BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. UNDOCKETED

In the Matter of

INFORMATIONAL WORKSHOP ON
RENEWABLE GENERATION.
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VOLUME 1

Pages 1 through 126

PROCEEDINGS:	WORKSHOP
BEFORE:	CHAIRMAN LISA POLAK EDGAR COMMISSIONER MATTHEW M. CARTER, II COMMISSIONER KATRINA J. TEW
DATE:	Friday, January 19, 2007
TIME:	Commenced at 9:30 a.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	JANE FAUROT, RPR Official Commission Reporter (850) 413-6732

P R O C E E D I N G S

CHAIRMAN EDGAR: Good morning. We are going to get started here in just a minute. Briefly, before we start, a housekeeping detail or details. I understand that in the back in that direction, that there is a sign-up sheet, and we are so grateful for everybody's interest and we would love to have your contact information. So if you haven't, at some point during the day put yourself and your information down on the sign-up sheet.

I also understand that there are copies of presentations that have come in to us prior to this meeting for the discussion that we are going to have today. And presentations will be available on the website, Kathy?

MS. LEWIS: Yes, ma'am. They should be on the website by tomorrow, or certainly by Monday.

CHAIRMAN EDGAR: So please go to our ever wonderfully current website and you can download the presentations here very soon.

Welcome, everybody. We are so glad for your interest and for your willingness to participate in our discussions and in our processes. Your expertise is a very, very important part of what we are hoping that we can do and contribute to, which is dialogue, discussion, and action for the state of Florida. Beginning past months, a big thing for us today and, of course, trying to map out actions and plans and strategies

for the next months and the next years. We know here at the Commission that it is essential that Florida maintain a reliable and secure supply of electricity. That is part of our charge and our mandate here at the Public Service Commission. We also know and we fully support the position that greater use and development of renewable energy sources needs to be a part of Florida's energy mix.

At our agenda conference last week, the Commission approved a rule to facilitate an increase in the use of renewable energy to help meet the future energy needs of our growing state. This rule is the culmination of a great deal of effort and cooperation on the part of many, many interested parties. Our staff, all Commissioners were very, very involved, and I am very proud of the product that we were able to pass within the last, oh, a week or two ago, I believe it was.

I also think that the process that we were able to go through to get us to that product is a very good prelude for where we are now, which is everybody working together, putting forth concerns, putting forth suggestions, putting forth language, and letting us all come to the table, have open and transparent discussions, and keep the discussion and the agenda moving forward. I do firmly believe that the rule that we passed two years ago will provide financial inducement to renewable providers and that is an important step. But there

are many other steps to be taken and many other things that we think that as a Commission we can contribute to, and that is where we are asking, again, for your expertise and for your assistance both with suggestions, with big ideas, and also helping us with the details.

Today we're here to begin to lay a sound foundation for our further efforts to encourage renewable generation. We have chosen three items to focus on today. The first, without financing and cost-recovery constraints, how much renewable energy can be available for electric power generation in the next one to five years. In other words, what is the potential for renewable energy in Florida. We want to look at the requirements for financing renewable energy projects from the perspective of the financial community and from the perspective of the renewable developers.

And the third point, what is required from the public and from the private sectors to accelerate and to increase the deployment of renewable energy in Florida. We do have a full agenda. We have a full day, but it is going to be a very interesting day. I do ask that all of the speakers and presenters today be mindful of the time, and that we do have other presenters. We want to hear from everybody, so please try to keep to the time constraints that we have laid out. We want to hear from everyone, and we don't want to be here till midnight to do it, quite frankly.

So this is the beginning. We will have other steps. We will have other opportunities during the next year. This will be a focus for me and for the Commission and we look forward to further dialogue after today, as well.

Commissioners, I encourage questions, as well, so jump right in. And we are going to go on and get started. And our first speaker -- and I'm going to apologize in advance if I pronounce any names wrong, because some of you I have had the opportunity to meet, and some of you will be new friends. So our first speaker is Jay Levenstein, Deputy Commissioner with the Florida Department of Agriculture.

Mr. Levenstein, please.

MR. LEVENSTEIN: Thank you, Chairman and Commissioners.

It is indeed a pleasure to be here. And I think just the fact that I'm here representing the Department of Agriculture sends a sign or a signal as far as the importance of this, because I think second to efficiency, what agriculture and America's farms and forests and agriculture community can do for renewable energy, we are second only to efficiency in what we can provide. So I think it is important and we certainly appreciate the opportunity to be here.

You will notice in your packets, and I think it was reprinted, there is quite a lengthy presentation that I have, which has been -- and I have been instructed a number of times,

it has already been pared down, and even more so for the presentation. I will try to rip through it so we can get ourselves kicked off, but I invite you to look at the information in there. And certainly if there is anything in there that piques your interest, to contact us and we will be certainly happy to answer any questions or discuss it further.

And on behalf of Commissioner Bronson, he certainly would have loved to have been here himself, but his schedule prevented him from doing so, so I'll go to bat for him.

Just quick, and I'm not going to talk about it, you all know these figures as far as energy supply in the United States. The important thing to note here is the focus there on fossil fuels, the great amount that comes from that and the very small amount from renewable energy. Bringing that home, the same thing. Again, you have seen this, and this comes out of Florida's energy plan. Again, as far as generating capacity in Florida, even smaller than the national figure of 6 percent renewable energy. Only one percent here in Florida. And key, and I know you all are familiar with the energy plan, there was to be growth in natural gas, growth in coal. Oil, the good thing there is the decrease, but the projection was that in the next seven years renewables was to remain flat, and that is something obviously that we need to seek to change.

There is a lot going on in recent initiatives, all the way from Congress down here to the state level. Without

going into a lot of detail, you all are familiar with the Energy Policy Act of 2005, a lot of which had to do with transportation fuels, a big area that we are working on as far as ethanol and biodiesel production in the state. But we will limit our comments to electricity today. The President's Advanced Energy Initiative did the same thing, focused a lot on cellulosic ethanol, which has great promise here in Florida.

The Renewable Energy Technologies Act, Allan Guyet, you will hear from him later and he will go into detail. And I might make some enemies by throwing this up there, but I think it is worthy of discussion. And I got a little education from some of my friends in the utility industry last year about net metering, but I think it's something that needs to be on the table that we need to discuss. In particular, a situation that exists across the country with dairies in taking their waste and turning it into energy, they do that successfully, and with the help of net metering in those cases. So I think you will hear more about that later.

The Florida Legislature has made great strides. In particular, last year Speaker Rubio embarked upon his initiative of 100 ideas for Florida. I think there is about five or six that are devoted to energy. One in particular that we are focused on in working with members of the House and Senate, and that is looking for more alternative energy sources, and in particular, ethanol production.

The other thing the House did was create an energy committee which was new for them, separate from the old communications and -- telecommunications and utilities committee, so that is good and we look forward to working with them. This is key. If you haven't heard of 25 X '25, that has really sparked us in the last year as far as what we have been doing in our office. 25 X '25 started in 2004 with some grassroots agricultural leaders, Ag Energy Work Group is what they call themselves, and the first charge was to come up with a vision as far as how agriculture can contribute to the nation's future energy needs. And the vision was very simple, and that is what you see there. By the year 2025, 25 percent of our energy can come from the nation's forests and farms and ag lands. In addition, of course, to continuing to produce safe and affordable food and fiber supply for us. And that is a huge initiative that's going on.

Just so we can put it in perspective, as far as our current consumption and needs, you can see there actual production versus consumption. You can see the gap of the 29 quads that we are not making that we consume, most of which can be attributed to petroleum needs. The forecast for the year 2025 shows that gap widening even more.

And here with respect to the 25 X '25 vision, you can see the current amount of power or energy in the nation of our total coming from renewables versus where we need to be to make

that 25 X '25 vision come true.

As I said, it started a couple or so years ago as far as coming up with a vision. It has grown by leaps and bounds. There are over -- they are fast approaching 400 organizations that have endorsed this vision. There is currently joint resolutions running through Congress. Several state legislatures have endorsed. Our own Florida cabinet endorsed the vision last year. They first created this vision and now they are working on an alliance which includes state level alliances which we are engaged in in trying to create here in Florida.

The big thing they are doing now is an implementation strategy. They have got groups meeting all over the country to talk about, okay, we have got our goal, we have got our vision, what kind of policies do we need to have here in the country and among the states to be able to achieve that vision. And that is something that they are working on and we expect that strategy to come out probably next month.

As far as meeting that goal, how will we do it. You can see here all the different ways. Florida can probably do everything on that list except harness a lot of wind energy, I think, which we can all pretty much agree upon. But the other things, those resources are readily available here in Florida to be able to tackle that.

And that is just, again, talking about the policies.

And everybody asks can we do this, and the simple answer is yes. In fact, there has been a couple of recent studies commissioned to actually look at this vision, look at the resources in this country, and determine whether or not that is achievable. And one was a RAND Corp. study that was done that affirmed that statement, said we can do it. Another one was a study recently released by the University of Tennessee that not only concluded that we could meet that vision but, as you can see, they identified the ways we can do it in terms of gallons of ethanol, gallons of biodiesel, how much electricity and the quads of energy that we can produce in this country. And all of this comes in addition, or without changing -- major changes to our current agriculture and forestry practices and land use in this country.

Now, the farm-to-fuel fuel initiative. Learning about the 25 X '25 kind of sparked Commissioner Bronson as far as wanting to do something here in the state, and that's what created our farm-to-fuel initiative. We went to the legislature last year, we had them put language in the statute that identified this initiative and said that we were going to look for ways to produce and promote alternative energy or renewable energy and renewable fuels here in the state of Florida, which is exactly what we are doing.

One of the big things we have done this past year is back in August we had the first of its kind here in the state,

we had our farm-to-fuel summit, which attracted nearly 350 participants. Although that one focused mainly on transportation fuels, ethanol and biodiesel, we are looking at doing another conference hopefully sometime this summer where we are going to broaden our scope.

Now, what are the resources for our renewable energy? You can see there on the chart -- well, ignore for the moment biodiesel and ethanol, but for purposes of electricity you can see that left-hand column is all the places that we can get resources here, nationwide, and again in the state of Florida. We can produce all of those things, some more than others. We have got great potential. Obviously not so much from the residues of corn and wheat. We don't grow a lot of those crops here in the state, but dedicated energy crops shows a lot of promise here in Florida.

Cattle. Well, not just cattle, but cattle and poultry manure, anaerobic digestion has great promise. Not a producer of a large of amount of electricity or energy, but with all the other benefits associated with it, it is certainly something that shows a lot of promise that we need to explore here in Florida, and we certainly have the ability to do that in our dairy industry. In the forestry industry, we have quite a large one in Florida. Mill wastes and forest residues can particularly help out.

I won't go through all of this. You might have heard

about it. If not, it's very interesting reading as far as the Billion Ton Study because there was a study commissioned by Congress several years ago that looked at how we can replace 30 percent of our transportation fuel, or have 30 percent of it made up from biomass in 30 years. They did a study, and they basically said, yes, we can do this, and they identified the fact that within 30 years we can produce 1.3 billion tons of biomass in this country just from agriculture residues and from forestry resources.

Bringing that home to Florida. Where are our sources of biomass? You can see the figures there. Over 40,000 farms and ranches, millions and millions of acres of cropland and timberland and pastureland. Marginal land is something that needs to be explored. It shows a great deal of promise as far as where you can't grow a food crop or something else you might be able to plant an energy crop and make good use of that. And in particular, when you talk about the things that are on those, you are growing, you know, we have got all the woody biomass. In fact, a recent study shows Florida as being one of the nations top producer of biomass and all of that can be converted to energy of some sort or another.

One other thing just to throw out there, and this is something that is very, kind of near and dear to Commissioner Bronson is we have a tremendous opportunity to use this as a way to tackle our ever increasing problem of invasive species

in the state of Florida. And if we could find a way to -- while we are removing those also convert them to energy, melaleuca, all the other invasives that are in the state, that shows, again, potential that we can tackle.

And you can see the list there. Not only can agriculture produce a great number of benefits to our energy needs, but likewise lots of benefits to agriculture. Because especially for us and Commissioner Bronson, we need to keep our producers producing, we need to give them alternatives that they can grow to keep them in business. We need to keep Florida's green space green. Thank you very much.

CHAIRMAN EDGAR: That was a lot of information very fast. Thank you. Let me ask this question, and I truly don't know the answer, so, in order to work towards Florida's contribution to hitting that national goal that has been set out, is the department or working with the legislature are you planning to come up with more specific goals between now and that 2025 year, or is it still a little too early for that, or can you just talk a little bit about how we are looking to get from here to there a little bit?

MR. LEVENSTEIN: Certainly. And we are working on this as we speak. We plan on working very aggressively this legislative session. We're already talking to some of the members and talking to Representative Allen or Chairman Allen of the Energy Committee as far as some proposals we have to try

to prompt this.

I will tell you this: There is a lot of discussion out there, and I know that there will be some more today as far as mandates. As a matter of -- we generally don't believe in mandates. We think the way we need to do it here in Florida is we need to provide appropriate incentives for those folks that would either produce our renewable energy resources or actually take those resources and make energy out of those. So mandates, per se, is not something we are looking at. But we have some ideas. We are working on them as far as appropriate incentives to do just that.

CHAIRMAN EDGAR: Thank you. I'm interested to learn more also about the conference or workshop that you are doing this summer and hope that we can participate to some degree with our staff, as well.

MR. LEVENSTEIN: We will certainly make sure you are informed. Thank you.

CHAIRMAN EDGAR: Thank you.

Commissioner Carter.

COMMISSIONER CARTER: I just wanted to ask, how have you found the forestry and farming community to be receptive to this? I know that it's probably one of Florida's stories about the tremendous contribution agriculture makes to our economy, but how have you found the farmers and the forestry producers to be responsive to this idea?

MR. LEVENSTEIN: Thank you, Commissioner. And that is an excellent question.

We have found them to be very receptive. In fact, since we embarked upon this, we consider ourselves equal partners with Florida Farm Bureau, who is working very closely with us, the University of Florida IFAS, among others. And, the truth of the matter is we are really kind of new to this. In fact, coming here today I was thinking I don't know that anybody in the Department of Agriculture has ever been before the PSC. So it's kind of new ground for us. We have got new partnerships, we have worked more closely with DEP and the Energy Office than we had before. But as far as the ag community, they have really embraced this. They are really excited about it as far as, you know, as far as the opportunities that exist for them.

And, in particular, the forests and our forest resources here in Florida, which are great. In particular in North Florida there is tremendous opportunity. And I should note that they have already for years been doing things that they don't get credit for. And I think not only do we need to go and we need to find ways that we can further capitalize on their resources and what they can provide, but also recognize them for their past achievements, because they are already there, and they have been there for years doing exactly some of the things we are talking about doing today.

CHAIRMAN EDGAR: And I love to hear stories about cross-agency collaboration, so I think it is wonderful. Thank you, Jay. Thank you so much.

MR. LEVENSTEIN: Thank you, Chairman.

CHAIRMAN EDGAR: Susan. Susan Glickman with the Natural Resource Defense Council.

MS. GLICKMAN: Good morning Commissioner Edgar, and Commissioner Tew and Carter. Thank you very much for having me here today.

Today's discussion is another important step in advancing Florida to a clean energy future. Clean energy policies present the state with a range of possibilities and enormous economic and environmental benefits if we are bold enough to embrace the renewable energy technologies that will be presented here today. Being bold means moving beyond the policies of the past which have stunted, unfortunately, the growth of renewable energy in Florida. What the policies of the past have gotten us is that less than one percent of Florida's energy comes from renewable resources and herein lies our challenge.

It is important to understand that with energy there is no silver bullet. There is no single technology that is the solution. However, each technology has the ability to reduce our environmental footprint with a unique contribution. And I want to commend the Commission and the Commission staff,

particularly Bob Graniere, for bringing such a diverse group of speakers here today.

