mostly with RCA and GE. And I'm mainly in Camden, New Jersey.

I call engineers *pragmatic scientists*. Scientists work mostly on abstract theories. And engineers use these theories to make things practical for people to use. I have nothing but the highest regard for scientists.

Decades ago, most scientists were convinced there was something called the greenhouse effect causing global warming. They had a conference-- The UN had a conference on it in Rio De Janeiro in 1992. Scientists who mostly like to stay to themselves had gone to the trouble of telling politicians about it.

More scientists had convinced the world's countries -- 84 percent -- by 1999, when the Kyoto Protocols were written. In 2005, when Kyoto took effect, 95 percent of the world's countries endorsed them. It took the scientists convincing politicians to make that happen. Nearly all, but not all, scientists say global warming is real today; and dramatic measures must be taken now to prevent catastrophes.

But a small number of scientists who are very vocal say there is no global warming. These usually say it is just the normal ice age cycle. If you saw Al Gore's movie, "The Inconvenient Truth," you'd know these few scientists have been debunked. Why do they do that?

My answer is that having *Ph.D.* and a scientific specialty after your name doesn't make a scientist immune from selling his soul to the company store when the CEO tells them to, if they want to keep those five-figure salaries.

There is global warming. It is caused by people polluting the atmosphere. And everyone, including politicians, have to work fast to prevent catastrophes.

Thank you.

SENATOR SMITH: Thank you, sir.

Monica Howell and Terrence Shannon, from Cogentrix Energy.

UNIDENTIFIED SPEAKER FROM AUDIENCE: We're not making-- We're submitting written comments.

SENATOR SMITH: Okay.

Jeff Tittel, Sierra Club.

J E F F T I T T E L: Thank you.

Oh, by the way, I just want to start out-- The reason that Sierra -- California has been leading New Jersey is, there is now 175,000 Sierra Club members over there -- out there, so--

SENATOR SMITH: That makes the difference?

MR. TITTEL: Yes, well there--

SENATOR SMITH: How many Sierra Club members do we have in New Jersey?

MR. TITTEL: Twenty-four thousand, so we better catch up.

SENATOR SMITH: Well, what's wrong with the local Sierra Club people that they haven't been able to increase the memberships?
(laughter)

MR. TITTEL: I know.

But anyway, I just wanted to start out and, you know, thank the Chair for holding the hearings. So often, the State House has been a

source of global warming. And I'm glad that we're getting together to try to fix it. I think that's important.

I don't want to spend a lot of time on the problem, because I think we are all getting more and more familiar. But I just wanted to mention a couple of key points. When we see the cycles of droughts and floods that have affected New Jersey-- This is the seventh major flood we've had in this state since '99. We've seen droughts in between that.

With sea level rise, if that is to occur because of global warming -- which all indications say it is -- most of our water supply south of Trenton will be in jeopardy, either through saltwater intrusion into the aquifers or because of saltwater moving up the Delaware River and impacting water supply intakes. And so it is in our best interest not only for our health and our environment, but for our economy, because you cannot function without water. And they are linked together. Just like when we see changes in our climate -- where we see deer ticks staying out well into January because of the warm weather, and we see Japanese Beetles attacking trees in the middle of March. That is an effect of climate change.

And without basically having a cap -- and that's why I'm really here today to support Barbara Buono's bill. Everything else falls from that. We really have to set the goal, as the Governor did -- and I hope we all wish him well. And I hope her bill will be in front of him the day he comes out of the hospital. That is ambitious, I know, but it's something I would love to see.

SENATOR BUONO: No, it isn't.

MR. TITTEL: But that's something I'd love to see.

Without a cap, I don't think we can get to all the other things we need to do to fix the problem that we have.

Some of the issues that I just wanted to mention are that I think we do need to have green building codes, not just for affordable housing, but everywhere, and State government in particular. I think we need to look at recycling. Recycling is another big waster of energy -- even, potentially, a bottle bill, which -- I can hear people groaning in the back, but, again, it's a great way to reduce greenhouse gases.

One of the things that I think I agree very strongly with is the issue of leakage. Without having an emissions portfolio standard, not only in New Jersey -- but other states have cap legislation as well -- to block dirty power from coming in from the Midwest, not just here but in other states. So I think we really need to have that included.

A trip reduction program is essential. Plus mass transit. We also have to look at hazard planning, because many facilities in development in this state are being forced into low-lying and flood-prone areas, including major intakes for some of our biggest power plants. And so we have to start thinking about what will happen if sea level rises to some of these major facilities that we have constructed; but also the fact that many of our-- I was looking at the list of towns that flooded yesterday, and almost every one of them is designated as a growth area in the State plan. We have to start thinking about hazard planning: either how to build above flood stage or how to move people back from those flood prone areas, which I think is the most prudent way of doing things.

We also have to make sure that, as we go forward, we don't take false choices. There is not a choice between jobs and the environment.

They're interrelated. I would love to see the Mercer plant, as an example, be converted to natural gas, as an example of one way to produce jobs and clean the environment. I would like to make sure that if we do cap-and-trade, that it's not *cap-and-charade*, that it's actual real reductions and real trading that goes on.

I believe that there should be no new coal plants. And one of the bills I know Senator Buono has is to call for a two-year moratorium. New coal in New Jersey will undermine all the work we're doing, because coal produces twice as much greenhouse gas per kilowatt as natural gas, and (indiscernible) more than cleaner sources of power.

I think we have to look overall and holistically; that we have to look at reductions, we have to look at conservation, we have to look at efficiencies, and we have to look at renewable and alternative energies -- low-impact hydro, I think wave hydro, off-shore wind, solar -- as all part of the mix. But we also have to make sure that we're not looking at creating things that will cause other problems.

Ethanol is one of those examples where, in many cases, we may use more energy to create the ethanol than we're going to have -- to get from it. So there is not really the benefit. Or we could be like Brazil and wipe out 5 million acres of rainforests to plant a monoculture. It has its own consequences for global warming. Because destroying that forest actually produced more greenhouse gases than people realized, by wiping out such a large forest.

We also need to look to Europe, which is leading in a lot of ways. Western Europe, for instance, produces half the greenhouse gases we have, but has actually a higher standard of living, especially in northern

Europe and countries of the Netherlands, Sweden, West Germany. So you can have a strong economy and also reduce your greenhouse gases. And I think that's critical.

SENATOR SMITH: Yes, but, Jeff, what would you-- How would you respond to the argument that in western Europe, the major source of the electricity supply is nuclear?

MR. TITTEL: I was talking about West Germany and northern Europe, which do not -- which is not.

SENATOR SMITH: Okay.

MR. TITTEL: In fact, France is a big nuclear country. And there are a lot of problems. I don't want to spend too much time on that. But if you look at western Europe and northern Europe, they are building windmills off the coast, hundreds of them. They are doing-- They have a lot of mass transit. They are doing green buildings. They are doing a broad mix to reduce. They have something called *existing use zoning*, where you don't go sprawling out into farm fields, you actually stay within your growth boundaries.

So there is a lot that we can be doing. But we also have to make sure that, as we do it, we're not making other mistakes. And I think coal is the worst one -- that new coal plants would create so much greenhouse gases that we would never be able to make up for those additional emissions from other sectors. In fact, it would actually hurt other parts of our economy, such as the petrochemical and even pharmaceutical industries. And the pharmaceutical industries in New Jersey are some of the leaders in reducing greenhouse gases, because they see the

money that can be made. And even some big companies like DuPont are looking at taking their waste heat and gases and generating electricity.

So there's plenty of money and jobs to be had through, basically, these new technologies coming forward.

SENATOR SMITH: I'm sorry that Senator Sweeney is not here for this.

SENATOR BUONO: I'm surprised he isn't.

Can I ask a question, Mr.--

MR. TITTEL: Sure.

SENATOR BUONO: --Chair?

You're talking about coal, and obviously you know my position on that. But I'd be interested in hearing your position on coal gasification or sequestration.

MR. TITTEL: Well, carbon sequestration is -- with the tooth fairy, it doesn't exist. And some of the ideas of pumping it down into the aquifer would, I guess, cause seltzer. Because if you take CO₂ and you throw it in the groundwater-- I don't believe the technology is there at any time in the foreseeable future. It may never be there. I think there are better, much more energy-efficient ways of going -- as well as cleaner, renewable ways of going -- that would make a lot more sense.

