BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of:

DOCKET NO. UNDOCKETED

REVIEW OF TEN-YEAR SITE PLANS
OF ELECTRIC UTILITIES
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PROCEEDINGS:	COMMISSION WORKSHOP
COMMISSIONERS PARTICIPATING:	CHAIRMAN ART GRAHAM COMMISSIONER LISA POLAK EDGAR COMMISSIONER RONALD A. BRISÉ COMMISSIONER JULIE I. BROWN COMMISSIONER JIMMY PATRONIS
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PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	LINDA BOLES, CRR, RPR Official FPSC Reporter (850) 413-6734

I N D E X

P R O C E E D I N G S

CHAIRMAN GRAHAM: Good afternoon, everyone. Let the record show it is still Tuesday, still September 15th, and this is our 2015 Ten-Year Site Plan workshop. And we're going to start off with a presentation, unless staff tells me something else I need to be doing first. Is there a notice or something we need to read?

MS. AMES: We are here pursuant to notice. This time and place is set for the Commission workshop on Florida's electric utilities' 2015 Ten-Year Site Plans. The purpose of this workshop is set out in the notice.

CHAIRMAN GRAHAM: Okay. Let's jump right straight into the presentation.

Stacy Dochoda, come on down.

MS. DOCHODA: Is the mike on?

CHAIRMAN GRAHAM: Yes.

MS. DOCHODA: Yes. Okay.

Good afternoon, Chairman, Commissioners. I'm Stacy Dochoda. I do like to offer a little help with my last name because I know it's difficult to pronounce. The C is completely silent. Thank you, Chairman, for getting it so eloquently.

Today I'm here with John Odom, who's the Vice

President of FRCC Planning and Operations; Vince Ordax, Director of Planning; and Denise Lam, Planning Engineer II. I'm Stacy Dochoda, the President and CEO of the Florida Reliability Coordinating Council. Thank you for inviting us to present on the Ten-Year Site Plan.

Today I'll be addressing three different main areas. First I'll talk about the FRCC load and resource plan, and then I'll go into some aspects of items that are impacting our fuel reliability, in particular enhancing our natural gas fuel reliability. And then I have two standards, NERC standards that I want to provide an update to you on: One addressing physical security and the other on geomagnetic disturbances.

The mission of my organization, the Florida Reliability Coordinating Council, is to promote and assure reliability of the bulk power system in peninsular Florida, and each year we do get invited to present to you at the Ten-Year Site Plan workshop.

So I'll just begin with a summary of our findings this year. Our analysis of the 2015 Ten-Year Site Plan shows that reserve margins are expected to be greater than 20 percent throughout the ten-year planning horizon. These calculations, of course, do include significant additional utility generation capacity that would be added over that ten years. Demand-side

management continues, as has been in the past, to be a significant component of planned reserves; renewables are projected to be about 2 percent of energy served by 2024, the end of the ten years; and energy production from natural gas is expected to increase by almost 19 percent by 2024.

The 2015 Ten-Year Site Plan was filed on April 1st. That was well before the final EPA Clean Power Plan rule was issued, and so the impacts of that rule are not included in the data that I'll be presenting to you today. With the final rule released on August 3rd, just a little bit more than a month ago, there will be a lot of work done over the next year and subsequent years as the state implementation plan is developed and as utilities determine how they will comply with this rule. Given the timing of this workshop, I look forward to coming back in future years and providing you more analysis of the impact of that rule on our planned reserve margins.

Now today, in addition to our traditional reserve margin analysis, I'll also discuss factors that are positively affecting Florida's natural gas fuel reliability and the status of the two standards I mentioned earlier.

So I'll start with the load and resource plan,

and first we'll talk about the load forecast part of the resource plan. The impacts that are positively impacting the load forecast are Florida's improving unemployment rates, which have gone from 8.5 percent in 2012 down to 5.6 percent in 2015, and also population growth, which has grown from 18.8 million in 2010 to 19.9 million in 2014.

Now these positive factors, though, are offset by wage and income growth not keeping pace with employment growth, and also increasing impacts of energy efficiency standards and customer-owned solar generation. So overall, the forecasted energy sales and peak demands are lower in the 2015 Ten-Year Site Plan than they were in the 2014 Ten-Year Site Plan.

Now this chart is new to our presentation. For the first time we tried to gather data about the incremental impacts of energy efficiency codes and standards on the forecast. Now only a few of our utilities were able to calculate this data for us in terms of what appears in their forecast, so I actually view this information as quite conservative in terms of the impact into the forecast.

The green bar on this chart is the energy -- energy use reduction, and the red bar is the summer peak reduction. So you can see that beginning in 2015 the

energy use reduction is a little bit less than 1 percent, but that grows to 3.8 percent in 2024. And the summer peak reduction, again, starts a little bit under 1 percent but grows to 4.7 percent in 2024.

Now the impacts of these energy efficiency codes and standards that I've shown here are embedded in the load forecasts that you'll see in the subsequent pages.

So let's turn to the summer peak forecast. The red line here is our 2015 Ten-Year Site Plan and the gray is last year's. On average, the 2015 Ten-Year Site Plan demand forecast is .8 percent less than 2014. Now it's a fairly modest decline, but the main drivers of this decrease are lower usage per customer for certain utilities and the impacts of the energy efficiency codes that I just showed on the previous slide. The compound average annual growth rate for the 2015 summer peak demand forecast is 1.46 percent.

Now I'll turn to the winter peak demand forecast. The 2015 Ten-Year Site Plan is in blue and the 2014 in gray again. On average, the 2015 Ten-Year Site Plan forecast for winter peak demand is 1.8 percent less than 2014.

Now the main drivers are similar to the summer, but, in addition, impacting this forecast is the

fact that our actual winter peak in 2014 was significantly below the forecasted, and so it anchors this forecast a little bit lower and has caused that decrease.

So now we'll move from the demand that I showed in the previous two charts; we'll look at net energy for load. The 2015 is in green and the 2014 in gray. On average, the energy forecast is 1.1 percent less than the 2014 Ten-Year Site Plan, and the average annual growth rate here is 1.13 percent.

This graph shows our historical summer peak demands going back to 1990 and our Ten-Year Site Plan forecast. The dashed line on the graph is the linear trend of actuals, and the yellow, orange, and red lines that you see are really the information from our Ten-Year Site Plan.

And so on this next slide I'll zero into that aspect of the chart. This is a detailed look pulling out certain pieces of important data. The red line on the bottom is the firm peak demand, and this is the demand that is used to calculate whether or not we meet our reserve margin targets. The orange line is the demand forecast assuming that demand response was not available. And then the yellow line is demand forecast without demand response or utility energy efficiency

programs.

So the demand response reduces load by 6.5 percent out in 2024, and the utility energy efficiency programs reduce load by 1.4 percent.

This graph shows the compound annual growth rate of firm peak load in previous Ten-Year Site Plans going back from 1992 through the current one. The red is the summer peak demand and the blue is the winter. You can just see over time that, you know, going back to the early '90s we had compound annual growth rates in the forecast that were between 2 and 2.5 percent, but in this year's for the summer we're under 1.5 percent.

So on this next slide I'm going to shift from the forecast and now talk about the resource side of the equation. This bar chart shows the projected change in total available capacity in FRCC in the green segment of the bars. Here you can see the utility additions to capacity over the years. And I'd just note that in this Ten-Year Site Plan we have new natural gas generation of 10,491 megawatts.

So now putting together the load forecast and the projected capacity, we'll look at the planned reserve margin. So the red bar is the summer reserve margin. The blue bar is the winter reserve margin. Using the firm load forecast with the 2015 Ten-Year Site

Plan data, we do project that reserve margins will be greater than 20 percent over the ten years.

Now as a further illustration, though, of the significance of demand response in Florida, this is looking at reserve margins if demand response and utility energy efficiency programs were not available. Now if that were to be the case, we would be below 20 percent throughout the ten-year horizon and we'd be below 15 percent beginning in 2016.

This is just another picture of the significance of demand response in Florida. FRCC is now the region with the highest amount of demand response as a percentage of peak demand. In previous years we've been the second highest, but this year we did move into the highest percentage.

So in summary in terms of reserve margin for the 2015 Ten-Year Site Plan, we do show that expected reserve margins should be above 20 percent over the ten-year horizon based on this data. Demand response continues to be a very significant factor, averaging 6.6 on average over the ten years. Utility energy efficiency programs reduce summer peak by 1.4 percent in 2024. Energy efficiency from codes and standards reduces summer peak by at least 4.7 percent in 2024.

So next I'd like to turn to the fuel mix

that's in the Ten-Year Site Plan. So this chart is the fuel mix for energy, so in megawatt hours generated. It shows 2015 and the 2024. And I'd just note the percentage of gas, of course, is the largest. We're starting at 60 percent in 2015 and growing to 65 percent in these projections in 2024.

And now we're looking at similar information, but this is on a capacity basis, so in megawatts. Here natural gas is 62 percent in '15 and 69 percent in 2024. We also show in this graph within the natural gas section we've split out the amount of natural gas where we have fuel switching capability, and we show that currently we have about 43 percent of our natural gas capacity is capable of fuel switching and about 41 percent projected in 2024.

So now we'll dial in on a few of the components of the capacity. Here looking at our existing renewable resource capacity, you can see that biomass and municipal solid waste continue to be our largest percentage of renewable capacity currently. Now out of this 1,538 megawatts of nameplate capacity, about a third of this, or 556 megawatts, are firm and are included in the reserve margin calculation.

And then looking at the forecast through the ten-year horizon, we show total planned additions of

1,414 megawatts of renewables: 285 biomass, 70 municipal solid waste, and 1,059 of solar. And over a quarter of these planned additions are firm, 376 megawatts.

Now looking at the nuclear component of the resources, we began with 3,600 megawatts of nuclear capacity. In 2018 and '19 there is a planned upgrade to Turkey Point 3 and 4 for a total increase of 40 megawatts.

Now one thing I'd point out in this Ten-Year Site Plan compared to 2014, in 2014's Ten-Year Site Plan Turkey Point 6 and 7 were included in 2022 and 2023. However, based on a new schedule that was issued by the NRC for the combined operating license, FPL now projects that the earliest date for these units would fall outside the Ten-Year Site Plan.

Okay. Now I want to turn a little bit to the Clean Power Plan. As I mentioned earlier, of course, the final Clean Power Plan was issued on August 3rd. The data in the Ten-Year Site Plans that I'm showing to you today was developed way before that final rule, and so it doesn't include those impacts. I'd just emphasize right now there's still a lot of uncertainty about the way the implementation of the final rule will roll out. There's a lot of work that will need to be done between

now and the next few years as the state implementation plan is developed, as utilities determine how they will comply with the rule.

But I would point out a few items that changed from the initial proposed rule to the final rule, several items that I think are positive in terms of their impact on electric reliability.

First of all, the beginning of the interim compliance period was moved from 2020 to 2022. The rate limit for Florida was changed from 740 to 919 weighted average pounds of CO2 per megawatt hour. The state implementation plans are required to take into account electric reliability, and those plans are due in September of 2016 with a possible two-year extension. And then also there was a reliability safety valve that was added to the rule. This is more of a realtime apparatus that would allow a state to submit a notification to the EPA within 48 hours of the need to modify emission standards for a reliability critical generating unit.

So I think those were positive changes to the rule. Given the timing of the Ten-Year Site Plan workshop, I look forward to having more information for you in future workshops. I think it will be -- we'll have some information next year, but it's likely to be

several years before we really know the full impact of this rule.

One of the things that we'll be examining very closely at FRCC is looking at overall resource adequacy, but also, of course, the impact on transmission constraints, particularly if there are changes in resource mixes we have today.

So then just to conclude the load and resource portion of my presentation, again, based on the data we have, we do show adequate reserve margins throughout the period. DSM is a very significant component of those reserves. Natural gas energy production, based on this data alone, is projected to increase almost 19 percent by 2024, and renewables are 2 percent of energy served in 2024.

So I'm going to shift gears a little bit and talk about fuel reliability in the FRCC region. Now given the high percentage of natural gas both existing today and projected in the future and then the possible impacts of the Clean Power Plan, the reliability of the natural gas fuel is a very important factor for us in Florida. But I do think there are several things that I'd like to illustrate in my presentation that do favorably mitigate the risks that we have around natural gas.

One item that we've had for a number of years is we do have at FRCC a Fuel Reliability Working Group. This is a group that works together from industry to review the interdependencies of the fuel availability and our reliability in the electric grid. We also use this group to coordinate realtime responses to fuel issues in emergencies.

Now another change that I think is positive that's happened over time is if you go back to the 2004/2005 time period, we had seven major hurricanes in the Gulf at that time, and that severely impacted the gas supply into Florida. We don't have current ability to store natural gas in Florida, but the Florida utilities have contracted with natural gas storage out of state. And we gathered that data to show to you today currently the utilities have rights to approximately 8.4 Bcf of natural gas storage that can generate about 829 gigawatt hours of energy. They're able to withdraw at a rate that's just under 1 Bcf per day.

And then just to sort of put that in a more -- terms we can put our hands around, that would be at a rate that's a little bit more than a tenth of the summer peak day's usage. So this is one mitigating factor in terms of our reliability on natural gas.

This is just a chart that goes back and shows where we've been on natural gas and where we're projected to go in terms of capacity.

Now natural gas dual fuel capability, I referred to this a little bit earlier, but this is a second factor that mitigates our risks around natural gas. We benefit in Florida from substantial dual fuel capability. We have more than 40 percent of the natural gas is capable of fuel switching.

And then the third factor I want to talk about that helps our risk on natural gas reliability is the third gas pipeline. The Sabal Trail Transmission is a joint venture between affiliates of Spectra Energy and NextEra. It's a new interstate pipeline that would originate in Alabama and extend through Georgia into Florida. Now Sabal Trail would add over 1 Bcf a day of capacity connecting the Transco Station 85 supply to southeast markets and the Central Florida Hub.

We also have the Florida Southeast Connection. This pipeline would originate at the Sabal Trail Central Florida Hub in Osceola County and would terminate at FPL's Martin Clean Energy Center in Martin County. This pipeline has the capability of over 600 Mcf a day. The status of both of these is that they're projected to be in service in May of 2017.

So I'd just -- I'd just summarize some of the analysis on fuel reliability. We certainly do have a very high percentage of reliance on natural gas. It's something we want to watch very closely. But we do have some factors that mitigate in favor of reducing that risk.

First, we have the natural gas storage that utilities have contracted for out of state. We have the ability to do a significant amount of fuel switching. And then the addition of this third pipeline will also provide an important increase in supply diversity and reliability.

So I want to talk a little bit about physical threats to our infrastructure. External threats to the electric infrastructure are being addressed continuously by electric utilities themselves; also, a lot of focus from FERC and from NERC and the regional entities. In the past years, we've seen a lot of focus on cyber security threats. That focus will continue. But more recently there have been new standards that have been developed for other external threats on our system, and these include a geomagnetic disturbance standard and a standard about physical security. Having processes in place and making the investments necessary to protect our infrastructure against these external threats is

critical to our energy security.

I'll begin by talking about the GMD standard. And first I'd just say a little bit of background on geomagnetic disturbances. These result from a process that begins with the sun. The solar activity is a cause that can cause solar particles to escape the sun's halo and travel to Earth in an estimated 15 hours to four days is about how much notice we have when these events occur. The charged particles can cause a geomagnetic-induced current wherever there is a path for them to flow. Now these quasi-DC currents can flow in the Earth or they can flow on long manmade conducting paths, which would include transmission lines, metallic pipelines, railroads, and telecommunication lines.

The GICs can enter and exit the power system at transformer grounds and disrupt normal operation of power systems and can potentially significantly damage operating equipment. Geomagnetically induced currents can cause the misoperation of protection systems as well and cause damage to transformers and ultimately voltage collapse.

There was a NERC study that was done in 2012 that examined these phenomenon significantly, and found that a GMD is more likely to cause voltage collapse in the system than extensive transformer damage. Now both

are bad, but the reason this finding is important is that a loss of power from a voltage collapse is something that could probably be restored in a matter of hours or days, but a system collapse because of extensive transformer damage could take months to bring back because of the lead time of those transformers.

I'd also point out in 1989 there was a solar storm that led to a widespread significant blackout in Quebec. The Quebec event was caused by voltage instability similar to what the NERC study was discussing. Now the grid in Florida did not experience any adverse effects during that storm. And generally the scientists tell us that solar storms tend to affect higher latitudes more than lower latitudes like Florida.

So with the importance of the impacts that GMDs can cause to the electric system, FERC did issue an order in 2013 for the industry to develop reliability standards around GMDs in two stages.

In Stage 1, the standard requires utilities to develop and implement operating procedures that mitigate the effects of GMD events. This standard became effective in April of this year, and utilities are operating under this standard today.

In Stage 2, a standard is pending at FERC that would require utilities to take GMD events into account

in their system planning. And this standard is applicable to facilities that include power transformers with a high side greater than 200kV. This standard would require that utilities maintain models and perform studies to analyze the effect of GMDs, and also plan corrective action plans that could address system vulnerabilities. The planning standard is pending FERC approval. It has a five-year proposed implementation period.

Now at FRCC, our role would be to build the model that's described in this standard and perform system studies based on input from the Florida utilities. We believe that by doing this in a central fashion, we can achieve savings to avoid duplication at the specific utilities. The cost of implementing corrective action plans, if we have any, won't really be known until those studies are performed.

I'm going to shift gears to the second standard, and that's the physical security standard. And I think last year John Odom described to you at the Ten-Year Site Plan the attack on the Metcalf substation in California in 2013. Well, after that attack, in 2014 FERC did issue an order that directed NERC to develop a physical security standard. And that standard is applicable to 500kV and large 230kV substations and also

primary control centers. The standard requirements include the performance of initial risk assessment, the evaluation of potential threats, and the development and implementation of a documented physical security plan, and then also an unaffiliated third party has to review those plans.

Now the standard calls for the initial assessment to be completed by October 1st of this year, and then the physical threat analysis and the security plans are due to be completed between August and December of 2016.

So just wrapping up the various points that I've covered today, again based on the 2015 Ten-Year Site Plan data, we do show reserve margins to be greater than 20 percent over the ten years. We have -- DSM is a very significant component of those reserves. Energy from natural gas production is expected to increase almost 19 percent by 2024 based on this data. And we have several factors that are working favorably toward our natural gas fuel reliability, including the third gas pipeline that's under development.

The Clean Power Plan, we'll know more and be able to tell you more in future years. And then we've got the two new standards that are to help our physical security of our infrastructure that'll be implemented in

the next few years.

So with that, that really concludes my prepared presentation. I'd be happy to answer any questions.

CHAIRMAN GRAHAM: Stacy, thank you very much for your presentation. Commissioners, do you have any questions of Stacy or FRCC?

Commissioner Brisé.

COMMISSIONER BRISÉ: Thank you, Mr. Chairman. And thank you for your presentation this afternoon.

A question on the gas pipeline, the Sabal Trail project, do you see any reason why that project would not come online on time?

MS. DOCHODA: Based on everything I understand, they're exactly on schedule on that -- on that project.

COMMISSIONER BRISÉ: Okay. On page 7 you talk about -- let me make sure I get to page 7, give me a quick second -- increasing impacts from codes and standards and also from customer-owned distributed generation solar. If you can expound on that a little bit.

MS. DOCHODA: Sure. So the forecasts this year do show the effect of a certain amount of solar generation. In 2024, we show about a .2 percent

reduction in the forecast based on customer-owned solar. So that's just reducing the demand because it would be demand that the customer would supply themselves, and so it wouldn't appear on the electric grid.

COMMISSIONER BRISÉ: Okay. And you don't see that curve growing a lot quicker during that time frame?

MS. DOCHODA: Well, what I would say is that I think the big question mark is the impact of the Clean Power Plan, particularly with the incentive program that's in that plan, there certainly could be changes that would occur there.

