BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. UNDOCKETED

In the Matter of

INFORMATIONAL WORKSHOP ON
RENEWABLE GENERATION
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P R O C E E D I N G S

(Transcript continues in sequence from Volume 1.)

CHAIRMAN EDGAR: We are going to get started again. Okay. We are going to shift our focus a little bit for our next presenters. And we've been hearing some really wonderful presentations and great information about alternative energy current projects and potential projects and ideas here in Florida. And now we're going to shift a little bit to the investment and the finance side, what is required by investors; what assurances, if indeed, if indeed there ever is full assurance, but what assurances; what type of perhaps incentives we can be talking about and looking at and seeking. And so I'd like to call our first presenter, David Perlman with Fieldstone Private Capital Group.

MR. PERLMAN: Thank you very much. And thank you for inviting me here today to give my thoughts, which actually are going to be fairly simple.

The overriding, the overriding thing that I'd like to say is that if the State of Florida, the United States wants to have renewable energy resources, we have to realize that it's not a free lunch, it's something we have to pay for, and we'll figure out exactly what that means and I'll try to go through this.

Just to, for full disclosure, I am representing a renewable project which is going to come online in Florida in

the next few years, Biomass Investment Group, a biomass power project selling its power to Progress Energy, and, and my job is raising the capital for that.

So I'm going to go through how Wall Street thinks, which is surprisingly very simple. And this slide and the next are simply an advertisement for my firm and I wanted them in the book. I don't really want to talk about them. So we'll go through these, we'll flash them up and we'll get on to the real subject of the -- you can go one more.

So what do renewable energy projects really look like from a financier's point of view? The first thing I'd say is they're project financed. That means they're financed as a stand-alone entity. There may be multiple offtake parties, people who are buying the product, there may be a single one. There certainly are multiple parties supplying the financing and they're looking at this single stand-alone credit without really looking beyond the companies involved, to the companies involved. They're looking at the obligations of the companies as they apply to the project. There are often government incentives, whether they be tax credits or cash or simply renewable portfolio standards which incent utilities to buy such power.

In a project financing the structure of the financing is to allocate risks. They typically are very structured deals, and because of this the cost of financing tends to be

more expensive than what folks in this room are used to as, say, the cost of financing for your large regulated utilities. And the project can be an established technology, certainly the easiest to finance; a scale-up of things that exist but have never been done on the size that has been done; or something new, which is not the favorite of Wall Street, but there are ways to get these things financed.

Next slide. The key to getting financing done in a project is to make sure that every involved party has a reason they want to be there, whether it's the carrot or the stick. And hopefully it's mostly carrots but there are going to be some sticks: The developer, the person who conceived the project, who put together the land and tried to find all the other parties to make it happen; the people who put money in it, whether it's debt or equity money; the party that's constructing; the party that's operating; the party that is supplying; and this applies to some renewable projects. And for some renewable projects the supply, the energy supply is something that comes from a higher authority and so it's not necessarily something we pay for directly. And then finally the utility, the off taker has to get something out of the project. They need a reason to want to be in the project, and that is an often overlooked point.

And the second point about our project financing is that if you look at it, you can sort of look at it as a big

black box with a funnel at the top and a bunch of spigots. And the spigots show the amount of monies that are going to each of the parties on the top list and the, the funnel is what's coming in. And if what's coming in doesn't, isn't sufficient for what needs to go out to get everybody happy about being there, you don't have a project. And there's only two things that are really coming in: One is revenues for products produced. It's basically the power payments. If there's heat, there's the heat payments. And the second are whatever our various government entities are supplying us because the public policy suggests that this project is a good thing, and, therefore, even if it's not stand-alone economically viable, well, because it is a public, we are incenting the public good, we'll put something else in. And this can come in the form of cash payments or tax benefits or other things.

Next. So let's talk about three things, and I just have three basic things to talk about. One is the subsidies that we get as a matter of public policy. And our federal government, in their infinite wisdom, has mostly decided to incent renewable developers to produce projects by creating tax subsidies, the Section 45 credits primarily. They've done other things, but this is their primary means. And this is, you know, from a Wall Street point of view a very inefficient method of doing things. You have a limited pool of investors who both have the tax base to use these and an energy focus.

So they're not applicable to everybody. So they bring -- you have to bring specific parties into the project as investors in order to take advantage of the tax subsidies. And needless to say, since there's such a small pool of such investors, they will get their pound of flesh. It's inefficient economically. They will -- the project will not benefit to the full amount of the tax benefit. The investor will benefit more than probably it should.

And you have to create complex structural puzzles because you can't simply sell tax benefits. You have to -- tax benefits go with ownership of assets and you have to create structures which pass muster with the IRS.

And, consequently, I would say that a cash subsidy, which is not necessarily the nature of the business, is a better way because it applies to all parties. Folks like me, we like to see cash subsidies because you, when you have a tax subsidy and you're an investor that's not involved and you want to see where that money is going, you have to count on the tax party always having tax base to get tax benefits. But cash goes to everybody and it works for everybody, and a cash subsidy is revenue and revenue is the mother of all financings. And with revenue the structural complexities are truly minimized.

So let's -- the next thing is let's see if we can increase revenue in the project, second point. And the first

thing is renewable portfolio standards, probably the best public policy tool we have out there right now from, at least from a financing point of view because the off taking party, the utility is required to have a portfolio of renewable projects if such standards exist in the state. And I know that the next speaker is going to talk about the difference in how RPS is applied in different parts of the country, so I won't go into that at all. But it's, you know, it has to be applied in a fair and proper way.

But, secondly, the off taker will pay for renewable power on the basis of what is required to meet its standards. And I think of one example that's not, that doesn't -- it's not a Florida example but I will give it anyway, where I was asked about finding investors for a wind project in some faraway state where at the end of the day because there were no RPSs and the utility was able to offer a fairly light contract, it depended on getting all the tax incentives, both federal and state, and so they were looking for a tax investor who was both, had tax space both federally and in the state, and that turned out to be a real, real issue.

The second thing I want to -- you know, maximizing revenues. If renewables themselves are something that the State of Florida wishes to support, then renewable power purchase agreements ought to be part of the tool kit, and making sure that, again, they're sufficient to take care of all

the people that are interested in being incentivized to participate in the project. They don't have to be so rich that somebody is making excess profits, but everybody has to take, make the profits commensurate with the risks or activities they're taking.

A third thing is something which I think certainly got lost when the federal government passed PURPA back in the late '70s and it got implemented in the '80s, and you saw the erosion of utility assets and the sizes of utilities because basically they took PURPA power. They had a -- they were able to recover the cost of the purchased power in rates. They got smaller and suddenly they were getting no profits on this power, yet they were taking risks, the risks that the power developers would actually be there when they needed to be there. So the old rate base system certainly worked to get profits for the off takers, and allowing the utilities more than a straight pass-through on power purchase agreements also would do the same.

And so the question, of course, from a public policy point of view might be, well, who's going to pay for this increased cost if you decide to have an increased cost of power as a public policy matter? Is it the ratepayers or the taxpayers? You know, is it coming out of the coffers of the government or is it going to be higher rates?

But if you really cut through the issue, maybe

there's not as big a difference between those two categories as you want because we all use electricity and we all pay taxes. You know, there are differences, but at the end of the day it's the public in one form, one guise or another, and hopefully that issue should not, should not halt progress in this area.

Next slide. The final thing I want to mention is -- and I mentioned the project, financing the projects was a more expensive means of getting projects done than having a big, highly capitalized company build their own plants. So let's look at a couple of things that might be done to help projects out. And, again, I'm not suggesting any particular solutions to these issues, but just some thoughts and places where public policy, again, might have an impact.

One is construction. A typical project which is project financed has what I call an EPC contract, an engineering, procurement and construction contract, where the contractor guarantees fixed price, date certain and certain performance of the plant. The alternative is to build the plant on an open-book basis: You have your design, you pay what it costs, but nobody is guaranteeing much of anything. And the difference being that a contractor when guaranteeing the performance of a plant will add on a fairly significant amount in the price to construct, and that price to construct is then absorbed in how much money needs to be raised to build the plant and consequently the cost of capital.

So if you, if you can come up with a means of making open-book financings palatable to financiers, and that basically means somebody is making sure that at the end of the day there is enough money to complete the plant because that's what financiers are really worried about when you don't have a fixed price contract, the question is who's covering the overrun risks in the open-book project? Is it the financiers? And they will to some extent say, okay, I will guarantee, I'll put in so much more not knowing exactly how much more but only up to a cap. Is it the off taker, the party who needs the power, or is there some public policy solution?

The second, the second part, second piece on limiting cost is the cost of operations. And the story here, because we're talking about renewables, primarily I'm going to deal with sort of wastewood or waste-to-energy projects and give you just a little, you know, what's happened around the country and history and these. There's been this great boom saying, well, we're using a waste fuel, it ought to be pretty cheap. And suddenly the people who control the waste fuel, whether it's wastewater, solid waste, say, hey, I can make money on this. Let me see exactly how much I can squeeze the project and keep the project viable. We really don't want to go there. So how do we control feedstock costs?

And the second piece is as we involve new technologies there are going to be equipment warranties and

somebody is going to be taking a risk on that and getting, making, making an appropriate benefit for taking that risk.

The last thing, you know, and it goes back to some things that I talked about before is the whole financing and ownership issue. And if projects are project financed when you have a tax investor, you have huge leakage. If you have a traditional project finance structure because the government public policy benefits are in a cash forum, you still have expensive debt and expensive equity. And if you have the off taker owning, maybe you get a cheaper project. But surprisingly there's been just a small move towards utility-owned wind farms but not much beyond that, but at least you can minimize finance costs. So, again, just something to think about. It's probably going to be a combination of all of the above in the future, but any way we can reduce financing costs is a good thing.

I should add one more thing. I note that the federal government in the Energy Policy Act of 2005 introduced yet a new set of loan guarantees. All I can say is we're waiting to find out what, what the details are. The devil is always in the details. I'll just mention that the last time there were loan guarantees for these kinds of projects, it was introduced in the '70s, implemented in the '80s, it was the infamous United States Synthetic Fuels Corporation which created such an onerous process that I don't think anybody ever came out of it

with anything.

So the next slide. And my final point -- go back and click it again -- are we communicating with each other? There are really a number of parties here that are all involved in trying to get these projects done. There's the finance community which I represent, there's the public policy aspects which you represent, and there are people who are trying to bring new technology to the floor to make renewables a reality. And at the end of the day there's been a lot of talk where each of these, each of these three constituencies has talked sort of around the others, and I think communication between the three constituencies at the end of the day is going to be the crucial component to making a real push into renewables a reality. Thank you very much.

CHAIRMAN EDGAR: Thank you.

Commissioner Carter.

MR. PERLMAN: Any questions?

COMMISSIONER CARTER: Thank you so kindly for coming today. I wanted to -- you heard my discourse earlier this morning, a discussion with a young fellow from Palm Beach County, and I was asking about the cost of the public benefit.

In your scenario as you price out these projects, how significant is that in the context of investors? I know that a lot of people say that they're invested for a tax loss, but most of the investors that invest are actually investing to

make a profit.

MR. PERLMAN: Oh, absolutely. You know, as far as the public benefit, it's up to the public policymakers, the Commission, your bosses in the legislature and the Governor to figure out how to make public policy benefits turn into dollars, the dollars which will make parties make profits, which will bring them into the process. That's at least my view of the world. And, you know, it's your job again to figure out how much of a public policy benefit there is, which is essentially not a quantifiable concept. And so you have to sort of stick your thumb in the air and lick it and see how the wind is blowing and figure out how much, how many dollars you want to bring into, bring into the equation to make it all work. And there's no, there's no science here, there's no -- it's all just a question of trying to figure out what the right thing is to do.

COMMISSIONER CARTER: Thank you.

MR. PERLMAN: Thank you.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: If this won't breach your confidentiality or your current client that you're working with, and obviously I wouldn't want you to do that, but just kind of a general idea of a concept in terms of financing a, a renewable plant, generally what would that cost in terms of to set it up, to make it financially feasible where Wall Street

would be interested in a project like that? I'm just trying to get some kind of number. I know we can talk about megawattage until we're blue in the face, which would be a short trip for me, but still what kind of cost would it be for --

MR. PERLMAN: I think that you -- I mean, the nice thing about my client's project is they have a contract with a major utility and so they have a good sense of what the revenue stream is going to look like, they have a good sense of what the cost stream looks like.

There -- you know, you need to have -- and it depends on the risks of the project, and this is, this is -- as I pointed out, there are three different kinds of projects. This is a scale-up of technology project in one sense. So investors look at this as having some serious risk, and there's a large yet to be identified technology company which is taking some of the technology risks and putting guarantees on it. So the costs are the fact that this thing will probably -- say, if you just sort of got a bunch of people together and put the engineering designs together and said, okay, let's build it, no guarantees, it's probably going to cost 20 to 30 percent more to build it just to have the guarantees on it. So it's a more expensive plant. On the other hand, the fuel costs are low. But the second point is that it also is likely to qualify for the federal Section 45 tax credits, which means, you know, you're bringing in a tax investor. And just rule of thumb,

you'll probably wind up getting 85 cents on the dollar into the project that way of the tax benefits, and the other 15 leak out to the tax investor. And then the lawyers will make a fortune trying to document this complicated structure that's going to bring the tax investor in. And I don't mean to really impugn the lawyers, but, you know, they're doing what they're told and they're doing, they're playing with the landscape they're given.

COMMISSIONER CARTER: Thank you, Madam Chair.

CHAIRMAN EDGAR: Thank you.

MR. PERLMAN: You're very welcome, and thank you again.

CHAIRMAN EDGAR: Our next presenter is Ari Mervis with the Energy Management Group.

MR. MERVIS: Ms. Chairman, fellow Commissioners, thank you very much for inviting me here to speak.

Unlike David, I'm going to be a little shameless and promote my company in the next few slides, so if you'd click to the next slide.

We are a model of the classic IPP developer. That means we develop, own and operate power plants. We got our start in that line of business in the mid '80s with a small wood-fired plant we developed in Alexandria, New Hampshire. Following on that we developed six natural gas-fired combined cycles totalling about 860 megawatts and about $800 million

worth of construction. That portfolio was sold off in 2000, and since then we've been primarily focusing on renewables. And I think because of that I can add some insights today.

Next slide, please. Our premiere project right now you may have heard of because it, it has attracted some slight controversy is the Cape Wind Project. It's a large offshore wind project. We'd be the first offshore wind project in the United States. Although I might add the unregulated subsidiary of FPL is also engaged in an offshore wind project and that's very important. That would be off the coast of Long Island.

Offshore wind can add some key generation characteristics. Number one, you can produce a lot of power relative to onshore wind. Number two, offshore wind tends to track load profiles very well. Unlike in most parts of the country where onshore wind produces at night or in off-peak times, offshore wind tends to produce it on-peak times. And then, however, there is a very, very complex permitting process for offshore wind.

Now if you click to the next slide, our other premiere project right now is called the Nacogdoches Power Project. And this is a large-scale biomass project. It is very near the completion of the development phase, and it would basically be a 100-megawatt direct-fired biomass, so you use wood and wood waste, and it would use what's called a fluidized bed boiler. And that means the combustion in the boiler takes

place in about a six-foot high zone of fluidized sand. So the sand is actually floating because there are large fans underneath, and that ensures better combustion, it reduces your NOx emissions.

This project is nearly fully permitted. The air permit was supposed to be signed yesterday. It's been delayed a couple of days, but we do expect it within a week or two. The site development process is nearly complete. And there's been very strong interest in this project from the financial community.

Next slide, please. I'm going to talk a little bit more about the details of project financing that David talked about the theory behind. And -- but to start off, I contrast it with the three common models of financing power plants. The first is what the munis or publicly owned entities do, and they're able to issue very long-term tax-free debt, and that's backed by the general obligation revenues of the taxing district. So it's a specialized method that allows very low cost financing.

Then you have the investor-owned utilities which issue corporate debt, and that's backed by their own balance sheet.

In contrast, project financing means that the financing has to wrap around the project entity itself. It's non-recourse to the developer, and that's why it becomes

complicated and can be a little more cost, costly.

And then at the bottom there's a diagram of a typical project financing structure.

Next slide, please. When you set out to really create a project finance capital structure for a particular project there are really two metrics that are key. The first is the debt-to-equity ratio. And project finance deals tend to be very highly leveraged, and this is because you're creating a package with very, very secure, stable cash flows both on the revenue side and on the cost side, your operations and your fuel supply. Now, and so the textbook ratio is about 70 percent debt, 30 percent equity.

Now to get this, the key metric that determines how much you can borrow is called the debt service coverage ratio. And the example I've listed is if you have $140 of free cash flow in a period, so that's after paying operation expenses, and then you have $100 of debt service which is both interest plus principal, you have a debt service coverage ratio of about 1.4. And I would say right now the financial community is comfortable with -- a minimum DSCR is in the range of 1.4 to 1.6. So that's what really helps size the amount of debt you can borrow on a project.

And then as David mentioned, what are the sources of capital for project financing? The key and traditional source has been the commercial banks because they're really able to

lend in large amounts and take on structures of this type. The loans are typically structured as an amortizing loan, so you are paying principal off during the term of the loan. The interest rate is usually set at, spread above the LIBOR floating rate. So for example right now, a typical spread would be about 1.5 percent, LIBOR is about 5.25 percent, so you come up with a 6.75 to 7 percent interest rate.

Then, again, the other classes of investors in a project finance deal will be tax-driven equity, so that's looking to capture some of the PTC benefits or depreciation benefits for wind projects, for example, and cash equity.

Next slide, please. Looking from a developer's perspective then, what are the key criteria to create an effective project finance deal? Well, number one, you need a certain offtake arrangement, and that is you need a long-term power purchase agreement with a credit-worthy entity. Many lenders in the late '90s and early 2000s got involved in the merchant market and lost a lot of money because of price risk primarily on the fuel supply side. The fuel costs rose much more than predicted. And so now the banks have -- do you have a question?

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chair. When you say long-term, what, how many years are we talking?

MR. MERVIS: Ideally I would say 15 to 20 years.

COMMISSIONER CARTER: Okay. Thank you.