To us, coal is sort of like heroin: it's cheap, available, and very dangerous. And on top of it, if you look at the million-and-a-half acres of land that have been destroyed through mountaintop mining in Appalachia, it also is--

SENATOR BUONO: Right, strip-mining.

MR. TITTEL: It also adds a lot of problems that way, as well, both to water quality and air quality.

SENATOR BUONO: Senator Smith had mentioned that France -- or maybe it was you that mentioned that France is a big nuclear user. How do they deal with their spent fuel, the nuclear waste?

MR. TITTEL: They have a reprocessing plant. But the problem with reprocessing nuclear waste is that you end up with plutonium. And in a 9/11 world, having high-quality plutonium sitting around in stockpiles, I think, is very dangerous. It's also very expensive. And that's why I think that, even though PSEG has such a glowing endorsement for nuclear power, I think, long-term, when--

SENATOR SMITH: Is there a pun in there?

MR. TITTEL: Yes, of course.

SENATOR BUONO: There always is with Jeff. (laughter)

MR. TITTEL: I think we have to look beyond that. To me, no nukes is good nukes. I think those plants we have in the state are aging. At some point they're going to have to be phased out. And we need to start planning to get beyond them. And I don't know if we're going to have new plants in the state. I think local opposition and other concerns would probably prevent it, as well as-- It's probably the most expensive way in the world to boil water. I think there are a lot of cheaper ways of producing power. You need massive subsidies for nuclear power to really work, plus you need waivers of liability and all kinds of other things.

So I really think that if we look at efficiency, renewables, alternative energies, and conservation measures, we can get there a lot quicker, and a lot cheaper, and a lot safer.

SENATOR BUONO: It's kind of like selling the State's assets, and just kind of -- no effort put into it to reforming or changing our way of living and our sources of energy. It's just, like, out there, and so it's an easy alternative. And I would tend to agree with you.

MR. TITTEL: Right.

SENATOR SMITH: I would respectfully disagree. I don't think any of these things are easy.

SENATOR BUONO: Any of these things are what?

SENATOR SMITH: I don't think any of these things are easy.

MR. TITTEL: No, I don't think-- I agree. I think there's no simple solution. And that's why I think a mix will work better for longer term.

SENATOR SMITH: Right. And, ultimately, when we -- because we are going to, I think, adopt greenhouse gases emission standards statutorily, the public is going to have to be brought into that process. Because some of the things that we're going to require them to do are going to have a pretty big impact on their lives.

MR. TITTEL: Yes. I think we have to, in a way, change the way we think and do things. I don't think it would really impact our quality of life. It probably won't improve it. But you just have to start thinking differently.

And one of the things I was going to mention-- Thirty-six towns in New Jersey have signed on to what we call our Cool Cities program, which are the Kyoto Protocols; plus they, themselves, are coming up with ways of reducing greenhouse gases. That's 36 towns in New Jersey.

We're probably leading in the nation. And that's a program Sierra Club has been doing with the Mayor of Seattle.

I think the public gets it. When you look at the polling, the recent Gallup Poll showed 79 percent of Americans are concerned about global warming and greenhouse gases. When you look at the -- at some of the -- reading more into the polls -- you find that after the war in Iraq, the number two issue that people are mad at those governing the United States -- meaning those in Congress in the last session and the President -- is global warming and energy, after Iraq. So I think the public gets it. They're ahead of us. And that's why it's important for states like New Jersey to be leaders, because we can't trust the *Fossil Fools* in Washington.

SENATOR SMITH: The best, you're absolutely the best.

MR. TITTEL: And we didn't want to save-- You passed the Highlands Act, and we didn't save it as a national seashore either.

SENATOR SMITH: That's true.

Steve Gabel, Gabel Associates.

I want you to change the spelling to L-E, as opposed to E-L.

S T E V E N G A B E L: Talk to my dad about that one. (laughter)

Good afternoon.

Thank you, Mr. Chairman.

My name is Steven Gabel, G-A-B-E-L. I run an energy consulting business up in Highland Park, New Jersey -- Gabel Associates. I'm here today on behalf of a client of mine, the Independent Energy Producers of New Jersey Trade Association. It represents about 80 percent of the generation -- power generation capacity within the State of New Jersey.

I handed out to you, just now, a list of -- a bunch of exhibits. I'm not going to go through all of these. I want to just try and touch on some highlights this afternoon, Senator. And if anyone on the panel needs any help or any further information to follow up, please let me know.

What I wanted to touch on was a few things in highlight. First, two things I wanted to cover by way of background before I get -- kind of jump into the global warming issue and the issue of leakage. By way of background, first, I wanted to touch on reliability issues.

Senator, you had an exchange with the BPU representative a few minutes ago. Reliability issues, I think, have to stay squarely on your screen as you're addressing these issues. We do have issues related to electric power reliability.

Some numbers that I've laid out for you, I think, are pretty sobering. Our demand is growing by about 350 megawatts a year. That's a forecast that's put together by PJM, our regional transmission operator. That's a real number. Just by way of context, it's about 700 or 800 customers -- residential customers equals a megawatt. So that gives you a sense of scope, I hope.

Power plants have been retiring in New Jersey since 2003 -- a little over 1,300 megawatts have retired primarily for economic reasons.

Third -- just again by way of context -- we've talked a lot this afternoon about energy efficiency and renewables filling this gap in demand for electric power. If we're growing 350 megawatts a year-- The BPU's own number of energy efficiency and renewable for 2005 is 83 megawatts. I don't have an '06 number yet; they haven't publicly issued their data yet.

But I think that gives you, I think, Senator, an answer to your

question about how to reconcile these reliability issues with the other policy issues. And that's that reliability is a real issue in this region. PJM has been singing a song for the last few years that New Jersey especially, as well as regions of Delaware and Maryland on the peninsula area, are in great need of additional capacity. And that's something that's being addressed right now. I can spend some time on that.

But both the PJM, as well as the Federal Energy Regulatory Commission and the North American Electric Reliability Council -- which is an organization that has greatly expanded authority after the blackouts of, I guess it was, 2002 and 2003 -- they got greatly expanded authority to look at reliability. All three of those organizations have pointed out reliability problems specific to the State of New Jersey.

SENATOR SMITH: How do you prove the negative? Same question -- because they've-- We're about to have an Energy Master Plan. I think Lance speaks for the BPU, in terms of where their thinking is. And he's-- I think they're saying, unequivocally, that between alternate energy, renewable, and efficiency, and changing the way -- our lifestyles -- that we're covered. We don't need any other infrastructure.

I'm getting from you the same comment I got from -- I think I'm getting from you the same comment I heard from PSEG, which is that that is not realistic.

MR. GABEL: Well, I think the numbers here are dead-on -- and that's that we do have reliability issues. The BPU participates in all those committees at PJM. They're aware of that. I think they're thinking -- and I don't want to speak for them -- but I think their thinking is that this problem -- we're going to find these demand-side management, this energy

efficiency, and these renewable resources in the long-term. Their number is out at 2020. I'm focused here on the short-term. In the next three to five years, those demand and supply curves cross over one another in the region. And that's a real issue.

SENATOR SMITH: Okay.

MR. GABEL: How are we going to answer that issue, I think, is important. And that's where these greenhouse gas questions come in.

The economics of building power plants in New Jersey are not easy. We got this data from DEP. No new plant air permits have been filed at the DEP for the last two years. There are a lot of people talking about locating power plants in New Jersey or the region. There are people who have gone to PJM to get interconnected into the grid for the purpose of building a power plant. But no one has gone to DEP for an air permit. And that, to me, is a real important test -- asking for and then receiving that air permit are key events in the life cycle of developing a power plant. That's not happening in New Jersey right now.

There is a new model that's been put in place by PJM that is supposed to encourage the development of new power plants in the region by paying more for that capacity. That system is just up and running. In fact, over the last few weeks it just hit the ground. And it's kind of a *wait-and-see* as to whether that new entity and that new pricing method is going to provide enough oomph into the market place to allow new power plants to develop.

One of the things that was found -- both in my work with individual developers, as well as the studies that have been done by the RGGI group -- is that RGGI, or greenhouse gas controls in this region of the

country, are going to have a strong impact on the ability of power plant developers to either put a plant up here in New Jersey or put a plant up out in states that are not participating in the RGGI region.

So the issues and the determinations this Committee makes on greenhouse gases will not only affect your environmental imperatives, that are very important, but are going to go a long way to determining whether we get new, needed power supplies in the State of New Jersey. So that's one issue I just want to get up on your screen.