COMMISSIONER BRISÉ: Okay. Thank you.

CHAIRMAN GRAHAM: Any other Commissioners?

Okay. Well, Stacy, once again, thank you very much for coming down and for your presentation today.

MS. DOCHODA: Thank you, Chairman.

CHAIRMAN GRAHAM: I do appreciate it. And this information every year is always very, very helpful for us.

Okay. Next we're going to go down through the four IOUs, starting with Florida Power & Light. And unlike Stacy, you guys only get ten minutes.

MS. RAUCH: Good afternoon, Commissioners. My name is Pam Rauch, and I'm Vice President of Development and External Affairs for FPL. Thank you so much for the

opportunity to share with you today our plans to grow solar in Florida for the benefit of our customers.

I'm excited to share with you details of three large-scale projects that we plan to complete by the end of 2016. But what I'm even more excited to share is how excited we are and what a bright future we believe that solar energy has for our customers here in Florida.

As you probably know, FPL has believed for a long time that solar energy should be a larger part and a growing part of our energy mix here in Florida. And we've enjoyed watching significant price declines in equipment over the last couple of years, but that alone in Florida has not been enough because of our low energy prices for our customers. So that is why our team has worked very hard and been very proactive over the last year to identify three project sites that share some multiple advantages that will allow us to deliver cost-effective solar energy to all of our customers in 15 months, by the end of 2016.

But we didn't get here overnight. And pursuant to legislation back in 2008, we were able to develop and complete 110 megawatts in three large-scale projects that you see on the slide. And we had many learnings from these projects that helped accelerate where we are today.

First of all, we realized how much fuel diversity and diversity of our energy mix, how important that is for us here in Florida. We also learned that there is a huge benefit to our customers in terms of fuel savings with the solar energy projects. We learned a lot about technology. We learned that the photovoltaic panels can optimize and give us the best benefit to our customers. We learned about construction practices and what makes the most sense and how to minimize those costs in terms of design of the project, minimize the roads, optimize the panel locations for the best solar resource. And we also learned about O&M efficiencies: That when these plants are located near other plants, we can optimize our resources and our management for those projects, as well as maintenance efficiencies for these projects. So we had a lot of learnings.

And we took those learnings, and we are so pleased today because we now have three new projects known as the Babcock Ranch Solar Energy Center in Charlotte County, the Citrus Solar Energy Center in DeSoto County, and the Manatee Solar Energy Center in Manatee County. These three projects will comprise 224 megawatts of cost-effective solar energy, meaning that they will provide a net benefit to our customers over

and above their cost to construct.

We're really excited about this because this will more than triple our amount of solar energy that we are delivering to our customers in 15 months, and we believe it's a big deal because they are cost-effective and it is the way that we can continue to keep our bills low while continuing to diversify our energy mix and provide more solar here in Florida.

When we look at these projects and we look at trying to make them cost-effective so they make the most sense for our customers, it's important to realize that each of the projects are unique and have to be evaluated on their economics individually. For example, we're lucky here in Florida because we have a pretty good solar resource. In fact, you can see that we're ranked ninth in the country. So that helps us. But also when you compare to a state like Arizona that has a greater solar resource, that can make a difference on a per project basis on the economics.

So, for example, even here within the state, we know that locations in Southwest Florida offer a 3 to 5 percent greater solar resource than they do in other parts of the state, and those differences make a difference in the overall project cost.

We also know that the technical potential for

Florida to develop large-scale projects is very good. We know that there's a lot of potential to develop solar in Florida of all types -- large-scale rooftop. But we know all that technical potential, that 98 percent of it is with large-scale solar. So as a company, that is why we have taken the approach that large-scale solar makes the most sense for our customers.

In fact, when you look at the economics, you look at higher production of solar means lower cost for our customers. And when we have -- achieve economies of scale with larger projects, we're able to deliver solar energy at a lower cost. So, in fact, for every dollar that we invest in a large-scale project, we achieve two-and-a-half times the amount of solar energy than you would, say, for a dollar invested in rooftop energy. So that is why as a company we are focused on large-scale projects, because they benefit all of our customers in the most economical way.

So for the three projects that I'll share with you in a moment, we really dug in, and we found several advantages that allowed us to make these projects cost-effective by the end of next year.

First of all, we had the advantage that all three sites, the land was already owned by FPL or it was donated to us at no cost. We also had much of the

permitting completed back in 2011 and 2012, which saved us a lot of time. And saving that time is important because it will allow us to take advantage of the 30 percent investment tax credit before it expires at the end of 2016. That was also an important component of these projects.

All three projects are located next to or near existing transmission infrastructure with available capacity, so we were able to minimize our interconnection cost. And as I mentioned, the solar resource where these projects are located are 3 to 5 percent greater, which also benefits the cost of the project.

We also know that economy of scale makes a difference in terms of cost. And you get to the tipping point -- once you exceed 50 megawatts, you achieve economies of scale in terms of cost. We're also able to leverage our strong supply chain relationships. We competitively negotiated for the best possible pricing on panels and other equipment, and we competitively bid our EPC contract. So we believe we have the lowest possible cost to build these projects.

I mentioned that we have the ITC, which is a big component. But last, but definitely not least, was also the strong collaboration and partnership we had

from the three counties and their leadership. Starting with Charlotte County, followed soon after by Manatee and DeSoto, we were able to achieve tax abatements through economic development incentives that added to the cost-effectiveness of the projects. These counties recognized the great partnership and the economic development benefits that these projects would bring to their communities.

So let me dig into the three projects. The first one is the FPL Babcock Ranch Solar Energy Center, and this was a very collaborative partnership with developer Syd Kitson and Kitson Development. They donated this land to the project for the benefit of all of our customers. This is located on 440 acres. And in addition to the Charlotte County tax abatements, the Babcock Ranch Special Independent District also granted back a percentage of their franchise fees from the electric franchise to ensure that this project will be cost-effective for all of our customers. Much of the permitting had been done before, as I mentioned, which will help us meet the 2016 deadline.

The second project is the FPL Citrus Solar Energy Center, and this is in DeSoto County. You can see our original 25-megawatt DeSoto County Energy Center just off in the distance. And this project is located

on 841 acres of FPL-owned property. It took a little more land because we worked around the environmental conditions at that site.

In addition to the tax abatements that we received there, we also had permitting in place, and there was existing transmission capacity and availability. And we were able to take advantage of some synergies in terms of O&M in terms of maintaining the nearby plant.

CHAIRMAN GRAHAM: Pam, you've got two minutes left.

MS. RAUCH: Okay. Lastly, last slide, the FPL Manatee Solar Energy Center, a 74-megawatt project next to our Manatee Natural Gas Center located on 762 acres of property. Again, able to use existing infrastructure, like the substation was there, to minimize our construction costs.

So these three projects work today and will work and be cost-effective to our customers because of the synergies and the things we were able to leverage in terms of our infrastructure and timing to get the projects complete. We're very excited to get these projects in service for our customers, and we are very optimistic that we will be able to find more cost-effective projects going forward. Thank you.

CHAIRMAN GRAHAM: Thank you very much. Hold on for questions.

Commissioner Brisé.

COMMISSIONER BRISÉ: Thank you, Mr. Chairman.

Thank you for your presentation today. One more time, if you could walk me through the economics again of why utility-scale solar makes more sense than rooftop solar.

MS. RAUCH: Sure. You know, you're able to achieve economies of scale because of the large size and you're able to optimize the design and the location of the panels, and scale matters. And so you're really able to optimize the cost and achieve higher production because of the location. So when you look at it on a cost basis, a dollar-for-dollar, you achieve two-and-a-half times the amount of solar from that same dollar invested in large-scale. So if our goal is to really grow solar in Florida, doing it through large-scale solar today is the most effective way.

COMMISSIONER BRISÉ: Okay. So basically if you were to put the same level of investment in rooftop, you wouldn't gain the same type of result? That's what you're saying?

MS. RAUCH: Correct. You would need to build 65,000 rooftop installations to achieve the 224

megawatts that we are building in three projects.

COMMISSIONER BRISÉ: Okay. Have you all looked at community solar as, as an option to -- because part of this, from my perspective, is consumer engagement in managing --

MS. RAUCH: Yes. We absolutely are looking at all forms. And, as you know, we have a small pilot with our voluntary solar program SolarNow, and two of those projects are under construction and two more along the way. We have about 1,300 participants to date. And as we go forward and as prices continue to decline, we can evolve those types of pilots and programs to offer our customers. So we are looking at various ways to provide more types of opportunities to our customers.

COMMISSIONER BRISÉ: Okay. I'll leave it there for now. Thank you.

CHAIRMAN GRAHAM: Commissioner Edgar.

COMMISSIONER EDGAR: Hi, Pam. Thank you for being here.

You actually did answer one of my questions. I was going to ask you about the status of the voluntary solar program, an area of interest to me.

But also the -- in response to Commissioner Brisé's question about rooftop solar versus utility-scale, and I don't mean versus as if it's one or

the other necessarily, but your quote of two-and-a-half times more solar production for dollar spent, does that take into account the land use costs --

MS. RAUCH: Yes.

COMMISSIONER EDGAR: -- for utility-scale solar? Since I believe you said that the projects that FPL currently has were either currently owned or donated, and I would expect that there's probably a limit to the sites that are free in the future.

MS. RAUCH: Right. I believe the two-and-a-half number is more of a national average. Ours are even better because of the synergies that we were able to achieve. But two-and-a-half times is, it's kind of apples for apples.

COMMISSIONER EDGAR: So it does -- so that two-and-a-half times term, if I understand you correctly, it's your understanding that that does include land costs.

MS. RAUCH: That's my understanding.

COMMISSIONER EDGAR: Okay.

CHAIRMAN GRAHAM: Okay. Pam, thank you very much.

MS. RAUCH: Thank you.

CHAIRMAN GRAHAM: Next is Duke. Ben, you have ten minutes.

MR. BORSCH: I can probably do that. I'm Ben Borsch. I am the Director of Integrated Resource Planning for Duke Energy Florida. Thank you for the opportunity for us to provide an update on Duke Energy Florida's continuing commitment to renewable energy sources and our commitment to developing increasing amounts of solar in Florida as it's outlined in our Ten-Year Site Plan.

DEF continues to be one of the largest providers of renewable energy in the state. We provided more than 1.1 million megawatt hours of renewable electricity in 2014, and we anticipate meeting roughly 3.5 percent of our customers' electricity needs from renewable sources in 2015.

And going forward, we are planning for the increasing contribution that solar power will make to our energy mix. DEF plans to add up to 500 megawatts of new utility-scale solar within this year's -- this ten-year planning period.

And in addition to utility-owned or contracted solar generation, DEF recognizes that some of our customers are interested in owning their own solar, and we respect the right for them to be integrated to -- their solar generation to be integrated onto the grid.

Over the past several years we have expanded

our customers' connected solar generation from 1 megawatt in 2008 to 23 megawatts today, and we continue to connect an average of 80 solar systems per month.

DEF plans to install approximately 35 megawatts of new solar PV in the next three years at a number of solar demonstration facilities. These facilities will support DEF's larger planned future solar installations by developing our experience and our expertise in the integration of the solar utility -- solar resource onto our utility grid, efficient and cost-effective project development and EPC management, and in system operation and maintenance.

We selected two initial demonstration facilities for the construction of about 11 megawatts of PV in 2015 and '16. These sites were selected to take advantage of DEF-owned property internal to the state, away from the salt impacts of the coastline, and with low-cost interconnection, minimal environmental impacts, and supportive geology. We selected two different EPC contractors to provide us with supplier diversity and management experience.

The Osceola Solar Facility will be the first of several large-scale solar facilities that will be built and owned by Duke Energy Florida as a part of our

ongoing commitment to expand the use of solar and as outlined in our Ten-Year Site Plan. Osceola County Solar Facility No. 1 will be located on Duke Energy-owned land in Kenansville, a community in Osceola County. This facility will be built on 17 acres of a 25-acre parcel that includes our Canoe Creek Substation, and will utilize about 15,000 solar panels. Key vendor participates -- participants in this project include Advanced Green Technology, a Florida-based subsidiary of Advanced Roofing, Inc., which will serve as the EPC contractor; Solar World, which will supply the panels; and GE, supplying the inverters.

Our Taylor County facility will be the second large-scale demonstration facility, and it will be built by and owned by DEF to supply additional solar resources to our customers. It'll be located on Duke-owned land in Perry and will take up about 40 acres around our DEF Perry substation.

Looking ahead to 2016 and '17, DEF is evaluating additional sites for the development of an additional 20-plus megawatts of solar PV. Site development, feasibility review, and permitting are underway. And, again, DEF expects to take advantage of company-owned land interior to the state with minimal environmental impacts and favorable interconnection

opportunities.

And then, as projected in our 2015 Ten-Year Site Plan, we anticipate adding up to 500 megawatts of new utility-scale PV through 2024. Consistent with our normal planning process, these facilities will be evaluated for customer value based on the future and actual -- future, actual, and projected solar equipment and installation costs, the impact and value of that PV on our fuel and generating mix, and the value of competing generating facilities.

Thank you again for our opportunity to make this update.

CHAIRMAN GRAHAM: Okay. Thank you very much for your presentation. Commissioners?

Commissioner Brisé.

COMMISSIONER BRISÉ: Just to be consistent, do you all have -- does Duke have any plans to -- to develop any community solar?

MR. BORSCH: We are working on some community solar projects. Right now we do not have a community solar offering because we are working very hard to make sure that what we offer our customers in community solar doesn't take a, you know, significant adder to them but is genuinely a competitive offering.

COMMISSIONER BRISÉ: Okay. All right. Thank

you.

CHAIRMAN GRAHAM: Commissioners, anybody else? Commissioner Edgar.

COMMISSIONER EDGAR: Just to follow up on -- on that, with which I agree, do you have any idea of the timeline to get to that point where, for voluntary -- excuse me, community solar, for community solar, that that more competitive offering is in the offering?

MR. BORSCH: I don't know that we have a specific timeline. You know, we know that this will depend in part on movement both in the price of solar equipment and, you know, in the price of the competing technology. In this case, most likely the price of natural gas. But we are continuing to work on that. And actually we believe that the experience that we're going to gain from the projects that we were discussing just now in terms of our ability to leverage our supply chain to build these kinds of scale facilities will help us in the next few years to sharpen the pencil and really offer something competitive in community solar.

COMMISSIONER EDGAR: Thank you.

MR. BORSCH: Thank you very much.

CHAIRMAN GRAHAM: Wait. Commissioner Brown.

MR. BORSCH: Oh, one more.

COMMISSIONER BROWN: Thank you, Mr. Chairman.

CHAIRMAN GRAHAM: Sure.

COMMISSIONER BROWN: On your slide 9 you show the years 2015 through 2018, and they're just modest increases, and then you have a gap --

MR. BORSCH: Yes.

COMMISSIONER BROWN: -- between 2018 and 2024. Where -- I'm just curious where the megawatt makeup for 2019 through '24 falls.

MR. BORSCH: We have a pretty -- there's a -- we're projecting that there's going to be a pretty good size bump in the '19 and '20 periods, and then a -- kind of a steady growth period out, you know, to the cumulative 500 in 2024. Based on our current projections of the falling price of solar equipment and installation compared with our expectations about potential increases in the price of natural gas and other fuels, we think that that's probably around the time when it's really going to hit its stride. And, you know, so our current set of projects are specifically designed to provide us with that launching pad in terms of experience and understanding and operation to be prepared for that takeoff point in around 2019.

COMMISSIONER BROWN: So are there firm projects committed between 2019 and 2024?

MR. BORSCH: Not yet.

COMMISSIONER BROWN: Okay. Thank you.

CHAIRMAN GRAHAM: Now thank you.

Okay. Next is TECO. Welcome.

MS. WEHLE: Thank you very much. Good afternoon, Commissioners. My name is Joann Wehle. I'm the Director of Sales and Marketing for Tampa Electric Company, and it's my pleasure today to talk to you about the Tampa Electric solar project at the Tampa International Airport. We have been talking with Tampa International for quite some time about locating a PV system somewhere on the airport property, and we finally decided to locate one on the top floor of Tampa International Airport's economy parking garage. This installation includes car canopies on a concrete structure, which is in keeping with the design of the garage. We will own the canopies, the PV system, and the energy output from the PV system. We'll be using Solar World's 325-watt panels. And it will provide shaded parking for customers of the parking garage on the roof. And we signed a 25-year lease with Tampa International Airport for use of the space.

So this project has been underway for quite some time, over a year, and in 2014, in December of last year we issued an RFP with the help of SEPA, which is the Solar Electric Power Association, that helped with

qualifying bidders and also with our evaluation criteria for selecting a turnkey provider for this particular PV system.

After screening the bids and -- with our evaluation criteria and developing a short list, we selected an EPC general contractor named Solar Source, who is headquartered in St. Petersburg, Florida, and started looking at the criteria for putting this PV array on the top floor of the parking garage.

One of the things that was unique to this particular PV system is that we had to go above and beyond the normal permitting process because being on an airport property, there are quite a few other hoops that you have to run through, including a glint and glare study that we needed to perform, and also getting FAA approval. All of that was done by June of this year, and construction activities started in July.

We worked very closely with Solar Source as well as TIA on a -- on a daily basis in order to get construction underway, which is ongoing right now, and we plan to have the system commissioned in late December of this year.

As you can see, this is a schematic of other things that are going on at the airport proper. They're building a consolidated rental car facility currently,

which will be about a $2.6 million square foot facility; they're extending their automated people mover 1.5 miles down to the automated -- to the rental car facility; and they're also undergoing a lot of renovations in their main terminal area.

This is just a picture of some of the activity that's going on from the rooftop of that garage where we're actually putting the PV array. There's quite a bit of construction going on right now for that rental car facility, and it's been, again, another challenge that we've had to face to make sure that we aren't in the way and are not impeding any progress at the airport.

So a little bit more about the solar project. As part of the renovation program, TIA and Tampa Electric actually worked very closely, hand in hand to include this particular project in their sustainability and efficiency efforts there at the airport. We worked very closely with the design of this particular facility. Part of their issue was that they did not want us to utilize a ground-mounted system and take away any of their parking capability on the top floor of the garage. So we developed a canopy system that will provide, again, shaded parking for the occupants of that parking garage.

And so -- and then another thing that we're going to be doing with the airport is placing TV monitors in high traffic areas to -- that will be an education for the public as to the output of the system and other things about the system so that the public can actually get some more education about photovoltaic.

This is an artist's rendering of the economy parking garage with the extended automated people mover station that's going to be added to it. And we -- this is another area that we feel like we could possibly be putting some TV displays that will again be an educational tool for the public.

This is a picture of as we got started with some construction activities there. One interesting fact is they already -- again, this was an existing structure for parking. They have those lighting canopy systems right there that we're going to be utilizing for some of our canopy structures in order to reduce cost. And, again, another challenge that we've had is some of those elevator banks provide shade, so we had to be very careful to design the system such that there were no shading of panels. Again, this is an aerial view of the construction underway with the canopy and beam systems that -- that we're using.

Just, again, another -- a snapshot of the

column and beam structures the panels will be sitting on. The concrete structures are, again, in keeping with the design of the airport, of the concrete building that exists there today.

And while we have announced and are under construction with our 2-megawatt facility at the airport, we've also announced that we're investigating the addition of an additional 25-megawatt project to our generation portfolio. This project is anticipated to also be a turnkey EPC project that will be located near our Big Bend Power Station and our Manatee Viewing Center. This generation resource is going to provide energy diversity and hopefully reduce our fuel costs, and will be used and put on our existing company land.

This site was selected because of its proximity to our 69kV transmission line, and it's very visible from Highway 41 and our future Energy Technology Demonstration Center. So we are in the process of receiving bids for this particular project, and we will soon determine the project's next steps. And I'd be happy to answer any questions.

CHAIRMAN GRAHAM: Thank you very much for your presentation.