MR. MERVIS: And then now some parties will take merchant risk on wind projects because so much of the revenue to wind is tax driven. But really with biomass and others you do need the long-term contract.

The other issue that's very key is regulatory certainty. A lot of renewable projects revolve around incentives from both federal and state governments. And when those incentives change, it's an unacceptable risk to the lenders. And in a couple of slides I'll show you some examples of that.

From our perspective we only look at what I would consider proven technology, so something that's ready for full commercialization. There are operating offshore wind projects in Europe both in Denmark and the UK. And biomass, direct-fired biomass is really commercial now. There are similar operating units in Finland to what we're proposing in Texas and could also be applicable in Florida. And then you have the project document packets that you put together, and I think David really covered that.

Next slide, please. So what, what contrasts a successful or ineffective regulatory regime? Well, if you look at two examples, and I'd use Texas as an example of a successful regime and the New England states as an example of an ineffective regime. Both have very strong renewable

portfolio standards. Texas was originally set at 2,000 megawatts. It was recently expanded to 5,000 megawatts, which is about 5 percent of annual sales. And New England now is about 3 percent in most states and that ratchets up over years. Texas, however, has a very strong renewable market. It now leads the nation in wind, installed wind capacity. In New England very few projects have been built in the last five to six years. And the key difference that I would argue that's caused this is because the Texas regulators have put together very certain RPS regulations and have not altered from those regulations, and it's allowed competition to develop. Although the initial REC price was quite high, it has now fallen and fallen in Texas and it's at a fairly low level. So you're getting the benefits of renewables at a very low cost.

In the New England states, Massachusetts has altered the RECs, altered the rules for what biomass units qualify, and Connecticut has adjusted the rules for what biomass plants qualify, going back and forth and several times. So there's little market confidence that those incentives will stay, and so consequently none of the financial investors are willing to take the risk of the pricing risks associated.

Next slide, please. So in conclusion, what actions has the Florida Public Service Commission taken to date that I think are particularly important and what might be left to be done? Well, I think the new rule actually does lay a very

important foundation for renewables by allowing the IOUs to enter into long-term PPAs and provides some measure of regulatory certainty and shows the Commission's commitment to renewables. I think there are probably some outstanding questions left, but they'll be answered as the, you know, the rule takes force.

Will that be enough financially? I don't know. And that's a question that has to be answered by developers and through the course of time.

And then finally I'd like to just leave with, you know, renewable generation provides benefits beyond just clean energy. Certainly you can enter into long-term contracts and provide stability and diversity benefits. In addition, there are powerful economic development benefits especially with biomass. The Department of Energy has estimated that each biomass plant creates almost five jobs per megawatt in terms of operating jobs and, most importantly, fuel supply and transportation jobs. And all that money stays local; one estimate I've read is 80 to 85 percent of that money. So when you're talking about for a large-scale biomass project, $10 million to $30 million of fuel money staying in the state versus going outside the state for coal or gas. And that concludes my presentation.

CHAIRMAN EDGAR: Thank you.

Commissioner Carter, please. Please.

COMMISSIONER CARTER: Thank you, Madam Chairman. I beg your indulgence.

As you can tell, I'm really fascinated with this. Have you seen -- I mean, we've gone through a process recently in Florida through the leadership of our legislature in their great wisdom have put some good, passed some good laws for us, and here at the Commission we've implemented those policies in a way that we hope to create an environment. Have you seen a lot more opportunities in Florida for, for, to create investment in plants here?

MR. MERVIS: I think it's too early to see those. Because the new rule was, it passed so recently, I think now you, you will start to see action in the next year. Although I am aware that there have been a number of recent biomass projects proposed in the Tallahassee area, so that should be a good sign.

COMMISSIONER CARTER: Okay. And my reason is that I would much rather see us closer to Texas than to New England. Because we, our goal and our hope based upon our legislative grant is to create an environment. And, in fact, we've said here from the bench is that we want to throw out the welcome mat to have more and more renewables coming to Florida and have -- obviously there's an economic benefit with the jobs created locally here and also people that would be generating the greater tax bases, and that benefits us too. So we're

really hoping -- and we're fortunate to have people like yourself coming to give us a different perspective. We want to look at it from the technologies that are available, but we also want to see who's investing in the opportunities here. And I appreciate what you had to say about regulatory certainty.

Thank you, Madam Chair.

CHAIRMAN EDGAR: Thank you.

A welcoming and competitive environment. Thank you.

MR. MERVIS: Thank you.

CHAIRMAN EDGAR: And our next presenter is Rob Hunter with Green Coast Energy.

MR. HUNTER: Thank you, Madam Chairman and Commissioners. My name is Rob Hunter. I represent Green Coast Energy as its Director of Operations.

Green Coast is working to place multiple biomass facilities beginning with a 40-megawatt wood waste plant. We're also looking at some closed-loop biomass facilities as well.

Today I want to talk about from the perspective of a new renewable generator trying to place new projects in the State of Florida and bring investment money into the state and discuss basically the milestones you have to accomplish in that process.

We begin with the first milestone, the concept.

What's the, what's the idea? We have to have a technology, a fuel type and, you know, what, what location we want to put it in, what state, what county, et cetera.

Really the most important portion of the concept is the business model. How much is it going to cost? How much revenue is going to come in? If one is greater than the other, then we may have a project. If expenses are higher than your revenue, you're not going to have a project.

Mr. Bruner said earlier that as a government official he can't, you know, run this at a loss. While I can assure you that in the private sector we even -- we certainly can't do that. So we're going to need to see certain things in this business model, and I'll get to that later as we good forward.

Next slide, please. Next is one of the most important steps: Location, location, location. You can only place a renewable project in certain, you know, areas, certain types of sites. You need to have local support. If everybody in the town or area you want to put it in is, you know, marching out with torches and pitchforks, the project isn't going to go too well. On the other hand, if they see, wow, we're getting a lot of jobs in our community, we're going to get an enhanced tax base, we're going to get a clean source of energy right here in our town, then you're in good shape.

Another issue is the zoning. You generally need a heavy industrial zoning on the site that you want to use. Of

course, you can always attempt to rezone it, but that can be a process. It's very important to have rail and/or highway access to bring in your fuel supply, be it wood waste or agricultural residue, livestock waste, whatever you're trying to bring in, you want to be able to have it conveniently accessible. You have to have a certain footprint, the acreage of the plant, which varies based on the size. Usually 20 acres is kind of the minimum for a project like this.

It has to have sufficient interconnection with local utility. And that's one of the important steps you have to take as you're developing this. You don't want to, you know, finish everything, have it all lined up and then find out, oh, yes, it'll cost you $20 million to interconnect with a local utility. That's going to be a bit of a problem. You want to find that out early. And the permitting process, it has to be a permittable site with all the applicable agencies.

Now milestone three, the purchased power agreement. In my opinion, and you can debate this, this is the most important step towards, you know, a successful project because this determines your revenues. Your costs, you more or less know what they're going to be, you know, ahead of time based on industry standards. But, you know, the PPA, the revenues, this is, you know, like the gentleman who spoke before, this is what is going to make it financible or not using the project finance structure.

This is also the area where the PSC has the most opportunity to make a difference to open the door to renewables because you directly supervise and approve the purchased power agreements.

There are a couple of elements: The term, the capacity payments, the energy payments. We've been working on this at the, the forums we've had previously, so I'm not going to go into that too deeply. Recently with the new rule we now have the option for fixed energy payments which is very attractive to the finance community. That mitigates, you know, the volatility of both the project and the customers and makes it more feasible because you have less of an uncertainty on your, you know, your projected pro forma financials. The more certain the revenues are, the more interested the finance community is on a, on a general basis. And the PSC has approval and ultimate control over any of these power purchase agreements.

Next, please. The next milestone, the fuel supply. To make this project go you have to have a locked-in supply of fuel so you can run this on a stable basis. The fuel type will have a certain heat rate, number of Btus per ton. Some are greater than others. It depends on how dry the fuel is, et cetera. You'll know how many tons you need per day to operate the plant. That'll be an important consideration too. And tipping fees for fuel suppliers. Depending on what the fuel

type is, you may have a positive tipping fee coming in or there may actually be a cost overall for the fuel. Generally, many biomass projects have a positive tipping fee such as waste to energy; some do not such as some wood waste projects. There's a cost of fuel preparation to comply with regulatory DEP requirements. This, this milestone here more or less describes just biomass/waste to energy. A solar or wind project obviously would not face these same issues. You don't pay for the wind or the sun, but there would be other, other issues involved.

And step five, please. Now the EPC contract is generally the preferred way to do this from a developer's perspective because this is -- we make a deal with someone who specializes in this, a turnkey operation. They're going to build it, guarantee it, et cetera, like was discussed earlier. You also have option two, the open book construction where you might have a very experienced engineer who will do the design and purchase all the pieces from here, from there, et cetera.

The most important part of the EPC contract is the total cost to install per kilowatt. That's what's going to determine how expensive your plant is, how much money you need to raise from debt and equity, and also your construction time frame, what -- how soon can we have it up. Generally the consensus is from greenfield development it'll take you, you know, between three to five years to get a biomass plant, you

know, up and running.

And next slide, please. Okay. So let's say we get all these five steps completed. Now what? For this to reach financial close, for this to be, you know, a financible document you have to have, one, enough revenues to maintain a debt coverage ratio, which was just discussed, and, two, an internal rate of return satisfactory to equity investors. The people who are putting their money into this are not doing it for free. Granted, renewables is a very exciting topic, but generally those who invest in it are doing so because they want to see some return on their investment.

Which brings us really to the point of do we want renewables and, more importantly, do we want new renewables? If we want new renewables, we need to understand what it's going to take to get new renewables. And the biggest impediment, the biggest stumbling block is if the revenues are not high enough to make it a financible deal. Because if our -- first of all, if we're operating at a loss, I do not know anyone who will finance it. If you do, please contact me. But also it's a competitive market which I'm not going to get into. That's Mike's territory. And if our rate of return is so low -- you know, investors, I'll throw a ball park figure out there, others can debate this, they're interested in between 12 percent and 20 percent rate of return depending on the investor. So they do want to see, you know, some return

for the risk that they're taking in financing this.

This is where the Commission has the control over the standard offer contracts and negotiated contracts. If the revenues are sufficient to cover the costs and to provide a return, then we will meet any renewable goals that you may have, you know, between the developers, the finance community. If there's money to be made, we will, you know, we will come, we will be in town. And if not -- if, if the contracts offer less revenue than the expenses, I'm afraid we'll continue to see the stagnated development of renewables.

Next slide, please. What can the public do to help bring renewables? Well, you have to understand the full cost of not having renewable energy. It's not just electricity. It is also, you know, reducing pollution, reducing dependency and more or less safety from the upward-trend price volatility. The nice thing about renewables is you have much more stability in price than you do in natural gas, as we've seen over the past few years. Having long-term contracts with fixed payments for renewable energy brings that stability and security to the ratepayer that right now we don't have.

In my household it's not uncommon to see a $300 electric bill, I've heard the same from quite a few others, when in the past it might have been $150. The public needs to understand the value that renewable energy brings in price stability and the environmental conservation of our resources.

And to keep in mind that if the price per kilowatt hour of renewables is higher than it is today for fossil fuels, you're not just getting electricity, you're also getting all these other benefits, and those have value too.

Next slide, please. Just an illustration of gas prices in the long-term perspective. They might go down but I doubt it.

Next slide, please. What can the PSC do to help bring renewables? Well, like I mentioned earlier, you have great influence over the most key aspect, the power purchase agreement. The staff at the Commission has been working very diligently on this issue. I think we adopted a rule that made quite a bit of progress. Now the next step in my eyes is to enforce the rule that was adopted and to require the standard offer contracts to fairly compensate renewable providers. And if so, I think that the goals will be met very swiftly.

The bottom line is the bottom line. If, if we do that, if we approve contracts that will incent investors and renewable developers, then renewable energy will blossom and thrive in the State of Florida, financiers will bring their money to Florida, and, you know, we'll have an environment that's friendly, price-stable electricity for our customers. And more than that, the State of Florida will become a leader, a very paradigm for the other states who are struggling with their own energy crises. Any questions?

CHAIRMAN EDGAR: Questions?

COMMISSIONER CARTER: I was not trying to hog the mike, Madam Chairman, but I like your last point about Florida becoming a national leader. And I recognize that and that's our goal obviously from the legislative intent for most of the laws that have been passed recently, as well as what we're doing in our rulemaking process and all like that. And we recognize that. Where we are and where we need to be, we recognize there's a cost factor there. But there has to be a balancing act. You know, we've got to protect what we've got before we get something else because you can lose the forest and keep the trees. So where are you? No better off. So we obviously want to put out the welcome mat to do that, but we want to do it in such a manner to where -- let's say there may be a way to quantify the costs per kilowatt hour for renewables and quantify that in the context of other types of renewables more so than -- and it's a fascinating area to think about, but I do want to continue this dialogue we've started here today because our goal is to put the welcome mat out. Companies like yours and other companies, we want them to come to Florida and do business, we want them to come to Florida, bring out new technologies, come to Florida and bring about -- make us the oasis that we are. Just like people want to come down here and live and people want to come down here and vacation and see Mickey and Minnie, we want them to come down and do business

with us. So we're so pleased to have you. Thank you.

Thank you, Madam Chairman.

CHAIRMAN EDGAR: Thank you, Commissioner.

Thank you, Mr. Hunter.

MR. HUNTER: Thank you.

CHAIRMAN EDGAR: And our next presenter is Michael Bedley with APEX Power Services.

CHAIRMAN EDGAR: All right. Thank you.

MR. BEDLEY: Okay. Thanks. My name is -- thank you, Commissioners, for having me this afternoon.

First of all, my name is Mike Bedley. I'm with APEX Power Services. We're an international energy consulting company specializing more in commercial viability of projects. And I'd like to say it's nice going last in this group because everything I'm about to talk about has already been covered in great length. But let me see if I can summarize quite briefly a lot of the points that are important here for Mr. Hunter, EMI, and, of course, the financial groups.

If this was a great state to be developing in, the projects would already be built. Okay? We're working on several projects in landfill gas to energy, Texas being probably the one that's most proficient and developing. Even states with low cost power such as Tennessee, North Carolina, Virginia, the projects are already coming online and quite successful. So the question has to be what's the detriments to

development here, and they were gone over at quite length. So if this was the place everybody wanted to be in the competition for development, it would already be here. Okay? And that's driven home by the fact that you can see where all the renewable energy is going around the United States. And in some states you might see 30, 40, 50 developers at a meeting like this if you were in Texas, not just a few.

Let's just face facts. Renewable energy prices are higher in other states. It's quite simple. You get more for the RECs, higher prices, we get better contracts for our PPA. I would go elsewhere, too.

Secondly, in other areas that are deregulated like EMI talked about a retail buyer was buying the PPA, he obviously is getting more money for the power, so, therefore, the project is that much more viable, and, of course, to meet his debt obligations and coverage ratios. States like this, in our state today I'm not even sure we could have a coverage ratio, much less the tax subsidies as all the profits available to the investors.

Another point, natural gas volatility of the avoided unit. The as-available cost is nothing that both the equity or the debt lenders can swallow. The volatility of gas -- I just checked oil, it was up today. But gas prices, the volatility from $14 last year to $6, even if it would go lower, we just can't accept that in the project financing and, therefore, our

project will be, will not be successful. So that's another point that's very, very important. As this state becomes more and more natural gas, it's important to realize that renewable energy developers as fixed fuel costs, relatively fixed fuel costs cannot accept any associated viability -- volatility associated with natural gas pricing.

Standard offer contracts, value deferral, value of deferral with the back-end loading is just unacceptable as well. The risk of technology, the risk of development cost, the risk of regulatory and other environmental hurdles is just too great with the cost upfront to try to finance a plant based on those contracts, as well as the associated financial liabilities and reliability obligations of renewables especially involving new technology. As the project was mentioned earlier, the technology is now going to be pushed to the manufacturer, which is something new. But for new technologies, old technologies, that certainly would not be the case.

And continuing regulatory risk associated with development in this state is what's important. Sustainable rules, rules that allow the developers flexibility to develop their projects, timeliness, economic incentives to get him here are what's important, him or her here, I should say. Because with the regulatory uncertainty in any type of regulatory from development to contractual to other issues, I think anybody in

this room would prefer to go to other states if they can get their projects to viable.

There's a 100-megawatt biomass plant going up in Texas, and I commend them for that, but I'm sure we'd like to have that in this state somewhere as well.

So rather than going over a lot more points, if you have any questions, I'll take them at this time.

CHAIRMAN EDGAR: That wasn't doom and gloom, was it?

MR. BEDLEY: No. But, you know, from my standpoint, if you don't mind me commenting.

CHAIRMAN EDGAR: No, please.

MR. BEDLEY: From my standpoint I see it, I live it. You know, we cover pretty much all of North America including Canada. There's projects being developed in so many other areas but just not here. As a company based in Florida, 95 percent of our work is out of the state.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chairman.

Based upon the current iteration of our rules and the perspective of the legislature and where we are now in Florida, do you think from, from an investment standpoint and your clients as you're doing business in other states, do you think that we're in a posture to create some more energy in -- I don't mean energy in terms of excitement, but I mean energy in terms of interest in projects in the State of Florida?

MR. BEDLEY: I think so with an amount of changes. I think we need some substantial changes, substantially price and acceptance of maybe some more lenient terms and conditions associated with reliability and financial obligations, especially if these projects are being project financed. So I think there would be greater interest. I mean, we're having this workshop here and there are some different faces today, which is all good news. Let's start off the year, you know, on the right foot.

COMMISSIONER CARTER: Madam Chairman. Thank you.

In the context of financing these projects in other states, particularly I think Texas has been mentioned as a, as an outstanding example for these opportunities, but in Texas do, do the, is the regulatory regime where the regulators are involved in the pricing, or is that more of a consequence of the market? Or is that done by the market? Is it a competitive process?

MR. BEDLEY: Well, that's a good question. Actually there's two parts of it. In some parts of Texas it would be a regulated type of product. In other parts, as he mentioned, that was a retail buyer, I think, that was buying for their end-users. So, yes, the regulation associated with the buyer from the utility would not be -- it was an end-user buying the, the output of that plant. End-users meaning a potential aggregate or selling to homeowners or commercial business

entities.