A second issue is a little backgrounder on PJM. PJM is a regional organization. It's an independent organization that runs the power system, the transmission system, from here out as far as Ohio. I've given you a map of that PJM territory so you can get that picture in your head. The thing that's important about it is, PJM runs an hour-by-hour pricing marketplace. This is kind of an economist's dream, if you will, because every hour of every year there is an auction held. And within that auction, PJM is accepting the lowest cost offers to provide power to the region. So if you can imagine thousands of generators putting in bids, and PJM stacking those bids up from the lowest cost to the highest cost, and then accepting the lowest cost bids up to the amount of power that they need in that hour, that's what's happening at PJM every hour of the year.

So this isn't a question, as you see in a lot of legislation that you work with, Senator, of some industry saying, "I'm going to move my factory from here to North Carolina." This isn't what this is about. This is about the real-life power marketplace. The dispatch that occurs in PJM will determine whether a megawatt hour is generated out of a power plant

somewhere in New Jersey, somewhere in Pennsylvania, somewhere in West Virginia, or elsewhere through that dispatch method.

The issue that's important-- And I have-- Page 7, we put a map together that, I think, tells the story the clearest way -- is that the Regional Greenhouse Gas Initiative includes the states up in New England and New York, but only three members of PJM. All the other members of PJM have power plants that compete directly against New Jersey power plants, but will not be participants in the RGGI, the Regional Greenhouse Gas Initiative. So power producers in New Jersey will see that price signal, that you want, in the cap and trade program. But the generators in Pennsylvania, West Virginia, Ohio, elsewhere will not see that price signal. And when you get into that economic dispatch -- that ranking that I talked about -- New Jersey generation could move to a winner, to in-dispatch, to out-of-the-money and unaccepted for purposes of generating power in the region. That does two things: it not only takes the generation and the business opportunity away from generators in New Jersey, but maybe even more important to you, by shifting that generation from New Jersey to, say, generation in Pennsylvania, you've increased your greenhouse gas emissions and haven't achieved the goals of the program.

SENATOR SMITH: Is there-- If you compare New Jersey generation compared to the PJM states, is it-- Are you taking the position that generation in this state has less greenhouse gas emissions than--

MR. GABEL: Absolutely.

SENATOR SMITH: And why is that?

MR. GABEL: Well, it's a combination of reasons. One is that New Jersey's environmental standards, led by things that this Legislature

has done and what DEP have done, are much stronger than those in the other PJM states. So you tend to get power plants with much better emission controls on the back end. There's also different fuel mixes in each of the states. The other states to the west of us have much more coal-fired power and much more older coal-fired power plants operating at this time. So those are the two big drivers.

I've given you a bar chart on Page 8 of the handout that compares the on-average -- and these are averages -- the greenhouse gas emission rates in the PJM states. New Jersey is the lowest. This is data from the EIA, the Energy Information Administration, from 2002.

SENATOR BUONO: Can I ask a question on that, Chairman?

SENATOR SMITH: Sure.

SENATOR BUONO: What's your position-- Do you have a position on an emissions portfolio to address that?

MR. GABEL: There's-- What I wanted to get to was, first and foremost, I think before we implement a greenhouse gas cap and trade program, a RGGI for the State of New Jersey, we have to deal with leakage head on. The emissions portfolio standard that you've asked me about is one of, I think, six actions that are being evaluated right now. There's a subcommittee of the Regional Greenhouse Gas group that's looking at these options. That's one of several. I think that one has some potential. I'd rather kind of play out that process, if you will, to determine which one is going to be the most effective controller of leakage. But that's certainly an important one. I don't want to discount it in any way.

So, first and foremost, I talked about leakage as being a real problem because of the dynamics of the Greenhouse Gas group. The New

England states and New York being major members of that group -- they are not in our power pool. They all play under the same market rules. They are all in the Greenhouse Gas Initiative. So they don't have the same incentive and the same problem that New Jersey has, in terms of dealing with leakage.

There is an element of that group that wants to just study this problem and maybe deal with it down the road. And I think New Jersey has to be strong in that RGGI debate to make sure that leakage is dealt with clearly and effectively at the front end, before implementation. And that's my first point.

The other issues that I wanted to touch on briefly are, first, that we need to--

SENATOR SMITH: Hold on one second, Steve.

Go ahead, Senator Sweeney.

SENATOR SWEENEY: I'm walking into the meeting-- And my philosophy has always been, until you build new plants, you're never going to take the old ones down. But what-- Maybe this question has been asked. What will be the impact to the energy cost to the people of New Jersey by us adopting a new standard while everyone else is doing their thing?

MR. GABEL: Well, I think I'm going to dodge your question by not answering it directly. And that's that-- Being able to pin a number on that depends on a lot of the details that this Committee and the Legislature are going to decide. There are ways to make the program flexible, such that the rate impacts can be mitigated. There are ways to make this program very strict and rigid, and that will impose significant

costs in the tens and hundreds of millions of dollars, in the electric sector alone, on ratepayers.

So I think the answer to that question really depends on the outlines that this Committee lays out.

SENATOR SWEENEY: Well, I guess if the Committee-- And I'm going to talk about coal for a second, because I heard about coal earlier. If we shut all the coal plants down in New Jersey, what does that do?

MR. GABEL: Well, I think that all by itself, in the absence of anything else, it's got to raise costs; because you go right up that dispatch ladder that I talked about. My view is that, with respect to coal or any other technologies, once you have an effective cap in place-- If I say you can only emit X units of greenhouse gas in New Jersey, all the market participants, all the generators -- if that's effective -- and right now, because of leakage, it may not be effective -- but if it's a true cap, you let all the participants play underneath that cap. And you, as a Legislature, don't have to pick and choose between different technologies. The marketplace will make that decision for you. And you can feel comfortable that you've done your job, you've put a cap in place, and greenhouse gas emissions are contained.

SENATOR SWEENEY: And there are technologies that can further clean or burn than there is now? Are there technologies out there now? I mean, I believe in a diverse energy plan. And I'm not promoting or pushing one or the other. But to say we're going to shut this one down, or not do this one or that one-- Are there technologies out there that could make coal burn cleaner?

MR. GABEL: There are technologies, either in commercial operation right now and others being developed, both of which significantly reduce emissions, both CO₂ as well as other emissions, pollutants, that are in place.

SENATOR SWEENEY: Okay. Thank you.

I'm sorry, Senator.

SENATOR SMITH: Steve, if I could ask you to focus and finish.

MR. GABEL: Two other issues quickly: One is, I wanted to try and highlight the issue of offsets. Everyone talks about putting economic development in line with greenhouse gas controls. The linchpin to making sure the controls that you put in place help grow the economy is something called *offsets*. That is, if generators -- power generators -- can go out and get the reductions that we all want to see in greenhouse gas emissions by going to other nonregulated sectors of the economy -- and that could be landfills, that could be commercial and industrial boilers, or other users of -- high users of energy, or even residential that use energy -- and pay them for their reductions, that's where you're going to get a real economic driver; that's where you're going to get a lot of innovation, by using that marketplace to grow these reductions throughout the economy.

The RGGI program is very limiting in this regard. It only allows a 3 percent option. You can only get -- meet 3 percent of your obligations through offsets. And that's a very limiting part of the program.

The third area that I want to highlight, that we're kind of at odds with the DEP right now, is on the promotion of cogeneration. We think cogeneration is very important, in terms of both reducing greenhouse

gases, and supporting industrial growth in New Jersey and keeping companies here. The greenhouse gas draft-model rule that the Department is looking at does not do anything to ensure that cogeneration continues to be vibrant and continues to be not hurt--

SENATOR SMITH: When you say *Department*, do you mean BPU?

MR. GABEL: DEP, I'm sorry.

SENATOR SMITH: DEP.

MR. GABEL: --that would allow cogeneration to not be hurt by this rule; but, instead, to be fostered and encouraged by this rule.

There's plenty more to talk about. And I think that's some highlight points.

SENATOR SMITH: Steve.

SENATOR SWEENEY: On the offset-- And I apologize for jumping in and out. But on the offset, why would we limit it to 3 percent? What's the basis to put the limit at 3 percent?

MR. GABEL: I'm going to give you their answer, and it's not necessarily the answer that I'm accepting.

SENATOR SWEENEY: Okay.