Commissioner Brisé.

COMMISSIONER BRISÉ: Thank you, Mr. Chairman.

Would you define that project at the airport as community solar or large-scale solar?

MS. WEHLE: We are calling it large-scale solar.

COMMISSIONER BRISÉ: Okay. Do you have in mind to look at community solar?

MS. WEHLE: While our next step, as I mentioned, is that 25-megawatt system that we're looking at in southern Hillsborough County, I anticipate that we'll be continuing to look at community solar as an opportunity for the company. We're going to be -- as costs continue to go down, not unlike the other utilities, we're going to be keeping community solar in mind as an opportunity for the company.

COMMISSIONER BRISÉ: Okay. And your presentation didn't talk much about rooftop solar for individual consumers. Can you address that?

MS. WEHLE: Yes, certainly. We have over 700 customers right now that have rooftop solar on their own residences that -- that are interconnected into our grid.

COMMISSIONER BRISÉ: Thank you.

MS. WEHLE: Okay.

CHAIRMAN GRAHAM: Commissioner Brown.

COMMISSIONER BROWN: Thank you. And I'm happy

you highlighted this solar project at TIA. It's generated a lot of support among the community and interest.

I'm curious, under the current contract that you have with TIA, is there an opportunity to expand that PV across other parking garages or other facilities?

MS. WEHLE: While the current lease does not actually have an expansion opportunity -- what I failed to mention was that this is only on one side of the rooftop. So I think that there certainly is an opportunity to expand it to incorporate the entire rooftop of the sixth floor of the garage.

COMMISSIONER BROWN: Do you know how many megawatts that would encompassed?

MS. WEHLE: It would -- it would pretty much be about doubling the size of what we have right now, which is 2 megawatts.

COMMISSIONER BROWN: Thank you. Thank you for your presentation.

MS. WEHLE: Thank you.

CHAIRMAN GRAHAM: Thank you very much.

MS. WEHLE: Okay.

CHAIRMAN GRAHAM: Gulf, welcome.

MS. FITZGERALD: Good afternoon,

Commissioners. Thank you for the opportunity to speak today. My name is Sybelle Fitzgerald. I'm the Gulf Power Renewable and Generation Resource Planning Manager.

Oops. There we go. Sorry about that. I'm going to talk to you today about our portfolio of renewable generation that we have and are planning to install with an emphasis on the projects that we have currently ongoing.

So, first of all, we're planning on adding multiple large-scale solar projects and also a wind energy project, and currently we already have a landfill gas facility and we also have a purchased power agreement with Bay County for an MSW facility.

And the locations of these facilities, as you can see on the slide, the MSW facility is located in Panama City in Bay County. That's an 11-megawatt facility there. And then our first large-scale facility is going to be located at Eglin. That's a 30-megawatt solar facility. And then the second one is going to be at Holley. It is in the Navarre area. It's a 40-megawatt facility. And then in the Pensacola area we have the Saufley Solar Facility, which is going to be 50 megawatts. And then we have our existing Perdido Landfill Gas Facility.

So to go through these solar facilities that we're planning to install as an energy purchase agreement, these are being done in a partnership with our military customers. One project is being done with the Air Force and two is being done with the Navy. So, again, a 30-megawatt, a 40-megawatt, and a 50-megawatt, all as energy purchase agreements. And the term of each of these agreements is 25 years, and the construction is currently on schedule. We've received a lot of permits, we've received -- the transmission study is, the interconnection study is complete. These are all transmission interconnections. One is going to be a 115kV interconnection, the other one is going to be a 230kV interconnection, and one also -- and the other one is also a 115kV interconnection.

We're in the process of almost finalizing the interconnection agreements as well. And the land lease agreements with the military are underway, and we expect to get those executed in the next two to three weeks.

And moving to -- from our solar projects to our wind energy purchase agreement, we have enabled a wind farm to be built near Piedmont, Oklahoma, which is right near Oklahoma City. And that is a 178-megawatt farm. It also is an energy purchase agreement. It's going to be called the Kingfisher Wind Farm. And that

one has 674,000 megawatt hours that's going to be delivered to us. And this is kind of a unique contract as it'll be a fixed energy schedule, so we're guaranteed an output from that -- from the facility and we'll receive the renewable energy credits. That's a 20-year energy purchase agreement, and that facility is expected to be online by the end of this year.

And right now this is a picture of some of the construction that's ongoing. That's the foundation for one of the wind towers. And so foundations are being poured. The transmission line is actually almost 100 percent constructed. The substation is well under its way in construction. And then, like I said, the foundation and the towers are under -- in progress.

Here's just a couple more pictures showing the construction that's ongoing on that site. As you can see, we got one of the wind towers going up, and several other structures are being installed, and then you can see some blades being trucked to the site.

And then just to recap some of our other renewable facilities that Gulf has. The Perdido Landfill facility, which is a 3-megawatt facility, is operating very well. It has a 94 percent capacity factor and has delivered over 119,000 megawatt hours since October 2010.

Our Bay County facility, I think everybody is probably familiar with, is an ongoing purchased power agreement that Gulf has had over the years. We just renewed it under a three-year term. And that one has about a 45 percent capacity factor and is an 11-megawatt facility.

And then the look at what Gulf's mix is as far as renewables to fossil. What we have is -- right now is about .5 percent compared to our fossil generation. And then when we bring on the wind farm, we'll go up to 6.2 percent, and then we bring in the solar, we'll go to 8.1 percent on renewables.

So to summarize, Gulf has a diverse mix of renewable energy resources, and we're going to be up to the 8 percent range in renewables by 2017. And these solar and wind agreements that we're doing have enabled the construction of these farms, and the milestones, significant milestones on both of these projects have been reached.

The construction activities for all three solar sites and for the wind farm are currently on schedule, and the landfill gas and the MSW project facilities continue to produce electrical energy for our customers. Any questions?

CHAIRMAN GRAHAM: Thank you very much for your

presentation. Hold on just a second.

Commissioner Brisé.

COMMISSIONER BRISÉ: Thank you. I try to be consistent. If you can talk to me about what Gulf's plans are for community solar, and then also talk to me about your rooftop solar footprint.

MS. FITZGERALD: Okay. I'll be glad to.

Gulf is currently evaluating community solar. We're looking at, you know, what the -- we want to make sure that we're below our avoided cost and that all the customers, you know, aren't subsidizing other customers that have rooftop solar. So we're looking at various approaches to that mechanism for community solar.

COMMISSIONER BRISÉ: And then the second part of the question, describe to me your rooftop solar footprint.

MS. FITZGERALD: Yes. Rooftop solar, we have a lot of activity in that area with our net metering program. I don't actually handle that program; somebody else does. But we do have a lot of new installations going on rooftops each year. But we stand behind the concept that the large-scale utility solar projects offer a lot more value for our customers in economies of scale.

COMMISSIONER BRISÉ: Thank you.

CHAIRMAN GRAHAM: Any other Commissioners?

Okay. Thank you very much for coming and for your time.

MS. FITZGERALD: Thank you.

CHAIRMAN GRAHAM: All right. We have about -- it looks like about 13 minutes left. OPC, is there somebody from OPC who wants to speak?

MR. REHWINKEL: Thank you, Commissioners. Charles Rehwinkel, Deputy Public Counsel, and I have very brief remarks to make.

Twelve days before this workshop FPL filed a petition to construct a 1,622-megawatt combined cycle unit in Okeechobee County with a commercial operation date projected for the summer of 2019 at the cost of $1.2 billion. In the petition, FPL states that the plant is needed to meet its forecasted demand based on a reserve margin of 20 percent. Without the plant, FPL asserts that the reserve margin will only be 15.7 percent at that time.

OPC would like to take the opportunity at this Ten-Year Site Plan workshop to express a continuing concern that Florida's 20 percent reserve margin may well be out of step with those of the rest of the country, and that the $1.2 billion price tag for this plant is a poignant illustration of the extra cost to

customers of maintaining a reserve margin in excess of the 15 percent reserve margin that the FRCC has indicated is required for the State of Florida.

While it is too late in the context of the statutory and rule time frame allocated to the processing of the Okeechobee need determination to have a meaningful inquiry into the basis underlying the Commission order approving the voluntary stipulation among the utilities that established the current reserve margin 16 years ago, something can be done. However, the Public Counsel suggests it is time now to revisit and reconsider the so-called standard in light of the billions of additional dollars in costs that may well impact Florida customers through the pending Clean Power Plan. And thank you, Commissioners. That's all the remarks we want to make today. If there are any questions, I'm here.

CHAIRMAN GRAHAM: Mr. Rehwinkel, hold on just a second. Any questions?

Okay. I think they're going to leave you alone.

MR. REHWINKEL: Thanks.

CHAIRMAN GRAHAM: Okay. Is there anybody else that needs to or wants to speak today?

MS. GLICKMAN: (Inaudible. Microphone not

on.)

CHAIRMAN GRAHAM: So there's two. Anybody else? Okay. We've got ten minutes left. You guys have got five each.

Who's first?

MS. GLICKMAN: Thank you, Commissioners. Good afternoon. I'm Susan Glickman. I'm the Florida Director of the Southern Alliance for Clean Energy, and I just wanted to tell you that the staff did tell us that we each had ten minutes. So I will try to be as brief as possible, but I did take time to prepare remarks this afternoon.

Southern Alliance for Clean Energy is a non-profit, non-partisan public interest organization that advocates for the low-cost and low-risk resources to meet electricity demand for the benefit of customers. That naturally includes a focus on energy efficiency, helping customers reduce energy -- produce and save them money on their bills, alongside meaningful renewable energy development. The state's power companies are underperforming on both fronts and haphazardly doubling down on natural gas.

Not only is natural gas a fuel with a history of fuel price volatility, our overreliance on natural gas poses numerous complex risks. Given that between

2007 and 2013 our dependence on gas rose from 44 percent to 62 percent statewide, these Ten-Year Site Plans paint an even more frightening scenario for dangerously increasing this overreliance when we have other less costly options. And with the first ever carbon limits in the Clean Power Plan coming down the pike, this problem is very critical to address so we do not go from bad to worse in terms of fuel diversity.

We'll start out with the fact that there are least-cost, least-risk options, particularly energy efficiency. Efficiency can help us meet the demand at a cost -- a fraction of the cost of building these more expensive power plants that are in the Ten-Year Site Plan.

Why is this important? Because it helps customers actually reduce their energy and actually save money on their bills, and that's especially important to low income customers.

Secondly, energy efficiency, just like solar power, has no fuel cost, thereby insulating customers from fuel price spikes and from our state's increasingly reliance on natural gas. Yet the most current conservation goals set by this Commission in the Florida energy efficiency conservation proceeding place Florida almost at the bottom of the barrel for achieving energy

savings on behalf of its consumers. And it must be noted that the dismal energy efficiency goals is part of a pattern established well before this Commission took its place. Lack of actions in proceedings in 2004, 2009, and 2014 bring us to this place.

In fact, Jeb Bush, as DEP noted in their white paper on carbon and climate change science and policy options in 2007, that the PSC set numeric demands and energy goals for seven utilities in 2004 and they were lower than the goals set in 1999. For instance, Florida Power & Light now captures a paltry .03 percent energy savings, making its energy efficiency program almost nonexistent. Especially this hurts lower income customers. They don't have the resources or the information to implement measures on their own. Sadly, the programs approved by this Commission do not reach this community. For example, FPL's low income program reaches less than 1 percent of that community.

And as we watch dramatic droughts in other parts of this country and the world, it must be noted that power plants consume massive amounts of water. In a state like Florida where scarce water resources face competing demands, we ought to be working to find water smart solutions to our energy needs. Yet we see determination of needs flooding -- for new power plants

flooding this Commission, while efficiency and renewables are not on the radar.

Most recently, FPL has petitioned for a 1,600-megawatt gas plant in the northern Everglades ecosystem. And while these projects may maximize shareholder value for the power company, they are not the lowest cost and the lowest risk options for customers.

Likewise, on renewable energy and solar -- and I'd like to welcome my friends at the IOUs to the solar party. It's really terrific to watch them starting to put their toe into the pool here. But, frankly, even with the addition of these new solar projects, we will still trail our neighbors: Georgia, which will have over a thousand megawatts by the end of the year, and North Carolina, which already has over a thousand installed. And for a utility --

CHAIRMAN GRAHAM: You've got a minute left.

MS. GLICKMAN: Yes, sir.

CHAIRMAN GRAHAM: You've got a minute left.

MS. GLICKMAN: Excuse me?

CHAIRMAN GRAHAM: One minute left.

MS. GLICKMAN: Okay. Thank you. For these utility-scale projects, we do recommend that we have best practices and a meaningful competition for the

solicitation process to ensure the most cost-effective outcome for customers. And despite the sharp decline in costs that other people have recognized, the lack of willingness on the part of policymakers in Florida to allow solar power to flourish in the Sunshine State has been a major drive in Floridians for Solar Choice, an effort to take to the ballot an initiative to open up the third-party sale of electricity. And as you all know, we're only one of four states that has this prohibition. The costs have come down tremendously.

The Great Bay Distributor in my community, he put up a megawatt-and-a-half of solar. It has a six-year ROI. And in Orlando and the Winter Park area, they do have a variation of community solar project with a negotiated price that's going for $1.80 a watt. So this is happening. And we would like to see the Commission -- and while some of the utility companies and others argue about cost shifting, it was just a couple of weeks ago that you all oversaw what would have to be the greatest cross-subsidization possible in the nuclear cost recovery. So some of the same people and some of the same groups that are concerned about cross-subsidization for 8,500 solar customers on a 9 million customer base, which is actually laughable --

CHAIRMAN GRAHAM: Ms. Glickman --

MS. GLICKMAN: -- we would like to see those same people stand up and talk about the cross-subsidization happening with the nuclear cost recovery, because you simply cannot have it both ways.

CHAIRMAN GRAHAM: Thank you. And if you have prepared statements, you can drop that off to my office, and I'll make sure the rest of the Commissioners all get it.

MS. GLICKMAN: Yes, we will. I just wanted to reiterate we were told we had ten minutes each, so that's what I was prepared for.

CHAIRMAN GRAHAM: Okay. I apologize -- I apologize if you were misinformed.

MS. GLICKMAN: We were.

CHAIRMAN GRAHAM: Thank you.

MS. CSANK: Good afternoon, Commissioners.

CHAIRMAN GRAHAM: Good afternoon.

MS. CSANK: Mr. Chairman, my name is Diana Csank. I am here on behalf of Sierra Club. And we would like to thank the Commission for holding this workshop. It is hugely important to give the public an opportunity to engage.

There's a saying that an ounce of prevention is worth a pound of cure, and, you know, that's what planning is all about. It's about looking at what's

coming and taking these prevention measures to protect Florida's electric customers.

I will try to keep my remarks short and add to what's already been said here by Susan and others. So the top line that Sierra Club urges the Commission to take note of is that there is an opportunity in this ten-year site planning process to collect more information, to make this planning process more meaningful going forward. And in particular, I will go over some relevant market trends, highlighting some of what's been said before that can be helpful here, highlighting the most important information that's missing from the 2015 plans, and finally underscoring how to get and use that missing information.

So as we've heard, solar -- the economics of clean energy are terrific and they continue to be terrific. Solar in particular is at a tipping point. You heard FPL pronounce that the tipping point occurs at 50 megawatts. And I'm not here to tell you that utility-scale or small-scale solar is an either/or question, as Commissioner Edgar put it. Sierra Club looks forward to adding as much solar to Florida's grid because it is a cost-saving resource that makes a whole lot of sense, especially with respect to our natural gas overreliance problem.

And I do want to underscore that in contrast to that 50-megawatt suggestion, you do see here in Florida the Orlando Utility Commission successfully announcing a deal earlier this summer saying that the tipping point is actually available with projects that are as little as 13 megawatts. So, again, I don't want us to unduly focus on the scale of the solar, but to recognize that solar across the board is a great opportunity for Florida. And that, you know, whereas certainly you can add a lot of megawatts if you go large scale, rooftop has its benefits too. And we thank the Commission for opening that solar comment period. And, you know, there's a lot of material submitted there that highlights the various benefits associated with various sides of solar projects.

Next, I do want to highlight the economics of wind. As you heard, Gulf Power successfully added 178 megawatts. That's firm capacity. But Florida is in a position to access a whole lot more clean, cost-effective wind power. You may have heard of the high voltage transmission line that's being built, the plans in Eastern Clean Line, that will be able to deliver 3.5 gigawatts of wind capacity to the southeast region for five, six, seven cents per kilowatt hour. So that's a huge opportunity and one that we encourage the

Commission and staff to explore further with the utilities.

And another thing in terms of global market trends with the EPA's Clean Power Plan and a host of other regulations, it's pretty clear that coal is tanking. Coal mining bankruptcies are all over the news. There's virtually no new coal being built anywhere in the U.S., and utilities everywhere are phasing out of their coal plants in favor of better alternatives. And I want to highlight that Florida in particular, here in state we have over 9 gigawatts of vulnerable coal, and nowhere in the plans is the Commission afforded an opportunity to really understand the costly retrofits that the coal fleet in Florida faces.

And, in particular, I want to underscore the effluent limitation guidelines that the EPA will be issuing later this month. There are, again, over a dozen coal plants here in Florida that will have to comply with that rule, for example, within the next ten years.

CHAIRMAN GRAHAM: One minute left.

MS. CSANK: Okay. Similarly, there will be new smog -- in other words, ground level ozone pollution controls that are coming out also in a matter of weeks,

and those too will have implications for Florida's coal plants. There are a number of plants, at least three that lack modern smog controls. Again, air pollution controls, water pollution controls, that as the Commission engages in this Clean Power Plan implementation process in particular, and as the FRCC noted, for example, in -- next fall, within a year, Florida's initial submission to the EPA of how it's going to comply with that regulation will be due. And at that time, rather than point to a particular coal plant and rely on it and think that it will be here to serve Florida's customers for the next decade, but then five years later find out that it has costly coal ash storage issues to deal with, cooling towers that it lacks, other retrofits that are coming down the pike, and rather than going into those types of scenarios with the blinders on, now is the opportunity.

And I guess I'll just add also that I have asked staff to share the data requests. So not only am I saying that the plans lack this kind of information that's readily available, but utilities, certainly the sophisticated IOUs are capable of projecting and estimating and starting to quantify this risk and inform you all so that you can oversee successfully the electric sector here in Florida. But also in staff's

data request, though, they asked and nudged the utilities to provide this type of data. It wasn't provided. And as we discussed with staff in advance, Sierra Club looks forward to both answering your questions now, but also providing written comments to further expand on these points.

CHAIRMAN GRAHAM: I thank you very much, and I apologize, like I said, if there was any disconnect from your presentation here.

Please, if you have a printed presentation, if you'll give it to staff, I'll make sure that everybody else gets it. I appreciate everything that Sierra Club has done. I've had a relationship with Sierra Club for years and years back in my days in Jacksonville. So I apologize.

Staff, is there anything we need to do to wrap this up?

MS. AMES: No, sir.

CHAIRMAN GRAHAM: Okay. I do appreciate everybody being here, and we are adjourned.

(Workshop adjourned at 3:03 p.m.)

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

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

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

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

DATED THIS 21st day of September, 2015.