It's vital to note that a discussion of renewable energy technology is not complete without incorporating into that dialogue the untapped opportunities of energy efficiency. If we don't adequately address the need to reduce demand with energy efficiency then we are forever relegating renewable energy as to be a small fraction of the market. Energy efficiency measures are the least costly method of acquiring additional generating capacity and directly complement a successful renewable energy policy. It is an understatement, to say the least, that there has been a recent flood of interest in, well, what are the steps that we must take to achieve a real paradigm shift which moves us to a clean energy future.

For example, and Jay mentioned this, the Florida Energy Commission formed last year by the legislature and directed by statute to develop a comprehensive state climate action plan with greenhouse gas reduction is moving forcefully forward in that quest. And on Tuesday, the Century Commission for a Sustainable Florida released its first annual report, and I have given a copy of that to each of you through the staff. They have released their first annual report to the governor and the legislature for meeting the challenges of the 21st century.

The Commission stated in its very first recommendation that, and I quote, "There may be no more pressing issue in our state than the impact of our country's current level of use of fossil fuels on the state and the global environment. The relationship between our energy sources and our security, economy, and environment demand a bold vision. And of all the states, Florida has the most at stake and must take a leadership role."

The good news is that a clean energy plan is in the best economic interest of Florida. Eighty cents of every dollar that we spend on energy leaves the state of Florida. In 2005 alone, Florida exported $10 billion for fuel. Coal, natural gas, oil, purchases that are all used in power generation. Therefore, it is an imperative that we must use abundant homegrown resources to meet our energy needs. The increased use of renewable energy sources and the implementation of energy efficiency measures will increase the state's energy security, protect Florida's fragile environment, and create jobs right here at home.

And certainly we already have the intellectual infrastructure and resources in place ready to create jobs in a clean energy future. For instance, we have the Florida Solar Energy Center which, of course, is one of the top solar research facilities in the country, and, of course, you are going to be hearing from the director, Doctor James Fenton,

later this morning.

And as you just heard from Jay Levenstein, we have the agriculture community poised to provide biofuels to power Florida's future. Biofuels have taken on even greater importance as the nation and the state work to reduce our dependence on oil. And Commissioner Bronson is providing exemplary leadership not only here in Florida, but also on the national level as a board member with the group 25 X '25, which you just heard about.

We will also be hearing from Doctor Ann Wilkie from the University of Florida about the conversion of waste to renewable energy, probably more accurately described as from poop to power, you are going to hear more about that today, and there is obvious environmental benefits to livestock operations. Converting dairy waste helps with things as simple as odor reduction, and it holds the potential to meet the energy needs of dairy farmers themselves by providing a heat source that they can use for hot water to deal with their sanitation issues.

But in order to make this work, we must dispense of the policies of the past and make net metering available. Net metering is a low cost easily administered method of encouraging customer investment in renewable energy technologies. It enables customers to use their own generation to offset their consumption over a billing period by allowing

their electric meters to essentially turn backwards when they generate electricity in excess of their demand, and I'm going to talk a little bit more about net metering later.

Another renewable resource poised for development is Florida had produced 10 percent of its power consumed in 2003 from biomass. The agriculture and forestry sectors would have retained a billion dollars of the fuel dollars that currently leave the state. Florida would need 2,500 megawatts of capacity to meet the 10 percent requirement. That is 1.7 million acres would be needed to get to that particular goal. And Jay just told you, Florida has 28 million acres that is classified as agriculture and forestry, and what a perfect way that is to augment our generating capacity. Biomass power has virtually no sulfur, no mercury, it is CO2 neutral. It does have some NOX emissions, but when we add to that the advanced power of the gasification technologies, then we can even further reduce those emissions.

We also have a host of untapped energy efficiency measures to complement our state's renewable resources, and you are going to learn more today from Dave Dewis from Elliot Energy Systems about the benefits of combined heat and power, CHP, which can increase operational efficiency and decrease energy costs.

But in order for CHP and other forms of distributed generation to thrive, another policy of the past will have to

go by the wayside. We need a standardized interconnection rule as one of the several tools to increase the amount of clean distributed generation in the state. Standardized interconnection rules establish clear and uniform processes and technical requirements for connecting distributed generation systems to the electric utility grid. These rules are a vital mechanism for improving the market conditions for clean distributed interconnection. Barriers to interconnection must be abandoned.

And one speaker you are going to hear from later today, Grady Pridgen, is someone who is just pulling it all together in a way that can only be described as a benchmark for sustainable development. He is creating the nation's first zero carbon, sustainable, mass transit available, urban infill, mixed use, brownfield, redevelopment project with workforce housing, so talk about doing it all in one place. The ultimate goal of his project is to reduce electricity, water, sewer, and waste demand by 75 percent. And the result of all of that is lower costs and a cleaner, safer environment, and what is not to like about that.

Florida has much to gain on the environmental front from a clean energy plan. As we move to renewable sources of energy and energy efficiency measures, we begin to reduce carbon dioxide emissions, CO2, the main global warming pollutant. It has been well documented by the International

Panel on Climate Change, the National Academy of Sciences, and others in the scientific community that CO2 emissions are changing our climate, and Florida is more at risk than any other state in the nation. Global warming is expected to raise sea levels at least three feet and possibly much more than that within three generations. This poses a clear and present danger to Florida's low lying coastline and coastal development.

Recent MIT and Georgia Tech studies concluded that global warming is intensifying hurricanes. And with a special session underway just across town, we all know that in the last few years hurricane-related damage has plunged the state into a homeowner's insurance crisis. Global warming also threatens our agriculture industry by exacerbating droughts and facilitating the migration of tropical pests northward. Warmer ocean waters are already bleaching our coral reefs in South Florida, reefs which generate over $3 billion for the state in fishing and diving-related activities.

Needless to say, what we are doing here and the leadership that you all are providing couldn't be any more important. Clean energy policies such as what you are exploring today will act as the catalyst to jump-start investment in Florida renewable resources and efficiency measures. The state's encouragement of the renewable energy technologies and efficiency measures described today will

ultimately hedge the risk of energy interruption by diversifying into nontraditional energy sources. It will create jobs, it will reduce our dependence on oil, and it will reduce CO2 emissions laying the groundwork for a sustainable future for the next generation of Floridians.

In the absence of federal CO2 emission limits in the last few years, the primary policy responses have occurred at the state level. Twenty-two states and the District of Columbia have adopted renewable portfolio standards partly in response to global warming, and many now have adopted policies directly intended to limit greenhouse gas emissions. Several northeastern states and mid-Atlantic states have moved ahead with their own regional cap and trade systems, called the Regional Greenhouse Gas Initiative, that will impose mandatory limits on CO2 emissions from the power sector.

New Hampshire, Washington, and Oregon have already passed laws limiting power plant CO2 emissions or requiring them to purchase offsets. And Washington, Oregon, and California have combined to form the West Coast Governors Global Warming Initiative, and that involves a whole variety of steps to reduce greenhouse gas emissions from those states.

CO2 reduction plans and a renewable portfolio standard which mandates a percentage of electricity be produced by renewable sources by a certain date, they foster the development of renewable resources within the state. These

programs are an excellent catalyst for investment in renewable energy and efficiency measures because an RPS creates certainty and Florida cannot afford to be left behind as other states direct their utilities to invest in renewable energy.

An RPS is the most effective way to ensure that we continue to invest appropriately in new sources of clean energy. Adopting an RPS also sends an important signal to clean energy developers that a strong market is a certainty in Florida for their products.

Ultimately, though, our goal must be to strike the right balance between the operational needs of the utilities and the cost concerns of customers and the state's desire to develop a renewable energy infrastructure. The technologies available to our state today include -- we have already talked about biofuels and the farm to fuel initiative, and not only will that lessen the state's dependence on oil, but it is also going to protect green space in Florida, which as we grow and grow and grow apparently, which we are, that we are going to continue to allow green space and allow farmers the option to plant other profitable crops.

And, of course, there's solar. Photovoltaic technology, PVs, were initially developed for the space program over 30 years ago. They rely upon chemical reactions to generate electricity. PV cells are small square shaped semi-conductors manufactured in thin film layers from silicone

and other conductive materials. And when sunlight strikes the PV cell, chemical reactions release electrons, and that's what generates the electric current.

California recently announced the largest solar program of its kind in any state in the country, the California Solar Initiative. It is a ten-year $2.9 billion program designed to help California move toward a cleaner energy future and help bring the cost of solar electricity down for California consumers. The goal of the program is to increase the amount of installed solar capacity on rooftops in the state by 3,000 megawatts by 2017. One of your speakers later, Gwen Rose, is here all the way from California with an organization called Vote Solar, and she is going to help us understand how we get to 3,000 megawatts of distributed solar generated power here in Florida.

That kind of commitment would eliminate the need for two large coal-fired power plants, and it would provide hundreds of thousands of residents power during times of outages, such as hurricanes. I myself purchased a solar hot water heater this year and a solar-powered attic fan, so I'm ready for the next hurricane, because I'm going to be the only one on my street that has hot water. Gwen is going to share with us why even though solar photovoltaics are currently the fastest growing energy industry in the world, they have had a 60 percent annual growth over the last few years, but to date

market penetration has just scratched the surface of its potential and we need to change that.

Next is biomass. And man has used energy from plants and plant derived materials since people began burning wood to cook food and keep warm. Wood is still the largest biomass energy resource today, but other sources of biomass can also be used. Food crops, grassy and wood plants, residues from agriculture or forestry, and the organic component of municipal and industrial waste. Even the fumes from landfills, which are methane and natural gas, can be used as a biomass energy source.

The cleanest burning types of biomass include nonhazardous cellulosic or agricultural waste materials that is segregated from other waste materials. In states with renewable energy portfolios, this type of biomass is encouraged and designated as a Class 1 renewable, along with solar and wind. And utilities are given a more heavily weighted credit towards reaching their renewable goals by using a Class 1 renewable.

And I've already mentioned combined heat and power, CHP, and it's often described as district heat and cooling. The process recovers the heat that is usually wasted in the generation of electricity, and heat can then be used to heat or cool other buildings.

And that leads us to the importance of efficiency

measures. If it is a state's goal to increase our use of renewable energy resources as a percentage of the total electricity generated, then it naturally follows that we must implement efficiency. And while I will not discuss it today, we also need to implement conservation measures to control overall electricity demand. For instance, the state of California has found that for every megawatt of load reduction that reduces the renewable portfolio standard obligations by 33 percent, so these two notions work together.

The goal of the California RPS is to get 20 percent of electricity from renewable resources by 2010. Efficiency measures will have the co-benefit of keeping consumer prices flat or reducing them as renewable technologies come on-line. The American Council for an Energy Efficient Economy will be releasing a Florida assessment on February 5th that will present data on the potential for both renewable energy as well as efficiency measures that can slash demand-side pressure.

It is important to consider them together. Because in order for renewables to ultimately make a dent in the market, or as our legislators like to say, to change the pie charts, then reducing demand has to go hand-in-hand with the development of renewables. And I would just like to offer a little sneak peak of some of the ACEEE's recommendation. The first is a utility sector energy efficiency program, and perhaps what I have come to know as the mother of all policies

of the past, and that is simply put Florida needs to transition from the rate impact measure test to the total resources cost test, and here is why.

Florida utilities operate programs to help manage customer loads, but most of the emphasis is on load management, meaning shifting loads from peak to off-peak periods, and much less emphasis is on energy efficiency. But in an analysis of 2004 data on energy efficiency by state, Florida ranks somewhere in the middle of the pack, 19 out of 50 states. However, energy efficiency savings achieved in 2003 were actually higher than what was achieved in 2004.

Utility efficiency measures are wearing thin. While in states like Vermont, California, and Connecticut, energy savings are growing by about one percent of sales each year. The reason is that the RIM test is a fairness test, it is not an efficiency test. Under the RIM test, DSM program costs are added to rates. That increment includes the portion of fixed costs no longer recovered when DSM pares down energy sales and utility revenues fall as a result. These fixed costs elevate the per unit cost of furnishing electricity, which boosts rates and drives up the bills of customers that do not participate in the DSM programs.

These adverse rate efforts are typically captured by the rate impact measure. But because the RIM test counts lost revenues from decreased utility sales as a cost, DSM that

produces high energy savings can have an unfavorable RIM score. The RIM test thus eliminates proven energy saving measures from consideration. The RIM test reliance marks a large step backwards in the planning evolution of the utility industry. By ignoring DSM's long-term potential to defer or displace future capacity needs at costs well below those of new construction, utilities will bear higher costs in the long run when additional capacity is needed, and then that leads to higher rates.

The ACEEE recommends that the Florida PSC use the TRC test as the primary vehicle for assessing energy efficiency programs. The TRC test compares the costs of a program to customers in the utility to the marginal benefits of needing a little less power. If this test were used, many more programs would be found to be cost-effective and much more energy could be saved.

Next, we need a public benefit fund. There are various approaches used today to provide a public policy context for utility energy efficiency efforts. One such method includes an assisted benefit fund or a public benefit fund where the legislature, or you, the PSC, establishes a long-term level of funding for energy efficiency programs, and the utility plans a set of programs to optimize savings achieved within this budget. Typically, funding levels are set in terms of a cent per kilowatt of sales. This approach is now being

used by almost 20 states.

We also need appliance and equipment standards, and typically these standards eliminate the least efficient products from the market and sometimes mid-efficiency products, as well, while being careful to leave consumers a wide variety of projects from which to choose.

Efficiency standards are now available for more than 40 products. In addition to federally regulated products, there are a range of others that states are starting to regulate, and this includes walk-in refrigerators and freezers used in restaurants, bottle type water dispensers, DVD players and recorders, hot tubs, and two more items that would definitely reduce demand in Florida if they were more efficient, and that's pool heaters and residential pool pumps. Florida DEP prepared charts last year on what Florida's energy usage was, and as you all know, 51 percent of our energy use is residential, and of the residential use of the 51 percent 20 percent goes to swimming pool heaters and pool pumps. And I am convinced we can do better than that.

We need more efficient building codes. Florida recently updated its building code to reflect new commercial building and lighting limits and to incorporate the new federal residential air conditioner efficiency standards. But the next opportunity to upgrade the Florida code will be around 2010. The Florida code should start to address residential and

appliance energy use, perhaps building on what California has done with their new home code.

You're going to hear from Doctor Fenton, who is going to present an example of how Florida can radically alter its 2014 energy use projection by aggressively pursuing residential building energy efficiency improvements and aggressively increasing the use of proven renewable energy sources. Results show that significant electric savings in Florida homes are both possible and also practical. If the IRS tax credits are augmented by the state of Florida rebates, electrical energy savings exceeding 40 percent of the total home energy use are cost-effectively achieved for the customer. We really need to develop an advanced building program, because new homes --

CHAIRMAN EDGAR: Susan, I'm sorry, I'm going to have to break in.

MS. GLICKMAN: Sure.

CHAIRMAN EDGAR: Let me go back for just a moment and ask you a question. You talked a little bit about the RIM test and the TRC test, and I do strongly believe that the state of Florida, both public sector and the utilities have been leaders in DSM and other conservation measures when you look across the country. But are there other states that are applying a TRC type test instead of a RIM test?

MS. GLICKMAN: Well, what I can tell you, other states are no longer using the RIM test, and Georgia got rid of

it a year ago. So I don't know the data, and I, of course, get you that information. And, when the American Council for an Energy Efficient Economy is here in Tallahassee, I would love to have that opportunity to have Neil Elliot, who is doing the study, you know, really sit with you and spend some time.

But my understanding is that no other state uses the RIM test, and Georgia got rid of it last year. And my understanding is it's sort of a hopelessly outdated way of looking at things. And the way it adds the savings into the cost of the product, you know, compact flourescent light bulbs are not considered cost-effective, so that just doesn't make sense. I think it might have made sense in the past, but I think obviously there's a different landscape and there are different interests that the state has, and the Public Service Commission has to let us do more. So it's something that you really need to look at.

CHAIRMAN EDGAR: As I stated earlier, and as I know you know, we are trying to reach out and tap into varying expertise and to reach out beyond just our own qualified, but beyond our own walls, so we look forward to having our staff work with people that you suggest to us.

And I'm going to have to ask you to move along.