MR. GABEL: But their answer is that they have a lot of concerns about the monitoring and the accounting of these offsets. If I go to you and say, "I'm going to help you put a new boiler in at your factory--" They're worried about measuring the greenhouse gas reductions, and assuring that you would not have otherwise done that in the absence of my payment.

SENATOR SWEENEY: So it's a trust factor.

MR. GABEL: Correct.

SENATOR SWEENEY: And let me ask you one other quick question: How much do you think you could offset? How much could that percentage get up to, do you think?

MR. GABEL: Well, I think that if you look at what the electric power sector has done -- because they live and breath this every day. A person running a power plant worries every day about something called *heat rate*, making sure the amount of -- they minimize the amount of fuel going in relative to the amount of power going out. Because the better they can convert the fuel in, into electricity out, the better their bottom line is. So they live and breath that every day, more than any other sector of the economy.

So they've already done a lot of the efficiencies that you are trying to make happen here. I think if you turn that fire power, in the power industry -- in terms of financial capability -- into the other sectors-- I don't want to say 100 percent, because I haven't studied that. But certainly, if you look in the residential sector, the small business sector, the agricultural sector, they can all use that help and that incentive that the power industry would drive into those industries by virtue of a viable offset program.

SENATOR SMITH: Thanks, Steve.

MR. GABEL: Thank you.

SENATOR SMITH: We appreciate the testimony.

Our next witness is Suzanne Leta, Environment New Jersey.

S U Z A N N E L E T A L I O U: I'll just provide you with some information.

You know, I'm a big dork, so I give you lots of paper with my testimony.

SENATOR SMITH: And if I can -- especially if it's extensive testimony -- let me ask that you focus.

MS. LETA LIU: Absolutely.

SENATOR SMITH: All right?

MS. LETA LIU: Yes.

And I also want to just give all of you this report. I only brought three copies with me, but it's enough for the Senators.

And if you haven't seen our blueprint-- I'm sorry, if you haven't seen the Blueprint For Action report, specifically about global warming, please let me know.

So I guess what I-- More important than anything else, I think it's important-- I think I want to stress what this -- why this conversation about leakage is happening right now. So the priority for -- I think all of you, to just get a clear understanding of -- is that the Department of Environmental Protection, in consultation with the Board of Public Utilities and the Governor's Office, right now, is developing the State rule for the Regional Greenhouse Gas Initiative Program. That rule will address ways to make sure the Regional Greenhouse Gas Initiative Program benefits consumers. And I can-- I'm happy to answer questions about how -- that we can achieve that.

But that process is happening, right now, at the administrative level. And it is happening this year, and will include public hearings. But it is very separate from the discussion, I think, that is really before the Legislature right now, which is the multiple bills that the Senator has

introduced -- actually all of you have introduced -- that get at specific strategies to reduce emissions; and then the broader comprehensive bill, which, again -- as I think -- really should be the priority, which is the Global Warming Response Act. And both-- Clearly, it's Senator Buono's bill, but it's great to have Senator Sweeney as a co-sponsor of that bill, as well.

So just to make that clear, the process that's happening with RGGI right now is a separate process entirely than the legislative one. And it's important to know that those details are being worked out, but through the administrative rule-making procedure, both when it comes to addressing power plants from out of state-- And I can assure you that the DEP and the BPU -- they actually just issued a report about different ways to deal with this. We are working with them very closely to address that problem. And that includes possibly an emissions portfolio standard. But it could also include, which may work better-- It could also include a requirement that the Regional Greenhouse Gas Initiative Program, instead of being on specific power plants, is instead on the utilities. And because the utilities take electricity from both in-state and out of state to distribute to New Jersey consumers, if you put the onus on the utilities, then you actually get out the out-of-state electricity companies and require them to meet our clean standards.

SENATOR BUONO: So it puts dirty energy and clean energy on par, basically?

MS. LETA LIU: It requires any importer of electricity -- which for the most part is dirty plants from Pennsylvania -- it would require any importer to meet New Jersey's standards.

And then, on top of that--

SENATOR SWEENEY: Senator Smith.

MS. LETA LIU: Oh, I'm sorry.

SENATOR SWEENEY: I'm sorry.

SENATOR SMITH: Well, I don't--

SENATOR SWEENEY: I wouldn't have done it, but I've got to jump in there.

SENATOR SMITH: But are we-- Are we introducing -- or are we interrupting Senator Buono's question?

SENATOR BUONO: No, I'd be happy for Senator Sweeney to--

SENATOR SWEENEY: No, no, no, finish.

SENATOR BUONO: No, no.

SENATOR SWEENEY: She started going with something.

Only for one reason -- I brought up the same issue on how-- The problem is out-of-state power right now. That is our biggest problem -- is out-of-state power. And I was told we can't do much with out-of-state power. We can't regulate.

I said, "Can't we pass laws that-- Like Ohio -- in order for us to purchase their power, they would have to meet our standards?" And I was told we can't do that, through interstate commerce.

MS. LETA LIU: That is not accurate. Based on the research that we've done-- One of the groups that we've worked with very closely is the Regulatory Assistance Project. They're a team of experts. And actually, not just with them, but with Board of Public Utilities staff and DEP staff. Yes, we have the authority to -- through-- Whether as an emissions portfolio standard or, again, through just putting that Regional Greenhouse

Gas Initiative Program on the utilities, instead of the individual power plants, we have the ability to address that. Absolutely.

SENATOR SWEENEY: Only for one reason, Senator Smith. I wanted to do a piece of legislation basically spelling that out. And I was told we couldn't.

SENATOR SMITH: By OLS?

SENATOR SWEENEY: Yes. So I'd like--

SENATOR SMITH: Why don't you get your people--

SENATOR SWEENEY: Can you--

SENATOR SMITH: --whoever the experts are, to send to Senator Sweeney and the rest of the Committee members your source of authority.

SENATOR SWEENEY: Could you?

MS. LETA LIU: Yes.

SENATOR SWEENEY: Thank you.

MS. LETA LIU: Yes.

SENATOR SWEENEY: I'd appreciate that, because our problem is, everything is coming from out of state into the state, and we're buying that power.

MS. LETA LIU: Right.

SENATOR SWEENEY: That's the biggest problem.

MS. LETA LIU: Yes.

SENATOR SWEENEY: One of the biggest.

Thank you.

MS. LETA LIU: Right.

SENATOR SMITH: Would you respond to Senator Buono's question?

MS. LETA LIOU: I'm sorry, could you repeat the question?

SENATOR BUONO: I forget what it was now.

SENATOR SWEENEY: I thought she was finished with it.

SENATOR SMITH: Did she, or is there more?

SENATOR BUONO: No, this is a good discussion. This is fine.

Thank you, Senator.

SENATOR SMITH: Okay.

Listen, you passed out *Powering New Jersey's Future*, which is prepared by Environment New Jersey. And it says, "It's a clean energy strategy for replacing the Oyster Creek and Salem nuclear plants." Do you know if, in the BPU's proposed master plan, that is an element of the master plan?

MS. LETA LIOU: You know, it's interesting. Right now, we're very much involved with the Energy Master Plan process. And, right now, the State has a draft set of computer modeling assumptions that they're using to develop this plan.

SENATOR SMITH: Right.

MS. LETA LIOU: Right now, there are some of the draft assumptions that we think are great, that we absolutely agree with. And there are others that we don't. And, again, keep in mind they are only a draft. And all of the agencies have been telling us they're very welcome to suggestions and alternatives.

SENATOR SMITH: All right, back to the question.

MS. LETA LIOU: But back to the question: It requires-- It includes an RPS. It includes different--

SENATOR SMITH: RPS, meaning?

MS. LETA LIOU: I'm sorry, renewable energy -- renewable portfolio standard.

SENATOR SMITH: I know that. But the question is: In the Energy Master Plan that the BPU is currently working on, are they considering, in that, replacing the nuclear power plants with non-nuclear alternatives?

MS. LETA LIOU: Right now, the draft assumptions assume license extensions.

SENATOR SMITH: That they stay in place.

MS. LETA LIOU: And that's all. But those are, then, draft assumptions.

SENATOR SMITH: But you have to remember, if you were listening to the debate all day today-- The debate, as I see it, is that BPU says -- by using alternative energies, non-nuclear, efficiency, reductions, changing lifestyles -- we can meet the global -- we can do our share on the energy side in meeting the global greenhouse gas emission standards.