LINDA BOLES, CRR, RPR
FPSC Official Hearings Reporter
(850) 413-6734

Florida Public Service Commission
2015 Ten-Year Site Plan Workshop
FRCC Presentation

Stacy Dochoda
President and CEO

September 15, 2015

Agenda

Executive Summary

FRCC Load & Resource Plan

- Load Forecast, Demand Side Management (DSM), Generation Additions, and Reserve Margins
- Fuel Mix and Renewable Resources
- Clean Power Plan

FRCC Fuel Reliability

- Natural Gas Infrastructure in Florida
- Natural Gas Storage Outside Florida

Physical Security of Infrastructure

- Physical Security Reliability Standard
- Geomagnetic Reliability Standard

Florida Reliability Coordinating Council

To promote and assure the reliability
of the bulk power system in peninsular Florida

Executive Summary

- Based on 2015 TYSP, planned Reserve Margins > 20%
  - Demand Side Management is projected to be a significant component of projected reserves
  - Renewables are 5,127 GWh (2%) of energy served by 2024
  - Energy production from natural gas expected to increase 18.8% by 2024

Executive Summary

(Continued)

- EPA Clean Power Plan (CPP) effects in future TYSP
- FRCC members to implement the Geomagnetic Disturbance (GMD) Reliability Standard
- Physical threat analysis and entity security plans should be complete by late 2016

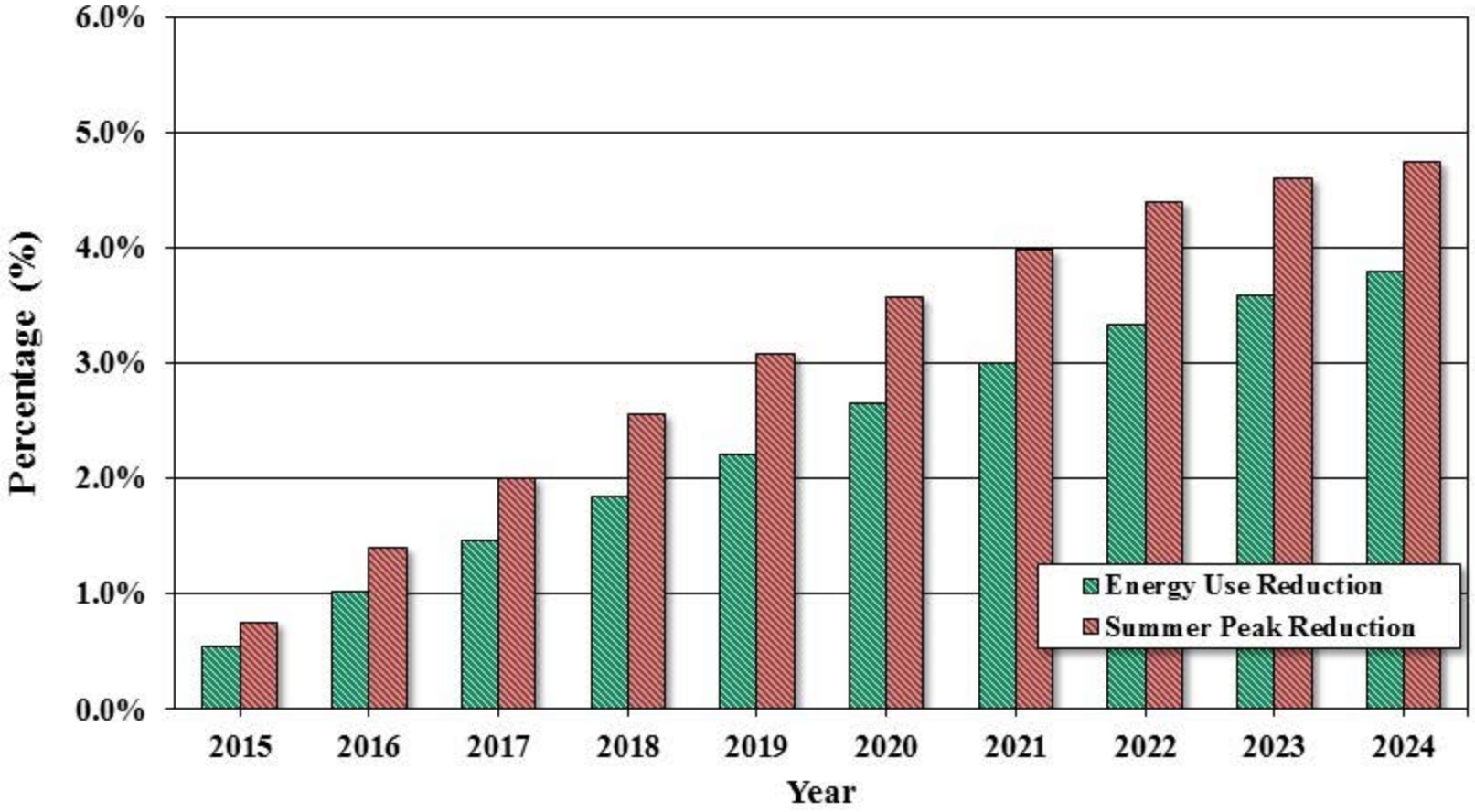
FRCC
Load & Resource
Plan

Load Forecast Factors

- Florida unemployment (actual) continues to decrease
- Population continues to pick up momentum
- Actual employment growth remains healthy, but wage and income growth have not kept pace
- Increasing impacts from codes and standards and also from customer-owned distributed generation (solar)
- Forecasted energy sales and firm peak demands are lower in 2015 TYSP compared to 2014 TYSP

FRCC Load Forecast

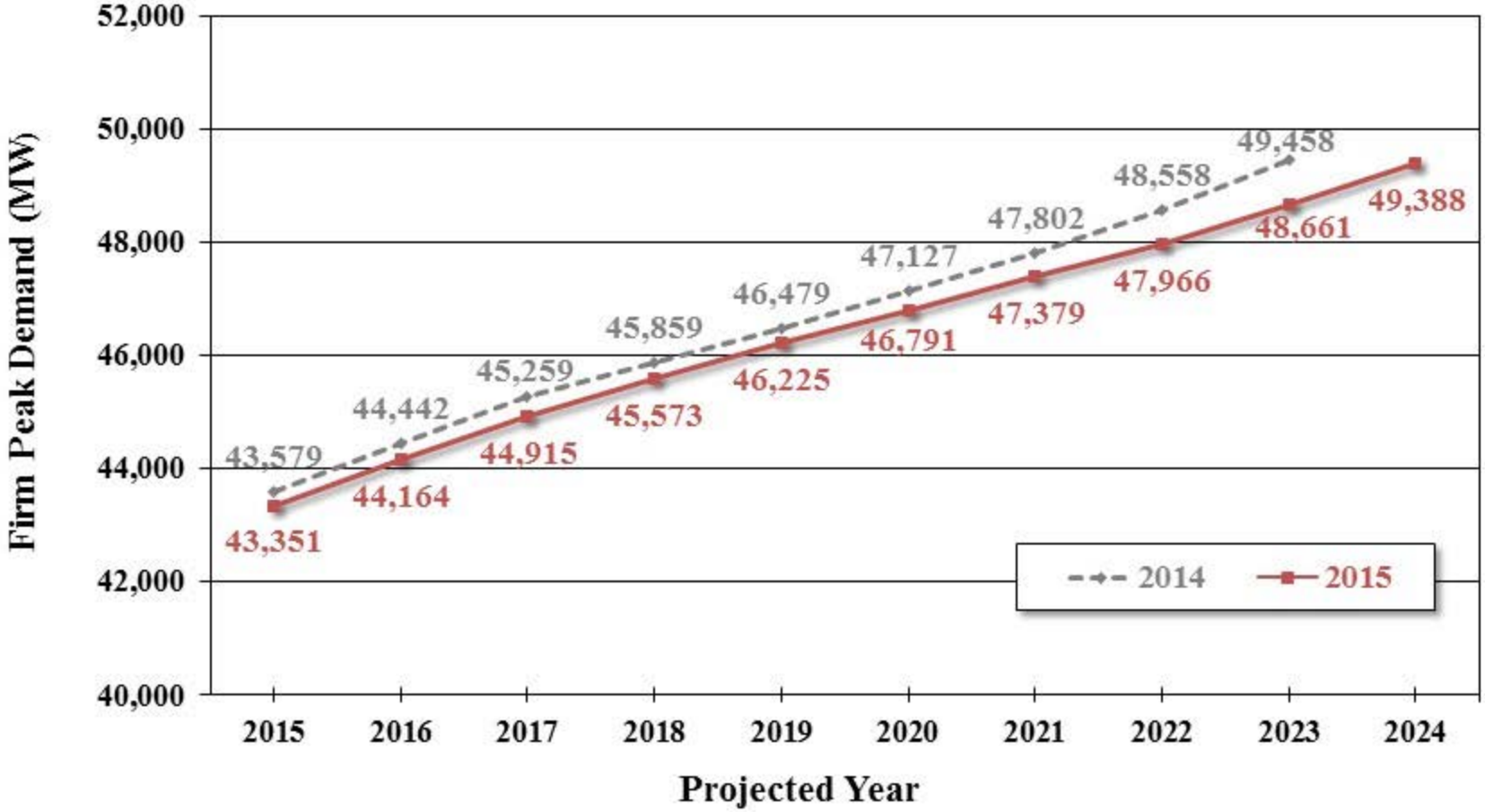
Impacts of Energy Efficiency Codes and Standards[1/2]



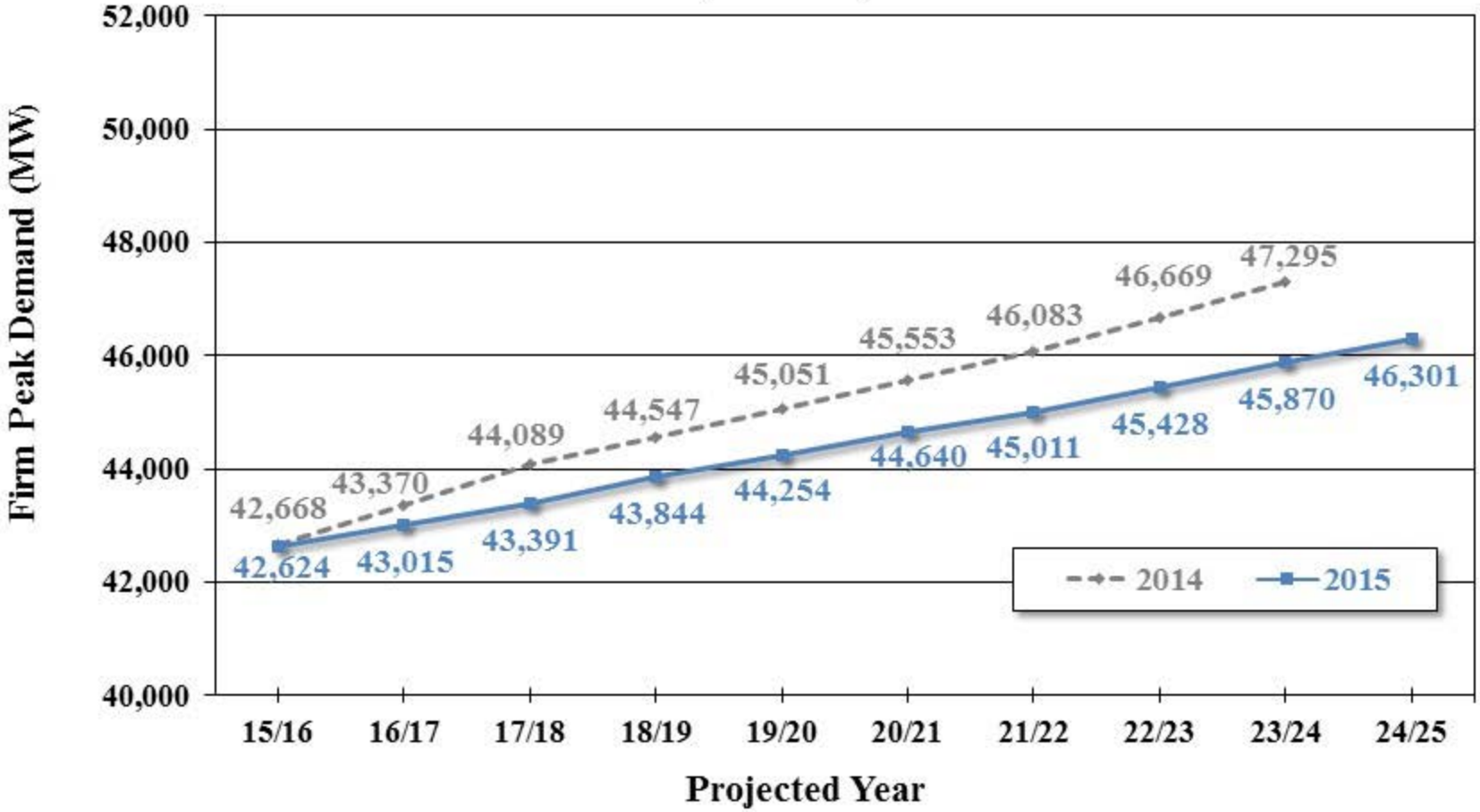
[1/] Only some utilities were able to quantify the incremental (2015-on) impacts of Energy Efficiency codes and standards. These impacts were compared against peak and NEL for all utilities and therefore understates the full impact of code and standards.

[2/] Data and charts shown after this slide include the projected impacts of Energy Efficiency codes and standards.

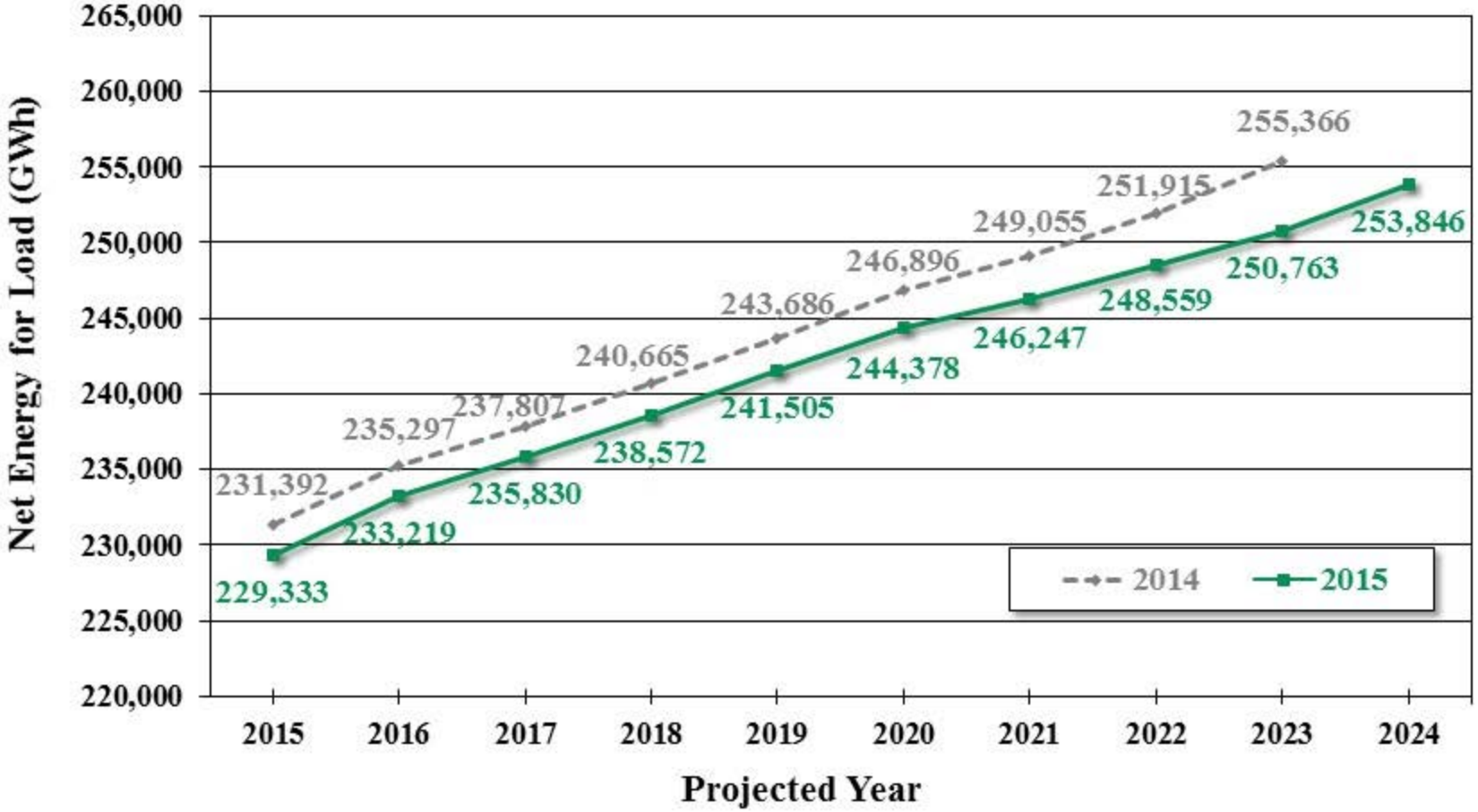
Comparison of 2014 vs. 2015
FRCC Firm Peak Demand Forecast
(Summer)



Comparison of 2014 vs. 2015
FRCC Firm Peak Demand Forecast
(Winter)

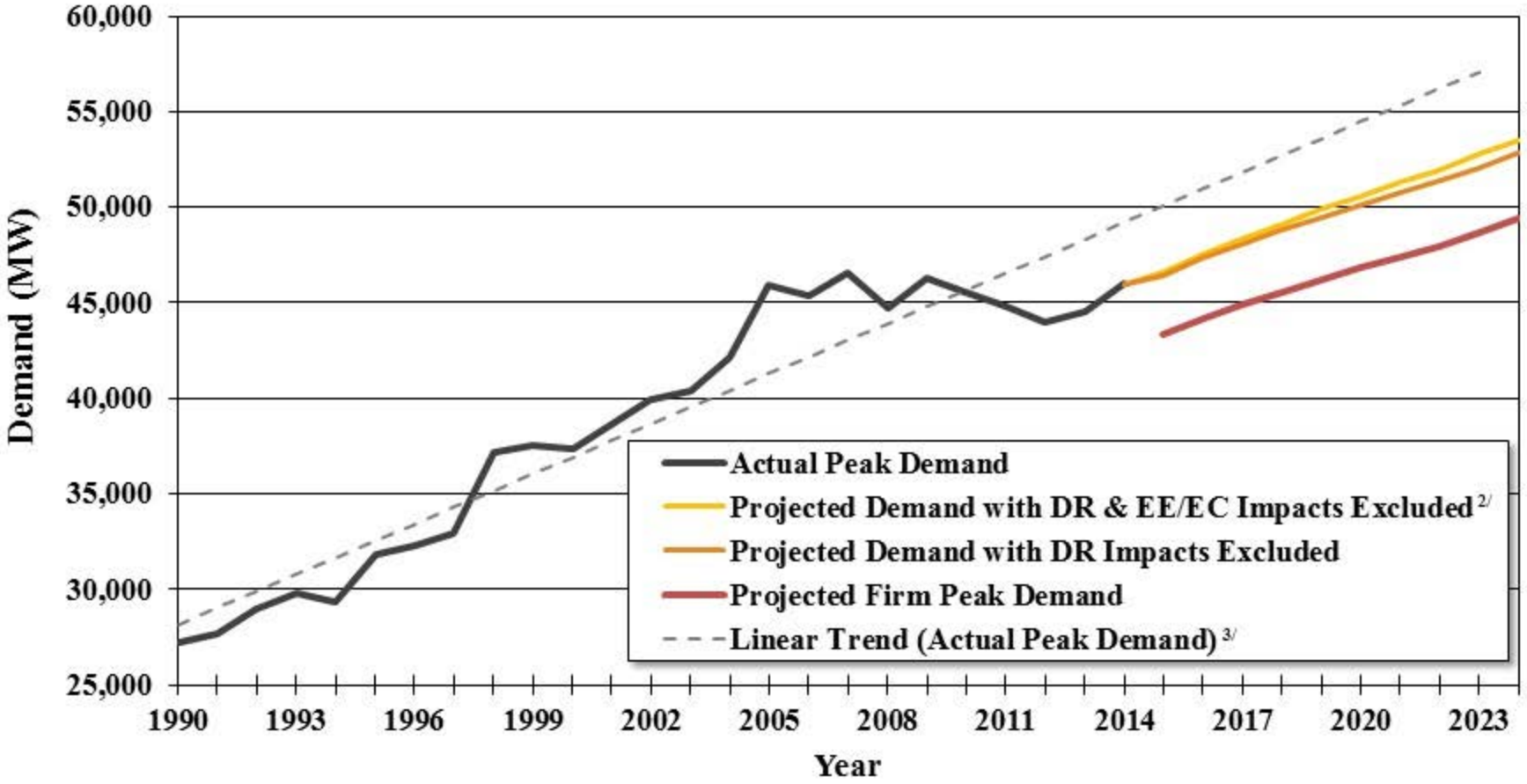


Comparison of 2014 vs. 2015
FRCC Net Energy for Load Forecast



FRCC Summer Peak Demands

Actual and Forecasted[1/]