MS. GLICKMAN: Sure, absolutely. The last two things that they will be recommending is that we really look at a significant public awareness campaign, because the public has

to be involved in understanding whether they're reducing demand or purchasing renewable opportunities. That's part of the mix. And then, lastly, to expand our research and our development and our demonstration efforts as they have done. New York established a state energy research fund with an annual budget of about $17 million, and the ACEEE would recommend that Florida do something significantly similar.

And to conclude, to reach a clean energy future we can no longer conduct business as usual. And it's too important. Energy efficiency measures are going to stabilize demand and keep consumer costs low as the renewable energy develops. The main point to understand is that energy efficiency measures are very immediate, they are short-term, and if we can help meet demand that way then we can allow the mid-term goals, which is sort of what renewable energy long-term, because it will take some period of time to develop that.

I appreciate your attention today. I have tried to provide sort of an overview. Obviously there is a lot of information to give. We have a lot of talent here, and I just hope that we don't leave those opportunities on the table. I look forward to working with you all as these ideas are developed over time. Thank you.

CHAIRMAN EDGAR: Thank you, Susan. We are going to move to our next speaker and we are going to go a little out of

order. Next I'm going to call upon Allan Guyet, who is the director of the Florida Energy Office with the Florida Department of Environmental Protection.

And, Commissioners, that is Tab 19 in your materials. And, Mike and Kathy, Tab 19 in our materials, if you can help make sure we have got the right slide presentation.

Allan, great to see you again. Welcome.

MR. GUYET: Well, thank you, Chair. It is a pleasure to be here. And thank you, Commissioners.

I just wanted to start today and talk a little bit about where we have been and where we are going in Florida. As you know, last year we passed the Florida Energy Act that has several components to it which I will talk about today, which I think are very helpful as we move forward with some energy policy this next year, and as you hear from some great speakers today that provide you with some great alternatives for production of energy in the state of Florida.

One of the great programs that we have is the grant program. The grant program consists of both renewable energy grant program and the bioenergy grant program. This is a great tool in the state of Florida for us to look at technologies that are in the marketplace that are very close to development and help give them that push to move over the edge and become commercialized in the state so we can start tapping into new renewable sources in the state of Florida.

We got a great significant response with over 183 unique proposals seeking nearly $215 million in grant funding and providing up to 505 million in cost share, so obviously the technologies that came forth have a significant skin in the game to really move forward and bring us into a new future in Florida with renewable energy.

We have a number of different criterion listed here that we use to score the grants, and we will be moving forward over the course of this month to score the grant program applications and move forward towards the end of this month and into the beginning of February to award these grant programs. We will enter into negotiations to actually have the agreement laid out with the different applicants that win the awards and move forward with funding these projects. So I think it is a great opportunity for the state of Florida. I hope next year I will have the opportunity to come back and talk to the Commission about some of the good work that has come from these grants.

Another good opportunity for the state of Florida is our renewable energy corporate tax programs. We have two taxes. This slide here talks about the sales tax. What this does is enables renewable energy companies that have clean fuels, and I will define clean fuels for this forum as being hydrogen, biodiesel, or ethanol, to apply for different types of technologies, different types of capital improvements, and

to not have to pay the sales tax on them to really stimulate that in-state capital investment in technologies. And, again, here is the investment side tax credit. They are eligible for 75 percent of their capital cost investment in the state of Florida.

Jay Levenstein spoke earlier about agriculture, and agriculture plays a very fundamental role in the state of Florida's energy future especially as it pertains to fuel grade ethanol. And there is a great opportunity, if you were to come into the state of Florida and develop an ethanol plant, for you to take advantage of these funds to help build that type of plant. So, again, the state has provided some economic stimulus for different companies to come in and help the state of Florida and to bring other technologies to market so they are available for the Florida consumer.

The rebate program, and Doctor Fenton will talk, I'm sure, in more detail about different types of solar technologies. But one important thing that we can do is help to get consumers aware of the use of their energy and also to make good decisions and look for alternatives to just turning on the light switch. The rebate program that is administered by my office has now issued over 693 rebates in excess of $410,000. There is $2.5 million available for these rebates, both for solar photovoltaic, solar thermal, and pool heaters. And I hope that as we move through the rest of the year that

more people will become aware of this information and more people will take advantage of this opportunity, because it can draw down significantly the cost of a solar PV system at $4 per watt rebate for a PV system, it significantly draws down that cost. So as we move forward, I hope more people will take advantage of it. And based on our calculations from the types of rebates that we have issued, we have deferred 9.3 million kilowatt hours of energy in the state of Florida.

The Leadership by Example Report was a good opportunity for us to really take a benchmark, to look at ourselves and look at really three opportunities in the state of Florida for increased use of renewables. We have our energy efficiency and conservation state buildings. What are we doing in our state buildings and how can we do better. Also, in our fleet. Currently our fleet is between 9 and 10 percent comprised of alternative fuels, and then, of course, look at other opportunities such as an energy efficient product rebate program for consumers in the state of Florida.

Now, this is something that I know that the committee is familiar with, both the Power Plant and Transmission Line Siting Acts. This past year we looked at some different alternatives to streamline these two acts, and are right now in the process of drafting our rules. Power plant siting is about 95 percent complete, transmission line siting is about 40 percent complete. Once we complete both of those draft

rules, we will hold public hearings both here in Tallahassee and also in Orlando to get public input on the draft rules that we have come up with and then go before the Joint Administrative Procedures Committee for approval of those rules.

And here is another important topic, and it says energy efficiency sales tax holiday on the slide, but what it doesn't say is education, education, education. And I think you will hear a lot about that today. It's getting consumers to think about their energy consumption and their habits. The sales tax holiday provided a sales tax free savings from October 5th through the 11th of 2006, and it was a great opportunity for people not only to save money and not have to pay sales tax on energy efficient appliances, but it was also a good opportunity for the state to promote energy efficiency and to get people thinking about how they actually consume their energy in their homes, in their vehicles, and just overall. So this was another great opportunity for us to do that.

And the last thing I will just mention today is the Energy Commission, which was established by Senate Bill 888, which I have been describing to you today. This is another great opportunity. I think it is another great forum to bring people just as you are doing today together to talk about how we can move forward in this state. So I look forward to working with Commissioner Burroughs (phonetic) and all of his

staff as we move forward, and I know that you have been invited as the PSC to work with them, as well. So I think it is just another opportunity.

I certainly commend the PSC for having this forum today. I'm not going to take up much more time because there are some great speakers. If you look at the agenda, I think each one of them, and I spoke to many of them at different occasions, have some very outstanding ideas to bring to this committee for you to consider as we move forward and really start to draft more energy policy for the state. So thank you for your time. I would be happy to answer any questions you may have.

CHAIRMAN EDGAR: Allan, thank you. Questions?

Commissioner Carter.

COMMISSIONER CARTER: Just a comment. As I am sitting here -- and thank you, Madam Chairman, for your leadership in organizing this -- is that we look at this from the standpoint of can the lion lay down with the lamb in peace. And in this process a lot of times here we see where in order for me to win, you have to lose. And I think what we are trying to communicate, and hopefully to both those that are in the environmental community, those in the industry, as well as those in academia, and our governmental agencies will recognize that what we are trying to do is to use our best and brightest, you know, in all areas to come together on a common perspective

to provide efficient, economical, and environmentally friendly services for our state here in Florida.

So, Madam Chairman, I thank you for this process, and I'm already excited. I look forward to the rest of our speakers. Allan, thank you so much for your presentation. We have some great speakers, some great things happening here, and I'm really looking forward to getting beyond the dialogue and starting to get the wheels moving. Thank you, Madam Chair.

CHAIRMAN EDGAR: Absolutely. Thank you, Commissioner. Thank you, Allan. Hold on a minute.

Commissioner Tew.

COMMISSIONER TEW: Thank you, Allan. A couple of quick questions. One was about the solar rebates to Florida residents, 693. Do you remember if that is available to businesses and residential, or is it just residential customers on the rebates for solar?

MR. GUYET: It's primarily residential customers, but we have also received some solar thermal applications from businesses, as well. But it's a mix that we have received.

COMMISSIONER TEW: And, selfishly, I need new appliances, and I'm wondering are we hearing anything about the prospects for another sales tax holiday on the energy efficient appliances this year?

MR. GUYET: I know there has been some bills introduced to create another sales tax holiday, and I think

that there will certainly be a lot of interest this year as we go forward.

COMMISSIONER TEW: Thank you.

CHAIRMAN EDGAR: I know I am, and we all are, looking forward to seeing what the 215 million in grants that the state has provided for this year when those awardees are announced later to see what kind of great projects are coming out of that, and see together how we can work with your program as well and with the secretary. Allan, thank you so much.

MR. GUYET: Thank you, Commissioners.

CHAIRMAN EDGAR: Our next speaker is Doctor James Fenton, Director of the Florida Solar Energy Center.

DR. FENTON: Good morning.

CHAIRMAN EDGAR: Good morning.

DR. FENTON: I appreciate the opportunity to be here in front of all of you. I am James Fenton. I'm the Director of the University of Central Florida's Florida Solar Energy Center, and it is my pleasure to present to you "Taking Charge of Our Energy Future." We can do much better, and I'm very optimistic that we will.

Florida ranks fifth nationally in the amount of energy consumed per capita, and third in total energy use. These are not good rankings. Currently more than $20 billion leaves Florida's economy as fuel payments to other states and nations. If these dollars stayed in Florida's economy, they

would generate 40 to $60 billion in economic activity for the state.

To stem the flow of cash and the resulting jobs that go with it from Florida, we must implement a nonfossil-based fuel economy using our plentiful sun and biomass. While many high tech jobs may be moving overseas, the local production of indigenous fuels that will achieve Florida's energy independence cannot be outsourced. Now is the time for action. We need a vision, a vision of energy independence for Florida where the sunshine state provides its own fuel from our plentiful sun.

The jobs that implement the technologies that use our renewable Florida fuel are Florida jobs and the companies that make this happen are born in Florida. This vision of energy independence for Florida can start with our new homes. Our new homes in Florida, and we build 160,000 of them a year, should be approaching net zero energy homes. These are homes then that would be designed and built more energy efficient. Hot water would be provided by solar thermal energy and electricity is generated from the sun through the photovoltaics and stored in the electric grid during the day and the grid provides the power at night.

To get to this vision, we must expand on the rebates. And as Allan mentioned to you, we have made some significant progress in having these rebates, and create new incentives for

energy efficiency. The Florida Solar Energy Center hopes to help drive this vision for Florida. We have 150 staff at FSEC that think about energy 24 hours, seven days a week. We are ready to provide the research, development, deployment, information, and assistance so that the sunshine state is indeed energy independent.

As was mentioned, through the Public Service Committee, the 2004 future generation, our projection -- this was done in 2004 to 2014 -- calls for Florida utilities to produce an additional 75 billion-kilowatt hours, more energy than we produced in 2004. It's a 32 percent increase in the energy use over the decade. And as this shows, 72 percent of that electricity would be generated from what we now realize is very expensive natural gas that we import from off our shores, and 28 percent would be from coal.

As was mentioned, 50 percent of the electric energy use that we use today is for residential buildings. We have a unique opportunity. We are somewhat unique in Florida in that we use a lot of electricity in our residences. As they say, the south will rise again. It was the invention of the air conditioner.

If Florida is to minimize its use of electric consumption, it starts with us, the homeowners. We, the homeowners, can stop the flow of cash, at least for the purchase our fossil fuels, by making our houses more efficient

and use the sun to make our electricity and our hot water.

Well, okay, why not change the new generation? Based on the concerns of building new power plants based on this expensive natural gas, and then the time lag it would take to get to the coal plants, Governor Jeb Bush at that time in November of 2005 signed an executive order to develop a statewide comprehensive energy plan. Last year I had the opportunity to present in front of the Florida Senate Committee on Communications and Public Utilities the positive message on how we can leverage the federal tax credits, okay, for renewable energy and energy efficiency. In effect, trying to change the pie. And that study was done a year ago, and that website that is up here lists that information for that study.

There is a new opportunity, and it was mentioned earlier today, not only should we be using fluorescent light bulbs and ENERGY STAR® appliances as you brought up in your homes, but our new homes should be ENERGY STAR® homes. ENERGY STAR® homes, national brand recognition, we can reduce our total home energy use by about 15 percent based on our 2006 new code standards and save owners money every month. The pay back is your first monthly mortgage check. Monthly energy efficiency savings are greater than their cost when paid through this 30-year mortgage. You can save Florida citizens about 2,000 kilowatts per year, about 1.5 tons of CO2 emissions per home each year.

What does it take to be ENERGY STAR®? Well, you start with today's standard minimum code building features. You add some ENERGY STAR® windows, a refrigerator and a dishwasher, three ENERGY STAR® lighting fixtures, and a substantially leak free duct system, and a high SEER air conditioner. So incrementally above and beyond the normal pieces of equipment you might have bought for your own home. So a 2,000 square foot home in Florida can be EPA ENERGY STAR® rated for just an additional $1,600. This leads to 2,000 kilowatts in annual energy savings.

And as Susan had mentioned, based on the levelized cost study that is on-going right now, this calculation of this $1,600 invested in a typical new home built here in Florida is equivalent to paying six cents a kilowatt hour for your electricity. I remind you, we pay about 12 cents a kilowatt hour today right out of the wall.

Where does Florida stand as far as these EPA new energy homes? Well, we build the most homes in the United States, 160,000 new ones a year. Unfortunately we only build 2,500 of them that were EPA ENERGY STAR® homes. Seven states have greater than 15 percent EPA ENERGY STAR® homes. Unfortunately, Florida stands dead last. We can change that, though. We're upbeat. I'll give you an example, the art of the possible. The first zero energy home was built here in Florida, in Lakeland. We can build these new energy homes or

net zero energy homes in Florida. We can do this. The control home that you see in the upper top here is the same footprint as what at that time was called the PV res home. This is a net zero energy home that we built with a developer in Lakeland, Florida. You notice the footprints are the same.

You will notice that the lower building has a white roof, a big improvement as far as reflecting the sunlight from our air conditioning load. You will also notice that the lower building has larger overhangs, providing more shade over the windows. There were more efficient insulation put in, some better windows, a better air conditioner. You will also notice that there were photovoltaic panels added. The large rectangular box in the center there is a PV panel. That is facing south. There was also some western facing PV. This is to the left. And then in the right, the small rectangle there is a solar thermal piece of equipment.

Okay. Here is the results, right? These are two exact homes facing the same profile, same building lay out design, so on and so forth. They tend to be a little bit on the high end side of homes. This is a 2,700 square foot home. It is not the average 2,000 square foot home that we would speak of here in Florida. But as you can see here, the standard home uses over 20,000-kilowatt hours of electricity. The PV res home with only the solar thermal and then all the efficiency measures only uses around 7,000 kilowatts. And at

12 cents a kilowatt hour, it's a savings of $1,800 a year.

Now, if you allow me to put the PV panels on the roof, I only use 8 percent of the electricity that was used of the standard control home, and you can see there the savings then is $2,400 a year on an existing home. And by the way, that home sold first. It sold for $30,000 more than the previous house, and today it is worth $80,000 more than the control home.

Next slide. We have made some progress here in Florida. As I mentioned before, we didn't have rebates in PV. We do now, thanks to the legislation that was passed last year. This is a bar chart here of the final consumer cost. As Allan Guyet had mentioned, the current rebate program right now provides a $4 per watt initial cost to the customer, right. A typical system runs around $16,000 if you are putting two kW up on your roof, okay. With a $2,000 federal tax credit, which is all we had in place last year, now with the $4 we are roughly at about 50 percent of the cost of the PV, gets paid for by the rebate, 50 percent by the consumer. We have moved forward quite a bit.

I want to spend some time with this plot. This is a plot of the 30-year cost per kilowatt, okay, of various sources of energy as a function of the date and year. All right. You will notice if you look at the two stars down there that I've got, okay, that we started out in 2000 paying about 8 cents a

kilowatt hour out of the wall. Starting in January of 2006, we are paying 12 cents a kilowatt hour. Now you can draw a line through two points, all right, and you can see that I have done that with the dotted red line. Of course, you might speculate with the fact that the price of natural gas has gone up by a factor of four since 1999, that maybe I should be drawing an exponential curve through those two points.