COMMISSIONER CARTER: Thank you, Madam Chairman.

CHAIRMAN EDGAR: Commissioner Tew.

COMMISSIONER TEW: Similar to some of the questions I think that Commissioner Carter was just asking, you mentioned several other states in the southeast and how much more advanced they were than Florida. And, of course, we have some similar characteristics among a lot of the southeast states. What are the primary differences that they're doing public policy wise? Is it renewable portfolio standards, or what kind of policy or policy decision-making are they putting in place that's affecting their success?

MR. BEDLEY: Well, here's a good example, and it's one that's quite recent. Louisiana just passed a pilot program to pay a premium for renewable power. So their one state is actually very driven by the chemical industry and refinery business, but they just did pass a premium to the as-available unit for the purchase of renewable power. So they have -- went ahead and tried to do that, and hopefully it'll be quite successful. That was just recent, November or December.

COMMISSIONER CARTER: Madam Chair.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you.

MR. BEDLEY: What, do I get all the questions for the group?

COMMISSIONER CARTER: My distinguished colleague -- what was -- if I may, you mentioned that Louisiana passed a law giving a premium. What, did they put a percentage on this premium in terms of percentage on the amount or was it for one specific area, one type of renewable? What was the --

MR. BEDLEY: From what I recall, it was a, a pricing point to see how much renewables could be generated in the state, and then they would sell them to the potential buyers, which would be the rate base depending on what the balance would be from buying to purchase. But they wanted to incentivize renewable developers in the state to see what kind of supplies they could get from the marketplace. So basically they were putting a carrot out there to see who would show up, and maybe at that point you would balance.

COMMISSIONER CARTER: Thank you.

CHAIRMAN EDGAR: Commissioner Tew.

COMMISSIONER TEW: I should have asked this before. Was this the PSC or was this the state legislature?

MR. BEDLEY: I'm sorry. PSC.

COMMISSIONER TEW: Okay. Thanks.

MR. BEDLEY: I apologize.

CHAIRMAN EDGAR: Thank you.

MR. BEDLEY: Thank you for having me.

CHAIRMAN EDGAR: We are going to move into the next section of our agenda and begin to talk more about renewable

energy providers and how we can, following right along with many of the themes that we've heard today, how we can work to increase and accelerate the flow of renewable energy. I'm going to jiggle with the agenda just a little bit, and I'd like to ask Mr. Grady Pridgen to come forward and share with us some information.

MR. PRIDGEN: Hi. Thanks for having me here today. Before we go into my presentation, I'd like to start with a little bit of some background on what I've been doing. For the last 20 years or so I've been in Pinellas County building business parks, and we've relocated over 1,000 companies in that area.

About ten years ago our company started asking where are our people going to live because the geographical area started to grow, suburban sprawl started to happen, and the commute got longer and longer where today it's an acceptable commute to drive an hour and a half each day in to work. So we tried to design a mixed use development where people can live and work, and we right now have a development where it's urban, where 12,000 people can live and work in the same place. Our goal is when you get there, you don't need to drive your car, you don't need a car because we're tying into mass transit, and you don't get a utility bill. We can't do that today but we're working on that.

So we started working with scientists to figure out,

you know, what's out there, in reality what can we really do? And it seems with today's technology we can drive down energy demand by 75 percent. So our desire now is to design a community that we drive down energy demand, both water, sewer and electricity, by 75 percent. And in doing that, then we can use alternative energy to subsidize that so that we're pulling minimum power off the grid.

My idea is instead of planning for the future, if our population is really going to expand, double in 30 to 40 years, instead of saying we need to double the amount of power plants, why don't we reverse engineer it the way Germany does. They say we're not building one more power plant, sewer plant, water plant. This is our supply and we're going to work it back and you're going to save energy. And when you go to get a building permit, they see this is how many Btus you can use. Design to that. So if we were to reduce our state energy demand by 75 percent, even if the population doubled, you wouldn't need one more power plant.

So with that we started to try to figure out what can we do today and we started to run into some roadblocks. So I'm here today to talk to you about some of those roadblocks and some, some, some possible solutions, some ideas, some of them radical, some of them not. But you'll get a chuckle out of some, I'm sure. But with that, I'd like to start.

One thing we found is that with alternative energy

there seems to be a cap on how much one, one project can develop. It's about 10 kilowatts. And so one of -- some of the things that we came up with is one of the ways to get -- the public sector can help us out is to level the playing field. And this is sort of funny, but it's almost true. I mean, I went to the, to the Energy Committee meeting a couple of weeks ago and over half the participants in the audience were lobbyists. So one of my ideas was to, instead of capping the renewable energy, cap the number of lobbyists you can, you can have out there and cap the expenditure for that. We could require utilities to use zero carbon by mitigating one for one. And we can have a carbon tax and the money for the carbon tax could go to incent and provide incentives for renewable energy. Eliminate tax credits, subsidies and grants for carbon producing plants and move those incentives over to the green side. The Rocky Mountain Institute estimates that $3 a gallon is being subsidized right now in the United States for our gasoline. So if we'd move those subsidies to green energy, I think you'd see a lot more benefits quicker.

Next. Create tax credits for zero carbon, push the federal government to eliminate tax credits, as we just talked about, establish public education. Everything I read about and every scientist I talk to, they say the number one ingredient in making the change is education.

Eliminate barriers such as the application process

for the Renewable Energy Act. I got a copy of that. What I want to do -- and it's about this thick and I don't think anyone could ever get through that. So it needs to be friendlier for people to do it. I mean, I seldom take no for an answer and I'll spend three or four years going through something. But the average citizen is not going to go and spend $50,000 for consultants to go through this application to, to do a power grid interchange. Meaningful deregulation of the industry, that would be very radical.

Next. Again, reduce energy demand. That is the easiest and most cost-effective way to establish the maximum benefit. If you, in fact, can reduce energy, then you don't have to worry about as many things. I mean, in our development, for instance, we're trying to, we're reducing energy just by good planning. Our estimate, if you look at the trip generation based on the original model of development before I purchased it and what we have today, we actually have more density but we're reducing 10,000 trips a day. That works out to about 3 million gallons of gasoline a year, and I don't know what that works out to in tonnage of carbon. But you can actually reduce the energy demand just by good planning. Again, a reduction of 75 percent could eliminate the need for power plants in the future.

Require all state buildings to reduce energy demand by 75 percent. The reason I put that in there, I found out

that state buildings, educational buildings, they're exempt from building codes.

So if -- next slide, please. Provide incentives for zero carbon renewable energy. On cogeneration, I reviewed all the cogeneration policies for the United States, and it turns out that it seems like New Jersey has the best one. And California, although they have all these incentives, believe it or not they have a cap on a cumulative participation. I mean, what is it, Austria has, I think, in the bottom 10 percent of radiation in the world, yet they have between 10 and 15 percent solar. The State of California just passed a $3 billion incentive program for solar, but they put a cumulative participation cap of 2.5 percent of capacity. So why put a cap in there? They have a cap of any one project of 1 megawatt. Even New Jersey, which is the best one, has a cap of 2 megawatts. So I think if you go in that direction, why have a cap? If you want renewable energy, you want renewable energy.

One of the things we keep hearing is that solar panels are very inefficient, it doesn't work, it doesn't work. But as Dr. Fenton showed, the solar panels are getting more and more efficient and utility prices are going to go, continue to increase. At some point they'll be, they'll be less. But the states that are putting it in place now are offering subsidies to make it happen. That's what we need here in the state.

As you talked about, Commissioner Carter, there's a social benefit. A lot of people don't realize, but pollution for water, and we depend on water resources for our ecotourism and tourism in the state, 25 percent of the national average of pollution in the water comes from the air. I live in the Tampa Bay area. In Tampa Bay, 50 percent comes from the air. We have a ring of coal-fired plants around our bay, plus we have an airport, we have a lot of traffic, an interstate running through, and industry. So, yes, it makes a big difference.

The UK went from no green to everyone required to be green in the UK as of this year in three years. And it wasn't because of reduction in energy costs. It was because the people wanted a clean environment to live in.

Next. As far as what the private sector needs, the private sector is ready. The people of Florida need a progressive renewable energy policy and incentives to make zero renewable carbon energy work.

I mean, I'm ready to do this right now, I'm working on trying to make it happen, and I think everyone else is ready as well. Thanks. That's it. Any questions?

CHAIRMAN EDGAR: You've given us, you know, a lot of good ideas, of course. But when you talk about a progressive renewable energy policy and a financial incentive program, could you maybe give us a few more examples about what type of

financial incentives you think either have worked in the past or are ripe for Florida?

MR. PRIDGEN: For instance, where you have an ethanol subsidy policy right now, a 75 percent tax credit. A 75 percent credit or subsidy is what you need for solar to work today. So if we're doing it for that, why don't we do the same program for zero carbon energy.

CHAIRMAN EDGAR: Commissioners? Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chair.

By the way, I like your ideas. They're fascinating, they're not run of the mill, they're bold and courageous, and it's audacious too.

In the context of your development, can you quantify the cost in terms of the -- did it cost you more to do that and, if so, were you able to quantify that? And I appreciate the fact that you have some social benefits in there as well, but in the context of when you're dealing with, no disrespect to my colleagues that are money people, but were you able to quantify in terms of, let's say it, costs? In order to have a wholesome environment like this development that you've come up with, does it cost 30 percent more or does it cost -- do you understand what I'm asking you?

MR. PRIDGEN: To make them energy efficient it's about a 2 percent increase in cost. To add the solar it's about another 3 percent. So about a 5 percent cost. All the

other things, the good planning part, we want to do that anyway. But interestingly it's not just the energy sector, it's almost every single sector I'm running into roadblocks. For instance, I want to do low impact design where your pre and post-development runoff is the same, but in the State of Florida green rules which I plan on implementing and pervious concrete is not allowed. They give you no credit for it. But at the University of Central Florida, Dr. Juan Least (phonetic) is working on that, working with DEP and Army Corps and the water management district to get that approved, but I understand it's going to take several years to get that approved. I'm ready to put this in the ground today.

So there's -- it's a paradigm shift in thinking. And people have been thinking a long time, it's a good idea. I'm trying to do it right now, so I'm running across a lot of paperwork that needs to be modified in order to make it happen.

COMMISSIONER CARTER: We're sympathetic in that a few years ago I know that Florida made an effort to say we're going to do things like one-step permitting in terms of working with DEP and other agencies to encourage economic development, to encourage a more sustainable planned community concept. So I really appreciate your ideas. And there are some things that you're requesting we obviously don't have the authority for. I mean, we can't tell the feds what to do. But where possible we certainly want to do some interagency, you know, agreements and

things of that nature. But I do think that you presented us a perspective, and I know that a lot of our colleagues are watching this and we're doing this. And hopefully as you go through the process -- in March the legislature starts, so please go by and share your ideas with the legislature. Thank you so kindly.

MR. PRIDGEN: One thing real quick on the housing issue with 51 percent of the energy going to that, in Sarasota what they implemented was a really fast-track permitting process where they literally can give you a permit in three days. And talking to some large home builders, they said, you just give me that and that's enough incentive for us. So there's a whole myriad of incentives that could be out there. Some of them cost money, some of them don't.

COMMISSIONER CARTER: Thank you.

MR. PRIDGEN: Thank you very much.

CHAIRMAN EDGAR: Thank you. And our next presenter is Myron Rollins with Black & Veatch. And, Commissioners, that is Tab 16.

MR. ROLLINS: Hello. I wish it was Ric O'Connell. I was hoping just to sit back and be able to listen today. But Ric's plane got cancelled due to weather, so I'll try to work my way through his slides.

And, Commissioner Carter, I share your sensitivity about open dockets. And one of the things I told Ric,

"Whatever you do, don't put anything in there that deals with any of the open dockets." And I think he did a pretty good job on the slides avoiding it, but the dockets cover a pretty wide range. This agenda is a renewable energy overview, RPS overview and status of implementation, which some of those things you've seen quite a bit of, and then status of RPS compliance. It's been interesting, we've seen these pie charts all day long. All of them have a little bit different numbers but all of them have the same, same conclusions. This is the United States, and renewables, excluding hydro here, this source was 2.3 percent.

Next slide, please. This is Florida, and in Florida we have 3 percent from same equivalent source or whatever, so that, that tells me that Florida really isn't doing as bad as I thought they might be doing on renewables.

But Ric came up with some other interesting statistics. 45 percent of all the petroleum for electricity consumed in the United States was consumed in Florida, 12 percent of natural gas. And the issue with the 3 percent renewables is 85 percent of that is municipal solid waste and the other 15 is biomass.

Next slide, please. I know our renewable group, a big part of what they're doing currently, a lot of their projects are wind, and this is kind of a graph through time. 1978, I guess, corresponds when PURPA was passed. But the big

increase has been wind lately.

And the next slide kind of gives you a little bit of insight into some of this. You know, I'm kind of like the audience, I'm just more or less making observations from these slides, but my observations were the three bars on the right-hand side of the slide, I believe those correspond to tax incentives and credits expiring. So we've gone through a lot of boom and bust things to try to get projects in before the tax credits and incentives expire. And if you notice, a big part, the biggest part there is wind, and biomass is, is some but a lesser amount. And a lot of biomass was done back in the, you know, '90s era.

Next slide, please.

CHAIRMAN EDGAR: Commissioner Carter for a question.

COMMISSIONER CARTER: Could you hold to that slide for a moment?

MR. ROLLINS: Sure.

COMMISSIONER CARTER: Do you find that the reason there's a spike in wind is that as these tax credits are available, they're available for more specific types of renewables or --

MR. ROLLINS: It's my understanding that the tax credits help wind exceptionally well, and that the cost of wind generation in general has come down quite a bit. So it's probably -- if you've got the wind, it's probably the most

competitive renewable out there, and the tax credits push it over the edge to make it, to make it good.

COMMISSIONER CARTER: Thank you, Madam Chair.

MR. ROLLINS: This is the status of the state's renewable energy portfolio standards. I guess there's 21 of them plus Washington, DC, that have them, two states have goals and seven states are considering RPS standards. It covers about 45 percent of the U.S. retail sales. If you include the states with goals and that are considering RPS standards, it gets up to about two-thirds of the retail sales. If you look at that in terms of gigawatt hours, that accounts for about 160,000 gigawatt hours. And then if all those RPSs came to fruition, you'd have 20 percent of the new generation by 2020 being renewables.

Next slide, please. This is a map showing the locations and the, and the percents on the RPS. I wish we had the cost associated with, with energy in these states. It's my feeling that a lot of these states, the cost of renewables or whatever is higher where the RPSs are in place, and that's -- you know, essentially you've got to have, you've got to have renewables, so the price gets driven up. So I think that's an important function. I know one of the previous speakers talked about Texas and other places had -- it was more economical to do projects there. So I think that's one take-away I take away from this slide is the more expensive places for energy. And I

have -- I guess my thoughts are that low cost and low cost rates are fairly important. If you're having -- RPS is increasing the cost, well, that has to have an upward effect on rates. And one of the things about rates is that disproportionately it affects the lower income people when you have higher rates.

So go to the next slide, please. This slide kind of shows the status of those RPSs, how much -- the darker green shows how much is still to go and the, and the lighter green or whatever color it is is how much is achieved. My take-away from this slide is even though there's a lot of RPS targets out there, that there's still quite a bit to still be accomplished to meet, to meet those targets.

Next slide, please. This just shows how they've been implemented and shows the changes, which one of the previous speakers talked about those changes caused uncertainty and caused it to be more difficult for projects to get financed and built. It, to me, doesn't show real recently that there's been a big rush in new RPSs, but at least there's been quite a bit of activity two or three years ago.

Next slide, please. Again, I think these big bars, the tall bars in years show the impact of tax incentives. My take-away also from this is that the capacity built in the non-RPS states is still pretty significant. It looks like certainly the tax issues might be a much bigger driver rather

than the RPS itself. And I just thought it was interesting that the non-RPS states still have significant additional generation of renewable capacity.

Next slide, please. Finally this is Ric's summary of the status or compliance. He thinks about six states including Texas and Hawaii have pretty well met their targets. He thinks seven of them are challenged. I wish I would know what the problem was with Maine. If you remember that last chart, Maine was off the bottom, like 60 percent on the bottom, so I don't know quite how it can be challenged, but maybe the chart only showed 30, up to 30 percent. So maybe they're only a little ways off the chart. And then there are several, several states that it's, it's too early to tell.

And I guess, you know, my, my take-away, certainly I don't have a position on would RPS be good for Florida or not, but overall Florida has done pretty well through time. And some of the times they haven't followed California, but some of the things California has done, it's a good thing you didn't follow them. So, anyway, if you have any questions, I'd be glad to answer them.

CHAIRMAN EDGAR: Thank you.

MR. ROLLINS: Okay. Thank you.

CHAIRMAN EDGAR: Appreciate it. And our next presenter is Ted Bronson with the Power Equipment Associates, Limited. Mr. Bronson.

MR. BRONSON: Thank you, Chairman Edgar.

First off, I'm here representing the EPA's Combined Heat and Power Partnership. In particular, I'm here for Katrina Pielli, who is EPA's Clean Energy Program Manager. She's worked with several PSCs throughout the country on DG and clean energy policy issues, and she sends her regrets that she couldn't be here today.

The presentation we have, it's got quite a few details in it. I'm just going to skim, skim through a lot of it. The information is there for you to read through and digest later on at another time.

One resource I'd like to talk about just briefly now as we start is EPA's Clean Energy-Environmental Guide to Action. It's one of the most -- oh, sorry. It's one of the most complete, comprehensive and detailed papers out there on how to address barriers and promote clean energy. We'll be referencing that as I get through sections later on.

As an overview of the presentation, we're going to start with, address a couple of barriers in detail: Standardized interconnection rules, utility rates, and talk about an opportunity with renewable portfolio standards. We heard a lot there from Ric just a bit ago. And we're going to close with a summary of some EPA Clean Energy Programs.

What is clean energy? When we're talking about clean energy at EPA, we're talking about energy efficiency, renewable

energy and combined heat and power. Why combined heat and power with this mix? It's one of the biggest opportunities we have here in the country right now to address climate change, and that's a big driver for a lot of what EPA is doing here.