MS. LETA LIOU: Right.

SENATOR SMITH: We then have both Public Service and Mr. Gabel saying it's not realistic.

And the position that your group is taking is, "We want to go beyond what BPU is saying they could even match, by taking out the two nuclear."

MS. LETA LIOU: I don't think--

SENATOR SMITH: And the question is: What's the truth? What really works for New Jersey in the future? I mean, we're really getting a broad spectrum of what people think the future is like.

MS. LETA LIU: Right.

SENATOR SMITH: And you're talking about radically different positions. Somebody has got to be able to prove to us the negative, that we're not going to make a decision that's really going to do a number on our people, on our citizens.

MS. LETA LIU: I think there's two ways to respond to that. The first is that the BPU is very much still formulating all of their assumptions, whether it's about the nukes, whether it's about our potential for efficiency and renewables. What we propose in this particular plan is an assumption that the current plant -- current nuclear plants -- and it's just Oyster Creek, Salem I and II, because that's the 2020 timeline of the master plan. We assume the phase out; so closure at the end of their current operating licenses. We don't say closure right now, because we just don't think that's actually feasible for the State.

And so we propose an alternative that allows the State to achieve not only the ability to close those plants on schedule, but the ability to meet our greenhouse gas reduction targets, which are just as critical, if not more, in terms of urgency. So that's--

SENATOR SMITH: Well, you have a better argument with the location of the nuclear power plants. In the event of global warming, it would seem to me that they're going to be submerged nuclear power plants--

MS. LETA LIU: That's possible.

SENATOR SMITH: --which is another issue.

In any case, I interrupted you. Why don't you-- And I'm causing a lack of focus.

If you would focus. (laughter)

MS. LETA LIU: Absolutely. I was just going to say that's the plan that we have developed.

At the same time, the way to move forward for our state is really to maximize all of our potential for efficiency, and maximize all of our potential for renewables. And that's what's key. And that's what's key not only in terms of the implementation of this legislation, but in terms of our State's energy -- our State's energy future. They go hand-in-hand.

I wanted to highlight two other things, and then I'll wrap up, if that's okay.

SENATOR SMITH: Go ahead.

MS. LETA LIU: The first is that when it comes to growing our economy, there's incredible, good -- very good evidence that these solutions will grow the State's economy. And that's clearly the mission of -- now very injured -- our Governor. And I hope he recovers quickly, because I'd like him to sign this bill. But that's clearly what he's -- I think is what's driving him to push this forward.

And there have been studies done in California about economic growth. I can show you the numbers. It's in the testimony. We want to do the same thing for New Jersey. But I firmly believe that we need to stay ahead of the curve when it comes to the solutions. And then we get the economic growth benefits of doing that. And this bill puts us, again, on the forefront, just like what California is doing.

And then those solutions save consumers money. So just for example, if we were to establish a cap-and-trade program for power plants-- If you take the money from those emissions allowances and you reinvest it in energy efficiency -- which is really what should happen, because consumers should get those benefits -- you actually save consumers money. They did studies just for the Regional Greenhouse Gas Initiative Program that showed that consumers would save \$100 a year, than if that didn't happen. So we do believe that there are strong consumer benefits and economic growth benefits to these solutions.

And the reason why this particular bill -- Senator Buono's bill -- is broad, is because it allows for the State to have the flexibility that they need to really do what's cost-effective, to do what's going to grow the economy, and to tackle the sources that are easiest to get at first and easiest to deal with first.

SENATOR SMITH: Thank you.

Sara Bluhm, from NJBIA.

Sara.

S A R A B L U H M: Thank you, Mr. Chairman.

My name is Sara Bluhm. And on behalf of the almost 24,000 members of the Business and Industry Association, I'd like to give you the story of this state's largest ratepayer, which is the business community. We use over 64 percent of the electricity in the state. And we also happen to be large purchasers of natural gas, as well. And as a result, we do have a direct impact on many of these policies.

We've been involved in the Regional Greenhouse Gas Initiative for over the past three years because of the leakage issue, but also because

of other issues too: our business competitiveness and our industrial rates. Currently, New Jersey has the fourth highest in the nation for industrial electric rates. When you're looking at our competitor states, that adds into the cost of doing business. And so, as we're looking at adding on carbon pricing to our electricity, we look at how much cheaper does Pennsylvania become, not just for electricity, but also for the cost of doing business.

If you look at the past five years, we've added more State employees than we have private sector employees. That's something that we look at, in terms of the cost of doing business. We understand that climate change policy is coming, but we want to make sure the economic as well as the environmental is considered. And I think if you look at some of the policies that the State's been doing lately, that hasn't necessarily happened.

One of the things that we've been working on in the Governor's Energy Master Plan is a way to focus more of the attention on the commercial and industrial sector. If you look at the State's Clean Energy Fund, I would say that, again, it's primarily funded by the commercial and industrial ratepayer. Because we are the largest consumer, we pay the most money into the Fund. However, we're not getting the return on our investment into that Fund.

If you look at how the Fund has been allocated, the majority of the energy efficiency funds go to the residential sector. And energy efficiency is no different than any other economy of scale. You're going to achieve a bigger bang for your buck if you're putting it into a larger facility.

The Clean Energy Program, last year, budgeted over \$79 million for residential energy efficiency programs, while only \$39 million

was budgeted for commercial and industrial programming. And if you look at the Clean Energy Program report that was submitted to the Board earlier this month, it illustrates my point further by showing that carbon emissions are reduced when supporting electric efficiency measures. And in the commercial and industrial sector, we had almost 68,000 metric tons reduced, yet the residential sector was only 19,000 metric tons, yet you're spending two-to-one more on residential.

SENATOR SMITH: Right. Have you talked to BPU to say--

MS. BLUHM: All the time.

SENATOR SMITH: --"You're spending your money badly"?

MS. BLUHM: All the time. I keep telling them solar panels are better on warehouses than they are on houses.

SENATOR SMITH: Okay.

MS. BLUHM: But I'm just showing that as a way that the State is going with that policy decision.

SENATOR SMITH: We do it all the time. (laughter)

MS. BLUHM: And it's one of the reasons why we're concerned.

Another issue that's come up has been the co-gen facilities. And as we've been going forward with both the Regional Greenhouse Gas Initiative, as well as the Energy Master Plan, as well as the Governor's executive order, it's been coming back to the fact that we need distributed generation, and we need co-gen onsite in industrial sectors. Yet we had an elimination of a sales tax exemption for co-gen facilities that purchased natural gas, ending in 1997. Since then, we haven't really had any large-scale development of co-gen on industrial sites. We've recently seen what

happened to Marcal when they lost their co-gen. They aren't a unique situation. Other companies have been facing increased industrial prices as well. And if we're looking to make co-gen the savior to the industrial sector, we have to look at policies that are going to benefit them and also make it easy for DEP permitting there.

I know Senator Sweeney had legislation in last year -- which we appreciated -- that gave TEFA exemptions to manufacturing facilities in UEZ zones and in Salem County. We'd love to see that. It would give an additional savings to our commercial and industrial sector that needs it. However, we also have backlogs on our combined heat and power program. Applications that were submitted last April are just now being considered for rebates and incentives from the Board of Public Utilities. Last January, the Board authorized \$6 million in energy audit funds that have not yet been allocated to the commercial and industrial sector. Again, it's another example of the State missing out on an opportunity to have savings and to help out its business community.

In terms of demand response programs, New Jersey has the least participants within the PJM pool of companies that are participating in demand response so that, on those peak days, we have people who are volunteering to come offline. Yet we've spent several million dollars to try and get people to buy clean power. To me, it seems like it would make a lot more sense if we were asking people to reduce what they're using as opposed to purchasing clean power.

SENATOR SMITH: Why do you think that that's true, that we have the fewest number of industries participating?

MS. BLUHM: We haven't marketed it, and we haven't made any attempts to make regulations easier so that people can come offline.

SENATOR SMITH: Okay.

MS. BLUHM: Another area that we're concerned about, again, is the reliability. We've seen the devastation from the blackout from a few years ago, as well as down the shore -- the impacts of blackouts. I just had a member, the other day, in Jersey City who got hit by a blackout. And it cost him \$10,000 an hour to be down, in addition to equipment maintenance, because of the loss of power. These are real economic issues for us.