So what is electricity cost for the future? It is a good question. Let's go back to the PV curves. Thirty-two cents a kilowatt hour. It seems like a lot of money. It's a lot more than the 12 I'm paying out of the wall today. Let's go back to those 20 states that have the public benefits fund that were mentioned, right? They have been offering the 50 percent rebate combined with the government and federal taxes associated with those PV panels. Florida is also instrumental in that program. Unfortunately we are only at $2.5 million today, and as Susan Glickman had mentioned, California puts about a billion in it a year. But it's a start. We're making progress.

So if you buy in that we are going to have a rebate of 50 percent associated with the PV panels on your roof, and that data point for 32 cents a kilowatt hour is based on DOE data in 2005, so we move from that blue curve with the 50 percent rebate down to the 16 cents a kilowatt hour. Well, that's not so bad. Now, because a lot of those same states

also have portfolio standards, okay, you can trade your renewable energy credits on the Chicago Mercantile Exchange today at about 4 cents a kilowatt hour. 32 cents to 16 to 12. I pay 12 out of the wall today. How come I don't have a PV panel on my roof? That's the purpose of why we are having this meeting, okay.

Now, let me look at another thing on my little curve. Look at the upper curve. In 2020, we go from 32 cents to 9 cents a kilowatt hour. Now, whether you believe DOE projections or not, that's cheaper than what I'm paying out of the wall today. Let me give you another little thought to think about. Suppose you all decided you wanted a nuclear power plant in your backyard tomorrow. I'm speculating it would take 13 years before you got the first kilowatt hour if you turned it on. It would take 13 years before we probably turned it on. Maybe we can site plan and do a little bit quicker and so forth, and I hope we do, and clearly we need nuclear power plant and more base load generation for the other 49 percent of the electricity the state of Florida consumes outside of our residence. I'm not disputing that we need base load power. But think about it. Do you think that nuclear power plant turned on 13 years from now is going to sell me electricity at the same cost I got today or some higher number? PV is 9 cents.

Let's go to the next slide. I mentioned to you we

were looking at changing the pie. As Susan Glickman had mentioned, there is a new study that is being done today that we are looking at some similar alternatives to this. These are last year's numbers that we worked through, and so we took 160,000 new homes in Florida, assumed 15 percent of them were federal tax credit homes provided the efficiencies associated with them to improve those. Assume that we put 15 percent solar hot water heaters on those homes. Took the 6.2 million existing Florida homes and made some improvements. And my 15 percent there should, of course, be 10 percent, so I apologize about the typo error there. And then added 9,000 PV systems alone at 2 kilowatts apiece. And based on that alone we were able to save by 2014 25-terawatt hours of energy.

This next plot is rather interesting. This is an actual plot based on one of those energy credit, tax credit homes where we had a PV panel on it, two kW, right. We also had solar thermal energy applied to it, as well. This is a 2,000 square foot home. This is a plot for the home that we used as a model home in Tampa, Florida. We did this study based on Tallahassee and Miami climates, as well. And the interesting thing you will note here is look what happens to the electric demand curve. We lower the peak. In addition to actually having a curve much lower, it does a lot associated with lowering the peak. So clearly you can load management by putting in a more energy efficient home.

These are some of the benefits that were done based on that study. As I mentioned, we saved 25 terawatt hours over a ten-year time period when that study was done, and you can see what some of the costs are. Clearly we are avoiding quite a substantial amount of CO2, and we are generating $420 million of tradable renewable energy credits.

This next study is the study that -- the next slide is the study that Susan Glickman had referred to, the American Council for Energy Efficiency is putting together this Florida potential study. We at the Florida Solar Energy Center are providing the data and the information for that study, but this expands on the 2000 Florida's energy future study that the Department of Environmental Protection had put out. And it goes through a detailed analysis of all energy efficiency measures and renewable energy potentials for the state of Florida, and puts costs data on every single feature. The preliminary results which will be publicly available at the beginning of February show that we have significant savings potential for both new and existing buildings. And the final report for this will be available this early March.

With that I would like to end with the California example, okay. If you look at this plot, this is a plot of the per capita electricity used per person. You'll notice in the first Arab oil embargo, the real energy crisis -- we are just in a price crisis now -- the first one, right, the nation went

up. California stayed flat. If you look at today, you will see here that based on the energy difference per person in the state of Florida, that consumption compared to that person in California, okay, if we're paying 12 cents a kilowatt hour, that is $600 per person we are paying per year in Florida that they don't pay in California because our homes aren't energy efficient. You multiply that by the 17 million people we have in Florida, it's over $10 billion a year. It's simple. Build better homes, okay. It is efficiency, efficiency, efficiency.

Solar thermal hot water, by the way, is only eight cents a kilowatt hour. You should all have one of those on your roof right now. PV, still too expensive at 32 cents a kilowatt hour. If the state chooses to provide rebates, we can get those down to where that is cost-effective today. It's a choice we can all make. Thank you very much.

CHAIRMAN EDGAR: Thank you.

Commissioner Carter.

COMMISSIONER CARTER: Thank you very much for your presentation, Mr. Fenton. Do you know on average what it would cost to retrofit -- I know that we are building a tremendous number of houses in Florida, but we also have a number of houses that are currently here. What is the cost, or do you know, to retrofit the houses as they currently exist to put on the solar and the photovoltaic?

DR. FENTON: Of course, there's lots of things that

you can do in your home. And to answer that question, of course, if you are going to spend an incremental extra dollar to make an improvement on your home, I would strongly encourage you to make that investment on the most cost-effective thing to do, okay. And fluorescent light bulbs is a big one. Go for it, okay.

Now, maybe you have changed all of those out. And I will remind you, thanks to the tax holiday we passed around, if you had gone into the Big Box stores seven months ago before that tax holiday, you would not have been able to find fluorescent light bulb fixtures for ceiling lights, and various other, recessed lights, and so on and so forth. You only found a little helical job, okay, because customers weren't buying them. Whammo, the tax incentive. All the Big Box stores had every single possible fluorescent light fixture you can do. We going change the behavior.

To answer your questions more specifically, the problem that we have with a lot of efficiency measures, or the problems that we have with the renewable energy measures that I talk about which tend to fit into the distributed generation mode, it is an up-front cost for the consumer, okay. And so everything I'm going to tell you is an up-front cost, right.

As an example, the solar thermal hot water heater example, all right. Levelized over a 30-year period of time as I mentioned, and I like to use that because quite often when we

either buy new homes or buy an existing home, I get a 30-year mortgage, and the advantage of having a 30-year mortgage is I got my 30-year mortgage plus my electric bill. I, as a consumer, want the sum of those two numbers to be lower. Maybe you raised your mortgage a little bit and your utility bill really drops down, so that is the overall goal. So I prefer to do my cost basis on the cents per kilowatt hour savings. But up-front cost, it's a big problem.

So in the case of solar thermal, typically maybe $3,500 for the hot water system to be put on your roof. I remind you, you can go to Home Depot and buy an electric hot water heater for 200 bucks. So it is an up-front cost. Now, we already have a federal tax credit that will give you about $1,200 back on that, with the rebates that Allan had mentioned to you, it comes back that way.

If you are going to look at a payback that tends to be on the order of about five years for your payback. If you finance it through a 30-year mortgage, your payback is the first month payment. So it's a difficult question to answer completely. This study that will be published in March will have detailed analysis on every single efficiency measure you can make and will tell you those exact numbers for typical homes in Florida. Obviously, depending on what you have in your own home, it may change a little bit.

COMMISSIONER CARTER: Thank you.

CHAIRMAN EDGAR: Thank you, Doctor Fenton.

Our next speaker is Doctor Ann Wilkie with IFAS at the University of Florida.

DR. WILKIE: Good morning. This is going to be difficult for me because I was always taught to look at somebody when I was speaking to them, so excuse me for addressing the three people on the stage. It certainly is my pleasure to be here today to talk to you about biogas potential for Florida.

Susan mentioned earlier, you know, the poop word, and I think I would like to say that because of this humor attached to it, sometimes people don't take it as seriously as they should. So I want to basically say that biogas energy is beyond energy in the sense that it is renewable and it also gives us a tremendous amount of environmental benefits. Giving us energy, ecology, and it is also eternal because of the sustainable nature of that.

Anyway, biogas is a biological process. It's obtained from the degradation of organic matter, and that organic matter can be residues, or even purposefully grown energy crops. The gas can be converted, used directly as a gas or converted into electricity. The underlying process to produce the biogas is a biological one. It occurs in the absence of oxygen and it produces the end product which has methane as its main constituent, and methane is the primary

component of natural gas. So the biogas that is produced from this process is basically a substitute natural gas.

Complex organic matter, also known as biomass. In this case some of us may like to refer to it as biomess, but anyway, this material is broken down by bacteria. We generate some simple components, simple metabolites, and those metabolites then go on to give you methane as an energy source. And, again, we also get waste treatment at the same time. And the thing to remember is that today as we treat our waste products or biowastes in Florida, we actually expand energy to treat those wastes. So here we have a bifunctional process.

What are the feed stocks that we could use here in Florida? We could use animal manures. As Jay and Susan mentioned earlier, that we could use poultry and dairy. We are a large dairy state. We also are a fairly decent-sized poultry state. Aquaculture. We have very little swine. But one of the Commissioners asked earlier this morning to Jay, how are the farmers responding to that. I continually get calls from farmers and producers that are interested in looking at the opportunities, how much is it going to cost. They are excited that it will help the environment, but the question is if they generate energy from their waste and they try to sell that energy, will they be compensated at a fair price. These are the issues, equity for independent power producers.

But, Susan, the story goes beyond manure, and we also

produce some waste ourselves, industrial wastewaters. Flip back, please. Sorry. Municipal wastewaters and municipal solid waste. We also can use the process for making energy from purposefully grown energy crops. And by that I mean in the same way that we propose to grow cops to produce biodiesel and also bioethanol, we can also grow crops and harvest them for the purpose of producing renewable natural gas.

A number of benefits, again. Renewable energy, waste treatment, odor reduction. All of our waste tend to cause some odor problems at times. There is also an element of ecology in terms of public health pathogen reduction, nutrient conservation. This is very important from this process because our whole society is based on solar energy. We are all solar powered beings in the sense that we feed on what is produced by the sun through photosynthesis, therefore, the food that is produced we do need to have fertilizer. Either use organic fertilizer or we use chemical fertilizer. Today we are very heavily dependent on chemical fertilizer. Chemical fertilizer is produced by natural gas, therefore, by being able to produce a gaseous end product from our waste streams and be able to use that, we are also conserving our deployment of natural gas to make chemical fertilizer, because we are conserving the nutrients. And also we are conserving greenhouse gas emissions.

Any waste product as it tends to store, tends to

decompose and one gets gaseous emissions depending on the length of storage and also the temperature. What could we use this biogas for? As I mentioned earlier, methane is the main constituent which is also the main constituent of natural gas. Biogas is a flexible energy vector and it can have multiple uses. One of them is direct use, basic heating, steam production. Secondly, converted to bioelectricity. I call it bioelectricity because it is from biomass. It is renewable. It is sustainable. Any CN system, in today's world would be a combined heat and power system, also referred to as cogeneration, where the thermal byproduct is also deployed and not wasted.

The product can be purified and upgraded and injected into the natural gas pipelines. We have a number of gas pipelines in the state. A number of our homes are piped for gas. Vehicular fuel gas can be compressed and used as a vehicular fuel, and also biogas -- basically, natural gas can be converted into methanol. In fact, natural gas is the world's largest raw feed stock for methanol production, and methanol is going to be needed in the state of Florida. Why? Because we are proposing to grow crops and produce biodiesel. Methanol is one of those ingredients. Therefore, I'm trying to emphasize the synergy between our desire to grow crops for bioenergy biofuels and our ability to take biowastes and use them to provide supplemental fuels to power our other biofuels

forage production.

Biogas can be used as just cooking. A watched kettle never boils. In the background you will see there that that is just a silver bag and that actually might be called swill gas because it actually biogas from pigs. At the University of Florida we produce what we call gator gas from our dairy cows. Maybe we should call it swamp gas. But, anyway, we are actually -- this is a residential water heater 90-gallon unit, 199, 100 Btu. Taking biogas from a facility, taking biogas from hog manure and using that to displace our propane use.

So at its very simplistic level, we can use it for cooking, we can use it for hot water heating, and then there are additional uses, as well. Again, as I said, it could be used as a vehicular fuel. Sweden, for example, has a number of bus fleets and cars operating on biogas produced from these biowastes. And, in fact, it actually has a train. And I'm sure that we in the great state of Florida can do as well as the Swedes any day.

It also is one of the lowest in terms of emissions, natural gas. Secondly, this is the main components of a biogas plant, and this is the question: Is the technology available; how soon is it available? We certainly know that we have the waste. There is no question. Do we have any questions about that? No, we do not. The question is do we have the technology and how sophisticated is the technology and is it

being used other places. It is being used other places, so certainly a technology transfer opportunity can bring that to bear within the state.

Here I would just point out that it is a biological process and there are -- that biogas can be concerted to electricity, and that electricity can then be put back into the plant to make the system more energy efficient. Taking energy from waste and using that energy to provide any process conditions that are needed for optimization.

Secondly, again, at the bottom I want to emphasize biofertilizer, because growing food, growing crops takes fertilizer, and we currently use natural gas for that chemical fertilizer production. And the thing to remember is natural gas is great, but natural gas is finite. Thinking fossil fuel is fossil thinking.

So we talked about all the waste streams, although, you know, sometimes it is -- people don't understand how much energy is left there, but here I would like to show this energy as Jay mentioned with the Commissioner of Agriculture as we move forward to looking at green space in Florida, growing energy crops, biofuels. Ethanol and biodiesel are going to come hopefully, and here I would like to point out that as you look at ethanol production here in this diagram you will see there is a byproduct from that, too, yes.

Ethanol, I think, always give us a byproduct,

wouldn't we all agree, but here the byproduct can be converted to energy. And there is a national debate going on about what is the net energy balance of bioethanol. The simple answer to that would be the net energy balance of fossil fuels has rarely been discussed and what we can do here is at least we can reduce the net energy balance by taking the waste product and putting it back into the process.

Current numbers from Brazil would suggest that 12 percent of the actual ethanol leaving an ethanol facility is actually conserved in the wastewater product. Think about that. Sorry, 12 percent -- excuse me, 12 percent of the total energy in the plant, the biomass is contained in the spillage and 25 percent -- that is equivalent to 25 percent the Btu leaving the plant in terms of the ethanol.

As we move to biodiesel, as well, we also have the same opportunity to take some byproducts from biodiesel production and also produce biogas. Also, there is the idea that we can -- not the idea, there is the opportunity, you know, maybe a little bit longer time frame to move to growing energy crops. In other words, we would have energy plantations in the state to grow or to produce gas.

I would like to refer to this as green gas to green gas. And, again, I emphasize the fact that not only are we getting an energy product, we are also getting the biofertilizer. Again, the idea of synergy between the systems.

So, what does it all mean? How much energy is there in waste? What does it mean in terms of energy generation? It is very difficult to come up with an estimate of the potential in the state for total biogas. So, what I have done is I have taken a few waste streams that there are some definitive numbers on and made some estimates. The first one is municipal wastewater. We are all familiar with that. We have, like, 18 million people in the state. We have also calculated in this the number of visitors that stay here. According to the Florida visitor website, 5.9 days per year. So taking the municipal wastewater in the state and looking at our ability to convert that material into energy turns out to be the 63 megawatts.

In addition, I would like to point out that currently when we treat those waste products, we actually use an energy intensive aeration system and this is where the opportunity for conservation comes in. Not only by making the transition to treat our human wastewater by this method will we generate this amount of renewable energy, but on top of that we will save the existing energy that we are expending on an energy intensive aeration process, which is not needed and we can do it a better way.

Dairy manure. That's based on about 140,000 standing herd in the state, and looking at some average numbers that turns out to be 34 megawatts. Poultry manure, as well. That

includes layers and broilers, and that turns out to be 31 megawatts. Secondly, municipal solid waste. These are based on the P numbers from the municipal solid waste that are actually collected and that is documented in taking the paper yard and the food waste component of that and looking at the megawatt generation for that. You will see there the number is 314. And then making an estimate of if 10 percent of the land area in Florida were used to grow crops, in this case it would be succulent crops, that would be easily degradable and we could produce the 1,908 number.