Clean energy benefits, we've got a list here. We've talked about a lot of these today. But, again, one of the reasons EPA is in the game is we can reduce energy-related air emissions and meet load growth with fewer environmental consequences.

Next. Today we're going to talk -- we've got five main approaches that we have in our Clean Energy-Environmental Guide for Action. We're going to talk about three of those today: Renewable portfolio standards, standard interconnection rules and utility rates. We also have public benefit funds that were talked about earlier, and output-based environmental regulations. With environmental-based environmental regulations, that's where as opposed to having your cap set for a site as far as you can't exceed, say, 100 tons of a certain emission, you have it based on output where it's so many, an allowed rate per unit of energy. This way you're encouraging more, more energy efficiency with your rules than just additional emissions.

Standard interconnection. One thing here, policy objectives. Next one. Two things we want to cover. We want to establish clear and uniform guidance for application

processes and technical requirements. We understand Florida has recently issued, I guess, notice to, to utilities for tariffs to implement IEEE 1547. That's a great thing, that's a great start. That's a technical requirement. But I think as a barrier to clean energy we also have the business processes or the application processes that also need to be addressed. This talks about the time frames, the interconnection agreement, the processes, the fees, the studies, fast-track for smaller systems. You don't want to interconnect a small solar system with the same procedure you're going to interconnect a 10-megawatt system. They're a lot different here. With these business practices you can create more economic certainty for the developer because they'll know exactly when it's going to go in, what it's going to cost. You're going to take out some unanticipated costs or schedule impacts that can, that can get brought up during interconnection.

Next. Just a graphic example of what Ric showed -- or, no, sorry, not on RPS yet. But with standard interconnection rules they have just a map here of who's got interconnection rules in place and who's proposing interconnection rules.

Next. This is what I talked about before with the application process being just as important as the technical interconnection requirements when we're talking about barriers.

Next. A few things with successful implementation.

A lot of these interconnection standards have been developed with trying to build consensus with stakeholder groups and utilities and formats that are put together by the, by the utility regulatory commissions. They've been very successful in a lot of cases, but there are points where there will be contrasting opinions. And that's where utility regulatory Commission leadership really comes into play. You know, you can get through the good stuff, the easy stuff, build the consensus between the parties, but there are going to be some cases where you're going to need to make some hard decisions.

The best example of this was with one of the first interconnection standards with Texas. Texas, with former Chairman Woods, former FERC Chairman Woods from Texas, as well as Alison Silverstein looked at everything that was out there, looked at the issue: What's best for the State of Texas? And they chose based on that and they worked with the utilities and the industry stakeholder groups to live with those agreements, and it's working pretty well.

When you're developing standard interconnect procedures, you don't need to start from scratch. There's a lot that's been done out there. We heard about New Jersey earlier, some of the cogen stuff from New Jersey. Actually the MADRI distributed resources, the MidAtlantic Distributed Resources Initiative, which is a coalition of chairmen in the Mid-Atlantic states, they got together and they started with

the New Jersey rule, and they went further and developed it to where we have a pretty good guideline of what to do for standard interconnection policy. They're actually starting with that guideline now in Pennsylvania. So it's a good thing, it's a good product that's out there that can help lead the way with interconnection procedures.

Next. Leading state examples. The Oregon PUC is another one that just started. They started with the MADRI procedures, they worked through that, and it looks to be one of the best interconnection standards that we see out there. It's actually one of the newest. So we'd encourage you to look at that.

New York and Texas that I talked about earlier were some of the, were some of the, some of the early interconnection standards that were developed. New York just recently came out with a revision to their standard that actually addressed network systems.

Next. As far as interconnection resources, sources that we have for you, again, the EPA Clean Energy-Environmental Guide to Action, Chapter 5.4, Interconnection Standards. We have a fact sheet on standardized interconnection rules. And we recently performed a study of interconnection rules that was performed by the Regulatory Assistance Project in New Hampshire for us. And all that information is on our website. It's either EPA.gov/CHP or EPA.gov/cleanenergy, usually under the

state and local programs. But it's all there, all on the website.

Next. The utility standby rates. Next slide. Three primary issues with utility rates and clean energy that we talk about in our Clean Energy-Environmental Guide for Action. Exit fees. Pretty much an argument by utilities to recover costs that were, that were there to install the initial transmission or actually the distribution resources. And when somebody decides to produce their own power, the resources are still there and the utility is looking to get compensated for that. Well, most states that have interconnection rules or have guidance on here have waived these exit fees mainly because renewable energy is only really taking a part of the load growth that we're seeing right now. There really aren't stranded assets. And these, these new assets are providing a benefit to the grid by providing a little more stability. So that's exit fees.

The next one is standby rates. Now the best way to run distributed energy or clean power is to have it interconnected with the grid. You can get the best efficiencies out of it and you provide very reliable power for the site. But with that, if your system is going to go down, you are going to need standby rates from the utility. Now the problem has been that in some states these rates cannot represent the true costs, be very high, and can be prohibitive

for a project when they're paying so many dollars per month per kilowatt just to have the standby system available. But there are efforts going on in other states I'll talk about in a bit that are starting to address these issues.

Now buyback rates, we heard a little bit about that, I think, today with the, with the earlier gentleman talking about the landfill gas facility where they have free fuel available and they can't make the project work. Something, I think, needs to be looked at there. But those are the three main things that we look for for utility rates and clean energy.

Next. And let's skip to the next one. A few elements of successful implementation. Make sure that you have current and accurate information regarding rate issues for clean DG and their potential benefits on the electrical system. This is, this is typically left off. When you have these assets there, when they are generating power, they are starting to account for a more robust grid, but somehow because of that they're penalized and the benefit to the grid is often overlooked. And you may consider opening up a docket to explore these actual costs and the system benefits of onsite energy supply.

Next. Some leading state examples. Again, you don't want to reinvent the wheel here. California and New York have recently revised their standby rate schedules. As I said

before, several states have exempted clean energy installations from exit fees.

And in Oregon they've come up with something that's a little more unique that we really, really like at EPA. Most times with standby power you're required to purchase standby power for 100 percent of your load, of what your maximum load is, of what you have today. However, you may not need all that for standby power, but they're requiring you to purchase that anyway. In Oregon they have you -- you need to purchase a minimum of 7 percent, but you can purchase up to 100 percent of whatever you may need. So it gives a little more flexibility for that end-use customer, and that could also help make their, their package more, more economically friendly.

Next. Again, EPA rates resources. Clean Energy-Environmental Guide to Action, Chapter 6.3 and 6.2. We do have a fact sheet on utility rates as well right on our website. And with the National Action Plan for Energy Efficiency, Chapter 2 has some really good information there as well.

And the last topic to talk about is renewable portfolio standards. What we like about renewable portfolio standards, they can get a state to focus and develop action to find and install clean energy. It can really -- when you put that requirement in front of them, we see action taking place with the utilities and the stakeholders getting it together to

make things happen.

One of the things that I found from discussing this topic with Katrina is that RPS standards haven't always resulted in a cost, in a cost to the utility ratemakers. Sometimes there are modest increases up to 1 percent or most times there are modest increases, but in at least three states there's been actual savings as the price of natural gas has been volatile. When you look to take on that next unit of generation, sometimes clean energy has been cheaper than the natural gas-fired generation that would be brought on. So -- or not actually low efficient natural gas generation as far as that last unit that's brought on. So with that it has actually resulted in savings for some states like California, Iowa and Minnesota.

Next. Here is the map similar to Ric's chart. Just a couple of things here just to point out. Where we have the red star on the map, these are some of the states that are considering all different, all different types of technologies for, for their RPS, and including CHP and waste heat recovery usually as a Tier 2 or a Tier 3 type technology. So you could have a Tier 1 technology, maybe that's solar, wind and biopower where that's a certain percentage of power you're looking to provide in ten years or so, and maybe there's a Tier 3 requirement of 1 percent. Recent requirements that have been developed in Connecticut and Pennsylvania are some of the key

new examples that we look to.

Next. And there we're just highlighting Connecticut and Pennsylvania as a couple of the newer RPSs.

A few key features of RPS design. Determine what your objectives are, what you want to accomplish, what you want to do upfront. Are you looking for economic activity? Are you looking to attract manufacturers of renewable energy to your state? What technologies work? What technologies don't work? What do you want to encourage? Where within the state do you want to encourage these things? Those are just some of the things you should consider as you're -- if you are considering RPS, if you are moving towards RPS design.

Next slide. This slide just illustrates the different technologies that are eligible for, for RPSs in the different states. And, again, some, some key features. One thing I'd like to mention here is time horizons for compliance periods. We've heard you mention, I think, today looking at the next one to five years. Really good, go after the low-hanging fruit, get the program started up well. But we think it's also good to have maybe a longer time horizon like a ten-year goal where the financial community can see a sustained commitment to renewable energy or clean energy.

Also a flexible compliance mechanism to guard against high prices or the lack of supply of renewable energy. That's been another element that's helped with RPS design, as well as

cost recovery mechanisms for utilities.

Next slide. A few elements of successful implementation. Broad support, including top level support of the Governor and legislature, and hold action-oriented facilitated discussions among stakeholders. Today is a great start getting everybody together for, for some input. There's been a lot of great parties speaking here today. And, again, encourage a long time line to encourage private investment.

Next. Leading state examples. California, the California senate, RPS of 20 percent in 2017. Because of the status and the progress they're making and where they are right now, they've revised that goal to 2010 with a 2020 goal of 33 percent. Huge, huge step. So I think if you're looking to go this way, it's worth it to see what these guys are doing, what are some of the elements of their success.

Connecticut, we've heard some, that there's some issues there because there has been some stability. But there were some elements of their, the last change in 2005 that we liked, including an RPS Class 3 that encourages combined heat and power. Now with Connecticut you have one of the worst places in the country for transmission congestion and distribution congestion, so they've got a lot of issues to work there. And combined heat and power is a real good fix for their problem.

And next. The RPS resources we have listed here,

Clean Energy-Environmental Guide to Action, another fact sheet we've developed, and we are developing a White Paper here as well.

Next, just a couple of brief words on, on EPA. And what we deal with here with the clean energy programs, we're talking about voluntary partnerships. This is not the enforcement side of EPA. So I want to make that clear. But one of the successful programs for climate change has been the EPA CHP Partnership. We have 170 partners, and over a five-year period we helped influence over 3.5 gigawatts of combined heat and power. Now what does that mean as far as an environmental impact? Well, as far as CO2, it results in an equivalent of 2.5 million metric tons of CO2 being removed from the atmosphere and not put into the atmosphere, which equals 1.7 million cars. It's like taking 1.7 million cars off the road. This is five years with one program. It's like equivalent to planting 2.5 million acres of trees. So when you're looking at combined heat and power, you really are looking at one of our nation's opportunities to really make an impact on climate change.

Next. Now there's other EPA clean energy initiatives that Katrina Pielli is very active with. Next slide. The first one, Utility Commission Technical Assistance. Katrina leads this one working with Commissions, as we said before, to identify and evaluate policies and programs to support the

development of clean energy.

Next, the Clean Energy-Environment State Partnership Program. This is where EPA works with state energy offices to develop clean energy plans.

Third, EPA State Energy Efficiency and Renewable Energy Projects. This is an area with EPA, NARUC and some individual state utility commissions. We'd love to have you join. We do things, efforts like efficiency workshops, rate design, interconnection. We're working with some key states there.

And the last one, the National Action Plan for Energy Efficiency. This is facilitated by EPA and DOE. I think many of you know about the action plan here. It was developed by a leadership group of over 50 leading organizations, including senior utility officials, utility regulators, consumer advocates, and we wanted to commend the Florida PSC for endorsing the action plan.

And lastly, numerous opportunities we think for Florida to increase the use of clean energy. Two barriers that we think we can, we can help you on are interconnection standards and standby rates. Leadership is always key at the PSC; we're seeing that being delivered now with these hearings that you're holding. And we are here, we're available and we're armed with several resources to help support your efforts.

Next slide. And there's our information. Again, Katrina is the main contact here. She is the, is the leader of this area for EPA. And thank you very much.

CHAIRMAN EDGAR: Mr. Bronson, thank you. Once again, a lot of information in a short period of time. I appreciate you moving through all of it and sharing all of it with us. And, again, some of the things you've mentioned I am very aware of, and a few new resources, and that's always good to know. So I know that our staff has taken down all that great information and contact information, and we'll look forward to working with your office and with the office at EPA as well.

Commissioners, any questions?

COMMISSIONER CARTER: I don't have a question this time. I just wanted to say that I can see that, you know, through your leadership, Madam Chairman, that we are participating with EPA and other agencies and obviously we will continue that. And I just, I thank you for the courage that it took to kind of bring together people in a non-adversarial process so we can get the facts on the table. And I thank you for coming down from the EPA. Thank you.

MR. BRONSON: Thank you.

CHAIRMAN EDGAR: Thank you. Oh, before you leave us, Commissioner Tew.

COMMISSIONER TEW: Thank you, Mr. Bronson. I just had one quick question. Ms. Glickman had mentioned earlier the

information about Class 1 and Class 2 renewables, touched on it just a little bit. And I think you called it Tier 1 and Tier 2, and I'm assuming that's the same thing. But I'm interested in how is that determined? Do states that set RPSs, do they determine what they consider should be the Tier 1 and Tier 2 or is that somehow determined nationally?

MR. BRONSON: It's determined on a state-by-state basis on what technologies they want to encourage in their state. Some states may have what they call set-asides for wind. They may have a Tier 1, maybe that's, that's wind and maybe a wind resource is very abundant in their state and they want to maximize that. But, however, even if they have a, a Tier 1 of wind, they don't want to forget solar. They want to have solar to be there, to have a place on the table as well. They don't want all the, the effort to go just towards one technology. So by having the different tiers they can get different levels of support and set different goals for different technologies.

COMMISSIONER TEW: Thank you. That's very helpful.

MR. BRONSON: Okay. Thank you.

CHAIRMAN EDGAR: Thank you, Mr. Bronson.

Our next presenter is Leon Jacobs with the Sierra Club. Mr. Jacobs.

MR. JACOBS: Good afternoon, Commissioners. Such a long time since we've had a chance to see one another.

CHAIRMAN EDGAR: Welcome back.

MR. JACOBS: Thank you. You've had a lot of information, a lot of robust and rich survey of the landscape regarding renewables. And I'm going to stay within that context but, if you will, I'd like to zoom out just a little bit.

Policy in the State of Florida regarding energy is in the midst of incredible transition, paradigm shift, however you want to call it. We are being absolutely driven by externalities: Weather, technology, new volatility in the market. So much to deal with and so little time to deal with it. But perhaps the thing that is characterizing it most is the incredible growth that the state is experiencing. It is a, it is the lightening rod, if you will, that is so important to all of this. But in the midst of all that, and if you didn't have anything else to worry about, here the world markets become totally crazy. China and India and everybody else now wants their piece of the gold. And Florida is highly dependent upon importation of its energy sources. And so here you are in the midst of all of that and talking about one particular issue that's, that is absolutely vital to the whole mix.

Next item, please. Just as a summary of stuff, I know you're very familiar with it, but just to touch on it very quickly, we're looking at probably 900 to 1500 megawatts per year in growth. And if you were to want to build plants to

service all of that, we're talking about siting, well, at least planning for 45 500-megawatt plants by 2020, if that were your desire. I would suggest to you that, and I think it's becoming clearing throughout all of the, all of the various constituencies, that that's, that's not a realistic way to address this problem, this issue.

And there are ways that, that we can as a very intelligent group of folks step back and be realistic about how to really approach this. As former Commissioner Gunter used to fondly say, "This really is rocket science."

Next slide. One point that I know we've touched on a bit today but I think you should bear very heavily in mind, Florida has not, there's not a lot of publicly available information about Florida's transmission grid. It's being managed well. I don't doubt that. But in terms of planning for, for growth, there's not a lot that, that the private parties have at their disposal to deal with that. But it's becoming fairly evident that with, with where we are and where we plan to be that we should become very interested in what the status of our transmission grid is. In fact, the U.S. Department of Energy has a congestion study where they again acknowledge that they don't have the finite details today, but they surely say that with what we're looking at, already now discussions of two nuclear plants and a whole host of coal plants, they call this an area of concern for not only Florida

but the whole southeast, and particularly for the grid interconnections between Florida and the rest of the southeast.

Next slide, please. So if, if -- in the midst of all this you have the responsibility of planning on how to meet growing demand and, of course, you're being hit by incredible uncertainties and now being exposed to undue risks that you haven't really had to deal with maybe at such a direct level previously. Uncertainties in fuel prices, fuel transportation, capital costs of building new plants is a big issue today; O&M expenses of those plants once they get on the ground; emission issues, however you might want to characterize them. And one of the, one of the, one of my early days of my career in this august body, one of the first assignments I was given was the idea of nuclear decommissioning dockets, and some of the greatest minutia you ever want to have the great opportunity to experience, but vitally important if you're planning for nuclear plants. Those issues are in transition in and of themselves. The risks that they impose are significant. Reliability of power is, of course, the top issue on most everybody's plates.

Financing. There are real issues now with regard to the availability of capital, financing capital in the electric industry because of many of the uncertainties.

Technology, of course, you've heard so much about that today. And, of course, the global markets we've talked

about already.

Next slide. So now we're here today and we want to understand how to integrate and incorporate renewables into all of this. And they have a role to play; that's been demonstrated. I'll talk about it in a minute. Renewables have absolute benefits to deal with these issues that you're facing today. They're an important kernel. But it is our view that they have to be dealt with in a systematic and a reliable fashion in your holistic analysis.

You must be able to -- as you integrate this resource, you must be able to address the growing uncertainty and risks in your overall planning process, and we think renewables and efficiency and DSM resources have a role to play and, and should be accorded appropriate value for that role that they play. And, of course, because of that we're here on behalf of the Sierra Club to recommend that you take a holistic approach in this whole idea and engage in a, in a process you've really already begun, but wholesale and affirm and engage in the process of integrated portfolio management.

Mr. Bronson talked about the EPA's guide to action. I would, I would second his endorsement of that as an incredibly detailed and robust document, and they deal very clearly and very specifically with this issue. As well as NARUC has a report that has been issued that talks very clearly about this particular technology, I'm sorry, this particular

process.