And as has been said by other speakers, we're facing the reliability of not having power, more than we're facing sea level rise, within the next few years. And, for us, that's a huge concern. It's one of the reasons why we do support further development of nuclear power, as well as other sources of power. Because we recognize we need fuel diversity. But we need baseload power to keep the economy going.

In terms of the transportation sector, that's obviously a major component of our business community as well. I know that BIA served on the Congestion Busters Task Force several years ago. One of our greatest achievements was changing the interchange at 8A so that traffic could flow better and we wouldn't have backups of emissions, but you could still get the trucks in and out.

SENATOR SMITH: Mayor Pucci would claim he was part of that too.

MS. BLUHM: Yes, well-- (laughter)

Again, it's looking at the different ways that we can improve our transportation network. And we've done quite a bit to regulate stationary sources. And I think that it's been viewed that we have deep pockets for adding on filters, and scrubbers, and things like that.

But also looking at what we went through with the diesel retrofit-- You know, some of those cost \$8,000 for filters. And it impacted in-state companies only. And looking at how these policies, going forward -- what are we going to be doing that are impacting in-state companies only? And, again, trying to keep that business mix so that we aren't encouraging Governor Rendell to open the "Come on Over," sign.

So we're doing quite a bit on the industrial-sector portion. Some of that is because we have lost jobs, and we have lost some of our industry. But in terms of what our stationary sources have done, we have reduced our air particulates, we've reduced our fuel carbon dioxide emissions. And industry has actually been a leader in this. But at the same time, it comes with an economic price tag. And, going forward, we just want to make sure that is a part of this, as well -- and that we can continue to build on our industrial sector here.

So thank you.

SENATOR SMITH: Do us a favor.

MS. BLUHM: Sure. I've got some of this in writing.

SENATOR SMITH: Well, I'd appreciate a separate communication on the demand-side incentives. That's very interesting.

MS. BLUHM: Sure.

SENATOR SMITH: I'd like to know what BIA thinks would help encourage your industries to do that.

MS. BLUHM: Not a problem.

SENATOR SMITH: And if you think the problem is we're not marketing it, put that in there, as well.

MS. BLUHM: Well, we aren't marketing it, but we also aren't making that metering available for free. And currently the commercial and industrial rate class that is subject to hourly pricing-- If they don't shop for a third-party supplier, they're taxed. And we have money available out there. Part of it has just been lack of Board order for that direction.

SENATOR SMITH: Send me a note, all right? (affirmative response)

Mike PISAURO, NJEL.

And let me ask all of our three -- four remaining speakers to be focused. It is late. And we are going to do this again. Global warming isn't going away.

M I C H A E L L. P I S A U R O JR., ESQ.: We're not going to solve it today, Senator?

SENATOR SMITH: For sure.

MR. PISAURO: Thank you, Senator.

And thank you, sponsors to this bill. It's probably one of the greatest things that generations are going to be tackling.

You asked for things that we could do to address it: more fuel-efficient vehicles. The U.S. Supreme Court pushed us a little bit closer to doing that here in New Jersey and making that effective. I think Vermont, of course -- who are going to get us the rest of the way to make sure our clean cars stay in place.

State policies encourage the use of renewable energy, both residential and industrial. One of the things that I am seeing and I'm involved in-- The municipal land-use code actually does not create an incentive, at least for wind resource use. We have had, for years, in the municipal land-use law a requirement that towns, in their planning and zoning, promote renewable energy. But there is nothing in place. In fact, towns have, maybe not intentionally, created a disincentive to people, where there is adequate wind resources, to install a windmill. Because you have to go through a variance. That is a very costly, very time-consuming process, which has no definitive outcome. You could go before a planning board and lose your variance because of your neighbors. But yet, those are the very same neighbors who are going to be affected by global warming. We need to address that.

The BPU has great incentives for renewable energy, but I'm not going to go get the rebate if I can't get it up, and I have to spend thousands of dollars on the lawyer and the planner, and go through a board.

State purchases of Energy Star equipment, use of compact fluorescent light bulbs and LED lightbulbs-- LED lightbulbs are about four or five years away from commercial viability. They will be, I think, five times more efficient than compact fluorescent, and last maybe up to a hundred years -- one lightbulb ever.

I heard something very disturbing the other day. And it was more of a, at this point, rumor. So I can't confirm it. But State employees who have vehicles are not encouraged to minimize their vehicle usage, they're actually encouraged. Instead of a group of people getting in their car to go to a meeting, they're each taking separate cars in order to maintain

their right to have a car. That's incredibly wasteful, both in taxpayer dollars and carbon emissions. If that is accurate, that is something the State needs to stomp its foot down--

And I was going to say, Senator, you missed, in your list -- but Jeff hit it -- your recycling bills, e-waste and plastic. It is much more energy efficient to recycle material than it is to create it from virgin material.

Open space preservation, the Garden State Preservation Trust Fund, is another one of the building blocks of a solution.

SENATOR SMITH: Save a tree.

MR. PISAURO: Not only save a tree, but stop sprawl.

SENATOR SMITH: Yes.

MR. PISAURO: Encourage research into energy and other technologies. I think it's Hopewell or Pennington that has one of the leading companies in wave technology, that is high tech, high paying, and puts us in the leadership -- the Einstein Alley. If we can encourage more of that, we will be bringing high-paying jobs into this state.

Encourage telecommuting. I spent this morning working from home. There was almost nothing I could not do from home that I was able to do in my office, and I saved commuting time. And after yesterday's commute home of two hours for 12 miles, I was more than glad to do that.

We also need to change people's perceptions. I read a statistic that 97 percent of the carbon emissions from the auto industry is actually from the use of the car, not from the creation of the cars. Eighty-five percent of the emissions from the petroleum industry is from the use of petroleum products. How many times do you get into the car to run for a trip, get back home, and go, "Oh, I forgot something. I need to go out and

get it again.” Making things more convenient; but also putting in people’s minds the impacts they’re having.

We’ve heard a lot about the costs of doing global greenhouse gas on industry. And I think you heard earlier from Rutgers, the implication of what the costs are of not doing something now are going to far outweigh doing something. Tourism is the number two or three industry in this state. Most of that is on the shore. It won’t be there by the end of this century.

Also, we have learned, time and time again -- as Jeff has indicated -- it’s a false-choice, business versus environment. The Chairman and CEO of Alcoa has said, “I am convinced that we can build a global plan of action on climate change in ways that create more economic opportunities than risks.” DuPont reduced, by three-quarters, their emission levels to 1990, and avoided three billion in energy costs. And BP cut its emissions by 10 percent and saved \$650 million over three years. So by reducing your emissions, you’re not costing money, you are saving money.

Lastly, the insurance industry-- They are viewing this, and have viewed this for several years, as a serious impact on their business. Seven storms in the last couple of years. How many dollars have we lost in productivity and economic development? But how much is the insurance industry going to lose for having to cover this? And it’s only going to get worse. It’s not going to get better.

So I would again like to thank -- the opportunity to present some ideas, to hear testimony. And I want to thank every one of the sponsors for promoting this, because this is what we need to do to make

sure that New Jersey continues to be the state that we've all learned and (indiscernible) to have.

Thank you.

SENATOR SMITH: Thank you, Mike.

Joanna Wolaver, New Jersey Audubon.

Joanna.

J O A N N A L. W O L A V E R: Hi there.

Thank you for the opportunity to speak.

And thank you for tackling this issue that is so important to New Jersey's future.

I'd just like to quickly add to the Professor from Rutgers' comments about how global warming will impact New Jersey's environment, just real briefly.

Rising temperatures due to global warming is a direct and major threat to New Jersey's plant and wildlife communities. It places additional stressors on already stressed communities due to habitat loss and fragmentation in our state. As a result, we can expect to see the loss of 37 bird species, including some that are the most popular for wildlife watching in the state. We can also see the death of trout populations, much to the unhappiness of many of our fishermen in this state.

Increased temperatures will also lead to the loss of critical habitat for amphibians and reptiles, as vernal pools, wetlands, and streams dry out. We also, as Jeff mentioned, will see the rise in pests, such as mosquitoes and ticks. And, also, we're already seeing an increase in the number of southern pine beetles, which are attacking the forest and the Pine Barrens.

So these changes due to global warming not only directly harm wildlife species but also our quality of life and our economy. I think it's 2.5 million people that enjoy fishing, hunting, and wildlife watching in the state. It's a \$3.9 billion industry each year.