If you total them up, what it actually means, if you look at the energy of the natural gas used by electrical generating utilities in the state, those numbers alone without considering some of the other waste streams of which there are many, and I alluded to, constitute about 50 percent of that number.

In summary, biogas is a sustainable energy solution that is renewable as we have seen. It is available from all the waste products. We can grow crops particularly for that. It is carbon dioxide neutral because everything is through photosynthesis initially. This is not from the earth. It's not fossil fuel. It's locally based. You know, we all produce waste; thereby protecting the environment, creating jobs, and strengthening local economies. Keep the waste local, keep the energy local, decentralize, have peace of mind and security.

Biogas provides energy independence. It is a renewable natural gas. As I mentioned earlier, we have the natural gas pipeline which eventually will have no fossil resource to put into it. We can leverage that infrastructure. And, again, as I mentioned, most of our homes, a lot of our homes are piped for natural gas directly to. And, secondly, energy reliability, it is on locally based feed stocks. When you take biowaste that do not compete in the marketplace, we're not talking about corn versus some other commodity, we are talking about wastes that are normally seen as an environmental issue. And there is normally a cost involved. This is a way for us to take process and efficiency, take these wastes and generate useful products from them.

Now, the final slide would be implementation issues. What are the impediments to independent renewable power producers to produce this source of fuel in the state? The first thing I would say almost is what Allan Guyet said earlier from the Florida Energy Office through their rebate program is awareness, education. Do people really know that these opportunities exist? I really don't think they do, and I think that we are flooded by what we see in the media. We all have heard, in other words, biodiesel, we have all heard the words bioethanol, and, of course, then we have already heard the words moonshine before that. So the thing to remember is that sometimes it is all in what you call a particular process. And

I've learned in my life that perception is more than reality and, therefore, I think that I would urge the Commission to seriously consider biogas as an option. Take the time to stand and stare. Do a Google search. Look what other people in the world are doing, and realize that we will be left behind if we don't make that transition.

But, after all the philosophy, what do we have to do to make this happen? Let me talk about the institutional barriers. Jay mentioned net metering. I thought he might say more, but I will say more. When you produce renewable energy, that material has got to be sold at the moment. We need net metering laws in the state so that when an independent power producer has surplus energy to sell that they will get a decent price for that. Currently they will get paid the wholesale rate, not the retail rate. This has been an issue all over the country in all different states. New York and Pennsylvania have probably the best net metering laws where the meter runs backward, and one is not penalized for buying or selling.

Secondly, there is what they call the rider service or service agreements, and that is if an independent power producer decides to make his own energy and sell it onto the grid, normally he would want to have the utility on standby. That is what we refer to as a standby charge. Unfortunately, that standby charge can be much higher than the retail price, so the natural fact that some projects are held back by the

this standby impediment.

The third thing is what I think Susan referred to as the interconnect standardization. The whole idea of the engineering, the installation, and the maintenance of that connection to the grid. Up until a number of years ago it was almost impossible even to find any utility who would have the form to know how to proceed on this type of a situation. So, I think that net metering and equitable net metering is necessary to make this happen, because the reality is fossil fuel is limited, we need renewable fuel, we need to encourage people to produce this renewable fuel not penalize it, because we may be the people -- there is only a certain amount of renewable we will ever be able to produce, so we have to be sure we don't squander it, like perhaps we have squandered fossil fuels. I will close and be happy to answer, or try to answer any questions. And thank you for the opportunity to speak.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you, Madam Chairman. As I'm sitting here thinking about the necessary coordination. Assuming that we were able to overcome the situation with the interconnection agreements as well as the net metering, how soon or is it possible -- well, let me just say, how soon would it be possible to generate this 2,300 megawatts of energy from biomass as you have designed it here? Biogas.

DR. WILKIE: I would say that we are in the range

there of five to ten years. I think that we are -- biogas from energy crops is in the same time frame as bioethanol from cellulosic biomass. And let me try and explain to you why. Is that when biomass is grown it has to be broken down from large molecules to small molecules and from there you make ethanol. The impediment at the moment is getting that biomass to the liquid form. If the biomass can be brought to a liquid form, we can make ethanol or we can make methane, it makes to difference. But we have the opportunity at the moment to take some, perhaps crop residues, fruits and vegetables mixed with municipal wastewater so the biowaste opportunity is available as soon as we moved, make that change in how we want to handle our waste.

COMMISSIONER CARTER: If I may follow up, Madam Chair.

So basically what you are saying is that the total panoply it would be available within a ten-year time frame, but the biowaste could possibly be done within the next -- well, basically immediately?

DR. WILKIE: Well, yes. I mean, the thing is the waste situation is -- and, again, I would be happy to talk at length with the Commission before. I mean, this is not pie in the sky. I am talking facts, not fantasy. Is that other countries are doing it, and even actually as we speak in Germany, and a little bit in Hungary, there are a number of

producers, agricultural producers growing crops, maize, so that is an energy crop, right, and they are using that and they are making renewable energy from that at the moment. So the technology is there from that.

The question is for Florida, we would have to define what are the best crops and what conditions. Certainly we don't want to do what the midwest has done, I don't think. We do not want to go for a monoculture in Florida. We want to maintain some diversity, and I think that takes time because we have started so late, so to speak. But I think there is a lot that has been done in other parts of the world that we can springboard from.

But the German government pays, it is like 20 cents a kilowatt, it is like two or three times higher than the normal electricity, fossil fuel electricity kW and, therefore, it has just provided an incentive. There are people going out there building plants to produce biogas because it is economical.

COMMISSIONER CARTER: Thank you, Madam Chair.

CHAIRMAN EDGAR: Thank you, Doctor Wilkie. And I hope you will work with our staff as we continue our discussions on all of this.

We are going to take a very brief break. And we joke sometimes about Commission time, but this is a brief break just to stretch. Let the court reporter and others have a little stretch and we will come back in approximately six minutes, and

our next speaker will be Mr. Treshler.

(Recess.)

CHAIRMAN EDGAR: And our next speaker at this point is Joe Treshler with Covanta Energy.

MR. TRESHLER: I guess we need to wait for our moderator to come back?

CHAIRMAN EDGAR: We have got backup help.

DR. WILKIE: Backup, that's great.

Thank you, Commissioners. I appreciate the opportunity to come and spend a few minutes with you. I will try to be brief since we are running a little behind schedule, I see, with the first five.

I just wanted to state the purpose of being here today is just to put things into perspective a little bit. Based on what you asked about is, you know, what does waste to energy contribute to the state's energy production, what additional capacity can waste to energy provide, and then basically recommendations on what can be done to help generate and develop new Florida-based renewable energy sources, including waste to energy, and not all by itself.

Can I have the next slide. Just to put things in perspective a little bit here, you know, 9 percent of the total energy, electrical energy generated in the United States is renewable, 7 percent of that total is hydro, so we are really not going see that as a growth issue here in Florida. The

other two percent of the total includes solar at one percent, wind at 16, geothermal at 16, and biomass. And I don't think geothermal and wind are where we can focus things. I think there is a lot of potential for the solar end, but -- can you flip slides here, please -- but when you look at it, when you look at the biomass side, 34 percent of the biomass energy being generated right now is by waste to energy in the United States.

And Covanta is a company that is basically a renewable energy company. We currently generate a base load of 7,800 gigawatts from wood, waste to energy, and biogas. Nationally, we have 31 waste to energy facilities that process approximately 7 percent of the nation's waste and generate 1,200 megawatts of renewable energy. In Florida we operate four facilities, three owned by the counties that we operate for, Pasco, Hillsborough, and Lee County. In Lake County we own the facility and operate it selling power to anywhere from Progress Energy to Seminole Electric to TECO as companies.

The next slide, please. This slide probably should be renamed based on what we talked about. It should say energy from waste, not waste to energy power. And it tries to just give you an idea of the role that waste to energy plays in the state today. And these are basically general numbers, not completely site-specific, but every ton of municipal solid waste is a barrel of oil, or ten MCF of natural gas. And

depending on the fuel mix can save up to 630 pounds of CO2 in comparative energy generation.

We are the largest and most proven source of renewable energy in the state at present at 506 megawatts through 12 facilities running here in the state and with the capability of handling 6.5 million tons of municipal solid waste at present. But, you know, when you look at it, the facilities that were generated and built in the state, they are a result of legislative actions in the late '70s where the legislature stepped forward and said we have to do something about the solid waste problem to protect the land, to protect the ground water, to protect the air. They weren't built to generate electricity.

It is a side benefit that we are now seeing the real benefits of in the fact that these facilities were developed, and were developed to handle the waste, highly concentrated waste from the large population centers. Among fossil fuels, we are the second most cleanest fuel at present. EPA has certified that. Natural gas is the only cleaner fuel for producing electricity.

Can we go to the next slide. Are things being done? Yes. There's more being done at present. But these facilities that are shown here, and I reported this to the House committee on energy last year, were being done because of solid waste problems, with management problems needing to not grow. In Lee

County already exceeding the capacity of their waste to energy facility and having a mandate to minimize the amount of raw municipal waste that was being landfilled between Lee and Hendry Counties. Hillsborough County is the same way. Trying to save landfill space or limit it. I can be glad to tell you the Lee County facility will be coming on-line this summer, adding another 20 megawatts into the grid. The Hillsborough County facility got its notice to proceed in late December, so we are off and running on those two.

Mark Bruner is here, he can report on where Palm Beach is in their planning. And Pasco County right now is in their evaluation stages. So easily by 2010 we can be adding another 85 megawatts into the grid while handling less than 25 percent of the municipal solid waste that's available here in the state.

But there is a lot more that can be done. Even with a 30 percent recycling rate and 12 waste to energy facilities, there are still over 18 million tons of municipal solid waste that are being landfilled here in the state of Florida. And I have a handicap. I'm an engineer, so I always fail on the more conservative side. So when I wrote this slide, I basically took and I looked at the eight largest generators in the state. Just to give you an idea. Between those eight counties there is 6 million tons, highly concentrated. Just like we faced in the '70s when we were looking -- when we only had 7 million

people in the state. If only half of this was converted, it's another 186 megawatts. But if you actually were able to capture the 18 million tons that are there, that could replace three 500 megawatt base loaded coal-fired plants just from the existing landfilled municipal solid waste right now that is going into the ground.

Well, you wonder why isn't this happening. Well, when the legislature put together mandates to do this from the environmental side there were also energy contracts that basically fairly paid the communities for it. There were financial incentives. There was a good avoided cost value based against -- the avoided cost unit at the time was a coal unit, and it allowed them to be able to pay for the financing and to run these projects fairly.

In about the mid-'90s that changed, and what it came down to was payment for avoidable costs. And you can look at it nationwide, the further development of waste to energy basically came to a standstill in 1995. No new facilities were built. The next facility expansion was Lee County, which broke ground about a year and a half ago, and it was based on an environmental need, not an energy need, okay.

Could I go to the next slide, please. The current situation, what we need to do is encourage renewables. You have heard it by two previous speakers. We are still heavily dependent on oil and natural gas. The future of what we are

looking at is still about 80 percent of Florida's additional capacity is going to come from either oil or natural gas and coal. So we have to encourage the renewables. We need to be able to base the payment that is received for renewable energy, not just waste to energy, but all renewable energy on the most expensive fossil fuel.

But it is not just the avoided costs, there has to be an incentive for people to make the investment. They can't be put in the position, you know, that they are only getting peak power for a short period of time. Now, I know there have been some improvements in the rules, but there is still a ways to go on what needs to happen to provide further encouragement to make sure that there is fair payment for the energy and people can take these risks both on a community basis or on a private basis, okay.

We still believe that one of the most important things is to have a Florida renewable standard offer contract that really addresses avoided unit or avoided costs now. And I am more are less talking about the idea of an avoided coal unit being available now, not eight years from now or ten years from now, but something now that would simulate the growth in these communities. The life-cycle to do a waste to energy facility from the decision to make it to having it on-line can be as short as four years, and permitting being one of the biggest pieces of that. Five years would probably be the outside limit

if everything fell into place and was a financeable product.

So what we really need to do is be able to encourage these things, provide the incentives to develop these capital intensive projects, be able to match those capital outlays with a profile that matches with the renewable energy and allow them to have a greater certainty in the revenue streams. It can't be, as you said, you know, you pay and get the avoided cost at the moment. There needs to be a more stable energy cost base. Like I said, we know that there have been some improvements, things have moved forward on the rule a little bit, but we don't think we are quite there yet.

We see this as one way to really reduce the reliance on fossil fuels, including natural gas. A waste to energy facility is a base loaded facility. It doesn't ramp up and ramp down. The waste is delivered every day. The primary responsibility is deal with the waste in an environmentally responsible mode. It's not that we turn it on when the rate goes up or when the peak comes, and turn it off when there is no peak. The waste is delivered every day.

Could I have the next slide, please. Still, there is a threshold question out there, and I think it is still there, is do all the operating provisions of the SOCs fairly support what is in FS 366.19. And we need your help to make sure that happens such that we properly promote the development and utilization of renewable fuels. And does it also match what

Florida DEP has in their energy plan. And we think, yes. That is what we really need to see happen.

Could I have the next slide. The current SOC still have many issues. We know that they have now said that they would be treated as if they were a QF, but QF status should not be even an issue anymore for renewables. This is something that we need. We still think there are some confusions on what is intended by 366.191 in some people's minds and to make sure that everything is (inaudible). And there are still onerous conditions, unreasonable availability, and performance requirements are still --

CHAIRMAN EDGAR: Excuse me just a moment.

Commissioner Carter.

COMMISSIONER CARTER: Aren't we getting dangerously close to a docket that we have open on this issue?

CHAIRMAN EDGAR: Let me look to our staff. Do we need to --

MS. HOLLEY: I think the discussion today is appropriate. We do have the open rulemaking docket. That rule was recently adopted by the Commission and is moving along on its own separate track.

COMMISSIONER CARTER: (Inaudible. Microphone off.)

MS. HOLLEY: No, sir.

MR. TRESHLER: My approach was certainly not to (inaudible), and I apologize to the Commissioners if there is

any misunderstanding there. It was just to try to respond to the request of the workshop.

CHAIRMAN EDGAR: Absolutely. Commissioner Carter.

COMMISSIONER CARTER: I just, you know, didn't want that to -- you know, we have heard a lot of these same discussions before, and I would rather us stay focused on the workshop and not on what we --

MR. TRESHLER: Okay. Well, let's pass to the next slide. I think the points are there that you can see. As far key issues, we would like to see the support of a statewide coal avoided cost unit in future developments. We like the idea of the longer contracts. It is not available. Most communities when they look at these facilities, look to them as a 20-year financing at least, and we really do believe to establish renewable generation goals as high as 25 percent are appropriate here to drive this marketplace. And under a fair pricing to these facilities and to this community this is all possible. We could easily remove the need to build at least two 500 megawatt coal-fired units in the state over the next five to seven years.

So, again, I agree with the idea of a paradigm shift. The old regime we didn't have any development. It says five years. We didn't really have anything happen for over ten years, and it certainly wasn't driven by the standard offer (phonetic) contract, it was given by environmental needs. So

with that, I would like to thank you all for giving us a moment to speak on this subject, and thank you, Commissioners, for the consideration.

CHAIRMAN EDGAR: Mr. Treshler, thank you so much. Commissioners, any questions? No. Thank you.

MR. TRESHLER: Thank you.

CHAIRMAN EDGAR: And our next presenter is Mr. Mark Bruner with the Solid Waste Authority of Palm Beach County.

MR. BRUNER: Good morning, Commissioners. I have three goals this morning. The first is to talk about a global issue and a specific issue. The second is to do it under ten minutes. And the third is to do it without a PowerPoint presentation.

So that is where we are going today, and I guess the general issue that I want to talk about first is sort of my observation on the renewable energy field in Florida on a global basis. And as I look at the technology, I sort of see three states of being, or three states of the technology. We have seen that there are resources available in Florida, but the technology is not mature enough to utilize those resources, and that is where we get into situations with tidal energy or wave energy or the Gulf Stream. The resource is there but the technology is just not available to utilize it.