Next slide, please. For purposes of today we would define it as basically energy resource planning, and it utilizes a diverse cost-effective mix. They -- on the supply side it would be traditional supply-side resources and renewables, and on the demand-side it would be DSM efficiency and all, and the other technologies that you've heard about today.

Now here's the neat little pin on this. This is to bring you in line, in contact with what's happening in the, in your constituency, in the regulated companies that you oversee. This is to tie into their processes. This is to tie into the IRP processes that are in place. This is to encourage those who have not done IRP to look at it very seriously. And this is -- even if you -- it's being done even in states where the markets have been deregulated. But certainly in those states that are still looking at vertically integrated markets, where as in Florida the issues are diverse, they're, they're spread out across the spectrum, and now we're seeing, we're seeing where they may change in a quick time cycle, that this, this is being addressed more and more prominently every day.

California has, has engaged in it very, very heavily. In addition to all the other measures you've heard about from California, this is a key component of what their planning process is now. Illinois, Oregon and others.

Next slide, please. Critical difference. I believe perhaps maybe it may be a step up. It will provide for real assessment, balancing and management of long-term issues in order for you at your level to minimize overall costs and risks. What you should look to accomplish by having engaged in this is you should have an optimized mix of resources that stabilize prices so that ratepayers can have some understanding of where, where the markets are headed. That won't be totally -- you will not ever have everyone totally at ease with where we are right now because that's simply not going to be possible given the transitions that we're seeing right now. But if, if you are the, the head of it all, you will, you will drive so much of what will happen down the line. This cannot be multiple tails wagging here. You have to have stable, concrete, long-term objectives and policies. We believe again that the demand side as well as supply side are vital components of that.

Next slide, please. Now we've heard the stories, and I agree with Mr. Rollins, that renewables have had challenges. But what, what I hope you'll see is that some, some folks have figured out how to make it work. Most of them are overseas. And what's important, and you've heard already today, they're probably able to capitalize on particular technologies that they have at their disposal.

Florida does not have a robust menu of technologies

and resources that lend themselves to what's happening in renewables right now. Let's be honest. Wind is what's driving much of, much of the debate right now. We don't have a lot of wind, unless you want to engage in the offshore wind project. The biomass is going -- is an emerging technology that's going to drive a lot of what happens now, and Florida does have some potentials. But as we already are seeing, those potentials have, have some issues and externalities that we need to be focused on. You have to understand how to balance all of these. Where should you put incentives, recommend, I should say, incentives? Where should you look at to do -- where should the legislature consider real tax breaks? Those are the overall guiding policy issues that are going to be absolutely critical, and I think you have a wonderful opportunity to weigh in on using this process that we're suggesting.

Next slide. Now they -- while renewables will absolutely bring great benefits and they offer incredible energy resources to Florida, they bring with them their own uncertainty and risks. And we have some examples here that are already on the books, and many more if you were to do a survey around the country. This is not to -- and this is really important. All this does is puts them in line with other energy resources. This is not to diminish the idea that they deserve their own place in, in the generation mix. And it is our belief that if done properly, you can construct a scenario

where they almost become dispatchable. There are states where that is the goal now, to make these resources dispatchable. And, and if done properly and with the proper planning perspective, we think that that's possible.

Next slide, please. The, the, the most prominent strategies that have been undertaken thus far to promote renewables have been two primary, there are some others, but the two primary others are what we call feed-in laws. These are the guaranteed tariffs. And you, I think you're familiar with that and I won't say anymore. And you've already heard discussion about the pros and cons of that already, so I won't go much into that. And then, of course, you've heard a lot about renewable portfolio standards. And they have, they, again, have their pros and cons and mixes.

What -- but how are we given metrics and standards by which we can understand where and when to integrate one versus the other where one might taper off in its effectiveness and where another one might pick up in its effectiveness? Because the overall objective is how are we going to get more stable renewable portfolio standards into the generation mix of this state? And the results have to be, have to prove themselves. You're starting to see some results from renewable portfolio standards in other areas of the country. But you have to look even at those results to determine, okay, is that a result that's unique to that particular state? If Florida were to put

that in, would it have the same, the same results? And this here is the famous map that we've all seen so much of today. I won't even talk about that anymore.

So now it's vitally important that there be a more complete analysis of the true costs, the risks and the benefits of energy resources. We believe the way to do that is to look at this concept of a portfolio management, to really engage in it. It will require more skills. There will be some skill sets that you'll have to add to what your wonderful staff has already. You have a very, very knowledgeable staff. But there will be some skill sets that you'll need to incorporate. But the cost versus benefit of that is way, way positive.

Next slide, please. There are, I believe, incredible opportunities should we take this holistic approach. And in Florida's energy market we know that integrated planning is a viable need and has opportunities. The energy bill that came out last year, its analysis demonstrated that. A model that I look at for integrated planning again is California. If you look at what they did in coming up with their integrated energy plan, it's phenomenal to me. But what I would suggest to you is look at the mix of people who were sitting at the table when they came up with it. They were from across the spectrum and they had incredible input into that, into that plan which is incredibly robust, deep and wide. And I would recommend that to you.

We believe that there are incredible opportunities for the development of demand-side strategies in Florida. You've heard already discussion today about the whole, the whole RIM debate. I won't go into that debate, but I will say this. You have to measure biased results. And the results today of all these years of RIM is that we rank at the bottom of cost-effective use of demand-side strategies. Whether, whether you like that or not, that's where we are. And if we want to stay there in the midst of the kind of energy growth that we're seeing, then we're going, we better get to building bricks and mortar real fast in the middle of a hyper market for building new coal -- new plants.

We believe that you can cultivate renewables and distributed generation in this state. I believe that there is a wherewithal right now because of some of the issues that came out of the last storm. People are understanding now why it's important.

Next slide. I don't think there's any question but that in our planning -- well, let me put that -- I should strike that remark. There is a question, I'm sure, on both sides of this debate, but it's my view that Florida has marginalized the value of, of demand-side strategies. And how have we done that? We -- you have and the state as a whole has decided that we want to make sure that the companies are made whole, which is a reasonable objective. And I encourage you

now to rethink those things in the context of what I've suggested to you. There are states now that are looking at decoupling. I don't, I don't -- I'm not terribly familiar with that debate at this point, but I do know that it is a moment in time where we have to think about those, the issues at that level.

And for Florida I think there are even more important drivers because it's clear that if we don't import as much of our energy resources as we do, if we can make more of them indigenous to the state, we're going to have incredible economic benefits from that. So I think that more than anything else should drive our ability, our thinking on this.

Next slide. So there is a business case, I believe. Demand is rapidly outstripping capacity of supply. Energy efficient technology is quickly emerging. There's a growing adoption of renewables from around the country. We are seeing and will continue to see and we think very quickly see enormous economies of scale with that. You just heard EPA come up and you heard their level of their commitment to this. There are many other governmental agencies out there that are now actively involved in this and more governmental agencies who are being hit by energy who are going to become involved in this, I can assure you. Environmental benefits are valuable. And high priority for reliability is there, particularly as now we see the great concern of, of weather in this state.

Next slide. You've -- if we had any doubt about that, about that business case, let's look at what the public is saying to you. The public -- I'm sure you've had more than your share of information about what happened in this state after the hurricanes and what the response was. I won't touch on that anymore. The legislature has spoken on this in Senate Bill 888. You're seeing public debate now over new coal plants. The Governor, our outgoing Governor spoke to this in his hydrogen initiative. And then, of course, the 2006 Florida Energy Plan and, of course, the national plan has significant initiatives that go to these very points and these very issues and speak about renewables as a vital part of that.

So I end by encouraging you to please -- the details here are important. The, the, the manner in which you go about assessing this, we highly encourage you, has to be in a much more holistic level. We believe that you have to begin to look at demand-side strategies for what they are, a valuable component for how you address the future growth and energy demands in this state. And with that I thank you for the opportunity for being here. Any questions?

CHAIRMAN EDGAR: Thank you, Leon.

Commissioners, any questions? No. Thank you.

We are actually pretty close to being on track for time, but I think it is about that time, so I'm going to take a very short break. However, please, we have some very

interesting and very important presentations yet to go. We are on track for time, so do not go far. And we will take about a ten-minute break, and then when we come back we will be hearing from Gwen Rose with the Florida Renewable Energy Association.

(Recess taken.)

CHAIRMAN EDGAR: We are going to get started again. Thank you all for your patience and your perseverance. And, again, we are, we are close to on track.

Our next presenter is Gwen Rose with the Florida Renewable Energy Association. I think we're going to hear some more about solar. Please join us.

MS. ROSE: Hello. Thank you for the opportunity to address you today. A lot of what I'm going to talk about you've heard the elements of already, so I'll see what I can do to add something new to the discussion.

So I work with Vote Solar. We're a nonprofit based in San Francisco that works on state level campaigns. We're working to jump-start solar markets with a goal to specifically bring it into the mainstream, and we think this is a worthy and entirely achievable goal.

So you've heard a lot about the, you know, attributes of renewable energy and why it benefits, you know, society and the environment, so I won't, I won't go over those.

In terms of price volatility, I would actually mention that the hedge that renewables and solar provides to

mitigating fuel price risk and reducing natural gas demand, which can put downward pressure on natural gas prices, they're starting to quantify that now. And I'd mention a study that Lawrence Berkeley National Lab has recently published. That's a good start here.

Solar photovoltaics -- and I'm concentrating mostly on customer-sided technologies installed on commercial and residential rooftops, public agencies. But it's a mature and reliable technology. It's been operating in the field for decades, has a 25-year warranty, which is not something you see on a consumer product all that often. It's reliable. Solar is intermittent, but we do know when the sun generally is going to be shining so we can calculate how much energy we're going to get from it.

The infrastructure is already there, rooftops, parking lots. I saw your parking lot structure, which is very nice. I think it's also important to note that solar polls through the roof. People do really want to see investment in this technology. A Times poll that I saw recently said 87 percent of folks supported tax breaks for wind and solar. A Washington Post poll, 90 percent approved federal investment in solar and wind. It goes on and on. And then I would say that it's also a good time for the solar industry right now. This is a really exploding industry. It was $7 billion in 2004. Last year it was $19 billion. This year it's projected to be

27. It's expected to be $70 billion in 2010. So it really is an exploding industry.

In terms of the cost of photovoltaics, the material and installation costs have declined an average of 18 percent for each cumulative doubling of capacity. Manufacturing costs in 1992 were an average of $6 a watt. Last year they were about $2.50 a watt. And it's projected to be $1.00 a watt in the next decade. And Dick, Dick Swanson, he's the CEO of SunPower Corporation who manufacturers the most efficient crystalline technology, has predicted grid, retail grid parity by 2015. So we see where we need to get to. But for the meantime solar continues to be capital intensive and so we need these bridges that will get us there to ensure that the industry continues to grow so we can continue to enjoy the associated price reductions and the costs.

But incentives aren't the whole picture. Solar also needs a friendly policy environment, a lot of which you've heard today, but I'll go over those now.

So if you want to drive a photovoltaic market, then, just to abuse the car metaphor a little bit more, you need an engine. Those are the financial incentives that move it along. And then you need a road that's clear of obstacles, and that's the regulatory infrastructure. And that generally, as far as the photovoltaic community goes, refers to interconnection net metering and rate design.

So digging into the financial incentives a little bit more, and financial incentives could mean tax credits, they could mean a solar carve out in a renewable portfolio standard, it might be -- what am I -- I'm missing a certain type of incentive. I'm sorry. A fee, a surcharge that's assessed on ratepayers and put into a public goods fund. It's kind of obvious actually. It's a very popular way of incentivizing renewables.

But the key components that you want to see in a financial incentive program are long-term declining incentives. And what's also important is that they're continuously available. You see the start-stop issues in the wind industry. It's important that these be available continuously, long-term and declining. And by declining the incentives, then you probably go the farthest towards creating cost-competitive solar energy systems and will eventually get you to a self-sufficient solar industry.

You want to have a program that allows people to leverage private investment like federal tax credit creative financing mechanisms that will allow you to allocate scarce public funds efficiently. Market stability gets back at this idea of continuously providing incentives. A five-to-ten-year program will stimulate business development, provide the security to the industry that it needs so that it can dedicate the capacity to a particular market, and it also gives the

workforce a chance to professionalize if you have that five-to-ten-year program. And we're really looking at how do you transform a market.

You want to make the incentives available to a diversity of customers and applications: So, again, residential, commercial, agricultural, new construction and existing construction or existing buildings. It's important to note in terms of the cost of photovoltaics that larger systems tend to go in at a lower cost per watt. So you get cost efficiencies there. Another new area that is being explored in places like California are new construction programs. So you can get really great cost efficiencies through better labor practices, bulk purchasing.

And then administrative transparency is also an important component of a financial incentive program. In California, New York and New Jersey we get a lot of information about how the market is doing so you can evaluate program effectiveness. California is great; it offers you, you know, without telling where the address of the system is installed or the person who owns it, you get city, zip codes, you know, county-level information that tells you who installed the system, what it cost, what the materials were that were used so everyone can see how the program is doing and whether or not it's actually effective. And then they're more informed stakeholders after that.

So an example of where these components have actually come together and worked is Japan. They had a ten-year program that ran from '94 to 2005. And you can see from this graph that over that ten-year period they saw a 71 percent decline in the cost of installation, and the federal incentives rose and then declined by 98 percent over that ten years. All the while you see that blue bar rising and that's cumulative installations. And so today they have a thriving market. So this is an example that we have that already works.

Next example. You've heard already of California. This was actually an effort spearheaded by the public, by the California Public Service Commission along with Governor Schwarzenegger after legislation was stalled three years in a row to do something similar. So the goal is for 3,000 megawatts to be installed on new homes, businesses, public buildings. There's a 400-megawatt subtarget to get new construction incentivized and to get them to have solar on half of all new homes in 13 years, create a self-sufficient industry in ten years. And they're doing it through a ten-year $3.2 billion program that they're using collected through a public benefit charge. And when a poll went out to California voters, they said -- you know, we asked would you be willing to pay $1 more a month for more solar? And 75 percent said, yes, they would pay $1 more a month.

And we're also doing it, we're maximizing incentives

by making them performance based. So you maximize system design, orientation and location.

Interconnection standards, I won't go into these too much because I think you've already heard about them. It's key that you get the technical standards right, international and national safety standards, and then making sure that the business practices are in place that facilitate more distributed generation and solar energy.

Net metering. You've also heard a lot about this. The two biggest benefits of net metering for a photovoltaic system are: One, that you recoup the investment more quickly; and, two, that you design your system so that you're producing power maximizing for peak. And that's actually a benefit that accrues to all ratepayers.

And just to stand back, the alternative to net metering is net billing or dual metering. And what this requires is an extra meter and a monthly settling of accounts with net excess electricity being paid at avoided cost of generation. So this is not only less advantageous to the customer, but in treating every single customer like a PURPA qualifying facility, you're going to add additional administrative costs to the utility in that monthly settling. What it also does is it ignores the seasonal differentiation in loads and it incentivizes a sort of design that goes towards the lowest minimal load, right, so it's not allowing more power

to be available during peak times. It's not incentivizing that peak shaving contribution, which is really solar's most unique attribute. Net metering is, frankly, a threshold issue for the solar community. There's just not a market in the U.S. that is developed that doesn't have a robust net metering policy. So it makes sense to establish a policy that'll maximize benefits. And given the seasonal differentiation, this is best achieved through an annual account reconciliation with true retail rate net metering.

So solar friendly rates, also good for driving solar markets. Utilities are entitled to earn a fair share on their investment for providing electricity, but there's a lot of flexibility in designing rates that are adequate, that make sure they're adequately compensated, but at the same time provides encouragement for greater conservation and more solar and other renewables. So the ideal rate structure would value its contribution to peak shaving, time of use rates, and low or no fixed charges work the best.

And here's an example of how that has driven a market in California. So this is a comparison of two utilities in California, PG&E and Southern California Edison. In 2004, 51 percent of all solar capacity in the United States was installed in PG&E's territory, while Southern California Edison only had 18 percent of the capacity. That's despite having a similar number of customers, similar number of sales, similar

average cost of electricity, and for the most part Southern California Edison has a better solar resource. The main difference was the difference in the rate structure. Small and medium commercial customers had access in PG&E's territory to time of use tariffs with no demand charges. SCE had low volumetric charges and high fixed charges. And so the difference in the economics, if you installed a system in PG&E's territory, the same system in Southern California territory, the difference was a two-year better payback in PG&E territory and an increase in the internal rate of return from 9, 9.5 percent to 13 percent. And that was, you know, the same system territory with slightly less sun (phonetic).

This is just a view of where the solar market is in the U.S. California still has the majority of the share, with New Jersey creeping up at 9 percent. But, in any case, where there is a solar market developing, it is true that they have strong interconnection standards, robust net metering policy, time of use rates and financial incentives. So we think that these are really the key things that are needed. You know, and actually I should -- underscoring all of that is the explicit policy goal of developing the photovoltaic market. So that's key as well. So that is the end of my talk.

CHAIRMAN EDGAR: Thank you, Ms. Rose.

Commissioner Tew.

COMMISSIONER TEW: Thank you. I had one question.

You said, you were telling us about the poll of the California voters and that they were willing to pay $1 per month. Do you know how much they're actually paying a month?

MS. ROSE: I believe it's 50 cents, but I could get that actual information for you.

COMMISSIONER TEW: Okay. And one other one. Could you repeat that last list of things that you said that the states who had success with solar, all the components they had? I heard interconnection standards, time of use rates.

MS. ROSE: Interconnection standards, time of use rates, net metering, and then some combination of financial incentives, whether or not it's the solar carve out on the RPS, although we haven't seen as much development through a solar carve out in RPS yet. The main drivers have been public benefit charge funded incentive programs.

COMMISSIONER TEW: Thank you.

CHAIRMAN EDGAR: Thank you. And I know you've traveled to be with us today, so thank you very much for --

MS. ROSE: It was a pleasure. Thank you.

CHAIRMAN EDGAR: Mr. Wright.