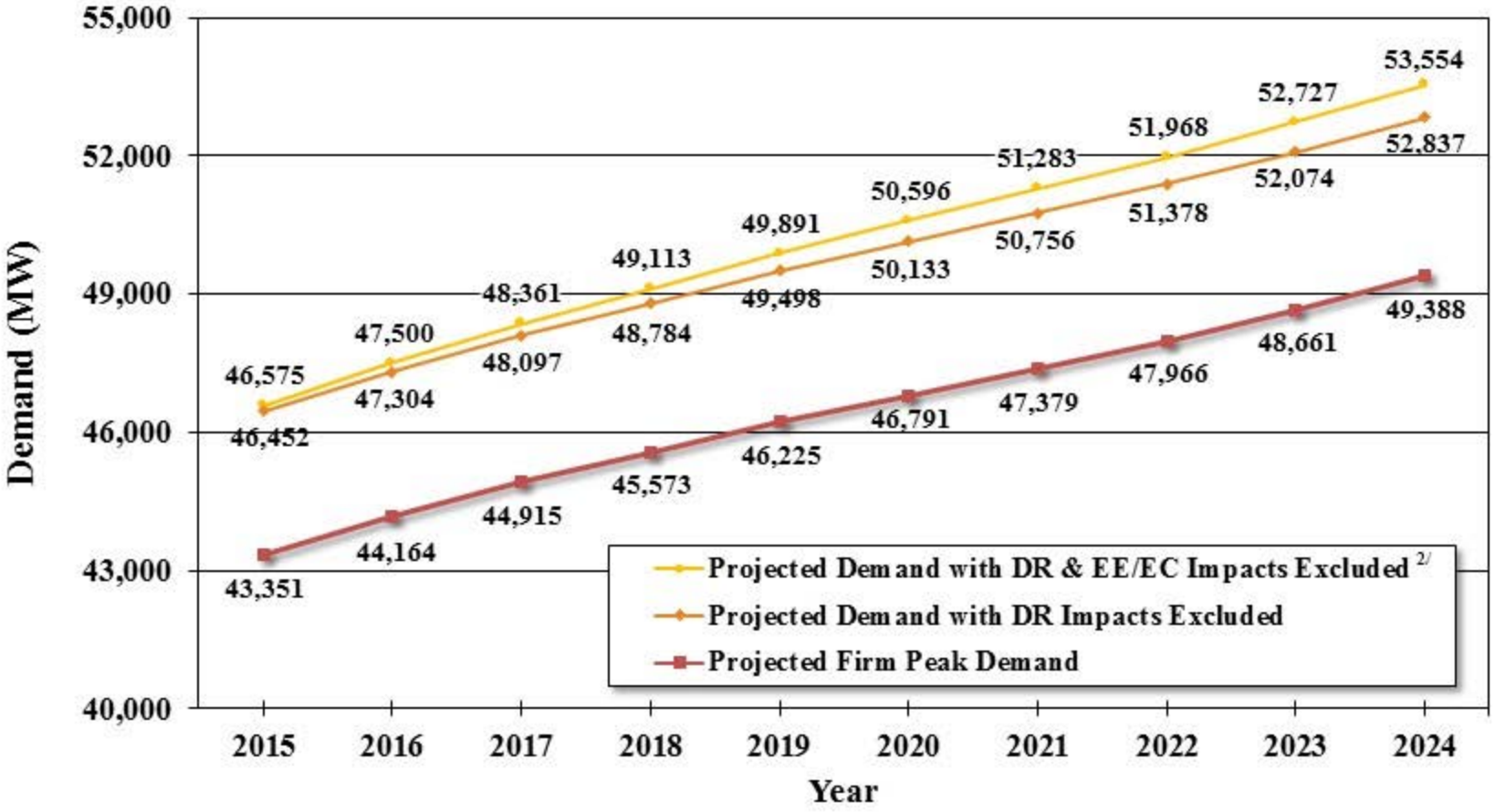
1/ Projected impacts of Energy Efficiency codes and standards are included in all projections.

2/ Impacts from cumulative Demand Response (DR) and incremental (2015-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

3/ Linear trend based on actual peak demand from 1990 to 2014.

FRCC Demand Forecast[1/]

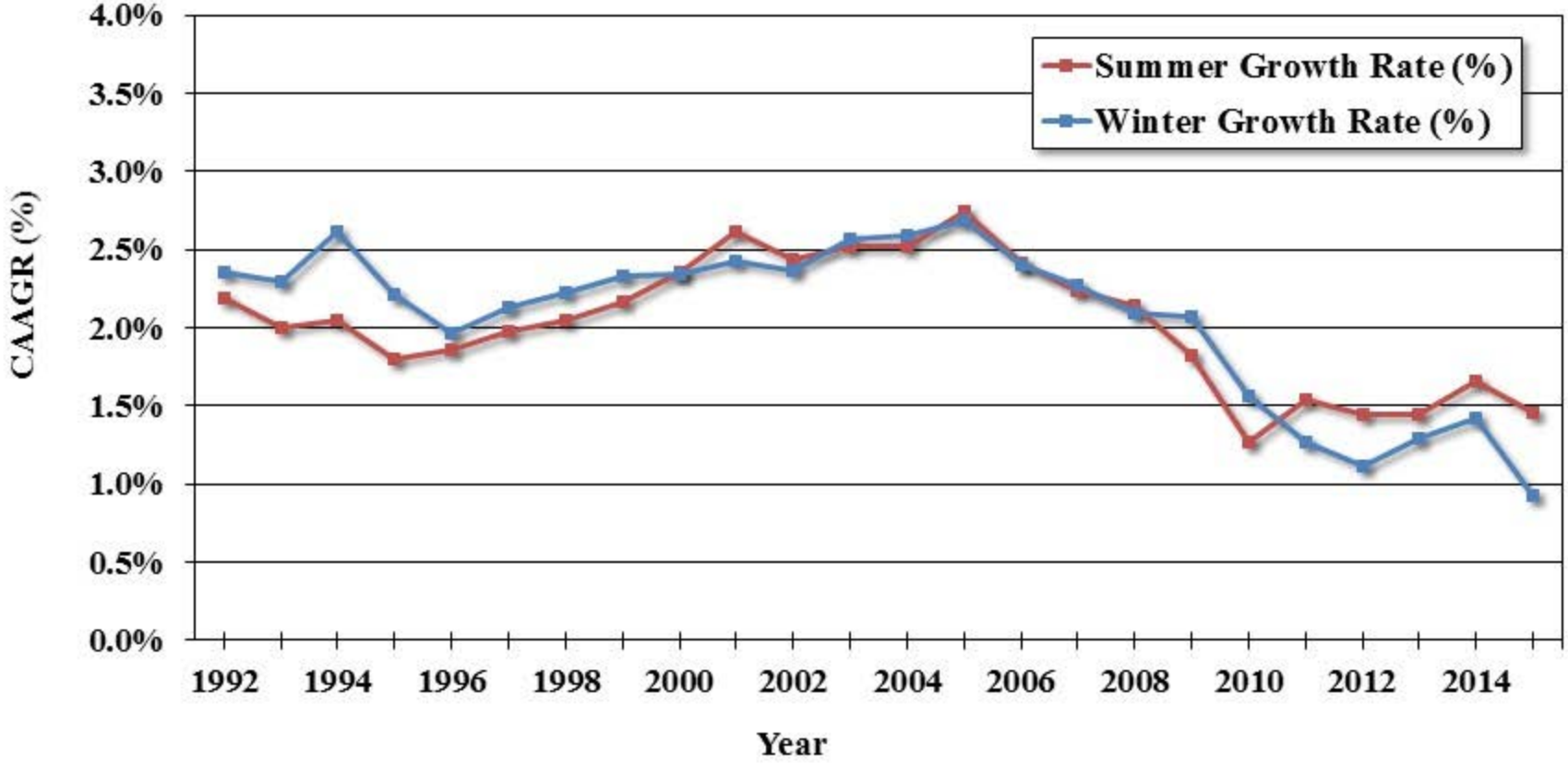
(Summer)



1/ Projected impacts of Energy Efficiency codes and standards are included in all projections.

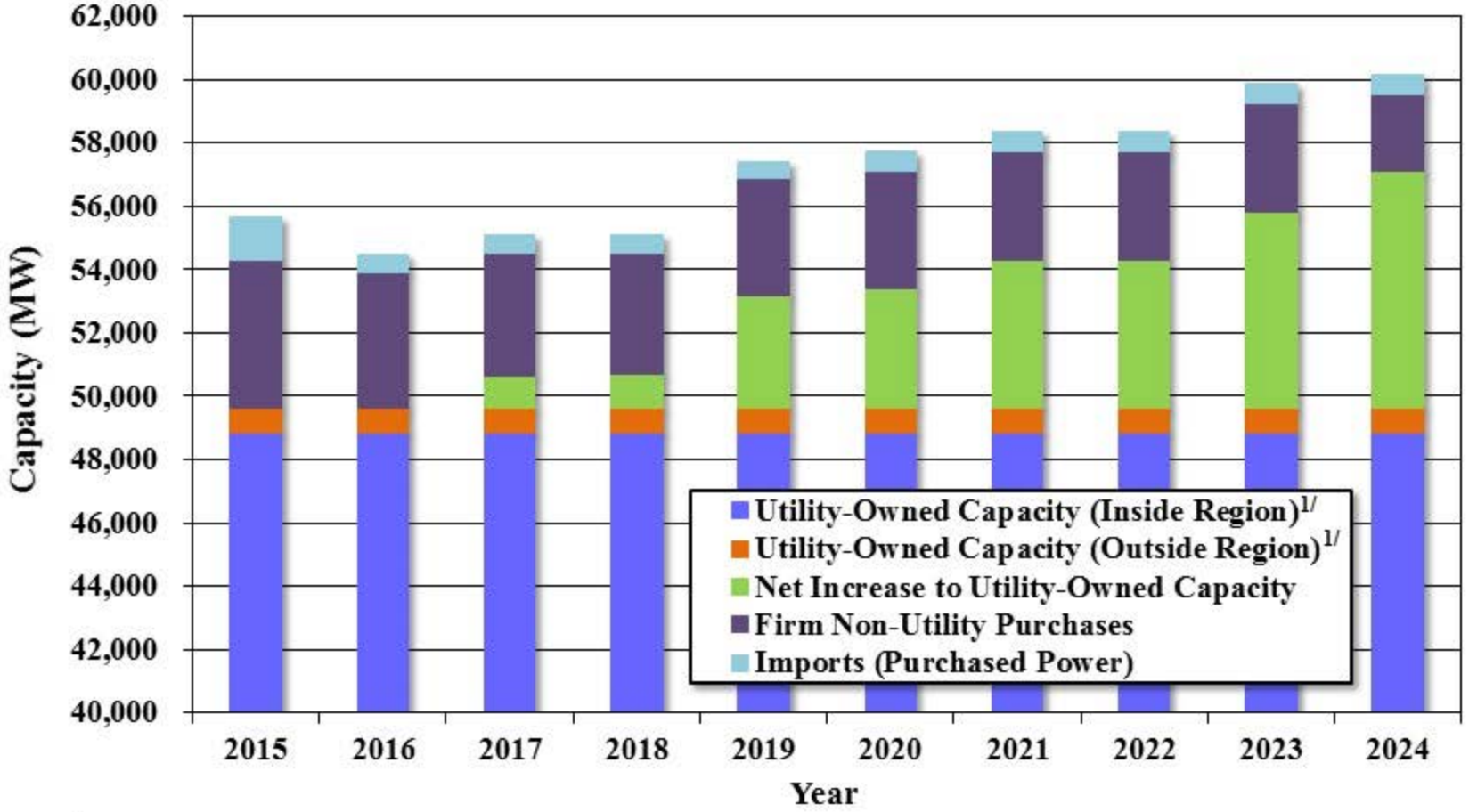
2/ Impacts from cumulative Demand Response (DR) and incremental (2015-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

FRCC Region
Compound Average Annual Growth Rate[1/]
for Firm Peak Load (MW)



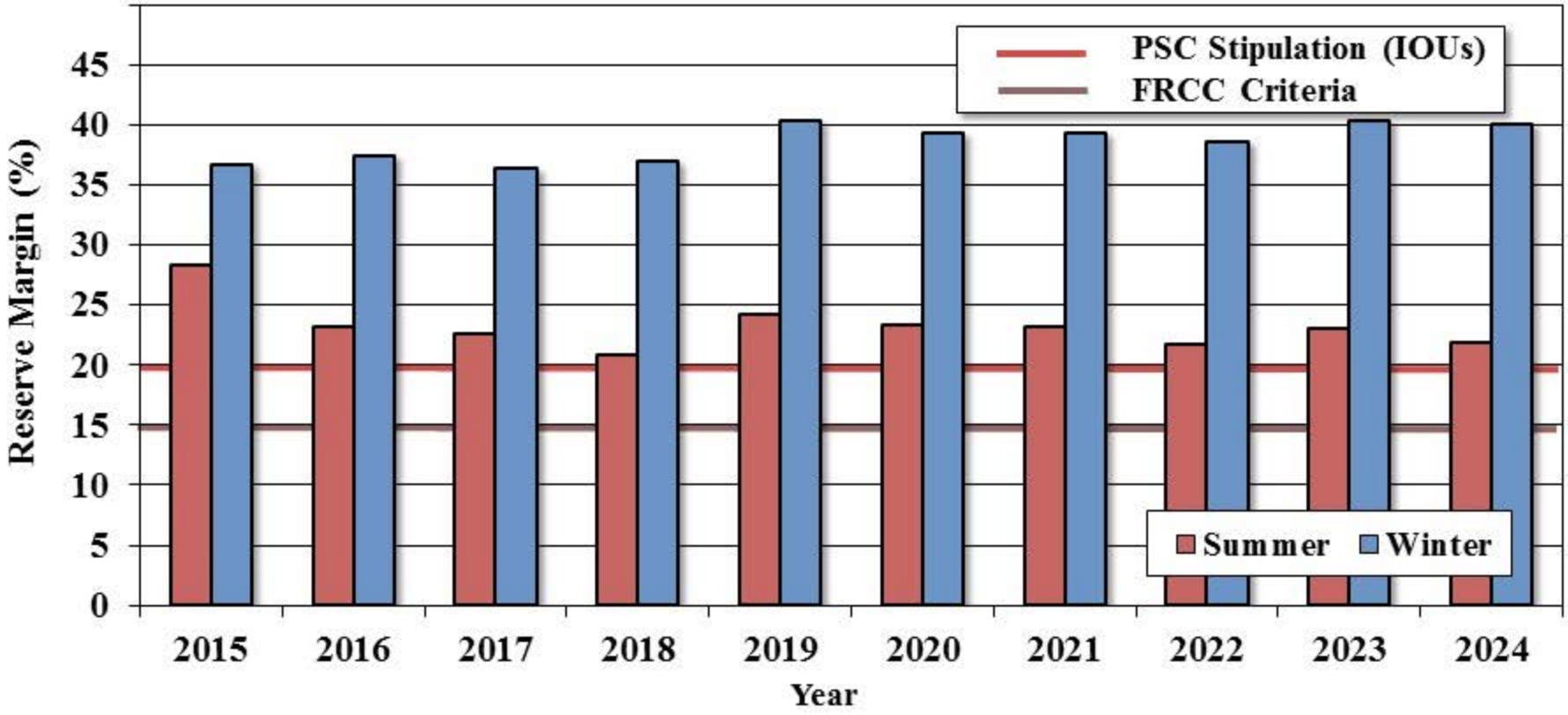
[1/]Projected growth rate from prior forecasts

Load & Resource Plan
Total Available Capacity
(Summer)

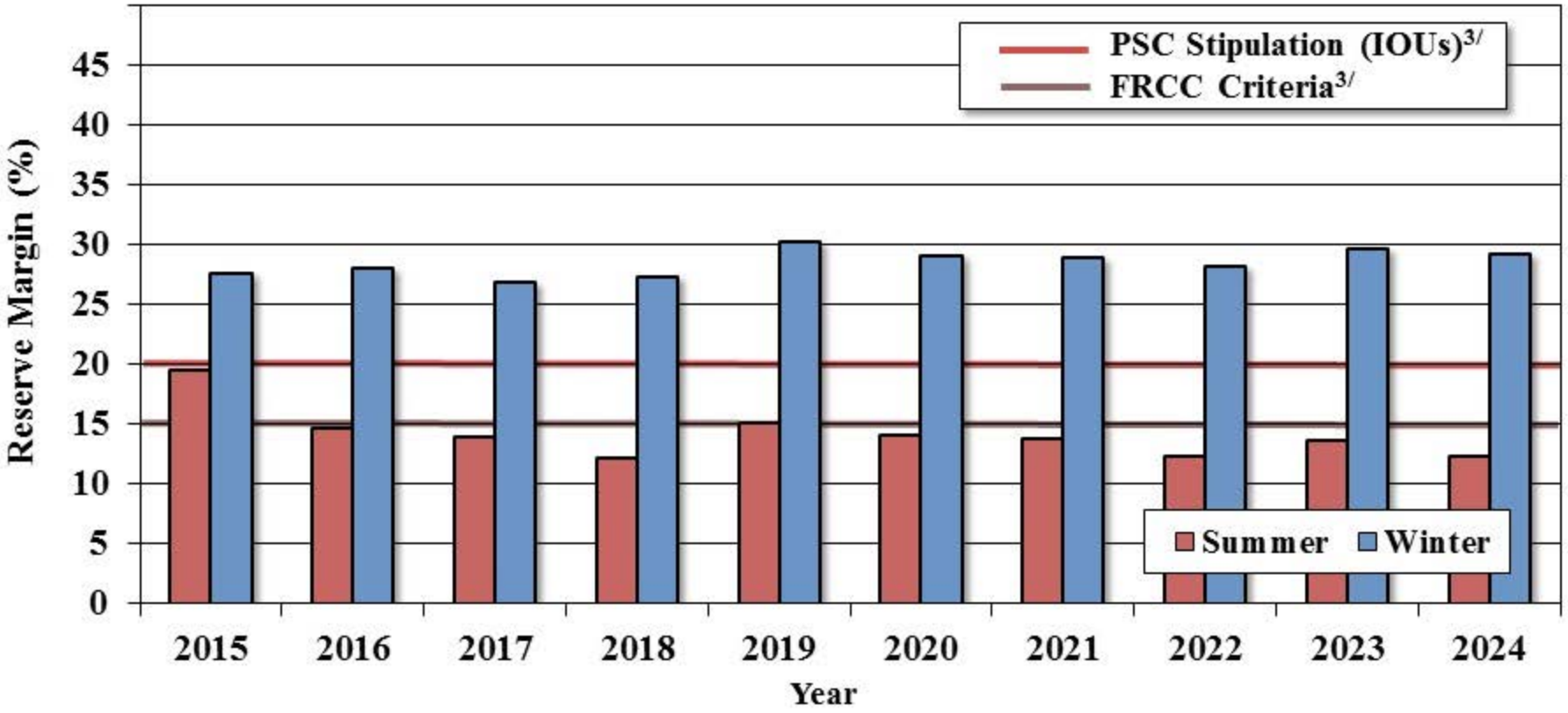


1/Existing generation as of December 31, 2014

Load & Resource Plan
FRCC Planned Reserve Margin
(Based on Firm Load)