There is a second set of technologies where the technology, in fact, may be mature, but there are resource

limitations that don't let us fully develop it. In that situation we may have wind, where the wind is just too intermittent in Florida to allow a full large scale development of wind energy. One other resource limitation may be in the situation in solar. As I think Doctor Fenton pointed out, there may be limitations in the amount of money that the person can actually afford to spend to replace their water heater. So there are technologies there, but there is some resource that is, in fact, limiting the implementation of those technologies.

And there is a third set of technologies that are, in fact, mature and the resources are available and we can go forward and start implementing those. Most of those technologies are the combustion based renewables. The ones we have talked about earlier today in some ways. The biomass, the waste to energy, biofuels, and landfill gas, which is the one I'm going to speak about this morning. So I believe that in the near term the combustion based renewables and biofuels may be the best opportunity for development that we have. But, again, the noncombustion based renewables that we have heard about also certainly need to play a role in Florida, but probably in the longer term.

But, again, one of the questions is what can we implement in five years or less. What can we perhaps implement in five to ten years? And that is really the global issue as I see it. In terms of the specific issues, and the issues

regarding the implementation and development of renewables from our perspective as a local government service provider, we are, again, involved in the production of renewable energy in three different aspects at this moment. Today as we speak we are producing three different renewable energy sources. We operate a waste to energy facility, as Mr. Treshler indicated. We are looking at expanding that or perhaps building a separate facility, a new stand-alone facility, so we operate on that basis. We produce biomass fuel today. We deliver it to the biomass generating facility in the western part of Palm Beach County. So we are producing that fuel today. And we produce landfill gas at two of our existing landfills.

And this morning I'm going to talk about landfill gas, which is perhaps the most underutilized and perhaps the quickest to exploit resource in Florida for the production of renewable energy. Landfill gas is actively being collected today and managed today at every major landfill in Florida and will be during their active life and periods of closure. Now, that time period may extend for 30 to 40 years for some of these larger landfills, so that resource is there and available today. Right now, a substantial amount of it is being flared. And if you drive through certain parts of large counties you will see it. If you go by in the evening, you will see the big blue and orange flame.

Why is that gas being burned and not used to generate

electricity? Because at the simplest terms, the amount of money that we can be paid for the power that we would generate doesn't cover the capital and operating cost of the generating equipment. So the situation would be that if we put in a generating facility the amount of money that we got paid for the electricity wouldn't offset all of our full operating and capital costs.

One of our local environmentalists one time came to me and said, "Well, you should do it anyway. That's a resource and you should utilize it even if you lose money." My response at that point was that as a local government we may do a lot of things to provide service to the public, but operating an electrical generating facility at a loss is not one of them. That would effectively be subsidizing the electric utility system with local taxpayer dollars and it's not something that we can really recommend to our governing board, the Board of County Commissioners.

Given that situation, somebody might say, well, that is fine, if you can't make the numbers work then don't do the projects. I mean, if the contract prices, if the money you can get paid for the electricity just isn't worth it, then flare the gas or find some other use for it, and you shouldn't be producing power. But I think that with the action of the Florida Legislature, with everything that's happening in the renewable energy market, I think I can say this with a certain

degree of confidence that the electricity generated by landfill gas, or by biomass, or waste to energy, the combustion based renewables will reduce Florida's dependence on natural gas. They will offset CO2 and global warming issues.

Landfill gas is global warming neutral because it comes from organic material, and at the end of the day it is highly unlikely that there would ever be a fuel adjustment charge because the price of landfill gas went up, or the price of biomass went up, or the price of municipal solid waste went up. Those are not cost fuels. There would not be price increases associated with the cost of those fuel management.

Specifically, we have been managing landfill gas at three different landfill sites for almost 20 years, so we have had 20 years of experience in collecting and managing this landfill gas. Our two oldest facilities had landfill gas systems installed when they closed. There has been a substantial change in the regulations that now require those collection systems to be in place during the operational life of the facility. Those rules came into place in the early 1990s. Our two earlier facilities, when we closed we put the collection system in. And we have been flaring that gas ever since then, because basically no economically viable project could be developed for power production or direct utilization using the gas directly to produce heat or some other kind of use.

And, in case people think that that is because we as local government officials can't necessarily figure out a good deal, we at one point, in fact, signed the gas rights to these two closed facilities over to a private sector developer and said, "If you can make a project work you can have the gas." They came back to us in about eight months and said, "We can't make a deal with it." And we have been flaring the gas ever since.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Thank you. You know, sometimes I have my over 50 moments, so while I'm thinking about this I just wanted to ask it now.

In the process of going through that, what were some of the reasons why it was economically feasible for them?

MR. BRUNER: For those two facilities there was a question about the gas production curve, how long the gas would be produced. And because those two were sort of older facilities where they had already been closed, the gas production curve is probably going to be fairly short. And I think that was one of the concerns, again, because you have got to amortize the cost of your equipment over the production life. So in those two specific situations I think that was one of the issues, when you factor that in against the price.

Now, with the newer landfill facilities, the bigger landfill facilities, and we saw a list of them that Joe put up

there, they are putting substantial tons in the ground or on the ground, they're collecting that gas now. They're going to be operating for 20 or 30 years continuing to collect the gas and the gas will probably come out for another 20 or 30 years past that. So I think that may be one of the issues that may have gotten better over the past few years. But, really that has been the biggest issue.

One project that came in was going to try and pipe it to a local utility, and just trying to route the pipeline became cost prohibitive. We had another entity that wanted to in and try and utilize it directly in some kind of a greenhouse operation, and the first thing they wanted was 50 acres of vacant land from us which we didn't have. So there are all kinds of limitations on some of the direct utilization projects or on some of the power generating projects. Some of them had to do with the production curve at the time for those projects.

And actually the issue is that the landfill that we have today, the landfill that we are operating today, we are producing gas now and we are actively flaring it. And this facility is actually collocated with our existing waste to energy facility, so it's on the same site. And we, in fact, approached the utility with a power purchase agreement, and made this offer to them. We said that we would install the power production facility to produce power from the landfill gas and that power would effectively offset our house power.

We consume two or three or four megawatts on-site with the waste to energy facility and all of our on-site infrastructure. And tie that into our existing power transmission facilities to the utility, and then we would basically just increase the amount of capacity we were selling to the utilities and that would actually have been within the capacity limitations of our power purchase agreement.

At the time the utility was not interested, and we didn't pursue the project. Our response was that we believed that we could, in fact, do it. That within the existing capacity limitations of the contract we could potentially do that. Their response then was that they were concerned that we could not, and they may, in fact, consider us in breach of our contract if we went forward with the project, and there were substantial negative consequences to that and, again, we didn't pursue the project.

But I believe that with the number of large landfills in Florida, and we saw again from Joe's table of all of those counties that are not doing waste to energy facilities, you saw the substantial tonnages that are going into landfills right now. And if they are not going to do waste to energy facilities, they should certainly be capturing the landfill gas and converting that landfill gas to energy. And the collection infrastructure is already in place on the ground. That gas is already being collected, routed to a certain point, and it's

being flared instead of being used to generate electricity.

When you talk about timing and the time at which resources and new generating resources can be put in place, I believe that there are somewhere between six and ten projects that could probably be implemented in Florida within the next five to seven years. I believe that that could be anywhere from 25 to 50 megawatts of power. The opportunity is, in fact, there. The question is whether the economic situation with, again, the production curves, with the price of the energy we would get versus the cost of the capital equipment for putting in probably reciprocating engines. The way you would typically generate this power would be to run a reciprocating engine. It looks like a big diesel engine. Either that or in some cases they might use turbines, but, the ability to do that, to get paid a fair price to put in that infrastructure, generate that power, put it onto the grid and be able to offset your capital and operating expenses is the limitation that we see today. It is an economic limitation, not a technological limitation.

And we believe that if we can move forward to look at how we are going to pay for some of this renewable energy, what we are paid for it, and how we can create some economic incentives to develop that renewable energy, I think that that landfill gas energy can be the first spike you see in the production of renewable energy in Florida.

Thank you.

CHAIRMAN EDGAR: Thank you. Any further -- Commissioner Carter.

COMMISSIONER CARTER: You heard my comments earlier about the lion laying down with the lamb. In some of our discussions, and we have held extensive discussion as well as our workshops and rules and things of that nature, we have looked at the cost, what the real costs are. And then in the context of those costs, how those costs are paid, that there is a societal cost. And the question is how much is that worth?

In a practical sense, I was taking notes as you were saying about the capital costs, is that the capital costs -- it is a good idea, but what's it going to cost us to convert it from a good idea to actually producing the energy. And in that capital cost we need to recapture what it costs us to put the plant up, what it costs us to operate, have the employees there, what it cost us to have the life-cycle of the plant and what have you. But is there -- and I'm pleased to have you here from local government, by the way, because you guys are on the front line of this. Is there a perspective on the county commission in terms of looking at the societal cost and factoring that in in how we deal with renewables?

MR. BRUNER: The answer, and I think I kind of alluded to it earlier, I think the answer is yes. I think that when you look at -- and, again, I think Joe's earlier presentation talked about it from a local government

perspective. The decision to do waste to energy is based on societal costs, not necessarily -- you know, energy is a benefit, but you don't build a waste to energy plant to produce energy, you build a waste to energy plant to produce solid waste.

And the same kind of paradigm works with landfill gas. First of all, the reason we are collecting the gas is to lower a societal cost in terms of methane emissions, which are greenhouse gas emissions, odors, other kinds of issues. So there is a societal solution on the front end to a totally separate problem other than energy production, and there is a cost associated with that, and that we have to absorb as an environmental cost.

On the back end, again, we look at those kind of issues. How much is it going to cost us to put in the generating facility. What is the benefit of putting in the generating facility, again. But at the end of the day, we, as an agency, have to operate as an enterprise. We have to basically make economic decisions that make overall economic sense. One of the restrictions in our bond covenants is that we have to operate in a business-like manner. And so when we get to the end of the day, if we are looking at a project and we say, well, it would be nice to do this project, but it's going to cost our ratepayers X number of dollars a year extra, then our county commissioners have to look at that. And

sometimes they will weigh that. Again, recycling at a certain level, particularly in the collection side, costs us money. But there is a societal benefit to recycling, so it is done. That is our core business.

When you look at energy production, which is not necessarily our core business, I mean, it is a big part of -- it is certainly one of our biggest sidelines. When you look at energy production, we have to perhaps look at that in a little bit more business-like fashion than recycling, which is one of our mandates. And it would be hard for us, again, to go forward with a project that is not one of our core businesses potentially having it be a negative drain on our budget, but saying, well, the societal benefits of producing the electricity outweigh the costs of doing it at a loss.

So that is probably the perspective and probably too much time on how our Commissioners would probably look at the situation. It has got to really be a balancing of all kinds of factors, whether it is a mainline business or a secondary business. And, again, how it fits into our operation as an enterprise where we have to cover what we do by the rates we charge the consumer.

CHAIRMAN EDGAR: And I know everyone in this room understands competing mandates. Okay. We are going to move on to our next speaker, which is Steve Davis with Mosaic Fertilizer.

MR. DAVIS: Thank you, Commissioners.

Common themes here with what Mr. Bruner and Dr. Wilkie also mentioned was concerns about the value of power that we export to the grid. You are going to hear a little bit more of that. The good news is that all of my presentation is on a single slide, and hopefully I can be done in less than ten minutes. But what I basically want to talk about is the obstacles that we are facing right now that may be inhibiting us from developing some additional renewable energy assets in Florida. And a lot of these obstacles are the same ones that we are currently facing with our existing renewable energy assets.

I want to briefly talk about what our process is to produce renewable energy, and then I'm going to mention what these hurdles are that we are trying to overcome. And then at the end, and you can see a sort of preview of it on the slide there, talk about the some of the areas that we may be able to turn to to try to get some regulatory relief.

The process of making phosphate based fertilizer in Florida basically involves reacting sulfur with oxygen to produce sulfuric acid. Sulfuric acid, that process is at our concentrate facilities, and then we react that with phosphate from our minerals operation that is also located in Florida, and that produces phosphoric acid, and then the phosphoric acid is the primary ingredient in our fertilizer products.

Well, one of the first steps that we go through is this reacting sulfur with oxygen. That is an exothermic process that releases a lot of waste heat. What Mosaic and other fertilizer manufacturers have done is to install waste heat boilers to capture that energy from that exothermic process and to produce steam. That steam is first routed to meet the industrial process needs that we have for making our fertilizer products. After that, whatever is remaining from the steam gets routed to turbogenerators to produce electricity. And it is worthy of noting that this production of energy is recognized as a renewable asset and there are no fossil fuels burned to produce the electricity, and there is also no greenhouse gas emissions associated with its production.

Right now in Florida there is about 400 megawatts currently operating of fertilizer-based production capacity. That's renewable energy. We believe that there is the potential for around 100 to 150 megawatts of additional capacity that could be put into operation to also produce more. And, in fact, Mosaic is currently reviewing the economics of moving forward with the project that could go into the ground as early as next year of around 15 megawatts with an ability to expand that to around 30 megawatts.

Now, the next question -- and what I'm doing is sort of painting sort of a unique picture that we face as a large

industrial customer in Florida. What really is a net consumer of electricity as opposed to someone who is just in the business to make electricity. We and other fertilizer manufacturers are net importers and we are interruptible customers typically, which means that we get a discount on the demand charges that we pay for the power that we purchase in exchange for being a customer that is subject to being interrupted should there be a power curtailment where capacity is tight in the state or with our native utility.

Well, even with the discount that we get, typically the price that we get paid for our cogeneration production is a lower level price compared to what we are simultaneously paying for power that we are purchasing. So we have got a delta to deal with. So, you know, you're faced with two ideas here. You can either export the power to the grid and basically get a lower value for it, or you can try to consume the power internally in order to maximize the value of the energy that you're producing. And what we have basically done is after we satisfy our internal need for power at the concentrate facility where this manufacturing process is ongoing, we have then, we being Mosaic, have constructed four separate 69,000-volt transmission lines that we own and we pay the capital expense of installing these assets, to connect our concentrate facilities to our minerals operations that are large consumers of electricity.

Basically, what you have ended up doing at that point in time, you have converted the concentrate facility from looking on the grid like a generation resource that would be exporting power to the grid, net export, so it's hooked now to a minerals complex and the two together are now really normally in a situation where they are a net importer of power. The power comes through the concentrate facility to feed down to the minerals facility.

That introduces a lot of operational complexity to our operations where, you know, in the past if you don't have these -- tie lines is what we refer to them as -- if you don't have the tie lines you basically have a situation where your minerals facility manager is able to operate pretty much autonomously from the activities at the concentrate plant.

Well, now once you introduce these tie lines, which we are doing to try to capture the maximum value for our renewable energy production, now they are joined at the hip, so to speak. So you get into situations where you have to coordinate repair days, down time events. There is a bunch of maintenance expenses that we are paying for basically owning and maintaining and operating this 69,000-volt transmission line. It's really right beside of the utility company's transmission line. It's the classic example of what I consider to be an unnecessary duplication of services.

And another situation that we can face, one of these

other operational issues, is that if there is a situation where there is a capacity constraint, now we have set up an environment where if there is the potential for a curtailment, the concentrate facility that was viewed as a generation resource is now viewed as a drain on the system, which means that that concentrate facility is now subject to being interrupted. Where if it wasn't hooked to that tie line, it would be a net exporter. It would be there helping to provide voltage support, frequency support, things like that. And obviously the utility company would not want to interrupt that because it is a generation source as opposed to something that is pulling power.

There's problems from a operational standpoint. If we do lose power at our concentrate facility, sometimes the materials that we are processing can settle in our process equipment. And it may not be that we can flush this material out after the power is restored. And so what we can basically be faced with is a situation where we may have to go for as long as two years up until we get to the next major outage at that concentrate facility in order to shut everything down, put people in those pieces of equipment to clean them out so that we can get back to full efficiency that we had prior to the interruption and full capacity that we had prior to the interruption. So there is a lot of tradeoffs here. It is not just a capital investment thing that I'm talking about. It is

also an operational obstacle for us to overcome when we have these company-owned transmission lines.