MR. WRIGHT: Thank you, Madam Chairman and Commissioners. My name is Schef Wright. I'm a partner at Young van Assenderp here in Tallahassee. I have the pleasure and privilege to be here today on behalf of Biomass Investment Group, Incorporated. Mr. Mills and Mr. Sharp and Mr. Whitfield

apologize that none of them were able to be here today, but we're developing the project on the ground and everybody, everybody is chasing around the four corners of the country doing what they need to be doing on the business end of things, so they sent me. That's sort of the bad news. But the good news is you get somebody who probably knows what he's talking about.

Last month I marked the 26th anniversary of my career in the Florida energy sector when I took a job with the Governor's Energy Office under Lex Hester and then Jay Haikes (phonetic.) And this coming March the 1st will mark the 25th anniversary of my coming to work as an economist on the Commission staff. And pretty much all my work in the last 26 years has revolved around energy one way or another.

Florida Biomass Energy Group, LLC, is a subsidiary of Biomass Investment Group, Inc. We are developing the first commercial-scale, closed-loop biomass-fueled power plant project in the United States and, we believe, in the world. We are very grateful to Bob Neecum (phonetic), Dave Gamin (phonetic), Vinnie Dolan and a host of other folks at Progress Energy Florida for working with us cooperatively to get a good, sound PPA, power purchase agreement that works for both of us and that is demonstrably cost-effective to Progress' ratepayers. So thanks, guys.

I'm going to give you a brief overview of our

project. And then since I was asked to speak in the section on increasing and accelerating the flow of renewable energy in Florida, I'm going to share some thoughts with you on that. You can more or less follow what I'm going to say about the project in the pack of seven color slides at the back. I'm going to skip the past impediments discussion and tell you what we do.

We're going to grow a dedicated energy crop. The plant, the scientific name is Arundo Donax. The common name is Giant Reed. We use the trade name E-Grass for it. It will be grown on approximately 15,000 acres, which will provide sufficient fuel for a plus or minus 120-, 125-megawatt power plant. We'll harvest the fuel, take it to a central processing location adjacent to the power plant where we will chip it up. It then goes into a pyrolysis reactor where it is processed into a combination of gas and liquid fuels which we sometimes call biocrude. And actually if you look, look on the next page, you'll see, you'll see a thing there with, it's showing you what the, the somewhat viscous brown liquid product is. Those two fuels, the biocrude, the oily hydrocarbon and the gas are then fired into a conventional combined cycle one-on-one generating unit. The residues, the ash or the ash equivalent after we run the process is then returned to the fields as fertilizer.

Where we are and where we have come is this: We're

not subject to the Power Plant Siting Act because our steam turbine is well under 75 megawatts. We did, thank you again, obtain state QF certification from the Commission. And thank you again, Progress and we obtained approval of the power purchase agreement. We will start air permitting as soon as we nail down the exact location of the facility. But we don't anticipate any real problems, for our plant will have very low emissions of criteria pollutants. And, well, you can say it'll be carbon neutral. It will actually even be slightly carbon negative because the root stocks of the Giant Reed actually sequester some carbon. So essentially it'll be carbon neutral.

Water issues, storm water and the ERP will be handled under existing permits from our landowner. And we don't anticipate any problems with zoning. Generally speaking, local folks wherever we have discussed this are, are very supportive.

I'm going to be as quick as I can, which I think is pretty quick. I've had time to work on making it a shorter presentation today. We all agree, I think everybody in this room agrees that renewable energy will provide great benefits to Florida, to the country and to the world: Physical fuel diversity; pricing diversity in most cases, if it's priced on gas, then it doesn't give you pricing diversity, if it's priced on coal or pretty much anything else, then generally speaking it does; reduced fuel price volatility in almost all cases; reduced dependence on natural gas and oil; enhanced economic

activity in the Florida economy; enhanced self-sufficiency and self-sustainability for Florida; improved environmental conditions in Florida; and reduced exposure to future environmental costs, especially the what seems to be very real prospect of a substantial and significant carbon dioxide regulatory regime.

What do you need to do to promote renewable energy? Well, remember, in my former career I was an economist, so I answered this like an economist would. You need to have meaningful power sales opportunities, a meaningful market for renewable energy. That market needs to provide adequate revenues to cover our costs, meaningful incentives to renewable energy producers and, I would suggest to you, also to utilities, and certainty of our economic bargain. Most of us have cost structures and cost characteristics that are much like baseload type coal plants or baseload nuclear plants. We have high fixed costs, relatively low operating costs. We need a fairly high fixed revenue stream or at least the opportunity, assuming that we perform, and we take the risk of performance, assuming we perform, we need a real good opportunity to ensure that we'll have high fixed revenues.

Respecting Commissioner Carter's earlier concerns, I did discuss this with the staff. But being asked to talk about what can y'all do to increase the flow of renewable energy in Florida, I can't really do it without talking about the

context, and the context where we stand today is the rule that y'all voted to adopt last week. And I want to say that many of the provisions in that rule will do a lot to provide meaningful incentives and meaningful opportunities: The fossil portfolio approach; the elimination of the subscription limit; giving the renewable energy producer the choice of term and years; giving the renewable energy producer the choice of the payment stream, front-end loaded, levelized, whatever, assuming that the net present value stays the same; consideration of fixed energy payment options is a good thing; clarification that tradeable renewable energy credits stay with the renewable energy producers; the environmental cost reopener in the event of future carbon legislation; and the prohibition of the equity penalty or the imputed debt equivalent unless the utility specifically justifies it on a case-by-case basis. So that's the context, that's all good.

And I feel -- I think my charge in accepting Bob's invitation to speak today was to say what more can you do? Well, you know, this isn't new. You know, you've heard this many times, more coal pricing, more flexible coal pricing. And I'm not, I'm not standing up here making, making the argument that has been already decided by y'all in the rule docket. I'm just saying that if you had -- this is a positive statement, not a normative statement -- if you had the option of signing up, if we, a renewable energy producer, had the option of

signing up a contract in 2009 based on a 2009 coal unit, that would have a greater value and, hence, provide greater economic incentive than a contract in 2009 based on a 2013 coal unit. That's just a simple statement.

Now I'm going to suggest to you, and I cite to precedent and I give you the order cite in my comments, a way that we might be able to get there, respecting the utility's reasonable position that the utility should not pay more than avoided costs. And here it is. Consider, I would encourage the utilities to consider this and I would encourage y'all considering either just telling them to do it or twisting their arms to do it, but consider having utilities evaluate what it would look like if they were to put a coal plant into their system in 2009, notwithstanding -- or 2010 or 2008 or whatever, notwithstanding the fact that they can't really build one. For example, if you were to do the appropriate generation planning analysis, PROMOD, PROSCREEN or whatever, and it showed that, well, yeah, if we really could build a 300-megawatt coal plant or a 200-megawatt or 500 megawatts, whatever, in 2009 and drop it in our system with the appropriate performance characteristics, it would be cost-effective, then it makes perfect sense. I mean, that's the demonstration of cost-effectiveness. And it would make perfect sense to offer a contract on that basis. We may be able to negotiate contracts on that basis or you may want to consider asking utilities to

at least evaluate and consider the possibility of standard offers on that basis.

The precedent is this: In 1991 Florida Power Corp, predecessor to Progress Energy, needed a bunch of power. They needed 500 megawatts plus or minus right away. They went to the market with a fast-track RFP. They got, I think, 11 responses in a month, actually I think in four weeks. They evaluated it in three weeks, awarded contracts, signed the contracts and had the petition in here -- the RFP hit the streets on January 11th and they had the petition in here by the end of March with eight, with eight contracts. But the point I want to bring to your attention right now is that there were eight contracts that were subject to that petition for approval of the, petition for approval of those contracts and they were all based on a hypothetical or virtual avoided 1991 pulverized coal unit. The inservice dates of the contracts ranged from fall of '91 -- my client, Dade County, already had an up and running plant -- to 1994 and they spread out over that time.

What else could you do? Consider, consider offering pricing on the basis of avoided nuclear units. Consider relaxing -- this is an implementation thing that we can talk about down the road maybe -- consider relaxing the completion and performance security requirements.

I'm going to -- again, this is a positive statement,

not a normative statement. But a renewable portfolio standard would, I believe, do a lot toward making renewables really happen in Florida. If, if you can consider the, the 25x25 concept articulated by Deputy Commissioner Levenstein this morning, that's a great policy. It sounds great. But when I looked at the numbers in his presentation, that will involve, to get there would involve roughly a quintupling of renewable energy to get there in what is now the next 18 years. I mean, I'm all for, I'm all for market solutions, I'm all for letting everybody work it out. But if you're going to get that kind of an increase in this kind of a time frame, I don't know if, if the market is going to, going to produce that or not. Again, a normative statement.

Having said that, you know, and leaving aside the issue whether you have the authority to require an RPS or not, you clearly have the authority to establish goals for renewable energy. That would be a really good signal to send to everybody, and I'd encourage you to consider that.

I also -- and we also would consider, would encourage you to consider offering financial incentives to the utilities to go out and subscribe renewable, renewable energy. I actually tried to, tried to make this -- I did make this sermon back in 1992 in the, in the original Bid Rule proceedings. But realistically the utilities don't profit at this point from signing up renewable energy because purchased power is a

pass-through. You know, we support giving them some incentive to go out and get the job done.

Finally, I would just encourage you to do everything you can to provide additional public support, whether it's telling the public the benefits of renewable energy, telling other agencies or making sure that they know, or articulating in your orders as a recital of the public interest benefits of renewable energy when appropriate and when you have the opportunity to do it just as a way of overall encouragement of renewable energy.

So at the bottom line my, our request is fairly simple. Do everything you can. Push the envelope to promote additional renewable energy in and for Florida. I've tried to offer you some, some ideas for doing this that I think are, are all, you know, fully capable of being implemented within your existing statutory framework, whatever, whatever anybody wants to argue about, and I hope you all and the utilities will, will go forth. Thank you very much.

CHAIRMAN EDGAR: Thank you, Schef. And, as always, we appreciate actual ideas and some substance. So thank you for that again. Did you bring -- you didn't bring a visual aid with the biocrude or the E-Grass?

MR. WRIGHT: I did not. Sorry.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chairman.

Mr. Wright, it's always a joy to have you here. I commend you, your client and Progress Energy for taking a step. I mean, instead of saying, you know, we don't have this and we don't have that, you guys have decided amongst yourselves to go and try the process. So, I mean -- and I think that the industry as a whole will learn from your, the efforts that you're making, and it has to start somewhere. So I commend you on your efforts. And we, this Commission, as you know, and what we've been able to do and what we've been able to encourage -- and as our Chairman so eloquently said, thank you for your ideas. You know, one of the things that we're asking for -- to us this is information. We want to know how to put out the welcome mat for more renewables in Florida, and I think that you've offered some -- not only have you talked the talk, but you've walked the walk by signing this agreement. Thank you so kindly.

MR. WRIGHT: We thank you very much.

CHAIRMAN EDGAR: Thanks, Schef.

And our next presenter is Kim Owens from JEA.

MS. OWENS: Hi. I'm here today representing JEA and also some of the other municipal utilities, including the Florida Municipal Electric Association. Many of us have renewable commitments that we've made and programs. JEA has actually had a renewable program since 1999. And we felt based on the experience that we've had developing these renewable

programs that there were some lessons learned and some barriers that we could talk about, and there were some practical solutions and ideas that we might be able to suggest to help move the development of renewables forward in Florida.

The development of renewables specifically focuses on several different areas. First, we need to know where our fuel sources are and how much we have. Second, we need to address the higher cost of renewables, which certainly has been a prevalent discussion in this day. We need to focus a little bit more on technology development, and also need to focus on demand-side management programs a little bit differently because these are not supply-side measures. These are measures that affect the customers and they need to be approached a little bit differently. I'm going to talk specifically about solar.

Go ahead. On the landfill gas side, JEA specifically and OUC and GRU as well all have landfill-gas-to-energy projects. JEA has two landfill-gas-to-energy projects and is in the process of developing one more. Landfill gas is a mature technology; in most cases it's cost-effective. I did hear the Palm Beach presentation. JEA has a different perspective. We found that our landfill-gas-to-energy project was very cost-effective. In fact, it's a ten-year contract with a fixed price with no escalation in price. Now where can you get energy prices like that? So it's a good project.

One of the barriers that we've had and that I see on the gas, landfill gas side is the negotiation of gas rights. We've been in -- well, the landfill developer and the City have been in negotiation for three years trying to negotiate an acceptable gas rights contract. And if you look at the Landfill Methane Outreach Program that EPA promotes, they do a wonderful job of trying to identify all the candidate landfills around the United States, and they've identified 20 in Florida that are ripe for development.

We had a conference sponsored by the Energy Office a couple of years ago to specifically bring together the different members of the landfill gas community, primarily in Florida that's a lot of our county governments because a lot of our landfill gas rights are owned by county governments and not private developers, and really trying to educate them and focus on some of the issues. And I think it is a little bit of an education process. And I would suggest that we look at doing a feasibility analysis on all the landfills. There's, you know, 20 some. It's certainly a reasonable amount to get your hands around and looking at what some of the costs, technology issues are in developing those.

On the biomass side, one of the biggest concerns -- and I really echo what Mr. Hill said at Telogia, that fuel availability and variability in the pricing is certainly an issue. You've only got a certain radius of fuel that you can

pull from because transportation costs then get to be a little bit too much of a problem.

JEA is developing a 20-megawatt yard waste facility. We do have a secure waste stream for 14 megawatts of that biomass facility. The other six megawatts they're going to have to try to find on the spot market, and cost is a concern. They have to bring it in at the right kind of cost in order to make that, that additional megawatt supply viable.

GRU and Tallahassee, both have been interested in woodwaste projects, and in both of those the volume of woodwaste, the price of woodwaste is still a concern.

And I would suggest -- last year the Energy Office and the Florida Solar Energy Center embarked on a biomass survey. It was a resource planning survey that was GIS-based to look at all the biomass resources that we have in the state from woodwaste to farming to where the land is, to really put this on some kind of GIS map with some cost parameters so that developers can then use that as a tool to identify where the best location is to identify bio, or to develop biomass facilities. It can be updated, we can look at it from a pricing perspective, do some economic analysis. We only have a certain amount of biomass, but the developers in some cases need the tools in order to figure out where the best place to place the facilities are.

On the MSW side, as we've heard before, a lot of MSW

facilities in the past have been driven primarily by land issues and not necessarily by energy issues. I'm really intrigued by the plasma arc technology that St. Lucie County has been investigating with geoplasma. I would encourage that we continue to support research and pilot testing or demonstration testing of cleaner destruction technologies, whether you want to call it plasma or some other type of high temperature technology. We've been approached at JEA many times to talk to different developers about how to handle our solid waste, although that's outside the purview of JEA. It certainly is interesting and maybe we need to change the mind-set of how we handle municipal solid waste in the country.

On offshore wind, RPS compliance has largely been attained in the United States through the use of onshore wind. And we don't have any wind projects in Florida and very, somewhat minimal onshore wind development. FP&L Energy and our colleagues here at FP&L are certainly wonderful resources for understanding wind technology. And I don't profess to be an expert on wind at all, but one of the things that we've found is from a national perspective to get on the wind bandwagon you have to be on the map. And our wind resources offshore are outdated, they're low resolution maps, they haven't been updated, and we're not necessarily in the queue for funding. We've proposed that we actually do some high resolution mapping for the state to determine whether we're, you know, we have the

resources or we don't have the resources and actually, you know, just do a study to look at this and then determine whether you need to take it to the next level. It's also another tool that developers can use to decide if they want to come to Florida or not, given the resources that we have. And that one is particular for Jacksonville, given that we're a coastal community.

Energy costs, specifically it's not unknown that renewable energy costs in general are more expensive primarily because they're not dispatchable. Federal production tax credits are not reliable. Just as an example, in the three years we've just been negotiating a gas rights contract with our landfill gas company and in the five years since they proposed a project to us there will have been no federal tax credits at the beginning, a tax credit that expired in 2007 somewhere in the middle, and now one that is extended to 2008 just in the five years of a small landfill gas project. Certainly not enough to base, have a financial basis for. So federal production tax credits because of the start and stop generally are not viewed as, as a sure, sure thing.

I do know in Senate Bill 888 there is a proposed state production tax credit. The funding is about capped at $5 million. And if existing facilities are allowed to cap into that, then it only has a certain amount of funding that will go towards the promotion of renewable production. So I would

encourage that the state continue to encourage the federal government to focus on long-term, extension of long-term federal tax credits or also looking at a state production tax credit or some other type of investment tax credit that's a little bit longer term. I know the investment tax credit that is in the energy act now on this state is only addressing hydrogen and biofuels. It doesn't address renewable development.

On the technology development side, the grants that were received, it was really interesting to see that although, although $215 million were appropriated, there's only a minimum -- $15 million is not a minimum amount of money, it's a good amount of money. But what was exciting is there's a lot of projects that will be waiting in the wings for funding off of -- that won't get funded. And the question is what to do with that. You know, will there be continued funding? Is there other, are there other resources? I think that exercise there showed that there is a lot of ideas and a lot of opportunity for Florida. And those that don't get funded, I think, should try to be vetted out through some other kind of mechanism.

On the Florida Solar Energy Center, which -- oh, go back -- which I do very much support, they've been a great resource for JEA and others in their building science and their Energy Star® programs and in their solar programs. But we

don't necessarily have a home for development of biomass wind dealing with these wind issues, dealing with hydro issues, any type of the plasma arc technology, we don't necessarily have a home for the research and development for those type of technologies. Whether it be the Florida Solar Energy Center through additional funding for them or some other type of entity, I think that that would be money well spent.

Go ahead. One of the other things that we've minimally looked at is, what are the transmission constraints into Florida? Since we're so close to the Georgia border, we do have a lot of people talk to us about the potential for using biomass resources in Southeast Georgia. And given the fact that you can't transport woodwaste only so far, many people would like to develop facilities in the southern part of Georgia or southern part of Alabama. And once they reach a certain size, there might be transmission constraints. We don't know what those are. I don't know if they've really been fully vetted out, but if there are some there they need to be addressed.

Somebody talked several times about model interconnection standards. We'll have to admit that when we contracted with these two companies, JEA did not have a standard interconnection agreement and we do now. So that's been a really good improvement on our part and something that, you know, we're glad that we have it and we're a lot more open

to developers now that that agreement has been developed. And also creating a business development infrastructure to help encourage some of these new businesses to do business in Florida with respect to renewables.