Load & Resource Plan
FRCC Planned Reserve Margin[1/]
(Excluding projected DR and EE/EC Impacts)[2/]



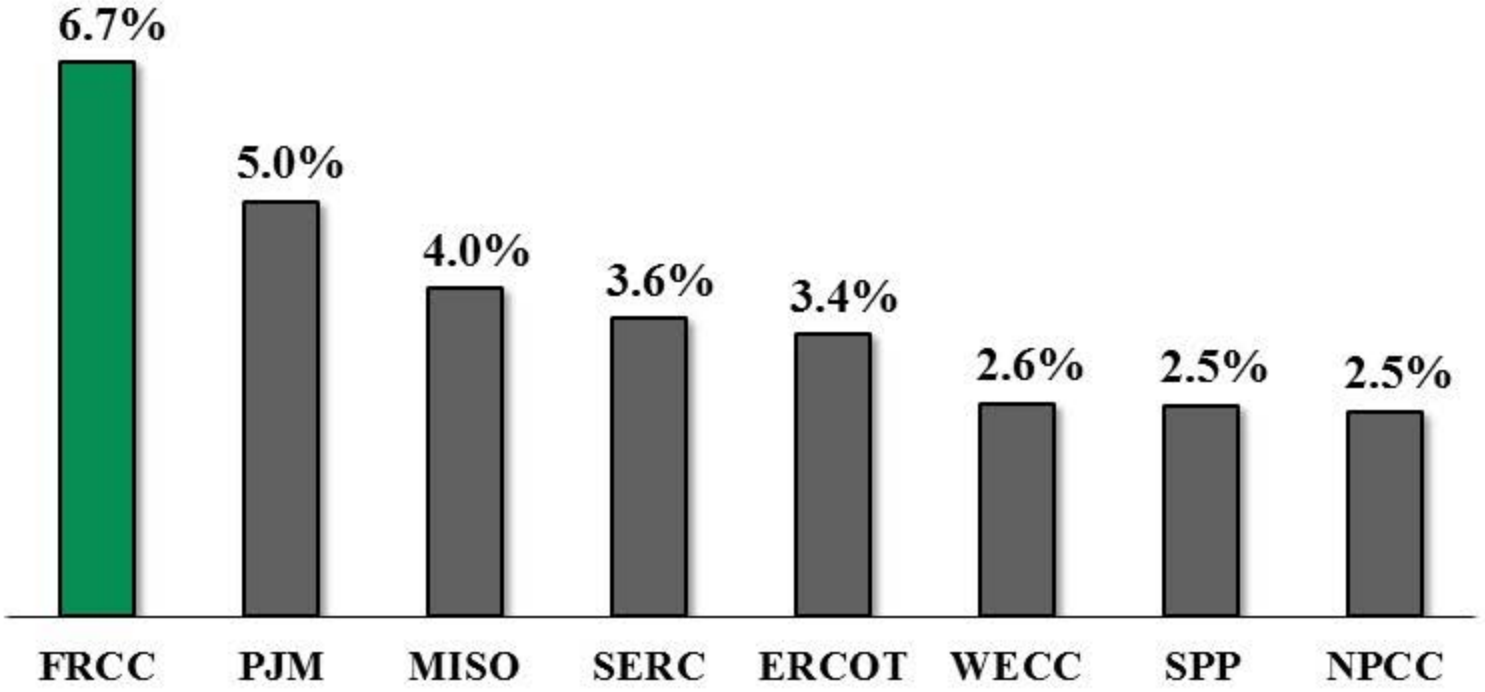
[1/] Projected impacts of Energy Efficiency codes and standards are included in all projections.

[2/] Impacts from cumulative Demand Response (DR) and incremental (2015-on) utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

[3/] PSC stipulation and FRCC criteria are based on firm load as per slide 16. The values shown on this slide are solely for illustrative purposes.

Load & Resource Plan
Demand Response as a Percentage of Peak Demand

Summer 2015



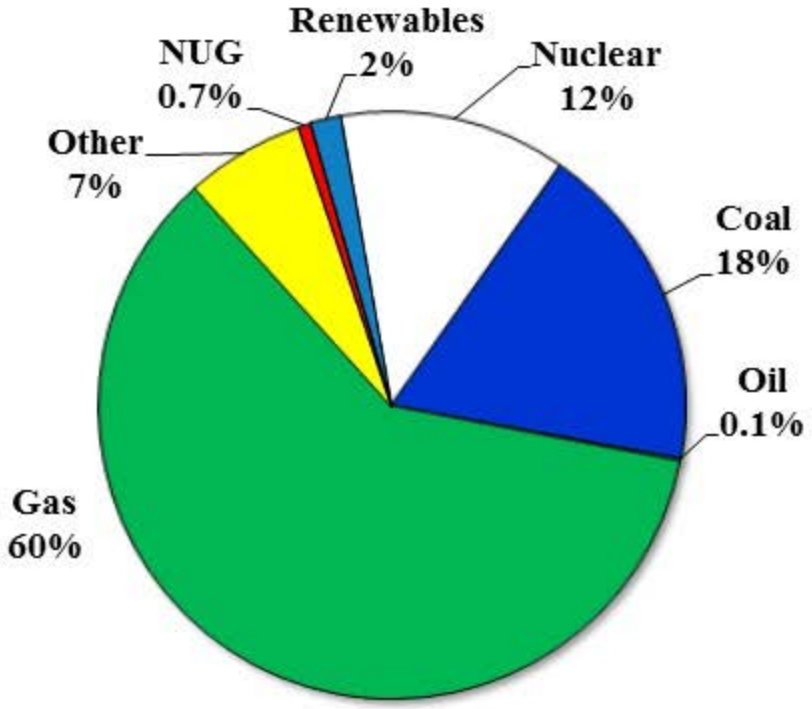
Source: NERC's 2015 Summer Reliability Assessment
(http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2015_Summer_Reliability_Assessment.pdf)

FRCC Reliability Assessment
Reserve Margin Review

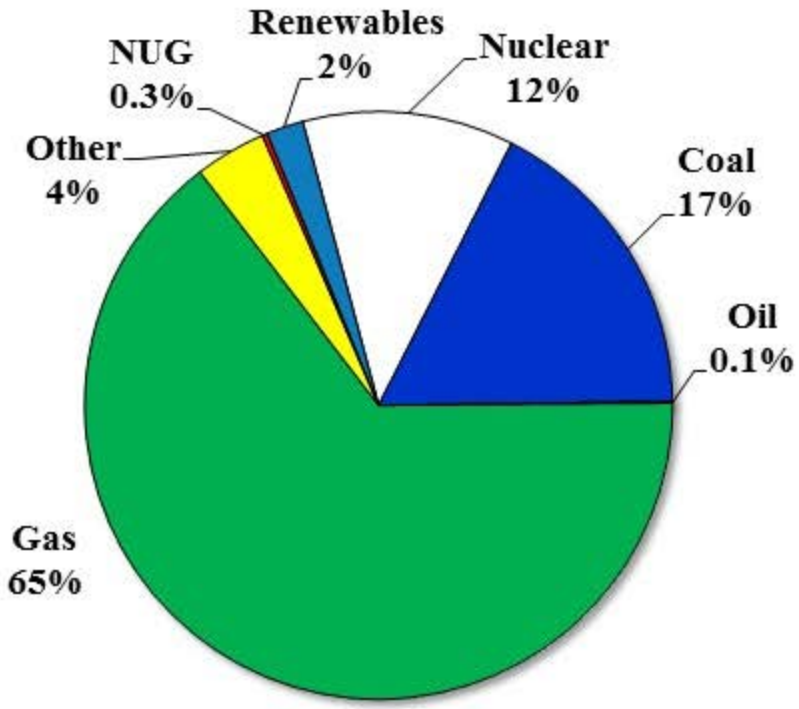
- Based on 2015 TYSP, planned Reserve Margins expected to be greater than 20%
  - Demand Response reduces summer peak (MW) by 6.6% on average throughout the 10-year horizon; FRCC has highest amount of DR as a percentage of peak load
  - Utility-sponsored Energy Efficiency/Energy Conservation programs reduce summer peak (MW) by 1.4% by 2024
  - Additional Energy Efficiency delivered through mandated codes and standards reduces summer peak (MW) by at least 4.7% by 2024

Fuel Mix (Energy)

Net Energy for Load (GWh)



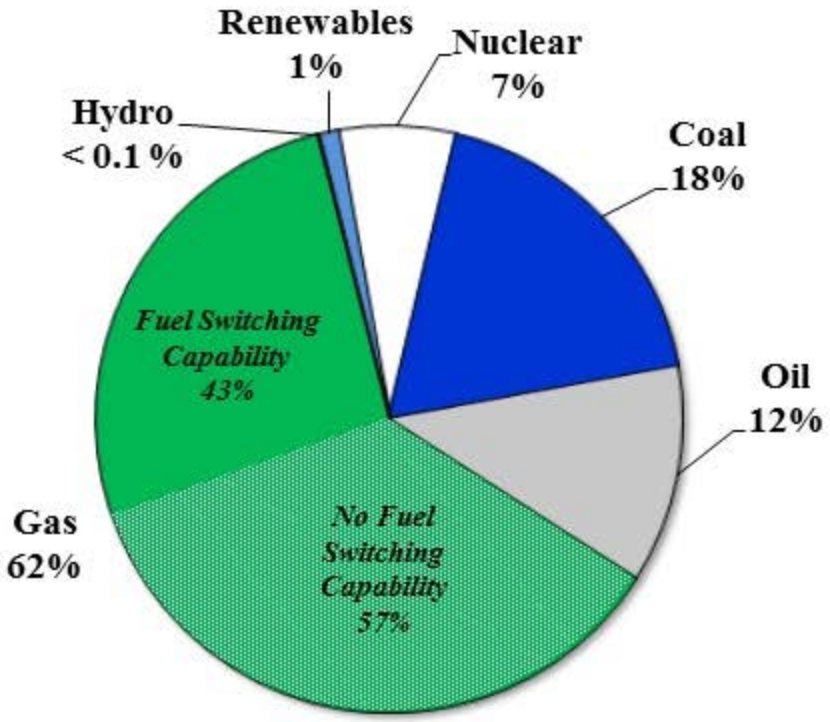
2015
229,333 GWh



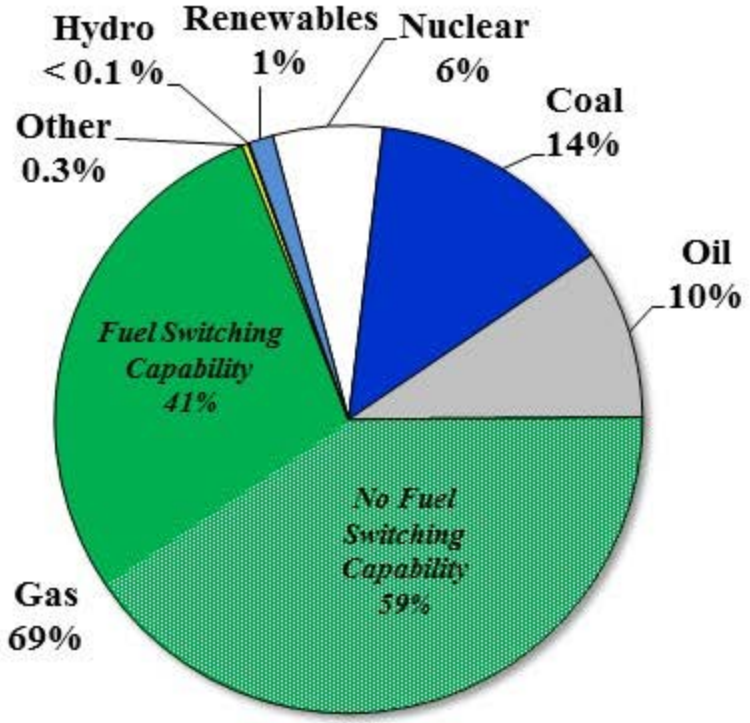
2024
253,846 GWh

Fuel Mix (Capacity)

Summer Capacity[1/] (MW)



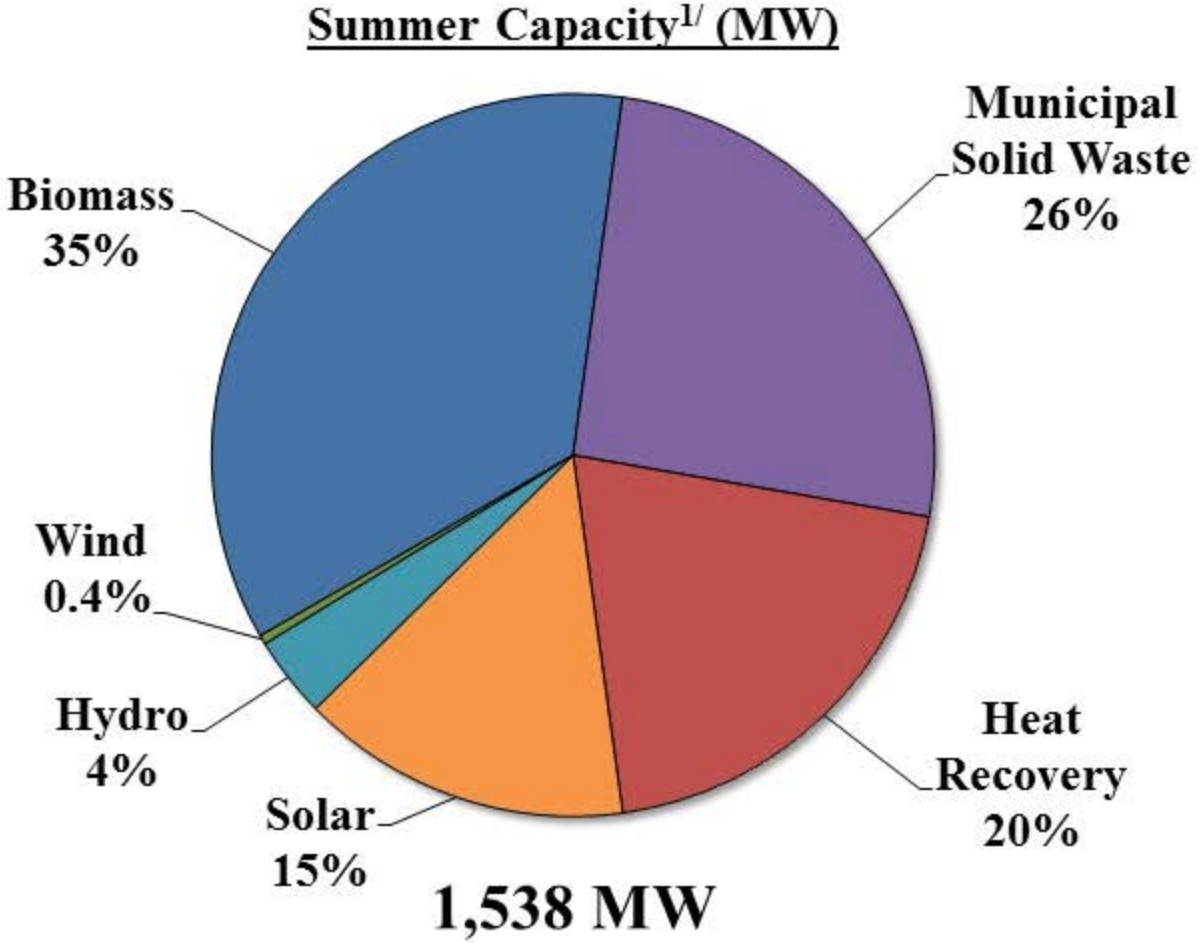
2015
55,663 MW



2024
60,173 MW

[1/] Only accounts for firm capacity

2015 Existing Renewable Resource Capacity



[1/] Contains non-TYSP data that includes both Firm (contracted) and Non-Firm Capacity in the FRCC region

Renewables Forecast [1/]

Existing Renewables Capacity	1,538 MW
Planned Additions (through 2024)	
Biomass	285 MW
Municipal Solid Waste	70 MW
Solar	1059 MW
TOTAL	~ 1414 MW

[1/] Contains non-TYSP data that includes both Firm (contracted) and Non-Firm Capacity in the FRCC region

Nuclear Outlook

Existing[1/] Nuclear Capacity (Summer)

St. Lucie 1	981 MW
St. Lucie 2	987 MW
Turkey Point 3	811 MW
Turkey Point 4	821 MW
	3,600 MW

Planned Nuclear Capacity (Summer)

Turkey Point 3 Upgrade (6/2018)	20 MW
Turkey Point 4 Upgrade (1/2019)	20 MW
	40 MW

[1/] Existing capacity as of December 31, 2014

Clean Power Plan

- Final Rule - Interim compliance moved to 2022
- State implementation plans by August 31, 2016
- Reliability Safety Valve
- Future FRCC Assessment plans
  - Individual entities develop resource plan to comply with CPP
  - FRCC to assess aggregated entity plans from a transmission perspective

FRCC Load & Resource Plan: Conclusion

- Based on the 2015 TYSP, the FRCC Region is projected to have adequate total planned reserves over the ten year period
- DSM, both through utility-sponsored programs and mandated codes and standards, is projected to be a significant component of projected reserves
- Natural gas energy production to increase 18.8% by 2024
- Renewables are 2% of the energy served by 2024

FRCC
Fuel
Reliability

2015 FRCC Fuel Reliability

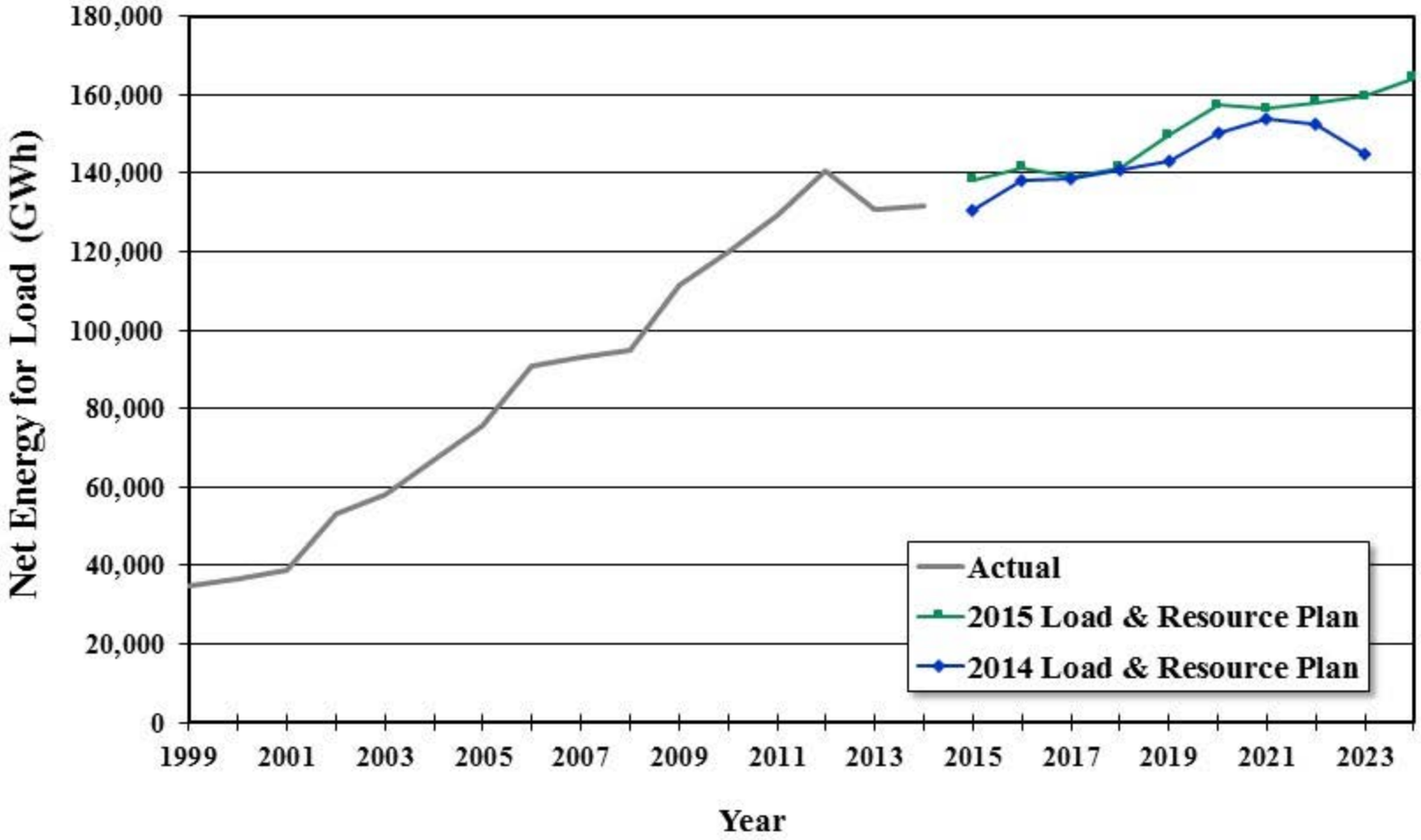
- Fuel Reliability Working Group (FRWG)
  - Reviews existing interdependencies of fuel availability and electric reliability
  - Coordinate regional responses to fuel issues and emergencies