The good news is that we do have the tools available to limit the worst impacts of global warming, as we've talked about today. And at the same time, we'll be able to grow our economy. So the tools are a combination of policies that the State can encourage, including the smart use of existing energy sources; reducing greenhouse gas emissions through the legislation that Senator Buono has sponsored; and also developing renewable energy sources, as well as conserving energy at businesses, homes, and in our cars.

So I thank you very much for tackling this issue and for working through this issue, through the suite of bills that you discussed at the beginning.

Thank you very much.

SENATOR SMITH: Thank you.

Jim Benton and John Maxwell, New Jersey Petroleum Council.

J O H N A. M A X W E L L: Yes.

SENATOR SMITH: What's that?

MR. MAXWELL: I will be very, very focused. And I will be as quick as I can.

SENATOR SMITH: Brevity is the soul of wit.

MR. MAXWELL: Okay. I think you're doing a great job.

Thank you.

SENATOR SMITH: A little more than that.

MR. MAXWELL: Pardon me?

SENATOR SMITH: A little more.

MR. MAXWELL: Okay.

I saw a press release yesterday from ConocoPhillips, and they said they are currently joining -- and they're a member of ours--

I'm John Maxwell, the Associate Director of the New Jersey Petroleum Council.

They are joining in the U.S. Climate Action Partnership. It's quite a thing. The times are changing, even for my industry.

So a couple of high points here I'd like to just mention-- And also, in a conference call just before I came over here, ConPhil said that they are just signing at -- they've inked a deal down somewhere in Texas to produce biofuels. So we get it.

API gets it, the member companies get it. We're looking at carbon sequestration a little bit. And we're doing that. We're injecting CO₂ into the ground to try to pull up more oil to make old oil wells more profitable, to extend their lives, and increase our energy efficiency, and stuff. And you probably know a lot of that, because you folks have read and studied these issues.

In any event, I'd like to say that we encourage this Committee to keep an ongoing, active dialogue with the regulated community and to encourage the public to participate in the debate.

We support voluntary, technology-based approaches. We believe that all stakeholders should remain open-minded. And we think that you're on the right track.

We do have some comments to amend Senate 2114, which we will submit here shortly.

Just a couple other highlights from my industry-- And you'll see my written comments written out. And there's no reason -- because you've been here a long time.

Our members are researching, developing, and in some cases marketing new energy fuels. Our companies want to be the energy providers of the future. Surely, 150 years from now people will look back and say, "You did what with gasoline? You burned it?" But that's not today. And the technology is evolving. And our folks have been, in some cases, on fuel cells since the 1940s. That's true up in Clinton, at the Exxon facility up there. So they're trying to get -- to market the first with the best. And that's what we're all about.

And we encourage this Committee to keep the (indiscernible).

So thank you very much.

SENATOR SMITH: Thank you, sir.

Dave Pringle, New Jersey Environmental Federation. Our last speaker.

DAVID PRINGLE: So I'm responsible for holding everybody up?

SENATOR SMITH: One more?

I'm sorry, there's one more; Bill Wolfe after this.

MR. PRINGLE: Oh, good. All right.

Dave Pringle. I'm the Campaign Director for the New Jersey Environmental Federation.

I'd like to thank very much the Chair, and the Committee, and Senator Buono for their leadership in this issue.

We really couldn't have a better day for this, because the last two days of the *Star-Ledger* says it all: "Nor'easter swamps New Jersey," front page of Monday's paper; "Storm delivers a deadly punch," -- you're district Senator, which I know you know all too well, "Route 18 is submerged."

SENATOR SMITH: I was almost late trying to get through.

MR. PRINGLE: "Super-soaking storm," today's *Star-Ledger*, the lead story on Page 2, the New Jersey section and Union section -- Union County section -- my area. I live in Cranford. My house is on the Rahway River, and we got flooded as well. I'm not moving. I love it. But it highlights the problem.

Page 2 of today's *Star-Ledger* emphasizes the U.N. report released last week: 67-page technical summary giving the most detailed look yet at the impact of climate change on North America for the coming centuries. This is an over-1,000-scientists consensus document.

One of their conclusions: By the end of the century, what used to be a once-a-century flood for cities like New York will occur every three to four years. So what we just faced, we will face every three or four years -- worse than that, because this wasn't a once-in-a-century flood. That's what is at stake here.

We talk about leadership. It's all well and good to say the feds should do this, or India or China should do this. But like it or not, somebody has to lead. India and China will not step up to the plate until this country does. This country, especially under its existing leadership and even this Congress -- even though it's better than the last Congress -- will not step up to the plate if the states don't lead. And if you look at the

history of environmental policy, environmental change in this country, our country doesn't move until states like California and New Jersey move.

California has moved. And thanks to Senator Buono and this Committee, we're beginning to move in this State. And we can't move fast enough. Every day we wait makes -- puts more of our economy and the environment further at risk. And it's that much harder to get the job done.

I'm going to try to limit the rest of my comments to stuff that hasn't been said yet today, or to really just reemphasize a couple of key points.

One: Carbon sequestration is a theory. It doesn't work. If you are banking on it, you are foolish. Should we look into it? Absolutely. But to say we can continue burning coal the way we are, and we can continue putting more coal plants in South Jersey, and eastern Pennsylvania, and West Virginia is more than foolhardy -- it's killing people every day we continue to rely on coal.

The Senator's bill, and the other types of efforts, fortunately-- Because by burning fossil fuels, not only is that a global warming problem, but it's a public health problem. So the solutions for global warming are a twofer, because we will have major public health benefits, major improvement to the economy because of health-care costs, avoided lost work days, avoided lost school days, etc., by addressing this problem.

The emissions portfolio standard is an absolute must. Yes, out-of-state power is a problem, but we can and should move forward within a--

I'm glad Cathy is still here, because I know Senator Sweeney is concerned about whether we have the legal authority. We have the legal authority. I don't understand what OLS's position is, because we have the

authority, as it exists today. The energy dereg bill, in 1999, gave the BPU the authority to adopt an emissions portfolio standard. There is an exception to the commerce clause. If a state can reasonably demonstrate that you're addressing public health issues, that is an exception to the commerce clause. States can regulate interstate commerce when they can show there is a direct impact on the public health of that state. That was a ruling from back in the 1999 law. It empowered BPU to do an emissions portfolio standard. And, frankly, shame on BPU for not doing it yet. There is a provision in this legislation to encourage BPU to do that. And the Global Warming Response Act -- that would do that. And we would very much like to see that move forward.

Jeff Tittel especially mentioned several other issues of how we can actually address global warming. We support all of them. A couple that haven't been mentioned that are less obvious: renewing the Garden State Trust. Best kind of carbon sequestration: more trees, Garden State Trust. Similarly, there's -- the implementing of the Clean Water Act, and controlling sprawl, and strengthening the State's clean water laws for more Category 1 waterways; more, even stronger, sewer and watershed rules, which we understand are coming forth. Growing better and preserving open space will go a long way to addressing global warming.

There is no magic bullet. We are going to need over a hundred different individual policies to address this problem. Some will address 10 percent of the problem, some will address .01 percent of the problem. But it is such a huge problem, we have to do everything.

It is an irrelevant question when we ask-- With all due respect, if we shut down every single coal plant in this state, we wouldn't make a

difference. That is irrelevant. We have to lead. And the more we lead, the sooner we lead, the better off we will be.

A couple of highlights on solar and wind. My in-laws are far from environmental activists. They're good, solid, conservative Republicans. My father-in-law brags he's been a Republican, and I (indiscernible). Because there are plenty of great Republicans on the environment-- Excuse me, let me clarify that. But he very much comes from the George Bush world of Republicanism and the environment. He just traveled to Denmark and Norway. The reason I'm raising this is, he loved all the windmills there.

Folks say the environmental community is just against everything. Baloney, we're for off-shore wind -- at least plenty of us are. Some folks are concerned about the aesthetics. They think they look bad. Well I, for one, am not-- In fact, the windmill in Atlantic City that faces the Borgata-- The Borgata -- hotel rooms at the Borgata that can see the windmill go for more, because people like the view of the windmill. So we are for plenty of things. Liquid natural gas has its place. Hudson -- we'd love to see Hudson and Mercer generating stations continue forever more, but on methane, not coal. So there are plenty of options out there. And we do need to move forward.