On the solar side, all the utilities that, the major municipal utilities that we talked to all have some type of solar thermal incentive program or will have one, or a loan program. And just to let you know, we meet as a group once a month and we have a group that's called the Florida Municipal Energy Efficiency Committee. We've met because we realize that we're answering some of the same and dealing with the same issues addressing energy efficiency and renewables. So we meet regularly. And we decided to have a solar workshop with some of the Florida solar contractors at the end of February, it's going to be held at OUC, to specifically address two of the barriers that we feel on the solar, that are some of the barriers for solar thermal installations, and that is marketing and workforce development and consumer education. And so we're going to have a, kind of an open forum discussion with some of the ideas that they might have specifically on marketing.

And one of the examples we have to that is that although JEA has had an incentive program for several years for solar thermal, with the new federal tax credit and the state rebate over the past year we haven't really seen an increase in the number of solar thermal sales and we haven't seen an

increase in the number of vendors. There's probably a variety of reasons for that. I'm sure a large percentage of that is marketing. Most people, when they think of solar, they think of solar PV. They don't know the solar thermal technology. So there's ways that we can work together to address that issue. Also on the contractor side, GRU and Tallahassee only have one solar contractor each in their service areas, so that gets to be an issue. Should you have a successful program, you know, it takes a lot more to develop a solar business than short-term incentives. So there's some issues there. And we'd like to hear more from the solar vendors and what they're looking for specifically. You can skip that for a time.

And finally echoing what everybody else has said, you know, focus on energy efficiency and demand-side management first. I'm happy to hear that the Energy Commission now has an executive director, who I've met, and will have their first meeting on February 9th. So I'm really looking forward to what's going to come out of that. Continue to energize the Florida Energy Plan, developing a strategic plan focusing on our resources, financial incentives, technology and development, some of the real basic things that we need to do before we develop what our goals are. We need to really know where we are. And we've done a little bit of that, but I think there's a little bit more digging that we could probably do to figure out where our resources are and what some of the

technology barriers are, and establishing a goal until we've really done that might be premature. And we feel that if that is established, we need to take into consideration, depending on which small utility or municipal utility you're dealing with, because you're dealing with local resources, then we want to make sure that the inequities across the state are dealt with. Some are stronger on certain fuel resources than others because of where they're located. And that concludes my presentation.

CHAIRMAN EDGAR: Thank you. And I know you've been with us all day, so thank you for, for being here all day and for listening and for being willing to participate towards the end of the discussion. JEA does, has so many good programs and we're always glad to have somebody from JEA come to the Commission and speak with us.

Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chairman. I sincerely appreciate your comments on the gas in terms of you have a program for that and you have not had the same experiences they've had in Palm Beach County. So maybe -- I mean, if nothing more, at least we can share some best practices.

MS. OWENS: Well, everybody's situation is different. That's a newer landfill and it's got a much stronger production curve and gas curve too. So all I'm saying is let's get the

facts on the table and see what we've got.

COMMISSIONER CARTER: And that's the whole point of why the Chairman had this workshop, so we could have a sharing. In addition to us getting information, different and disparate local governments, industry and what have you can, can do some kind of, in a nonadversarial process have a discourse and a dialogue. So we thank you so kindly. And I really wanted to zero in on that. And you said, did you have like a ten-year contract; is that right?

MS. OWENS: The contract is ten years with two five-year extensions.

COMMISSIONER CARTER: And you've had, you know, you haven't had any problem with getting a vendor to bid on --

MS. OWENS: Oh, no. We actually have the power purchase agreement with the vendor. We've had that for almost a year. They haven't secured the fuel contract yet.

COMMISSIONER CARTER: Okay. Thank you, Madam Chair.

CHAIRMAN EDGAR: Thank you. Thank you so much.

MS. OWENS: Thank you.

CHAIRMAN EDGAR: We are coming to the end of our agenda and so I'm going to ask our next speakers to come forward. I'm not sure, Vinnie, how you want to apportion your time, so I'm going to look to you to, to do that. We have Vinnie Dolan with Progress, Tom Hartman with FPL, Bill Ashburn with TECO and Bob McGee with Gulf Power representing, of

course, the four large IOUs here in the State of Florida. And, gentlemen, we thank you very much for your participation and also for being with us through the day.

MR. DOLAN: Thank you, Chairman Edgar, Commissioner Carter, Commissioner Tew, it's good to be here this afternoon. I know it's Happy Hour, so we'll try to make the time worth everyone's while here today. We -- the way we're going to do this, I'll offer some introductory thoughts and then turn it over to the experts. You'll hear from the individual companies about some of the activities that they have ongoing in this field, and I think you'll be quite impressed with the list of activities.

But really just to touch on a couple of things. First of all, we -- I would, I would echo Mr. Wright's comments. We really like the idea of market-based type solutions like his project that we can do at true avoided cost and we want to continue to search for those types of opportunities. We certainly appreciate all the enthusiasm for the, for the level of activity. It's quite impressive to hear the speakers today talk about all the different ranges of activity; however, I think we need to keep in mind sort of our principal charge of reliable electricity at an affordable cost. And, you know, those are the types of things that we at Progress Energy want to continue to support. And I know that we still have some gaps to close as far the cost, but we are

active in these areas with a lot of these folks and we want to continue to partner and look for some of these solutions.

Go back to the first slide. Really we -- renewable energy fits in with our long-term strategy. And when we talk about our growth, if you think -- we are serious about this. We are looking at for our utility, you know, unaltered about 4,000 megawatts of growth over the next ten years. And I will tell you close to 1,000 of that is going to either be eliminated through energy efficiency efforts, approximately 800 megawatts over the next ten years, and then if you add Mr. Wright's project in there, another 120 megawatts or so. That is really part of the balance that we're looking for.

We are also very interested, as you know, to build supply-side resources like nuclear that's environmentally friendly nuclear, we hope, in the future. And we are also looking at upgrading some of our existing power plant facilities with emissions control, some of our coal burning units and other things. So we really support a balanced solution, and we think energy efficiency and renewable energy is part of that.

But, again, I would also emphasize the second point which is the, you know, whether it's through tax credits or other subsidy methods, someone is paying that cost. And we really need to be mindful and understand in Florida -- I was, I was intrigued by Myron's slide where the renewable activity

tended to track the higher cost states. And I think there's a reason for that. You know, we are in a -- the southeast in general is a low-cost environment, and that may be, there may be some connection there and I think we need to be mindful of that. So we want to continue to help stimulate this market. We consider ourselves together with our customers sort of a laboratory of sorts where we can work on some of these key projects, and we want to continue to partner with some of the folks that you heard from today.

So with that, I'll get out of the way and I'll let you first hear from John Masiello from our company to tell you about some of the exciting things we have going on at Progress Energy.

MR. MASIELLO: Thank you, Vinnie. And, Commissioners, thank you for having me to go over some of the highlights. Hopefully you have this piece in there that reviews some of our highlights. Progress Energy has a long-standing history of educating and motivating our customers to implement energy efficiency measures. Since 1981 our customers have saved over $800 million dollars from energy efficiency programs. That's enough power to provide energy to the City of Orlando for over two years. It's eliminated the need for 17 peaking plants.

And if a customer were to participate in our programs today, they can save over $504, and those are just energy

efficiency programs. If they decide to participate in load control programs, they can increase that to $651.

On the next page I want to point out that we have perhaps the most energy intensive measures that can significantly reduce energy consumption. It was said earlier that perhaps RIM has been a limiting factor, and I'm going to show you a list of measures that I think you'll find quite significant.

On this page we just wanted to highlight that in energy audits alone where we go into homes and educate customers where they can prioritize measures and learn what they need to do cost-effectively to make the homes more energy efficient, to date we've done over 400,000 of those audits. I'm not going to go into the individual measures, but certainly duct systems which account for a third of the energy that we use to heat and cool our homes is lost and repaired through programs that we have specifically for that nature, a significant energy loss. Attic insulation, significant energy loss, and we have programs, aggressive programs to help homeowners insulate attics. High efficiency heat pumps, systems that are the heart of the energy usage in the home. Again, programs to help customers install high efficiency systems.

We have over 400 builders in our new construction program. At the highest level of participation in that program

we provide our builders Energy Star® where we actually go in and certify homes and provide incentives to bring them to Energy Star® levels. We received the EPA's Energy Star® Trade Ally of the Year Award in 2000 for those efforts. And recently, as Vinnie had suggested, we had submitted an additional 540 megawatts, unprecedented, of demand-side management, and that's on top of the 400 megawatts we had submitted just previous, two years previous to that.

The next five pages is what I was referring to in terms of energy efficiency measures. And instead of going through each one of these because it's really quite extensive, I'm sure you can see we go from attic insulation, duct test and repair, spray-in wall insulation, proper sizing of AC systems. The next page goes on, reflective roof for both manufactured and single family homes, window film, replacement windows. We've talked already about residential new construction.

We have a new program for low income families where we actually will go into neighborhoods and install free, at no cost, door-to-door low-cost conservation measures and provide education to our customers at the same time so it's sustainable.

We also just rolled out a new program for renewable energy which we think will have an impact. The program will provide for solar water heaters a $450 incentive. And for photovoltaic systems customers can install -- actually provide

or donate the incentive that they would receive for participating in our load management program to installing photovoltaics on schools. And those systems will also include curriculum where students can go online and learn about energy efficiency programs and do mathematical computations on efficiencies. And the list goes on. Commercial programs, we have a similar array of programs which include such things as energy recovery ventilation, again, ceiling insulation.

On the next page, Page 6, we have cool roofs, green roof, HVAC steam cleaning. It was mentioned that we don't have lighting, but we have energy efficient indoor lighting. We certainly do have lighting. Occupancy sensors, demand control ventilation.

Next page on Page 7, efficient motors, window film, new construction, similar activities and other programs, even including a customized program. Depending on the individual's process in a commercial environment, we can customize an individual measure that's probably not listed here.

On alternative energy on Page 8, currently we're producing over 2,000 megawatt hours, which provides 5 percent of our retail energy requirements. And that's coming from municipal solid waste, energy efficiency programs, exothermic which we heard about today, heat recovery, and biomass as well.

On Page 9, some of what Vinnie talked about earlier in terms of our partnerships and providing a test bed for

activities, we partnered with a variety of business and industry in the field of both solar photovoltaics, solar thermal, et cetera, and some examples of which is British Petroleum where we partnered with them to install photovoltaics on 16 of their stores. It's a photovoltaic canopy that goes over the gas pumps. It's worked out very well and they continue with that process.

On Page 10 we've partnered with the Florida Department of Environmental Protection to install a hydrogen demonstration project using photovoltaics to power electrolysis. That particular project recently won the Council for Sustainable Florida Award.

On Page 11 it continues. We recently and are currently involved in a solar thermal water heating pilot. This pilot is unique in that we're really looking to see the actual Btu output of the water heater and its potential to sell those Btus as kilowatt hours. So we'll see where this takes us. What's interesting with this is most recently we have seen an increase in solar thermal systems of about 15 percent, and we're concerned about that in that it's close to matching what the state rebate is for new solar thermal systems. So we'll keep an eye on that and hope that there's no impact from our incentive in increasing the installed costs for these systems.

If we continue on to Page 12, one of the things that our relationships and partnerships have done is by, by paving

the way for these activities we've worked with state fire marshals, code and building inspectors, state and local officials and first responders, and most of this will, will provide the template so that future projects of this nature will be able to go forward without the effort we had to make initially. Along with our partners, as you know, we're piloting fuel cell vehicles, and in a few months we'll have two of the state's first hydrogen fueling stations to provide hydrogen for both the fuel cell vehicles and for buses that will be used to transport tourists to and from the airport.

On the next couple of pages -- we can go forward to Page 14. There's more activities as we go on, but on Page 14 -- you've heard about biomass already and you've heard about our project with E-Grass. That plant alone will provide power for over 80,000 homes and over its, over its life will reduce or eliminate the need or the reduction of 25,000, I'm sorry, 25 million tons of carbon. So it's a substantial impact.

On Page 15, we heard Alan Guyet from DEP talk about the partnership that they have in terms of having grants available under the Florida Renewable Energy Technologies Grant Program. Progress along with its partners have submitted over $17 million in alternative energy projects. And to list those projects, just going down quickly, we heard -- Project 3, for example, that particular project will be looking in utilizing waste heat, which is something we heard about today in terms of

combined heat and power.

The fourth one in that category is something we also heard about, plasma gasification power project working with Dr. Jacob Chung. We're looking to design and build a plasma-enhanced biomass gasification system for continuous generation of syngas, and that'll actually use campus waste, medical waste and forestry and agricultural waste for its feedstock.

And Item Number 5 is, we heard a bit from Dr. Wilke about anaerobic digester. We're also working on a project in that area. And in Number 6, another sort of combined heat and power using waste heat and using solar thermal and waste heat from an organic Rankine cycle providing a DG power plant. So that's just a brief overview. Obviously there's a lot more here, but we want to provide some insight on that.

Next I want to introduce the speaker from Tampa Electric, Bill Ashburn.

MR. ASHBURN: At this point I'd like to provide some details about the types of renewable energy that our company, Tampa Electric, is providing service to our customers, as well as some of the potential new sources of renewable energy that we're pursuing at this time. As you can see from the slide, our renewable sources fall into several categories. I'll go through those.

Under the category of biomass, Tampa Electric will

purchase over 70,000-megawatt hours in '07 from a Florida biomass facility that utilizes agricultural waste as a fuel. We have in the past made purchases from the same facility. Additionally, Tampa Electric has conducted test burns of yard waste and other biomass in our coal burning plants to assess their capability to do that.

With regard to the category of waste heat, in '06 we purchased approximately 130,000-megawatt hours of as-available energy generated by the phosphate industry. We've had exploratory conversations with the industry regarding potential expansion, I think Mr. Davis discussed some of that, for additional purchases of such waste heat energy.

Tampa Electric has some extensive experience with PV, having installed four PV arrays totalling approximately 40 kW in public locations in our service territory, including two schools, the Museum of Science and Industry in Tampa, and at our Manatee Viewing Center, which is next to the Big Bend Power Station. We continue to explore new venues to partner in the installation of PV arrays.

Landfill gas is the fuel source for a 30 kW microturbine we have installed to test both the value of distributed generation of microturbines as well as utilizing landfill gas, and we're currently looking at the potential of utilizing this fuel at other locations.

For the energy efficiency, of course, we went through

a lot of the programs that Progress did. We have several, quite a few similar type programs. I didn't think we'd go through the long list, but we do quite a bit of energy efficiency work as well.

For the final bucket, the all encompassing other, we thought we'd mention that we've received and expect to continue to receive third-party solicitations regarding several different renewable fuels and other conventional and experimental technologies involving wind, water, solar power, different kinds of biomass. In addition, I would mention that we have a renewable energy program that has been approved by this Commission and under our, our conservation programs generally where customers pay additional monies for blocks of renewable energy that we provide through self-generation and purchases. And we have an excess of 1,500 customers signed up for this program.

Tampa Electric continues to demonstrate its need and looks forward to continued opportunities to renewable energies.

I'll introduce Bob McGee from Gulf.

MR. McGEE: Good afternoon, Commissioners. Thank you for the opportunity to speak to you today. I'm Bob McGee at Gulf Power Company. I'd like to give you a very brief overview following the pattern of TECO on some things that Gulf Power is doing, especially in some areas where we're a little bit unique.

Let me start out with photovoltaics. We've got four solar arrays across our territory from the Solar for Schools Program funded by voluntary contributions of our customers and grants from our friends at the Florida Solar Energy Center.

In the geothermal category, this is not the geothermal geyser that is typically thought of out in California, but this is the geothermal renewable technology of heating and cooling which is considered by the federal government to be a renewable technology and reported on their energy score card as a renewable technology. Gulf Power strongly promotes this in our territory. We've got over 2,000 residential customers currently choosing to use this where they exchange the heat and cooling with the earth down to about 250 feet typically of the ground level. And we've got 4,000 tons of commercial geothermal heating and cooling installed there. The benefit of that primarily is a reduction of about half of the energy consumption required to do the heating and cooling for those particular facilities.

Next, under the efficiency category, I won't go into a list of items that we do, but I will highlight the GoodCents Select Program, which, as you may know, is something that Gulf Power came up with and has had a great deal of success with. We've got about 8,000 customers on that program. It's an in-house energy management program with a time of use rate and a customizable thermostat where customers can program their

use and get off the system, reducing the peak demand by a pretty significant amount, 2 kW per customer in the summertime, to reduce that peak demand.

All that to say our cumulative efforts on energy efficiency over the years result in about 350 megawatts saved per year, which is about 12 percent of our system load, a pretty significant success over time.

And lastly in that item, in 2006, because of our conservation efforts with our customers and our customer choices, we've saved -- the customers have avoided about 700 gigawatt hours of energy consumption.

Lastly on the other category, I'll speak a little bit about research. Gulf Power benefits greatly from being part of the Southern Company, a larger company, and we are able to participate in and learn from some of the research that they do. I'll highlight a couple of those items for you.

There was, a couple of years back between 2001 and 2003 a full year operational run of a 250 kW stationary fuel cell, a molten carbonated fuel cell. And we got some very good date from that understanding the operational characteristics, the reliability of it and some of the costs and efficiencies of it.

We also did a 5 megawatt co-firing test on woodwaste at Crist Plant on Unit 4, and we also, as Southern Company and Alabama Power, on a yearly basis burn switchgrass in a

co-firing situation in Plant Gadsden there.

And, lastly, the Southern Company has recently gone through a study of offshore wind off the coast of Savannah, Georgia, in combination with Georgia Tech, the National Renewable Energy Lab and AWS Truewind, which is an outside vendor, to collect some data. The final results of that are not out. The preliminary results indicate that it's a low Class 4 wind offshore there, which is marginally financible, if you understand anything about the wind industry there.

If you have no questions for me, I'll turn it back over to Mr. Dolan from Progress Energy. Thank you.