Natural Gas Storage Outside of Florida

- 2004/2005 – Seven major hurricanes in the Gulf
- No ability to store NG in the state of Florida
- Florida utilities have contracts with NG storage facilities out of state
  - Currently have rights to approximately 8.4 Bcf of NG storage which can generate 829 GWh of energy
  - Able to withdraw approximately 0.85 Bcf per day which can generate 83 GWh per day

[1/] Data conversions were based on Energy Information Administration's average operating heat rate and average quality of fossil fuel receipts for natural gas units (http://www.eia.gov/tools/faqs/faq.cfm?id=667&t=2)

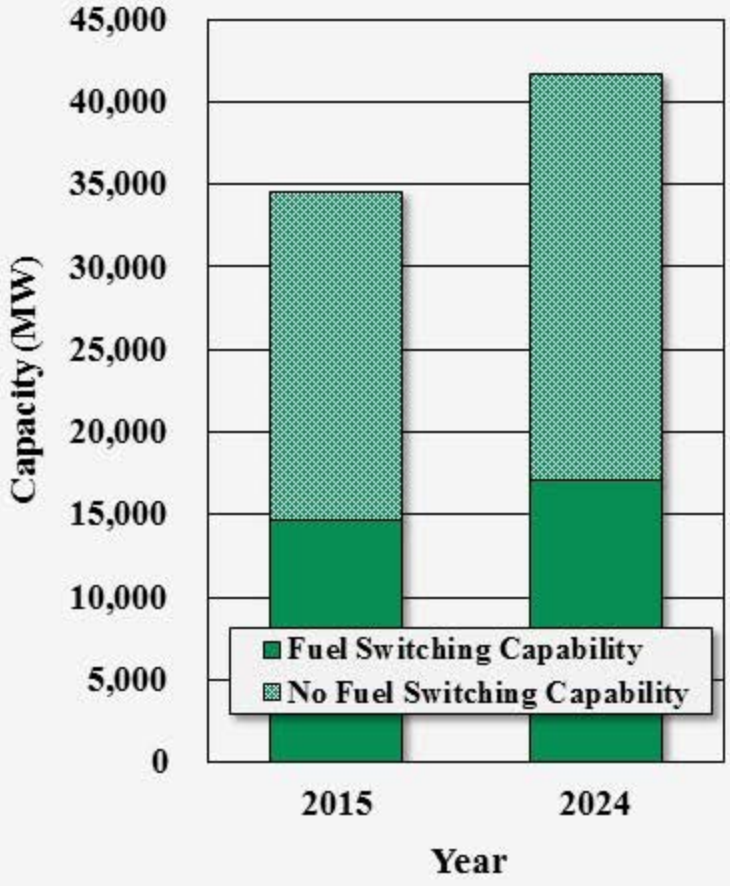
Energy Production from Natural Gas[1/]



[1/] Extended nuclear outages for uprate work resulted in higher gas usage in 2012

Natural Gas Dual Fuel Capability

Summer Capacity (MW)



	2015	2024
Fuel Switching Capability (MW)	14,699	17,143
No Fuel Switching Capability (MW)	19,797	24,509
Total Natural Gas Capability (MW)	**34,496**	**41,652**

Third Gas Pipeline

(Expected In-Service Date: May 2017)

Sabal Trail Project

Florida Southeast Connection

Fuel Reliability Conclusions

- Florida has existing and planned gas pipeline capacity adequate to support state electric generation
- NG storage outside of Florida provides significant additional redundancy against production interruption
- Electric generation with dual fuel capability provides operating flexibility when NG supplies become limited due to unforeseen events
- Third gas pipeline is under development and will provide important increase in supply diversity, capacity and reliability

FRCC
Florida Reliability Coordinating Council

Physical Security of Infrastructure

Why is GMD Important to the Electric Industry?

- Geomagnetic Disturbance (GMD) events may cause operational issues:
  - Misoperation(s) of protective systems
  - Equipment damage
  - Voltage collapse
- GMD historically has been a concern in northern latitudes; no known impacts in Florida

GMD Reliability Standard
Introduction

FERC issued order 779 on May 2013 to develop reliability standards in two stages:

Stage	Summary	Resulting Standard
Stage 1	Requires entities to develop and implement Operating Procedures that can mitigate the effects of GMD events	**EOP-010-1** GMD Operations *(Effective – April 2015)*
Stage 2	Planned system performance during GMD events and is designed to mitigate risks of instability, uncontrolled separation, or cascading	**TPL-007-1** Transmission System Planned Performance for GMD Events *(Proposed)*

GMD Reliability Standard
TPL-007-1: Applicability and Requirements

- GMD Reliability Standard establishes requirements for Transmission system performance during GMD events
- Applicable to facilities that include power transformer(s) with a high side > 200 kV
- Requirements are:
  - Maintaining models and performing studies
  - Establish system steady state voltage limits, responsibilities for conducting assessment, requirements for distribution of GIC flow data, and complete thermal impact studies
  - Develop Corrective Action Plans to address vulnerabilities

GMD Reliability Standard
TPL-007-1: Timeline

- FERC issued NOPR on May 14, 2015
- Pending FERC approval
- 5 year implementation plan is proposed

Physical Security Reliability Standard
Background

FERC issued order on March 2014, directed NERC to develop a physical security reliability standard.

Physical Security Reliability Standard
CIP-014-1: Applicability and Requirements

- Applicable to 500kV and large 230kV substations; primary control centers
- Requirements are:
  - Perform risk assessments
  - Independent verification of the risk assessment
  - Evaluation of potential threats (physical attack)
  - Develop and implement a security plan

Physical Security Reliability Standard
CIP-014-1: Timeline

- Initial Assessment must be completed by the 10/1/2015 effective date
- Physical threat analysis and security plan is expected to be finalized between August and December 2016

Conclusion

- Based on 2015 TYSP, planned Reserve Margin exceeds 20% for all peak periods for the next ten years
  - DSM, both through utility-sponsored programs and mandated codes and standards, is projected to be a significant component of projected reserves
- Energy production from natural gas expected to increase 18.8% by 2024
- Third gas pipeline is under development

Conclusion

(continued)

- EPA CPP effects in future TYSP
- FRCC members plan to implement the GMD Reliability Standard
- Physical threat analysis and entity security plans should be complete by late 2016

Questions ?

FPL Solar Power Plant Update

Pam Rauch
Vice President, Development & External Affairs
September 15, 2015

CHANGING THE CURRENT. FPL

Florida is advancing solar

FPL has been working to advance solar affordably in Florida for more than a decade

- Built Florida's first solar power plant in 2009 and two more in 2010
- Steep decline in the cost of solar is making it possible to do more without increasing electricity costs for customers
- FPL is targeting completion for late 2016 to take advantage of decreasing solar-panel prices while still qualifying for 30% federal tax credit

Cost-effective large-scale solar becoming a reality for the first time in Florida

Our current large-scale solar plants

Our first solar plants have given us valuable expertise that will help us cost-effectively triple our solar capacity by 2016

FPL DeSoto Solar Energy Center

- 25 MW Photovoltaic project, built in 2009
- Florida's first large-scale solar plant

FPL Space Coast Solar Energy Center

- 10 MW Photovoltaic project, built in 2010
- Partnership with NASA's Kennedy Space Center

FPL Martin Clean Energy Center

- 75 MW of solar, built in 2010; connected to natural gas plant
- World's first hybrid solar-natural gas energy center

Our future large-scale solar plants

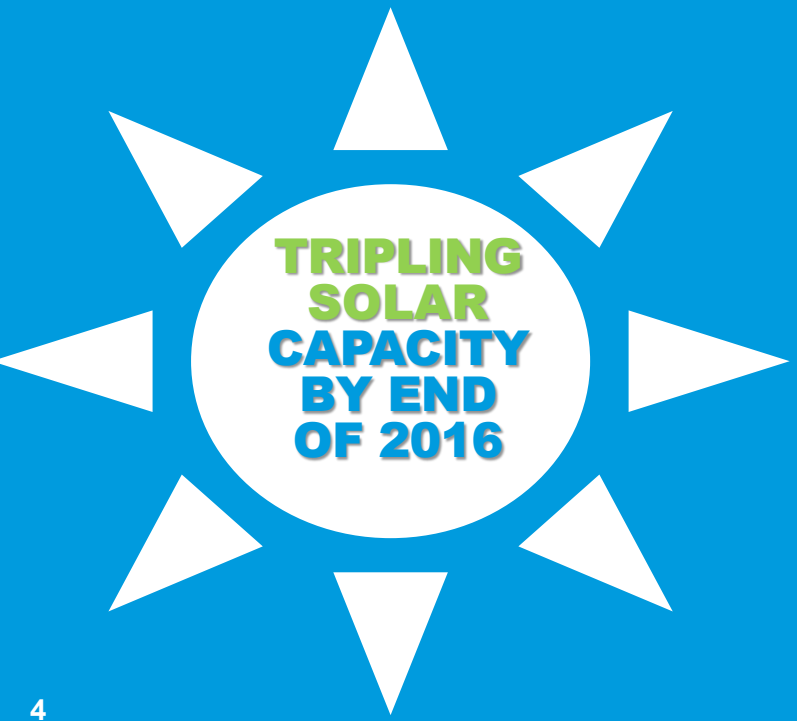
We are on track to triple our current solar capacity by the end of next year with no net-cost to customers

FPL Solar Power Plants Timeline

2008 | 2010 | 2012 | 2014 | 2016

~335 MW

- **DeSoto** 25 MW
- **Space Coast** 10 MW
- **Martin** 75 MW
- **Babcock**
- **Citrus**
- **& Manatee**
- **74.5 MW each**
- **Slated for 2016 COD**



The complexity of solar

Solar is easy to over-simplify, but responsible advancement must rely on facts, context and economics

Resource

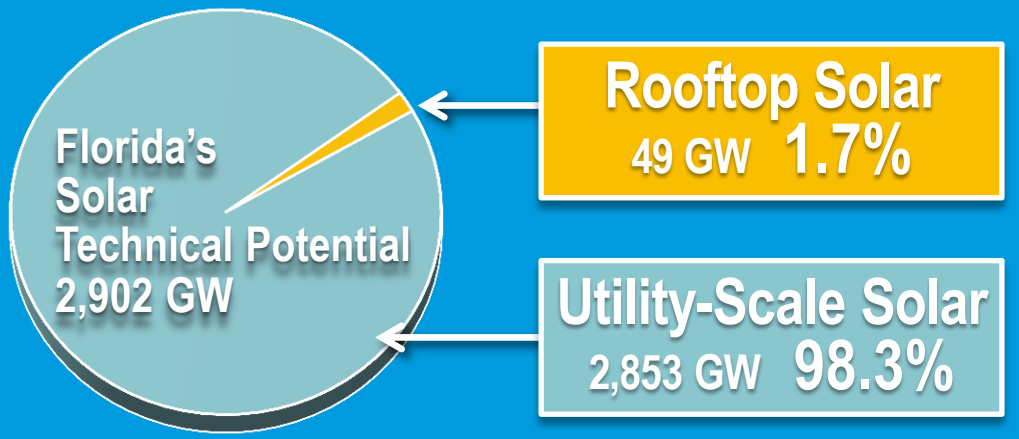
- Intensity of sun's rays reaching an area – affects ability of panels to generate electricity

Solar Resource Strength		
State	Solar Resource *(kWh/m2/day)*	Rank
Arizona	6.58	1
New Mexico	6.43	2
Nevada	6.11	3
California	6.08	4
Utah	5.90	5
Colorado	5.73	6
Texas	5.65	7
Hawaii	5.47	8
Florida	5.44	9
Kansas	5.43	10

- Solar resource variances make a difference: Southwest Florida's stronger solar resource provides a 3% to 5% edge in production

Technical Potential

- Estimate of the theoretical amount an energy source can produce in a given area
- More than 98% of Florida's solar technical potential is large-scale



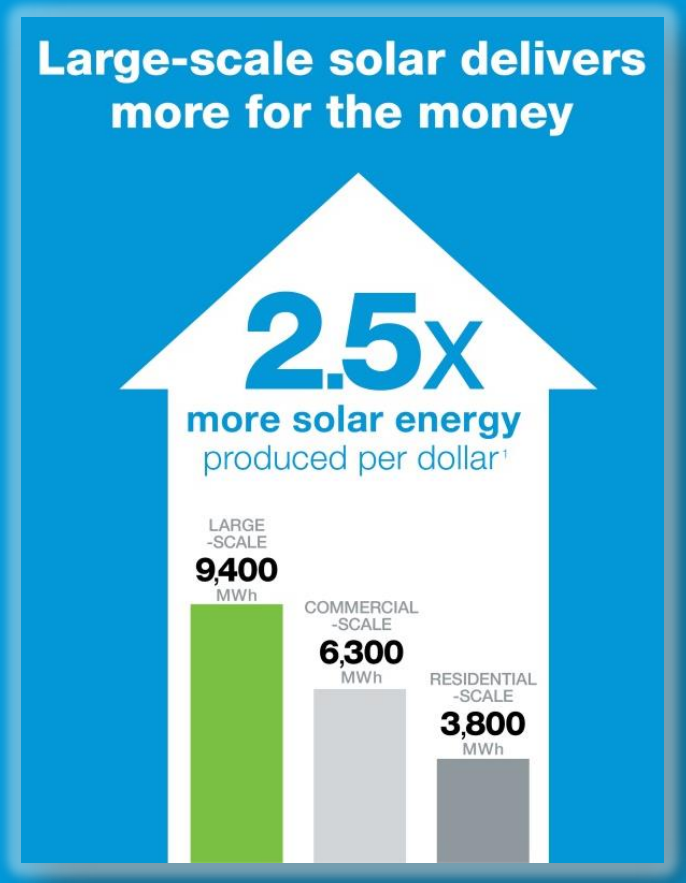
Source: National Renewable Energy Laboratory

Large-scale solar offers many advantages

Prioritize projects that deliver the greatest benefits for our customers' dollar

The most economic way to advance solar

- **Economies of scale and advanced design drive lower cost**
  - Florida has strong potential for large-scale
- **Offers higher production**
  - Better orientation and less shading
- **Benefits all utility customers fairly**
- **Best bang for the buck**



How FPL is delivering cost-effective solar

The benefits of our three new solar plants over their operational life will offset the costs of building them for our customers

We're leveraging multiple advantages to bring the costs of these projects down

- Building on FPL sites with prior permitting/development work
- Close proximity to transmission infrastructure with sufficient capacity, minimizing operating costs
- Located in Southwest Florida where stronger solar resource provides 3% to 5% edge in energy production
- Economies of scale because plants are more than ~50 MW
- Strong supply chain relationships to drive down costs
- Targeting completion for late 2016 to take advantage of falling panel prices while still qualifying for 30% investment tax credit
- Tax and fee incentives from local communities

FPL Babcock Ranch Solar Energy Center

~74 MW solar plant, partnership with Babcock Ranch development

- **440 acres donated by Babcock Ranch developer Syd Kitson**
- **Key site-specific cost-saving advantages:**
  - Tax incentive from Charlotte County
  - Babcock Ranch Independent Special District 3% franchise fee
  - Initial permitting completed in 2011; only modifications needed

FPL Citrus Solar Energy Center

~74 MW solar plant, near Florida's first large-scale solar plant

- **841 acres of FPL-owned property**
- **Key site-specific cost-saving advantages:**
  - Tax incentive from DeSoto County
  - Permitting began in 2009; only modifications required
  - Existing transmission capacity availability

FPL Manatee Solar Energy Center

~74 MW solar plant adjacent to FPL Manatee natural gas plant

- **762 acres of FPL-owned property**
- **Key site-specific cost-saving advantages:**
  - Use of existing substation
  - Tax incentive from Manatee County
  - Key permits were initiated several years ago and now only need to be modified

Leveraging existing infrastructure and permitting at all three sites is key to cost-effectiveness of projects

Questions?

Tampa Electric Company

Tampa Electric Solar Project at Tampa International Airport

September 15, 2015

Tampa Electric Solar Project at TIA

- 2 MW_{DC} photovoltaic (PV) system located on the top floor of Tampa International Airport's (TIA's)Economy Parking Garage
- Installation includes car canopy on a concrete structure in keeping with the design of the garage
- Tampa Electric will own the canopy, PV system and energy output
- Panels are Solar World SW325 XL Mono (325 Watts)
- Shaded parking for the roof was an added benefit for the customer
- 25 year lease with TIA for the space

Tampa Electric Solar Project at TIA

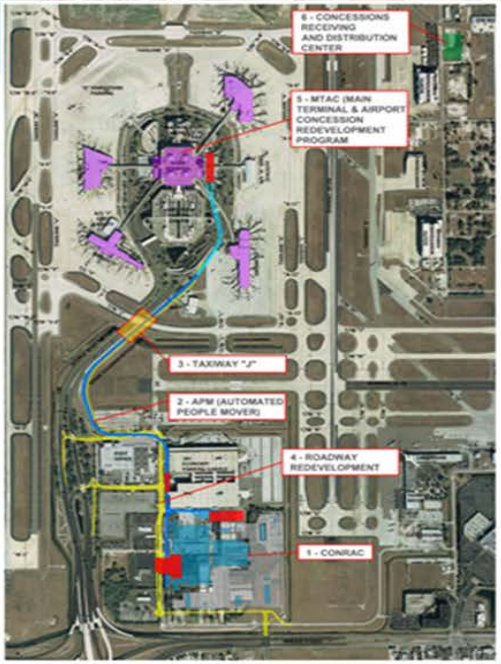
- RFP issued in December 2014
- EPC vendor (local vendor) selected in early 2015
- Glint Glare Study performed
- City of Tampa permit issued in June 2015
- FAA approval in June 2015
- Construction activity commenced in July 2015
- Working closely with TIA on weekly plans and daily coordination given other construction work in the area. Commissioning planned for late December 2015.