I think the final thing I'd like to highlight is: Nuclear, unfortunately, is not the answer. And we don't need it. The relatively minor bill this Legislature passed two years ago to improve the efficiency standards for about five different appliances is half in Oyster Creek nuke plant. And that bill was drastically watered down to get it through. So

some minor appliance standard -- if energy efficiency increases can get rid of something like Oyster Creek--

Why should we get rid of Oyster Creek? It's not the solution to global warming for several reasons. One, if we didn't generate any more spent fuel rods in this country forever more, we still have a major nuclear waste problem, because there's already more nuclear waste in this country than Yucca Mountain will store when it does finally open, if it ever opens, 20 years from now. We have not addressed that nuclear waste issue. And if we continue relying on nuclear energy as a power source, we are being irresponsible. And we don't have the solution to how we're going to deal with that. The true cost of nuclear energy is incredibly federally subsidized. If the true cost of nuclear power was reflected in the power rates, it would make the most expensive type of power generation look incredibly cheap. Nuclear energy is not the answer. The Oyster Creek plant has nuclear spent fuel rods 50 feet in the air. Talk about a threat in a post-9/11 world. So nuclear energy can't be part of the solution.

The report that Suzanne Leta Liou provided you shows how we can live, how we can address our global warming needs, address our public health needs, address our economic needs, continue to grow the economy without Oyster Creek, without more coal in New Jersey, and without Salem I and II. It's not going to be easy, but it can get done. And, again, the sooner we move forward in that direction, the easier it will be to get that done.

And I think I would just like to close, now, with an excerpt from an op-ed I wrote for the *Bergen Record*, published a couple of weeks ago. "Recently, my 8-year-old son Ryan saw a global warming headline over

a photo of two polar bears clinging to a small piece of floating, off-shore sea ice and asked me why the President wasn't doing more. The next day, President's Day, on the way home from having seen a polar bear and other endangered species at the Bronx Zoo, he asked, 'Why don't people live less -- why don't people drive less to save the polar bears?' How does one answer? I could say it's complicated, different folks have different values, don't worry about it, I'm too tired to explain. But I don't cop out. I tell my son, 'You're right. He needs to do more, and so do we.' But do I explain further, as the science major that I was in college, the environmental and political professional that I am now, or as a parent? I know from my training that the science is never crystal clear, but it certainly isn't foggy when it comes to global warming. We need to reduce greenhouse gases by 80 percent or face dire economic and environmental consequences. I know that it is easier said than done. The State faces enormous budget problems and political pressures. However, unless we drastically change our course, the New Jersey we know will be no more. Long Beach Island, Cape May, the Meadowlands, even Newark Airport and so much more will be gone. So, Mr. President, Governor, lawmakers, and fellow New Jerseyans, how will our children judge us? Will we save the polar bears; prevent that 8-year-old from having to leave the soccer field because a bad air day sent him to the emergency room; avoid a teenager's loss of his or her mom or dad due to premature death from cardiac arrest, respiratory distress, or cancer caused by fossil fuel exhaust? Will we have open spaces where our children can have -- where our grandchildren can have the wonder of turning over a rock to find a salamander?"

Thanks for the chance to testify. And please keep leading, beginning with passing the Global Warming Response Act as quickly as possible, and renewing and strengthening the Garden State Trust this year.

Thank you.

SENATOR SMITH: Thank you, Mr. Pringle.

Mr. Wolfe, our last speaker.

BILL WOLFE: I will be very brief.

Bill Wolfe, just citizen-analyst on this one.

I appreciate the leadership in putting this bill forward and hearing it today.

I want to just touch base on two points that you made in questioning, because I think you put your finger on several issues, with respect to the California model, and what California has that we don't. and I wish we could have had a little more dialogue between the California Air Resources Board and the DEP people who, unfortunately, weren't here for that testimony.

But they have staff, they have regulatory authority, and they have money. You can't say that the Governor's executive order, or any of this legislation, backs that. And I think that that's a critical point, because that goes to my second point I'd like to make, which -- I think you also had the leverage point, framed in the context of both the PSEG testimony and Mr. Gabel's testimony. And I want to just digress a little bit to illustrate the point.

I had the pleasure to work with Steve Gabel when he directed the solid waste initiative under the Florio administration. And we were confronted with the same kind of conceptual planning problem that you're

focused on now, in that into the '80s there was this perceived "solid waste" crisis, where allegedly landfills were closing down, and there wasn't going to be disposal capacity, and therefore we had to site and develop 21 high-cost, capital-intensive, environmentally damaging incinerators in 21 counties. And there was a lot of engineering expertise that defended the solid waste projections, and the economic projections as being in the interest of the environment, and the ratepayers, and being vitally necessary. And as soon as a political decision was made by the Governor, in 1990, to fundamentally change course, all those numbers -- and here's where you've got to get inside the belly of the beast and get into the spreadsheets -- because the devil -- I've seen it -- is buried in the details.

And so the same arguments that Mr. Gabel is making now about reliability -- conceptually, that was the same issue of landfills are closing. Reliability meaning, we're not going to have an electrical system where everybody can turn on their lights and have power. That, I don't believe is true. And I don't believe that the energy planners that have brought us to this juncture, and the modeling done at Rutgers -- which is an econometric model-- And the flat-out answer to your question, that you asked Lance Miller about, does it anticipate projected energy increases due to warmer days? It doesn't. It's an input-output econometric model done by economists. You have to change the nuts and bolts of the conceptual framework of the people who are making the decisions. You people aren't making those decisions; they're huge policy decisions buried within the structure of models.

And I just did a little peering in from the outside in the BPU energy planning process. It should not be called an energy planning

process. It should be called an electrical-sector management initiative. Because it's focused upon electrical power production, the demand forecasts are 27 percent increase in electrical demand between 2004 and 2020. It's a little over 1.5 percent a year. Quantitatively, you can't get here from there with the base-case model that they've laid out. And I've looked at it, and I'm highly critical of it. It also assumes an 85 to 92 percent online reliability factor for the nuclear power plants, including the relicensing.

I mean, these are all the nuts and bolts stuff that Lance Miller is not going to tell you, but yet is enburied in his method. So when--

Again, going back to the -- we need an incinerator in every county -- you looked at the per capita waste generation, you looked at the population growth, and you projected the need for all these facilities. And nobody said, "Hey, wait a minute. Can we do things a little differently here? Couldn't the public really get turned on by putting stuff out at the curb? And can't we save money and make the environment better by doing things differently? And let's take those people who are doing those projections that are environmentally crazy and, from an economic standpoint, crazy-- Let's put them off in the cube. Let's turn their phones off, and let's turn their Internet service off" -- like DEP did for the nuclear engineer that recommended to shut down the power plant. "Let's put those people on the sidelines, and let's put some really progressive thinking in place, and let's really do something."

And, unfortunately, it started out that way, and we never really made the commitment. Although the people in New Jersey made the commitment, because they bought into the program in a big way. But the State really didn't do its share, and never followed through on funding it,

and in putting forward regulations to really make the private sector behave. So we got half a loaf. And the prices came down, and the incinerators weren't built, and the garbage went out of state.

But we can learn from that lesson. And the suite of bills that you laid out is headed in the right direction. But the underlying theme that has to be there is, there has to be a real commitment. And I'll go to-- The Commissioner, I think, said this -- as to why the Governor established the long-range goal -- is that the private sector needs to know the commitment is there to make real change. And I think the economic and the political will, if it's there, has to be imbedded in the legislation, and really take on some big fights and make things mandatory. Go to the California model, use regulatory sticks. Not just incentives and public education, use some regulatory power.

And I think you're not going to get the kind of warm, glowing endorsement of that from the BIA. And I've read their submission on the Energy Master Plan, and I was highly disappointed. Because it's their members who are going to economically benefit from lower energy costs when they use less energy, and yet they don't seem to want to be a real player. PSEG is the same way. They want to control the game, they want to control the power, and they don't want to really -- and they want to put more power in-state.

So, I mean, these big-picture questions-- If, for instance, the Pennsauken Solid Waste Utility Planner got up and started saying, "I want my incinerator. We're selling bonds." And all the bond councils got up and said, "I want my incinerator. We're selling bonds." If there wasn't the political will to say, "No, we're not going to do that--" That's the scenario

we're in right now, and we should all know that. And you're going to have to bite the bullet, or the whole thing isn't going to work.

I'm just from the outside looking in.

SENATOR SMITH: Thank you for your comments.

Thank you all for coming today.

See you in May.

(HEARING CONCLUDED)