MR. DOLAN: I'll skip one in the interest of time. Commissioners, just a few thoughts that we'll leave you with on the policy side here, some things to contemplate. First, I would say this is, this is definitely a timely discussion. This is a live issue at the national level with the change in the party leadership. I think there's a lot of discussion about federal mandates and I think it's in all of our interests to be involved in that debate because we are differently situated in this region of the country than other parts of the country, and a federal mandate would affect states differently and it would affect us from a cost perspective differently and our customers differently. So I think this information that we're talking about here today is timely because that debate is going to ensue at the federal level, and I think obviously

we're going to have interest in this topic when the state legislature convenes in the spring as well. So we, we applaud you for having this workshop today.

A couple of things to consider. We really believe that if we do want to move forward, and we are talking about the potential for policy decisions that would be a cost perhaps above what are standard avoided costs, that transparency is key. Customers should know the cost of the policies that we're going to consider. And perhaps that's more of a legislative issue than perhaps for this Commission, but we think that's certainly something we need to be mindful of.

Secondly, if we're going to do something, everybody should play. It shouldn't be unique to the investor-owned utilities or the municipals or what have you. So if we're going to affect policy in the State of Florida, we think all customers and companies should participate.

Secondly, we think we should advocate and be for renewable resources that are based in Florida. A project like Schef's perhaps is a good example. We heard from Steve Davis earlier. We would welcome more so the opportunity to work in partnership with some of our customers like Mosaic here in Florida where there are secondary benefits, be it business retention or tax-based growth here in Florida, as opposed to responding to a federal mandate where we're taking our funds and sending them to another part of the country for renewable

projects that have really no direct benefit for the State of Florida. So I think we should be careful about that.

The federal issue I talked about. We really -- that debate is happening. I would encourage you to pay attention to that and participate in that. We would say the same thing to our state legislative leadership.

Energy efficiency, this is an area that you heard from each of the individual companies, you're about to hear from Florida Power & Light as well, this is something that Florida knows, it does well. I'm happy to say that I think the debate on renewable is widening and there's openness for people to consider energy efficiency in the renewable category, and that's important, as well as nuclear. And these are things that, again, to the extent we find new ways to expand our energy efficiency programs here in Florida, those are direct benefits to our consumers as opposed to subsidies to build renewable projects in other parts of the country. So I think that's critical.

And then the value in Florida, and that's really working with our customers, working with our large customers where there's waste heat available or key projects that are going to bring new jobs to Florida, we certainly at Progress Energy support that initiative.

So, again, I'll wrap up at this point. Just a few ideas, food for thought as we continue this debate and move

forward. And I'm going to turn it over to Mr. Hartman from FP&L in just a second, but I'll be happy to answer any questions you might have for me before I stand down. I know the hour is late.

CHAIRMAN EDGAR: Questions? I think we're ready to move on. Thank you.

MR. DOLAN: Thank you very much.

MR. HARTMAN: Good afternoon or almost evening, Commissioners. My name is Tom Hartman. I'm with Florida Power & Light in business management in the Resource Assessment and Planning Group.

I'm going to talk a little bit about renewable potential in Florida, but first a little bit about FPL's commitment. We're interested in the development of renewables in the state that are of benefit to our customers.

In 2005, we purchased $1.5 million-megawatt hours of electricity from renewable facilities to meet our customers' loads. Our Sunshine Energy Program is a voluntary program that's now been expanded to the commercial side of the customer base also. It's been hugely successful and it's been recognized as one of the most successful programs in the country. Our DSM program has been recognized by the Department of Energy as the most effective program in the country. And then, of course, we have FPL Energy, our unregulated affiliate, who is the largest generator of electricity from renewable

resources in the world.

Next slide, please. Within the utility itself, Florida Power & Light, some months back the Chief Development Officer, the VP of Customer Service and the Director of Resource Assessment and Planning formed a Renewable Strategy Team to advise the company on means of increasing and encouraging the use of renewable sources to meet our customers' needs, including demand-side, which is basically a reduction in load from the generation, supply-side, which would be new renewable generation, and including our operations. We were surprised to find, for example, that Florida Power & Light consumes about 300,000 gallons a year of biodiesel to run our service tracks.

The utility itself has experience that has been developed at FPL Energy. Mike Layton, our Chief Development Officer, was previously Chief Operating Officer at FPL Energy, so he has the knowledge of renewables. I came from the business management side that was in charge of renewables at FPL Energy. And we have an individual working for Mike, Chris Herring, who's sole charge in the company is to develope additional renewable resources within our service territory.

Next slide, please. Whenever we talk about renewables we have to talk about what is there and where are we and how do we do against everyone else? This is 2003 Energy Information Agency data as far as renewable generation by state

in the United States, and you'll see that Florida ranks just behind South Dakota in terms of renewable generation. First, however, is Washington State, and that's due to the availability of large-scale, inexpensive hydro power resources. That's something that we don't have. One of the things about renewables that's a little bit different than most power plants is that if you don't have the resource, there's no point in building the plant. You can't really truck it there. Even for biomass there's a limited trucking area. If you don't have hydro, it's not going to do you any good to build a dam.

So let's take a look at how we do whenever we consider the resources we do have. Whenever you exclude hydropower, geothermal and wind, which are basically resources that aren't present on a supply-side basis in the State of Florida, and you compare us to how we're doing against the other states with the resources we do have, Florida ranks second in the country. The only state that uses more of those resources than us is California. If you take a look at just waste to energy, we use more than any state in the country. We have more plants and we use it more effectively.

If you look at our existing generation, this is 2005 data from the Energy Information Agency, and it's generator nameplate data. And you'll see that the biggest source we have of renewable generation is municipal solid waste. The second source is black liquor. Black liquor may or may not count as

renewable. It's basically associated with a pulping process in a pulp mill. If you don't have an economic pulp mill or a new pulp mill, it doesn't matter. You're not going to build additional black liquor.

So then you start looking and we have wastewater, which is basically the gas from wastewater treatment plants, we have some small hydro, we have wood, we have waste heat which we've already discussed today, we have agricultural waste, a good bit of it down in Palm Beach County from the gas, the sugar fields, and we have landfill gas. Now let's talk about the potential for each of these resources.

We examined the potential for waste to energy in the State of Florida. We used DEP data as far as total waste produced on a county-by-county basis throughout the state. Then using characteristics of more or less typical waste energy plants, calculated out what could be achieved using those resources. We came up with a potential capacity in the state. Now notice this is not paying any attention to economics. This is just using the resources we have available and saying you're going to build it of 868 megawatts. The actual plant capacity that we had figures for in the same time period, that plant capacity was 476 megawatts. Which means whenever we examine waste to energy, there's an additional potential of 392 megawatts.

Next slide, please. The true low-hanging fruit is

probably landfill gas. We used the data that the EPA has published as far as the availability of landfill gas and landfills that are suitable for landfill gas generation. We showed the potential of about 86 megawatts of landfill gas. Today we have about 20 megawatts installed based on the EIA data from 2005. So there's 66 megawatts of landfill gas available. Those are a multitude of projects that we'll have identified, but they're fairly small generation sources.

Next, please. You've heard a lot today about biomass. Biomass can be trucked, but there is an economic radius of not more than 100 miles.

Next slide, please. We examined using Oak Ridge National Laboratory data. In 1999, ORNL did a study looking at every county in the United States and getting state totals for various categories of biofuels. We examined the ORNL data for agricultural waste and forest products in Florida and that showed that there's a potential, potential base now of 492 megawatts. Again, actual capacity, because we're using agricultural waste and straight biomass, is 202 megawatts today. So there's about another 270 megawatts available.

Let's take a look at FPL Energy's favorite which is wind. You'll notice that there are some very marginal wind sites shown on the coast of Florida and they are extremely marginal. We've been trying to develop, and Chris Herring has been spending a lot of time trying to develop a couple of

sites. We're looking at sites in Cape Canaveral. It's almost impossible. The reason why it's impossible is the Air Force really doesn't want 260-foot-tall wind towers near their facilities, nor does the Cape. You get off the Air Force base, you come inland a mile and the wind resource disappears. It's very, very location specific. You start looking on all the sites we've been able to find so far, you're basically looking on the beach, right on the coast. Okay? NIMBY is a problem. We're talking about large industrial facilities that do have some sound associated with them. These towers today on a commercial scale wind plant are, oh, 230 feet to the center of the cell and maybe 400 feet overall. Putting these on the beach in our expensive areas of the state is not going to be easy, if it could done. And even then it would be at best marginal.

If you look at the wind resources up there, you'll see that North Dakota, for example, is in the purple. FPL Energy has built plants up there with a 40 percent or better capacity factor. Capacity factors in the State of Florida would be on the order of 8 to 12 percent, so a fifth of the output.

We heard a lot about Texas and how good the RPS did in Texas. If you take a look, Texas has excellent wind resources. FPL Energy has merchant wind plants in Texas. That means there is no long-term contract. They just get the market

price for electricity and FPL is doing fine with them, and it's all due to the availability of the resource.

We are, of course, in the Sunshine State. If you start taking a look at commercial scale supply-side resources from solar energy, they're basically solar thermal. There are limitations on photovoltaics. One of the limitations is the price, of course. The other limitation is the availability of photovoltaic cells. Total sales of photovoltaics cells in the United States last year were about 150 megawatts. You're not going to make a big dent with photovoltaics in the near term in the State of Florida. Large-scale supply-side resources require solar thermal. If you take a look at the map, you'll see that Florida is not particularly good for concentrating solar collectors which solar thermal requires. The reason is that we have a humid environment that produces clouds, which means now you get reflections off the clouds and you can't use a concentrating collector to generate electricity with that. The good locations are in the Mojave Desert in Southern Nevada and that's where the plants are being built.

We've heard some discussions about incentives and economics of renewables. We've heard some discussions of how they get paid. It's important to recognize that over and above what the renewables get paid from the utility with avoided cost bases, there are significant incentives out there for renewable energy sources. Production tax credits on the federal level

are on the order of 1.8 cents a kilowatt hour. That's a lot of money. The state also has incentives. These can be monetized by the renewable producers.

Next please. Then, of course, there's the issue of future potentials. I know we've been concentrating on the near-term, but Florida does have some very, very promising renewable potentials for the future.

One is the Gulfstream. There is a huge resource flowing past our coast. That is being developed, there are some people working on research projects, there are some test installations. One of the most promising things is that the Board of Regents has just declared Florida Atlantic University's installation in Dania Beach as a center of excellence for ocean energy engineering. They're developing a resource down there to do testing of wave energy and ocean current energy in cooperation with others. They have a test range off the state. That resource has been -- the lowest estimate I've seen is 1,800 megawatts. The highest estimate I've seen is 60,000 megawatts. It's a huge resource. It's at least a decade, and there may be a lot of other issues, but it's something that is being addressed. We're working with FAU and others on taking a look at that technology.

Progress has already mentioned the work that they're doing and that the biomass investment group is doing on closed-loop biomass. The biomass potentials I presented

earlier are based on the resources we already have that don't include closed-loop biomass. So that is a resource that's new. This is the first installation in the country. It's extremely promising, but it is land intensive. We're looking at 15,000 to 18,000 acres for that plant.

I think somebody mentioned earlier from the University of Florida that we could look at 1,900 megawatts from basically crops for biomass. They also noted that that would take 10 percent of the entire land area of the state to accomplish.

Next, please. So let me just summarize very quickly and you can get on to the last speaker. Renewable generation, no matter the economics, no matter what you do in pricing, is critically dependent on the availability of the resource. It does no good if the resource isn't there.

Of the resources that we've identified that are viable in the State of Florida, approximately 42.5 percent of the total availability of that resource, independent of economics, is currently being used by the renewable energy industry in the, in the state. We're also seeing a great deal of interest in new renewable projects. I haven't talked to the other utilities. I know we've had a number of developers coming in and we're talking contracts, and we're talking a lot more generation than we've seen in a lot of years from renewables. So the programs are working now.

And, finally, in order to make an expansion of the renewable opportunities, in order to get very, very high concentration of renewables it's going to take new technologies and there are people that are working on them. Any questions?

CHAIRMAN EDGAR: Thank you.

Commissioners, questions? No?

You got us at the end of the day.

MR. HARTMAN: That's a good thing for me at least.

CHAIRMAN EDGAR: Thank you. And thank you to each of you for your presentations.

We are almost done for the day. I'll say that it's been another long day in the hearing room for many of us, but it's also been another good day, really a good day. I am just so pleased with the presentations and the information and the speakers and, once again, for the willingness of everybody that we've had join us for all or for a part of the day to participate, and we look forward to having more discussions and more participation.

And, Mr. Graniere, I am going to ask you for some kind of wrap-up and some summary comments, and then we will, we will finish for the day.

MR. GRANIERE: Well, I'd just like to begin by thanking each and every one of you who are still here for your stamina because it took a long time to get through this, and I, for one, certainly appreciate it.

And also in the interest of brevity I will not go any farther with that type of conversation and just summarize what I think are the nine most important points that came out of this workshop for each of us.

I heard, and I think we all agree, that there are certain areas of commonality here that we can work in and we can move forward in. One of them is in the area of interconnection standards. We all know we could do better with those.

We all know that we can revisit and look more carefully at standby rates in the context of renewable energy as opposed to energy conservation or energy efficiency.

We also know that net metering is a major issue in Florida, especially as -- and then add on to that that there's the wholesale/retail, payout/pay-in differential in terms of sellback and buyback. So we could work there. And that's an area that everyone is concerned about that who has spoken.

The fourth point I'd like to make is it's not yet -- there's not yet a clear picture of what is available in Florida. FP&L did a very good job in the last presentation, but there's still not a clear picture of what is available in Florida. But we do know that our best information is in the biomass area, we know that.

My fifth point, I think it's fair to say that renewable energy and energy efficiency are not substitutes.

It's not that you can't do both at the same time and it's not that renewable energy and energy efficiency are the same thing and a substitute for each other. They really compliment each other. I think we heard that in some of the discussion.

One of the things -- the sixth point I'd like to make is that we've heard that RPS or the renewable portfolio standard is very popular amongst many. And those who believe that it provides -- and one of the reasons why it seems, that it appears from their discussion why it's so popular is that they believe it provides them with greater certainty, especially in the area of finance.

But despite this belief, we've also heard today that the available evidence on a renewable portfolio standard's effectiveness needs further discussion. I think there's agreement there, that is an area that we need to discuss more.

The seventh point I think is that the financing of renewable projects is not easy even if the cash flow is sufficient. It's just not pure and simple dollars and cents in the sense of cash flows.

The eighth point I'd like to make is that the renewable project financing is extremely sensitive to changes in public policy, especially tax policy. We've heard that over and over and over again from all parties.

And the ninth and last point that I'd like to make in summary is that it seems that we all are in agreement that

minimizing regulatory uncertainty is important to all parties and counterparties. Thank you.

CHAIRMAN EDGAR: Thank you, Bob.

Commissioners, any further comments before we wrap? No? Commissioner Carter?

COMMISSIONER CARTER: Thank you, Madam Chair. Just a few.

CHAIRMAN EDGAR: Uh-huh.

COMMISSIONER CARTER: I was, I was really pleased that we had this workshop here today. Thank you, Madam Chairman, for having it, and thank you to all of our participants, thank you staff for organizing this, this panoply of outstanding people.

I was looking at it from the context of is, is renewables really worth the effort that we're putting towards it? And I think that it's a self-explanatory answer: Yes, it is. We, we had some dialogue and discourse on just how much renewables there are available in Florida without constraints or, you know, future needs and all like that and there was a dynamic discussion on that. We had a discussion on how difficult the obtaining of finances may be here. And we also heard that despite the difficulties there's still people investing in Florida, which is a good thing. We listened to public sector involvement and private sector involvement. I think that's a fantastic thing. And we looked at it from a

standpoint of -- I think there was an undercurrent or kind of subtle discourse about should the, the goodwill of, that benefits society at large, should it be paid by a few customers of a specific utility? And I think that we had the discussion on it and I think we probably need to look at that in a different perspective as well.

But overall, Madam Chairman, I'm pleased that we see that there's a true value of renewables in Florida. We see that, notwithstanding what other states are doing, Florida has opened a welcome mat, we are opening the doors, we have created an environment; otherwise, the project we mentioned earlier today with Progress Energy, you know, that wouldn't have occurred if there had been as many constraints. So, you know, I don't see the glass as being half empty. I think we've got a glass that's half full in Florida and it's going to be even more. And I think that we've answered a lot of the questions and I think that we've got the right people. I'm pleased to see our colleagues from the legislature here listening in to this dialogue, and I think that we have, we have fought a good fight today. We kept the faith and we finished our course. Thank you, Madam Chair.

CHAIRMAN EDGAR: Thank you, Commissioner.

Over discussions that we've had the past few months we've talked a little bit today about the rule that we adopted last week. And as we were working towards that adoption, I

said a number of times that it was part of a very important piece but part of a larger initiative of this Commission, which is part of the initiative of the state as a whole. And this day has kind of helped us kick off for the year a number of the things that I know we will be talking about more. On many of the issues that we discuss here at the Commission I have said that we will always strive to do good, careful, thoughtful and transparent cost-benefit analysis and discussion, and that applies to these issues as well. And, of course, when we do that cost-benefit analysis, part of the discussion in this issue is, is how do we consider that more holistic, is a term that we've heard, integrated externalities and where, where is it appropriate and where is the information available to quantify and qualify those discussions? And that's part of what we will be discussing and looking at as a Commission this year.

I also would like to make the comment that we've heard a lot about the need for regulatory certainty, and part of regulatory certainty is coordination between different arms and actions of government. And we will certainly do everything that we can from this agency to coordinate and collaborate in an organized and transparent manner with the legislature, of course, with other state agencies, local governments, and make every effort to keep abreast also of discussions and actions at the federal level as well.

So we've laid out an aggressive agenda. We will approach it as we have other things in the past year looking at short-term strategies and long-term strategies and being, as I said, collaborative and trying to bring in expert advice and opinions to add to our discussions.

And so with that, one more thank you to everybody. I look forward to working with all of you during this next year on many of these issues. It has been a long day, as I said, but it's been a good day. And I hope y'all have a wonderful weekend. Thank you. We are adjourned.

(Workshop adjourned at 6:00 p.m.)

STATE OF FLORIDA)
: CERTIFICATE OF REPORTER
COUNTY OF LEON)

I, LINDA BOLES, CRR, RPR, Official Commission Reporter, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorneys or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 26th day of January, 2007.

Linda Boles

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