Tampa Electric Solar Project at TIA

- TIA is undergoing major renovations and additions to the airport property at the same time and location as the Solar Project

Program Overview

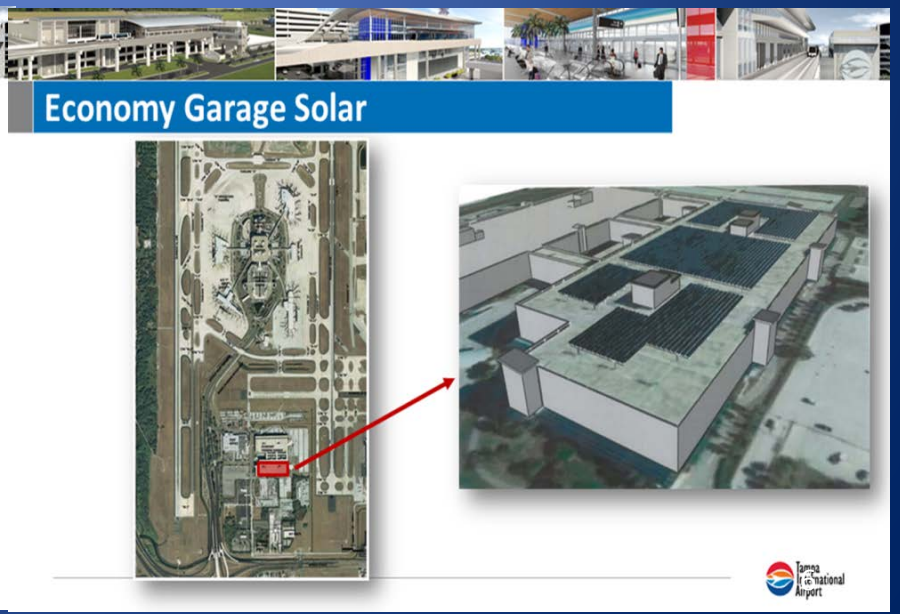
1 - Consolidated Rental Car Facility
2 - Automated People Mover
3 - Taxiway "J" Bridge
4 - Roadway Improvements
5 - Main Terminal Expansion and Concessions Redevelopment
6 - Concessions Receiving and Distribution Center



Tampa International Airport

Tampa Electric Solar Project at TIA

- Communication and execution of the construction plan are critical when working around the many different TIA projects
- Part of TIA's renovation program is to include sustainability and efficiency projects - the solar project fit perfectly into those plans
- TEC worked closely with TIA on an optimal design and location of the facility ultimately choosing the southern portion of the Economy Parking garage
- At completion of the PV system, we will place a TV monitor display in a high traffic corridor of the airport to educate the public about the PV system



APM – Economy Garage

Economy Garage APM Station - Exterior

Economy Garage APM Station - Interior

Tampa International Airport


Level 6
Elevators
Level 6
Elevators
6
TECO
TAMPA ELECTRIC


Economy Parking
Level 6
Elevators
Level 6

Tampa Electric Company Latest Solar Project

- Tampa Electric has announced that it is investigating the addition of a 25 MW_{DC} PV project to its generation portfolio. The project will be constructed turnkey with an EPC firm.
- The PV system will be sited near the Big Bend Station and the Manatee Viewing Center.
- This generation resource will provide energy diversity and reduce fuel costs and will use existing Company land.
- The site was selected due to its proximity to a 69kV transmission line and its visibility from US Highway 41 and the Company's future Energy Technology Demonstration Center.
- Tampa Electric is in the process of receiving bids from the marketplace and will soon determine the project's next steps.

Questions?

Gulf Power Company
2015 TEN YEAR SITE PLAN
Workshop

PRESENTATION BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

Sybelle Fitzgerald

September 15, 2015

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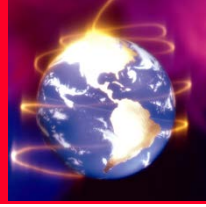
Presentation Outline

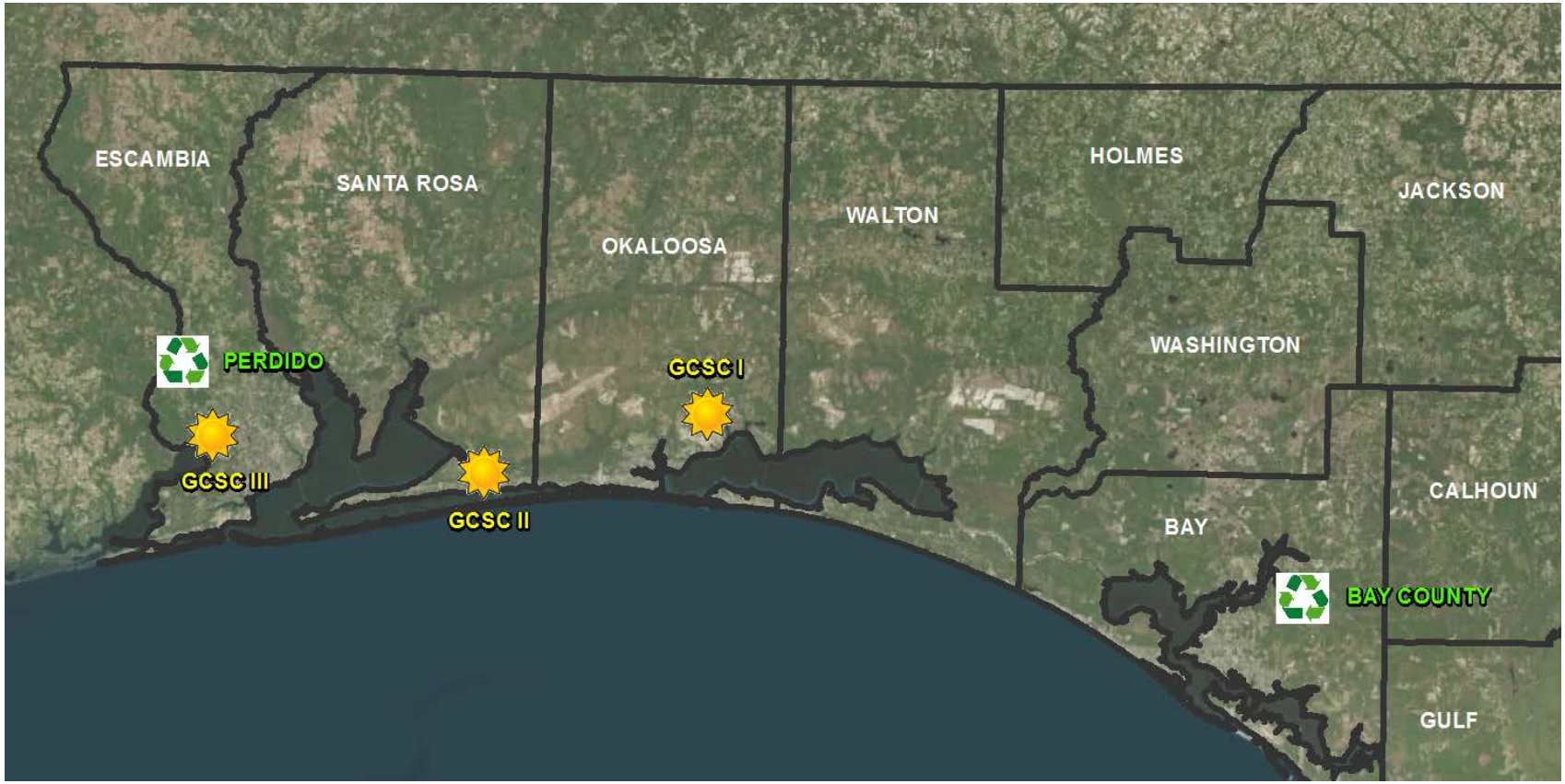


Gulf's Renewable Resources

- **Gulf Coast Solar Center Energy Purchase Agreements**
- **Morgan Stanley Wind Energy Purchase Agreement**
- **Perdido Landfill Gas Facility**
- **Bay County MSW Energy Purchase Agreement**
- **Gulf's Energy Mix serving Territorial Load**

Gulf's Renewable Resources

Location of Facilities in NW Florida



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Gulf's Renewable Resources

Gulf Coast Solar Center I, II, III Energy Purchase Agreements

- GCSC I - 30 MWs at Eglin AFB - Fort Walton Beach, Okaloosa Co.
- GCSC II - 40 MWs at U.S. Navy's Holley Field - Navarre, Santa Rosa Co.
- GCSC III - 50 MWs at U.S. Navy's Saufley Field – Pensacola, Escambia Co.
- Term of each Agreement is 25 years
- Construction on schedule; January
- Significant Milestones reached:
  - ✓ Environmental Assessments comple
  - ✓ Transmission Studies completed
  - ✓ Interconnection Agreements signed

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Gulf's Renewable Resources

Morgan Stanley Wind Energy Purchase Agreement

- **Located near Piedmont, Oklahoma**
- **Renewable Energy Credits Supplied from Kingfisher Wind Project**
- **Morgan Stanley obligated to deliver approximately 674,000 MWhs / yr**
- **Term of the Agreement is 20 years**
- **Construction on schedule; January 201**
- **Significant Milestones reached:**
  - ✓ **Tower and blade sections stored on site**
  - ✓ **Tower foundations being poured**
  - ✓ **Substation construction well underway**
  - ✓ **Transmission line construction in progre**

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Gulf's Renewable Resources

Wind Construction Pictures

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Gulf's Renewable Resources

Perdido Landfill Gas Facility

2 - *1.5 MW internal combustion* units in Escambia County, near Pensacola

- **Gulf owned facility, In-service October 2010**
- **Methane gas purchased from Escambia County's Landfill**
- **Over 119,000 MWhs generated since October 2010 (94%CF)**

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Gulf's Renewable Resources

Bay County MSW Energy Purchase Agreement

- **11 MW Facility in Bay County, near Panama City**
- **As-Available Energy purchases thru July 2017**
- **Over 308,000 MWhs purchased since July 2008 (45% CF)**

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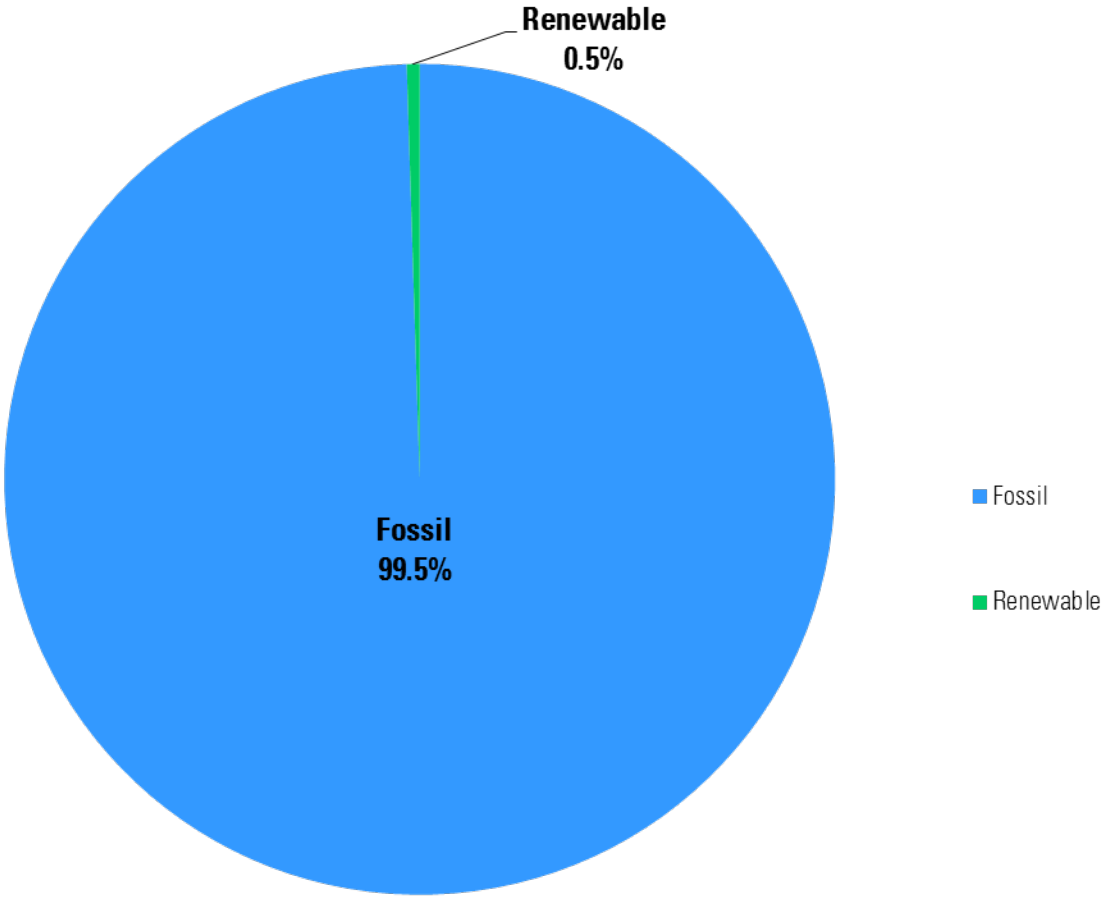
2015 Energy Resources as % of Retail Load



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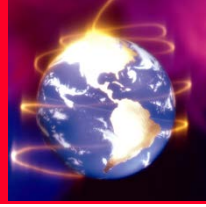
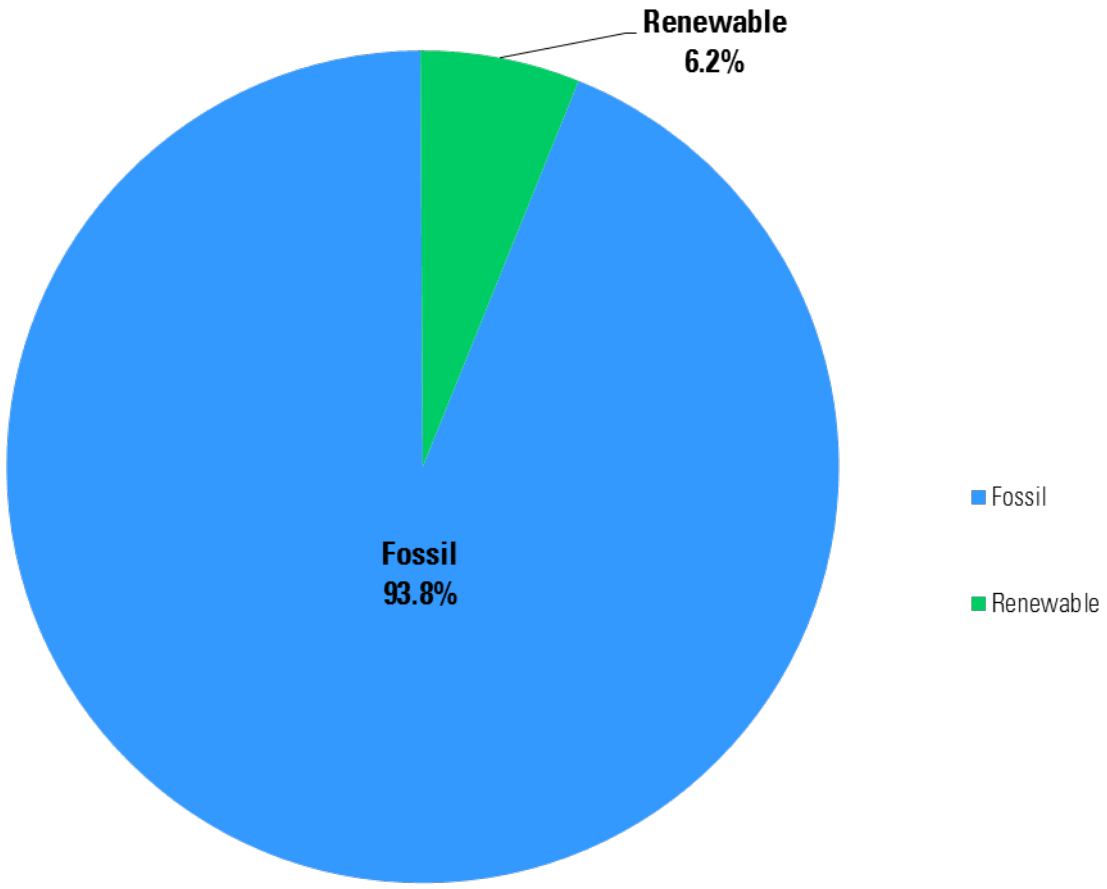
2016 Energy Resources as % of Retail Load





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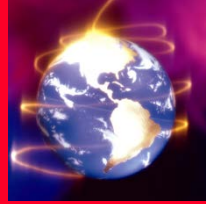
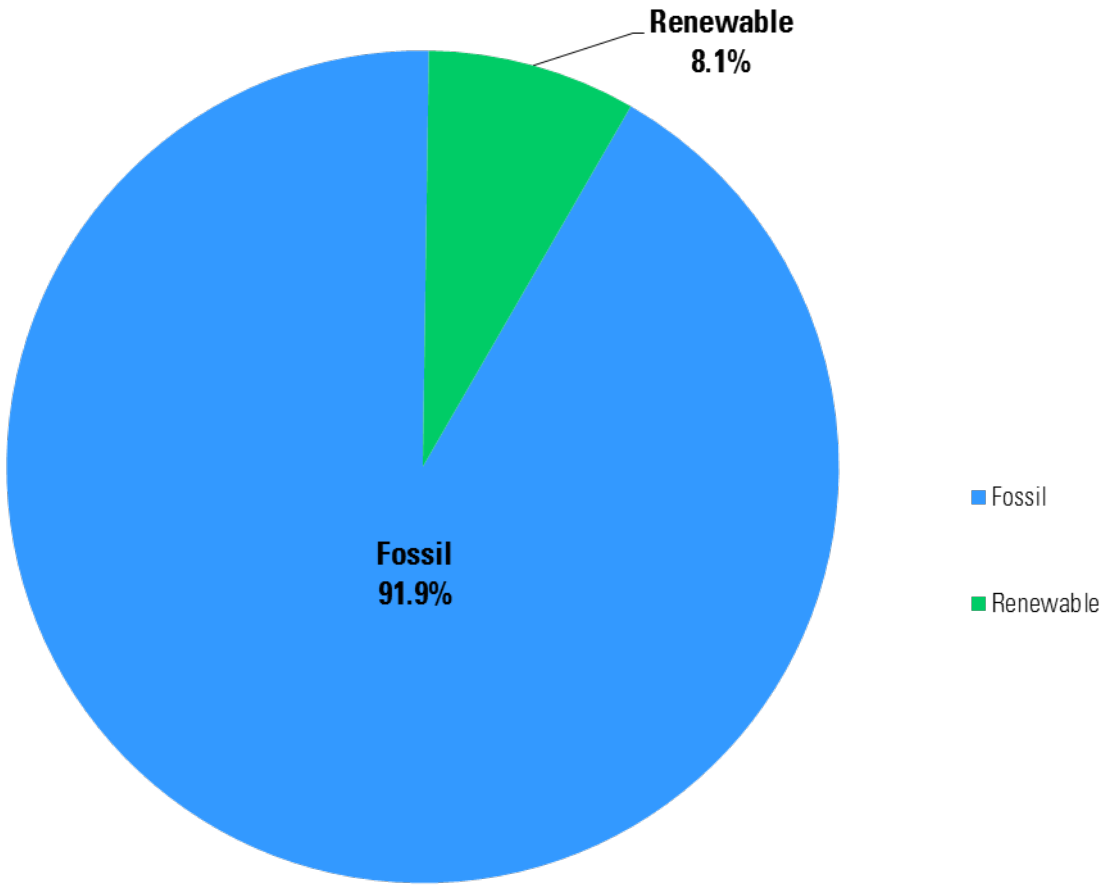
2017 Energy Resources as % of Retail Load





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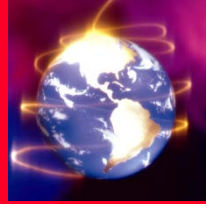
Summary



- Gulf has diverse mix of renewable energy resources
- Renewable energy as percent of retail load projected in 8% range by 2017
- Solar and Wind agreements have enabled construction of new renewable facilities
- Significant Milestones for Solar and Wind projects have been reached
- Solar and Wind construction activities currently on schedule
- Landfill gas and Municipal Solid Waste being converted to useful electrical energy