And that basically leads me into the bottom series of bullets on the slide, which is well, okay, that's where we are, what do we do about it. And I don't really have the final answer on that, but I do have some basic ideas for areas that we could look in for possibly getting some regulatory relief. One of those ideas, you see the first sub-bullet there, is the value of the as-available energy. Like I think I mentioned to you before, what we typically do is we use the left-over steam after we satisfy our process needs to run that into our turbogenerators to produce electricity. Even though we have a very, very high reliability factor for our turbogenerators, the availability of steam is not there on a steady basis where we know that, for example, we would put out 30 megawatts out of a specific unit. It might be capable of doing it, but it wouldn't have the steam to necessarily do that all the time.

So we have an issue where what we would like to think of is to eliminate that incentive for operating those tie lines and keeping them in service. One way to do that is if the power that was being exported to the grid was priced out to where it was equivalent to the price of the power that we are buying at the minerals facility, that would level things out and the economic drivers for having that transmission system that is owned by Mosaic to continue to be in operation would

evaporate at that point in time.

You know, what ends up happening in these, like I said, we have already built four of the transmission lines. We end up building those transmission lines and sinking in millions of dollars and compromising the efficiencies of our operations. The net impact is the same as if this was allowed from a regulatory standpoint, if you understand what I am saying. And then the other idea is really right along the same type of theme is to allow some sort of a net metering where you could potentially net out the concentrate facility with the minerals facility and have like a common bill where we would pay the net power imported between those two and eliminate the physical connection between them.

And then the third one, which is an idea that I felt compelled to put on there, but there is definitely some issues with it, is self-service wheeling. And like what I mentioned to you before about the steam being what is left after we meet our industrial process needs, we don't have a nice level production of renewable energy coming out the door netted out. So it's difficult for us to balance it and do a transmission schedule that we know that we can live by without going outside of the parameters for balancing, which would mean that we would have to effectively, like, buy power off the grid or sell it as-available anyway because we are either over-delivering or under-delivering compared to what we scheduled. And the same

type of thing for doing like a firm contract, you can't really hit a number that you know you are going to be sitting there at.

So there it is. We think we have the potential to put in some additional capacity as early as maybe next year. We are struggling with the economics on it right now. Thank you.

CHAIRMAN EDGAR: As are we.

Commissioners, any questions for Mr. Davis? No.

You have raised a number of interesting points, and I've got the wheels turning. So I look forward to hearing more from you and working with your organization, as well. Thank you.

MR. DAVIS: Thank you.

CHAIRMAN EDGAR: And our next speaker is Mr. David Hill.

MR. HILL: Good afternoon. Thanks for inviting me. My name is Ted Hill. Everybody calls me Ted, my friends. My given name is David, but since I tend to challenge those who in my definition are enthusiastically neutral, a lot of people still call me David.

CHAIRMAN EDGAR: Well, we are going to start with Ted and go from there.

MR. HILL: That will work. Amongst other things, I run a power plant in Telogia, which is about 50 miles southwest

of Tallahassee. This guy is an old timer, 20 years plus old. It has changed hands seven times. I have managed to work for four of the people that owned it. Five times it changed hands as a cash positive asset. The last two, regrettably, as a distressed asset.

We burn up to nine or ten fuels in combination at the plant really to basically balance out the amount we pay for fuel. That has become the single critical issue. The current mix of materials is 10 percent alternate fuel, and that is materials that we take under a tipping fee arrangement as opposed to the biomass fuel that we purchase. So our high number, average, on biomass fuel is we pay $12 and our tipping fees range from 5 to $15, so there is an avoided cost there that we benefit from.

Case one, basically, is where we burn a huge mix of fuels. Under that scenario it takes 2.2 tons of fuel to produce one megawatt hour of electricity. Case 2 is when we go to pure biomass and eliminate the low-end fuels. We can cut that number from 2.2 down to 1.75. So the average fuel cost in Case Number 1 are 8.50 per ton, meaning that we pay 18.70 to produce a megawatt. Case Number 2 goes to 12, and under that scenario we are at 21.

Now, the interesting part is that right now our cost of buying fuel and our cost of operating and maintaining the plant are almost 50/50. So if you look at that scenario, you

find out how important the fuel number is. Actually as the fuel cost goes up, our cost of running the plant remains about the same. So, we are in a very delicate balance. At this juncture I would say on my bottom point, managing the business of the operation has become more critical than managing the operation of the business.

It's an odd scenario. And just a case in point, the City of Gainesville recently put out a letter of interest solicitation for managing a biomass operation, and the RC&D Council thought they might be interested in becoming the fuel supplier, and so they caucused the fuel suppliers in the area and the numbers that they got back were between $20 a ton delivered and $30. Four dollars a million Btu. Renewable energy doesn't work at that number because it means you would have to be 60 to $70 a megawatt hour to develop a plant. That's a tough number. I don't get that at my plant.

As we speak right now, it costs us $41.06 to make a megawatt. My current PPA that was signed several years back, is at 43. You see the spark gap is extremely tight. So the way I make more profit is to systematically reduce the cost of the fuel. The operations number, that fixed and variable cost, really doesn't fluctuate at all, other than by CPI. But the very interesting part is in March of this year my number for fuel was at $3.30, because I got lots and lots of tipping fee revenue, and that worked.

Now, in the last several months we have seen increased activity in the Asian and the South American markets of buying what used to be nonrecyclable fibers. So the net of that is whereas in March I was at 30 percent of my fuel being from tipping fee, as we speak today, 10 percent. So it is a very interesting dynamic. It keeps my hair white.

If you would, Kathy. Pros and cons. As Joe Treshler said, not much activity in the last decade in Florida on the renewable side. And like he, I am a waste to energy guy, as well. So, as I would say it, a lot of pioneers, but very few new settlers. I mean, our plant has been running 21 years, Jefferson Power about the same number of years. But, name one in the last ten? I can't.

So, obviously, we need more incentives. But even the recent tax credits and laws, they do encourage new technology and new projects, but us old-timer guys, they don't sustain us. I only get one tax credit at this juncture, thank goodness, and that keeps us in operation. Otherwise we would be a loss leader without question. Yet with all the good things that are said, yes, we are carbon neutral, we are this, that, and the other, we burn 200,000 tons a year of stuff that otherwise would end up in a landfill. Those are all great. But as I see the PSC, I think of you guys as a facilitator. There is not a lot of interagency activity right now that becomes a positive benefit. There is a lot of push and tug. That's not so good.

So, I mean, as I enjoy life in Telogia, very good, we don't get all of the biomass fuel that is available. I mean, we compete with Smurfitt Stone (phonetic) and Jefferson Power, and others, but, still and all, to this juncture, 75 percent of the biomass product none of us see. Not just me. It goes to a landfill. Is that a great idea? Not really. The City of Tallahassee, Leon County sends 15,000 tons a year of biomass to the landfill, and at a number that is higher than what I would get it for.

Those are the melancholy facts. You know, most people -- when Katrina and Ivan came through, FEMA never listed our plant as an outlet. It has been there 20 years. How could it be so far under the radar would the great question. As I see it right now, one of the critical concerns now that after 20 years we have become an overnight success, if we built all of the plants that the last grant application sponsored, you could see to Jacksonville because there would be no trees left. There is a real issue here about outpacing the fuel shed.

At this juncture, Matt McConnell (phonetic) and I are working together on some interesting incentives, but there are 70 megawatts of biomass power proposed in Tallahassee alone. So with Jefferson Power, myself, and those two projects, the consumption would be over a million tons of biomass fuel a year. That market is not sustainable. That is the truth. I mean, as we speak right now, when production pulls off at a

paper mill, the chain reaction to me is I don't see fuel in the amounts I did when they were in full production. It is the truth.

So, you know, what do we do? First of all, under your guidance, provide bankable power purchase agreements. I agree with Joe, they have to be at a special level and they have to have considerations placed and they are not of the norm. If you look at the truth of this matter, the power purchase agreement is the main sponsor of such a facility. Unlike waste to energy where you get paid at both ends, paid to take the fuel, and then paid to supply the electricity, biomass plants generally don't get paid to take fuel. Service companies do. Tree businesses. If we closed a loop and bought a tree company, or bought a chip mill and provided our own fuel product, oh, yes, sure. But, of course, strapping those things together in the right region is also a challenge.

So, at this juncture, we really need you guys to step in and place guidance on -- like the DEP. As Joe said, it takes years, not months, years, to get through the regulatory maze. And, if you are not willing to plunk down a million dollars to develop one of these plants and stand the risk of losing it, don't start. It is not for the faint of heart. And being a waste-to-energy guy as well, it is not for thin-skinned people. I mean, one lady said to me, "As I stand here today, watching your plant spew carcinogens over an unsuspecting

population, I realize my New Year's dream didn't come true." And I said, "Well, likewise, as I am standing here talking to you, my New Year's dream didn't come true, either."

It really is very hard to do. We need more flexibility in the regulatory process. We certainly need to be viewed as part of the solution, not as part of the problem. Because as we stand now in Florida, not much stuff that is treated wood, and I'm not talking about chromated copper arsenate or pentachlorophenol, but even the benign or the more benign stuff like creosote, it doesn't get disposed of here. It goes to Alabama or it goes to the Carolinas. A lot of it drives right by me on I-10, so my position is we can't have a mentality that says keep Florida clean, dump your treated wood in Alabama. That's not a plan.

So, Mack and I are working with the forestry service now trying to get some incentives there. I'm one and a half miles from the northern end of the Apalachicola National Forest, and I will give you a guess as to how much fuel I get from there under the Green Forest Program. None. How could that be? The forestry service says, "Well, we don't have enough people. We don't have enough money, ergo, we don't have enough interest. You come and get it." I said, "Then I would have to buy a logging company. How do I do that?"

One of the things that is true here is that we are a function of the economy, literally. As I said, if the pulp and

paper mill is on low production and doesn't need chips, or is not buying chips at the right money, the chip mills don't work and I don't get bark. We shut down at Christmas and came back on-line the first week in January because we had no fuel.

So, yes, am I going to do an energy crop? Yes, I think I am. We have a 125-acre campus and that's on the map for us. I have expanded our menu to go after wood that is problematic for people that make poles and posts. When they cut the top off and the bottom off, that stuff is useless to them. They pay $400 an hour for a guy to come in with a tub grinder to grind it up for fuel they sell for $5. Not really. So I'm going over and saying give that stuff to me. I bought a new shredding line, I put that in, and we are banging down knots, shaves, butt ends into fuel. Stuff that I would not have looked at a year ago.

But the dynamic of this business is there are challenges. There is a literal end to the fuel shed. If I go out past 100 miles and pay too much windshield time and money, because the fuel itself is worth 3 to $5, and when I'm paying 18 to get it there, the world has gone upside down for me. But I am encouraged that the PSC is taking note of this. You guys have the ability to change this scenario rapidly, and I hope you do so.

And I thank you very much for your time.

CHAIRMAN EDGAR: Thank you, Ted. One question, if

you would.

Commissioner Carter.

COMMISSIONER CARTER: As I was listening to you, it seems to me what you're saying is that incentives as they currently exist work to get a renewable entity into the business, but the incentives don't continue such that you can maintain the operation. Is that what you're saying?

MR. HILL: Yes. I mean, the ones now at the fed level are still under a five-year window. What happens after the five?

COMMISSIONER CARTER: So, basically, they are setting you up to fail is what you're saying.

MR. HILL: There is a little bit of that. Commissioner, honestly speaking, the business of the operation has become more critical than the operation of the business. The moment you let the status quo go to your head, and think I am there, you took the first step on the pathway to failure. That's really what this is. It has become a business, not an operation. And it used to be an operation, not a business.

COMMISSIONER CARTER: Well, I just want to say how much we appreciate you coming and giving it to us from the man-on-the-street's perspective. Because, really, if the incentives only work to get you in the business, but then after the business is up and going there are no incentives there to continue it, because from practically everything that we have

heard so far today and what we have heard beforehand, the bottom line really is the bottom line, is what does it cost. I think your colleague from Palm Beach County was talking about that, the professors that were here this morning, the bottom line seems to be the bottom line. So we are hopeful at the Commission that in this discourse that we can get some ideas, in particular those areas that we have jurisdiction on that we can move those forward; and those that we don't, we can pass them on to our bosses at the legislature and they can take a closer look at this. So, thank you for coming today.

MR. HILL: Thank you. And, by the way, we are not very far away. If you ever wanted to come down and visit, we would welcome the opportunity to show you. Thanks.

CHAIRMAN EDGAR: Thank you. And our next presenter is David Dewis with Elliot Energy Systems.

MR. DEWIS: Well, this probably won't be as entertaining as the last one.

CHAIRMAN EDGAR: Well, the last before lunch.

MR. DEWIS: That's right. It is an envious spot, I guess.

My name is Dave Dewis. I am with Elliot Microturbines in Stuart, Florida. And I guess the message that I have to bring today is about CHP, or combined heat and power. And I was just sitting next to Ted Bronson. We are colleagues at actually the U.S. CHPA, and we had a little discussion about

what does CHP mean. And I was at a conference at the Florida Manufacturers Association just a few months ago, and there was maybe 50 people in the room, and I asked who knows what CHP is. And there was two people in the audience of 50, and the subject was power. It was conservation of power and water, and only two people out of 50 knew what CHP was.

And Ted was telling me that really that's not too bad considering that some of the people in the energy game don't really understand what CHP is, because they call it cogeneration. And certainly we have a very tough time getting the message across about CHP. And I think you have heard through all the speakers this morning, they have all spoken about efficiency, how efficiency is important. And CHP is one way of getting that efficiency, or cogeneration is one way of getting that efficiency. But probably more people in this room are more familiar with the terms of clean coal or hydrogen highway and yet they don't know about CHP, or combined heat and power. And that's one thing that our segment of the industry is struggling with is getting the message across. So, I am thankful for the opportunity to try and explain it a little bit.

And if you have got any suggestions on what we should call ourselves and not use CHP, I'm up for it. So, if you go back to the first slide. I wanted to make sure that on the first slide I said what the message was supposed to be got from

this presentation, because you have so much in terms of information thrown at you in these events. And certainly I have learned a lot of new things today, and some of the people before me, I would like to sit down and talk a little bit, because obviously we have a lot in common. But we try and preserve our own little territories, and at the same time don't look for opportunities. Where if we work together, there are some tremendous opportunities throughout.

And if I had a source of gas, free gas, and I can't turn that into, you know, a viable source of energy, then I should probably quit my job because I'm making a device that takes natural gas and produces energy. And I will tell you, it is not free. The gas that people use to put in my device is not free. So I think anybody that has got a free stream of natural gas and cannot turn that into a viable source of energy, when we talk about the demand from outside fuel and the pressures on the economy, there's something missing there.

But what I want to get from this presentation is to understand what CHP is. What is CHP? Understand how it can help. Understand that he was talking that things that are available now. It is available now. It even was available right at the very beginning. And the one thing that I want you not to understand is why it's not more widely used. Why are we not using more CHP.

Next slide. Efficiency is a common theme. It

doesn't matter whether it's a renewable energy or whether it is a consumable energy source, whether it be coal or whether it be gas. If we don't use it to its fullest efficiency, we are letting ourselves down.

I found this to be -- this slide here is one that I found absolutely staggering. I only came across it two years ago, and I'm sure the people in my industry have understood it from the beginning. But when Thomas Edison first put the grid together, he did it around about something called district heating which actually used the waste heat from the power generation.

Any time we have any kind of electrical generation or any kind of process that has inefficiency, the inefficiency of that process is turned into heat, and we typically don't use it. But when Thomas Edison put his first grid in in the U.S., he did use that heat, and in 1910 the utilization of the fuel he put in was at 65 percent. Today the grid, when we go to the sockets in our home, is 33 percent. So today, 100 years later we are burning twice as much fuel to get the same amount of energy, albeit not in exactly the same format, because it is a combination of electricity and heat. But I find it staggering that we can be talking about, you know, an energy crisis and we are not making the full use of the energy that we use.

And, part of the problem is that, yes, technology has evolved. The electrical generation efficiency today is much

better, but who wants a big plant in their backyard? Nobody wants a big power plant to be sited right next to a power plant. So we put them way out away from the centers of population and then we have to put transmission lines in, and even then we talk about let's bury the transmission lines because we don't like the poles. And, you know, that has gone in our community, as well, and I would like to see them buried by the way.

So here we are where we see these giant stacks spewing steam where not only are we wasting energy, but we are actually wasting water. I think, like, 39 percent of the fresh water consumption in the U.S. is for central power plants. So 67 percent of the input energy in a central power plant actually goes away as waste.

Another staggering fact when you think about it, but I'm not sure of the details behind this, because it's something I don't need to go into. But over the last 40 years, the efficiency at the sockets in our house have not changed. It's about 32 percent. Now, I know that technologies have changed. In fact, in some of the most efficient plants today pure electrical efficiency can be as high as 60 percent. So I know that the technologies have advanced, but yet the average efficiency to our homes, as delivered, is 32 percent.

So, again, this is a number that I find staggering, that in over 40 years it has not improved. And, again, part of

it is the fact that we don't want the power generation in our backyard. We want it further and further away. And that is why distributed generation has been a big push with both the EPA and the DOE. And it centers on CHP, combined heat and power. And as you can see from the little diagram there, basically, if you use electricity that has been generated from a central power plant and you have a thermal need, whether it be hot water or steam or something else for your process, whether it be in the house or whether it be industrial, then you use 180 equivalent units. But if you had a process, or a combined heat and power plant that not only produced the electricity, but with the waste heat that was generated in that inefficient process, you capture that and used it for your process, you only need 100 units of energy going in. So, therefore, we can talk about CHP processes with efficiencies over 80 percent.

Now, we talk about fuel cells and the advent of, you know, hybrid technologies, fuel cells with 60 percent electrical efficiency utilization, and these are technologies that are way, way out in the future. I mean, the hybrid technologies not only demand fuel cell technologies, but they also have to integrate them with the devices, or the gas turbines or the such like, which are very, very complex systems. And yet CHP, which has been around since the late 1800s, and even then when it first introduced was generating at

35 percent. You know, this is a technology that is available now.

If we look at it on an international perspective, the U.S. has got about 7-1/2 percent of CHP in power generation, and a lot of this is deployed in universities, institutions, hospitals, and large chemical industries. These are people that understand the benefits of it. In fact, at UF they have a very large CHP plant. And most of the hospitals have CHP for the laundry, because what better use of waste heat than to make hot water for all the laundry needs. But we can see, we have only got about 7-1/2 percent penetration. And yet we look to the other countries such as Finland, Denmark, and the Netherlands, with as high as 40 percent utilization. In fact, when I was doing some research, there is a new plant, I think it is in Copenhagen, it is certainly somewhere in that peninsular, a power plant, a central power plant with an efficiency of 90 percent. It's huge. It's very close to the central population, obviously, but there is some tremendous advances that can be made in CHP.

Recognizing this need for conservation or energy efficiency, I mean, there are some tremendous allies out there that are trying to push for distributed generation and CHP. There's a road map, there's a national road map that is looking to get to 92 gigawatts of electrical generation by CHP by 2010, but at the moment it is stalling. A lot of the low-hanging

fruit has been utilized. And there are so many barriers to small scale CHP that it is just not -- it is just failing in the impetus. But the DOE and the EPA have put tremendous assets behind trying to stimulate the growth. And, in fact, the DOE has looked upon its activities which were basically there to stimulate the technology, and guess what, it has been unsuccessful. They spent millions of dollars trying to stimulate it, and they realized it was the wrong thing.

The technology is there today. It is not the technology, it is the barriers. The money today is better spent on outreach type programs to educate people about the barriers and where we can -- we talk about laying down with the lions -- where we can get to a win/win. We have to get to a win/win, and it just seems so stupid to me that we could throw away so much energy when there is such high demand, whether it be from natural gas, coal, or whatever. You know, we are going to end up going towards a nuclear society because there is going to be such a gap. It is the only way forward. And nuclear is fairly clean, but who wants to live with a 200-year legacy of that nuclear.

So I think that when we talk about all of the push for clean energy and to stimy the production of some of these other technologies, what we are going to see is the void has to be replaced with nuclear. Now, in the UK there was a study done by Greenpeace, it was a very good study, looking at

London, and they determined that just by deploying CHP in London they could actually defer the nuclear deployment. To me that seems -- I can't see how we as a nation could do that, but certainly CHP plays a part. And if we can offset one nuclear power plant by pushing CHP, I think it would be good.

Next slide, please. In the National Energy Policy -- and this was signed into effect and presented to the president by Dick Cheney -- it talks about CHP achieving efficiencies of 80 percent. Of course, with Dick Cheney, I think that he thought the H in CHP was hydrogen, but --

And then, of course, we have got Florida's Energy Plan. And as I was reading through it we talk about energy efficiency in many, many places. It is obvious we have to make efficient use of the energy that we have in natural resources. And in there, there are two factors that I pulled out to identify that I thought would really help the cause of CHP and distributed generation. One was that it identified the barriers, the interconnection barriers that we really need to do something about, and then the other was about how CHP can address the efficiency by making use of that waste heat.

And on the interconnection, let me just tell you a little story. At my plant we produce microturbines. They are 100 kilowatts each, and they produce 172 kilowatts of thermal energy. And at any time I can be testing eight of these on my facility. I do have a QF facility, so I have one unit that is

putting out to the grid, and I get my four cents for doing that, but I have eight. And I have offered to give them the energy free, right? I don't need it. I have to put them on test. So I have eight units, 800 kilowatts just burning away. And I have to take the energy out of it and stick it into a load bank and just add to the temperature in Florida.

I have offered to Florida Power and Light, take it free, I don't need it. If I can just go onto the grid and let you have it, it would be great with me because I wouldn't have to have these noisy load banks there. But, even that, having free energy put back, it seems such a problem. So even when you want to give it to them free, they won't take it because there is just this adverse feeling about combined heat and power.

So the thing about -- we are talking about CHP, but one thing I need to tell you, CHP is neutral. Any technology or any device that produces electricity can produce waste heat. And where that waste heat can be applied, then you have a combined heat and power system. So the product I'm interested in is microturbines, but equally turbines or even reciprocating engines, or better known as internal combustion engines, all add or play into the CHP game, as do even fuel cells.

Now, what differentiates these technologies is the amount or the relationship of the electrical generation to the thermal generation. With my product it's 100 kilowatts to

172 kilowatts of thermal, so 100 kilowatts electric, 172 thermal. How that changes depends upon the technology.

Now we can see here is a list of some commercial institutional buildings, and you can see the electric to thermal load ratio. So there the electric to thermal starting at the top in education is 5.67, and the department buildings where we look at the water heating at .8, that is about the ideal ratio for, you know, my type of product. But in some of these areas you can see some have a fairly heavy load of thermal, others do not.

And this one is more on the industrial application, as you can see again. And I just put this in just for detail. But it does show that a lot of these industries, they do have a thermal load and the thermal load does tie in with their electrical load, so there is some ratios here that we can play with, and dependent upon the ratio of that thermal to electric load, it would really depend on what kind of technology plays to that application.

The product I produce is a microturbine. As I said before, it produces 100 kilowatts of electricity and it gives 172 kilowatts of heat. It is a fairly complex piece of equipment, it has all kinds of certifications, and the resistance to sales in this country is impressive. That's all I can say. It is really impressive. I have no problem selling it in Russia, I have no problem in Italy, I have no problem in

many places. But in America, I have a lot of problems. In fact, I probably couldn't -- it wouldn't even be viable in Florida. It might be at one of those free gas facilities, but apart from that, not.

But where it does pay in America, and where things are changing, we are starting to hear about some of the regulations and some of the states changing, and some of the requirements of the some of the states changing. New York is where this product can work. And why it works in New York, they can't get enough electricity into the center of that city. So our product works in that. It doesn't have anything to do with the renewable play, but there are applications in America that are now starting to come to the forefront. I think we are going to see other areas where they can come because it does run on natural gas, but it also runs on renewable biogas, as well. And we even have a couple of units that have been sold to a company that are working on biodiesel applications up in the Philadelphia area.

So it is a simple box. We have got all kinds of certifications. Safety features you wouldn't believe. And this is actually one place that we have been successful in America was at a Marine base, and I think probably it was something to do with the DOE push to try and get distributed generation into their facilities. But there is 15 of these in South Carolina at a Marine base, and the 15 units produce

1.5 megawatts of electricity, and then, you know, a tremendous amount of thermal load, as well. On the thermal load, they only use about five at a time to satisfy the demand of the base. They really wanted the 1.5 to offset some demand charges, which was something like $15 a kilowatt, I think, for the base.

The other thing that was interesting about that application was they had propane. They have interruptible natural gas, so it is a federal facility with an interruptible gas, which I thought was kind of strange. But they have these propane tanks and we have to switch over to propane once a month so that if the natural gas is shut off, that we can still generate the electricity off the propane.

And then there is another facility there. That one is actually in Japan. And why I put that one up there was to show that not only can -- when we talk about combined heat and power, there is another phrase, CCHP, where it is combined cool, heat, and power, because we are actually using that heat. You can actually get cooling, as well, which is pretty important in Florida. Because in the summer who wants the heat, but the cooling is pretty good.

In fact, at our facility we use this kind of a set up to lower the temperature in our test cells because we have to run -- on gas turbines we talk about an ISO standard day, which is a 59-degree day. Well, how many 59-degree days do we get in

Florida? At least down in the Stuart area near West Palm Beach. So I need that cooling to push my air temperature down so I can run my systems at design point.

I know we are kind of about 15 minutes late, but I am impressed that we are only 15 minutes late after the start. I think you are doing a great job. So, if we look at CHP solution in the national perspective, there is a lot of issues that it addresses. Some are economic, some are just societal benefits that we have heard a lot about. But in terms of supply, you know, there's 210 gigawatts of capacity of CHP in the U.S. available. In fact, somebody mentioned, I think it was Susan mentioned a study that was coming out by Neil Elliot of the ACEEE to identify some of the benefits or some of the renewable portfolios in Florida. One of those, one number he gave me when I saw him just the other day was that they have identified 11 gigawatts of CHP potential in Florida, 11 gigawatts. However, with today's barriers, only 4.5 percent of that would be applicable today. So 11 gigawatts are available, but only 45 percent would be available given today's barriers.

So, I don't need to go through this list, because I have kind of summarized it on the next slide, and that is if we just look at the simple message what CHP brings, it reduces the fuel consumption, easing the reliance on foreign fuel, and you must be able to see that. Because by taking that waste heat

and applying it to a thermal process, it has to do that. By using less fuel to derive that energy, CO2 emissions are directly proportional to the amount of fuel consumed. They are a function purely of efficiency. The only way to lower CO2 emissions, unless you want to sequester it and pump it into the ground, which I think is another stellar idea, is to increase the efficiency. So, again, CHP can now lower those greenhouse gas emissions. And if we talk about a three-foot rise in the water, you know, my house is going to be -- at least my lots are going to be submerged and I won't be able to build. So, I don't really want that three-foot water rise.

And then the other thing that we talk about with CHP and distributed generation, is the increase grid security. And certainly there is a lot of people, we hear a lot of instances where hospitals, in particular, that had CHP facilities after Katrina, and certainly one hospital that was pretty famous that it ran for 52 hours independently after everything else was in the blackout. They actually used that as an emergency staging area. They ran for 52 hours. It was a CHP facility after Katrina went through.

So, certainly here in Florida, I think distributed generation and certainly CHP has a big part to play. I think CHP has a big part to play in our industry here because we have a lot of tourists, hotels are big. CHP is good in hotels because of the water need. So, I think it certainly has a way

of stabilizing the situation in times of hurricanes and other turbulent times.

But I want to go back to that one last slide, because of the message at the bottom. Why aren't we building CHP today, right now? I don't understand. The technology is there, it's just not happening. The reason is there is barriers and that is the next slide.

So there are barriers to CHP. In fact, two years ago I was up at a meeting up in Washington, D.C., and we went to the Senate, and we talk in our message, giving our message to some of the senators, and they looked at us and said, "But if it is so good, what the hell do you need my help for?" And, you know, it is true. Why do we need your help? Well, the answer is we need help because if we have a technology today, and it's not just a technology, it's a suite of technologies that can conserve fuel, help the environment and stiffen up the grid, whether it be from, you know, a national disaster or a nonnatural disaster, why aren't we doing more with it today. So this is where we really need your help.

We talked about interconnection. There's also a suite of other things that are required. And ACEEE and the other people here are probably much better at explaining it than I, but there is a whole suite of tools available to see how we can lie down with the lion and do something useful. Because I think this is something we should all -- we owe

ourselves. Whether it be a natural resource that we are consuming that is being depleted, or whether it is renewable, we still owe it to ourselves to make the most efficient use of it.

So I just want to end up and say that Florida's Energy Plan, I thought, laid a very good foundation for CHP. There are some very clear messages on energy efficiency, and I look forward to seeing those implemented. And then the last thing is that CHP has been around from day one. It was around, it was actually used in the very first electrical utility in the U.S., and it generated at 65 percent fuel utilization in 1910. So I say that CHP offers tomorrow's energy efficiency dream today, now. So if you want to know what you can do now, CHP.

Thank you.

CHAIRMAN EDGAR: Thank you, Mr. Dewis. And I am one of those people who might not have known what CHP was at the beginning of the morning, but I do now.

MR. DEWIS: I'll check my box.

CHAIRMAN EDGAR: Commissioner Carter.

COMMISSIONER CARTER: Not a question, Madam Chairman, but a comment to you. Nearly a year ago I asked the question of one or several of the utilities about the percentage of waste loss in the transmission, and they looked at me like I was speaking Greek. So, I mean, this is a powerful -- to me

what you said is very, very powerful, because I asked that question, and I now see that 65 percent of it --

MR. DEWIS: Well, actually transmission is about 7 percent. I mean, most of it is going up in waste heat.

COMMISSIONER CARTER: The waste heat is where most of it is going. So it seems to me that -- and I'm so happy, Madam Chairman, that you decided to hold this. Because now a lot of the questions that we asked we only get a tertiary answer, so this is really -- I'm being educated today. And I think, Dave, you are my guy. We need to talk to you again.

MR. DEWIS: I'm the lamb. But I must say, you know, I'm actually an engineer. I know there was another engineer up here before me, and I'm an engineer. And I always thought if we built the best widget, you know, a widget that would work, hey, it would sell. And now I'm president of the company and I've got to try to make it sell. But I don't understand, and that is why I am here today. That is why I am getting involved with some of these other people, because I didn't know that about the electrical until two years ago.

I have been doing this specifically on microturbines for nearly ten years. But I wasn't looking at the other side. I wasn't looking at the whole picture. And when you look at the whole picture it is really sad. You know, I could guarantee that you could probably take that message about the 65 percent back in 1910, people probably wouldn't believe you.

But it's true, and it is sad. And I only learned that two years ago, and I just thought it was so powerful. And I couldn't understand how come, I, who are in this industry, didn't understand that before.

COMMISSIONER CARTER: Thank you, Madam Chairman.

CHAIRMAN EDGAR: Thank you. We are a little bit behind schedule, but I agree that we are doing quite well. And I am very pleased.

We are going to take a lunch break. I hope you all take advantage of the opportunity to get acquainted, as well, and to get some nourishment. And we will come back, we will begin at 2:00 o'clock. Our next presenter will be David Perlman, and we will begin at 2:00 o'clock by the clock on the wall. Thank you.

(Lunch recess.)

(Transcript continues with Volume 2.)

STATE OF FLORIDA)

: CERTIFICATE OF REPORTER

COUNTY OF LEON)

I, JANE FAUROT, RPR, Chief, Hearing Reporter Services Section, FPSC Division of Commission Clerk and Administrative Services, 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' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 24th day of January, 2007.

JANE FAUROT, RPR
Official FPSC Hearings Reporter
FPSC Division of Commission Clerk and
Administrative Services
(850) 413-6732