




# **FPL's 2011 Ten Year Site Plan: A Presentation for the FPSC's 2011 Ten Year Site Plan Workshop**

**September 7, 2011**

## Agenda

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- **Resource planning changes since the April 1, 2011 filing of FPL's 2011 Ten Year Site Plan (Site Plan) (which addresses FPL's resource plans as of end of 2010/1Q 2011)**
  - **Status and Plans for Inactive Reserve units**
  - **Status of Existing and Planned Solar and Wind Projects**
  - **Status of Gas Pipeline Needs**
  - **Plans for Improving Fuel Diversity**
  - **Review of the 20% Reserve Margin Criterion**

# FPL's 2011 Site Plan projected the following major capacity additions/reductions (assuming FPL's approved 2009 DSM goals)

## Major Capacity Additions / (Reductions)<sup>(1)</sup>

Year	Change	Summer MW
2011	West County 3 Riviera 3 & 4 (removed)	1,219 (565)
2012	Nuclear Uprates Oleander contract ends	231 (155)
2013	Cape Canaveral modernization Nuclear Uprates	1,210 219
2014	Riviera modernization	1,212
2015	---	0
2016	Greenfield CC UPS contract termination SJRPP purchase (suspension)	1,191 (931) (375)
2017	---	0
2018	---	0
2019	---	0
2020	Greenfield CC	1,191

1) Represents long-term capacity additions / (reductions) of 100 MW or more.



**The following major, long-term changes in planning assumptions and the resource plan have occurred as part of FPL's on-going analyses**

## **Long-Term Changes in Planning Assumptions**

- FPL no longer assumes that an average of 350 MW Summer & 550 MW Winter of generation will be on scheduled maintenance in all peak months**
- Turkey Point 1 (396 MW Summer) will be removed as a generating resource to serve as a synchronous condenser starting in 2016<sup>(2)</sup>**
- 26 GE 7FA combustion turbines (CTs) in existing CC units will be upgraded by 2015 resulting in approximately 190 MW increase (Summer)<sup>(2)</sup>**
- The recent FPSC decision regarding incremental DSM will result in somewhat lower incremental utility DSM additions**
- After factoring in these changes, FPL continues to project a resource need in 2016 and 2020**
  - The projected 2016 Greenfield CC addition has been replaced by a 2016 modernization of Pt. Everglades<sup>(2)</sup>, consistent with FPL's Site Plan discussion regarding modernization of existing generating unit sites**

2) Projected net savings (CPVRR) to FPL's customers are approximately: \$65 MM for Turkey Point 1, \$210 MM for the CT upgrades and \$400 MM for Pt. Everglades modernization.

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# FPL's plans for its 8 generating units now on inactive reserve status have not materially changed

## Status and Plans for Inactive Reserve Units

Unit	Summer MW	Comments
Sanford 3	138	To be retired in 4Q 2012
Cutler 5 & 6	205	To be retired in 4Q 2012
Turkey Point 2	392	Operating in synchronous condenser mode (to provide voltage support)
Port Everglades 1 & 2	426	To be retired in 2013 if Port Everglades Modernization project proceeds
Port Everglades 3 & 4	761	<ul style="list-style-type: none"> <li>• To be returned temporarily to active service in 2012 during Modernization work at Cape Canaveral and Riviera;</li> <li>• To be retired in 2013 if Port Everglades Modernization project proceeds</li> </ul>
<b>Total</b>	<b>1,922</b>	

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# **FPL's 3 major solar facilities are operational and projected to provide more than 225,000 MWh of energy annually**

## **Existing and Planned Solar and Wind Projects**

- **FPL's 3 major solar facilities are operational**
  - 25 MW PV in DeSoto County (2009)
  - 10 MW PV in Brevard County (2010)
  - 75 MW solar thermal in Martin County (2010)
- **FPL has pursued a potential 14 MW wind energy project in St. Lucie County for several years, but has been unable so far to obtain local approvals**
  - FPL remains interested in pursuing wind energy development
- **FPL has done extensive planning and performed initial permitting and due diligence for a number of additional large-scale PV projects totaling approximately 500 MW**
  - Because no legislation supporting utility development of new solar power generation facilities has been passed at this time, FPL has not proceeded with the construction of these projects



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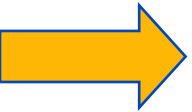
# The FPL system needs additional gas and FPL plans to pursue additional pipeline capacity

## Status of Gas Pipeline Needs

- **Gas transportation needs:**
  - FPL continues to pursue gas transportation alternatives which create supply diversity and strengthen the reliability of FPL's and Florida's gas infrastructure portfolio
  - FPL is updating its analysis with respect to future gas needs for the FPL system
- **Request for Proposal (RFP):**
  - FPL is currently in the process of preparing an RFP for pipeline capacity to meet future needs
  - As per the Final Order on the Florida EnergySecure Pipeline, FPL will be prepared to discuss the RFP with FPSC Staff in the next few weeks

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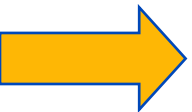
# Fuel diversity is being pursued along a number of fronts

## Plans for Improving Fuel Diversity

- FPL is continuing its efforts to increase the fuel diversity of its system through additional nuclear capacity with the EPU and Turkey Point 6 & 7 projects
- FPL's existing 110 MW of solar facilities (PV and solar thermal) are also contributing to lower dependence upon natural gas
  - As previously mentioned, other potential solar projects would also contribute to lower dependence on natural gas
- FPL is maintaining the ability to use oil at its 4-800 MW steam units by adding electrostatic precipitators (ESPs) at these units
- In addition, FPL is continually improving its ability to utilize natural gas more efficiently through the addition of highly fuel-efficient combined cycle units at new sites (e.g. West County) and through modernizations of existing sites (e.g. Fort Myers, Sanford, Cape Canaveral, Riviera, and Port Everglades)
- FPL continues to pursue the diversification of natural gas supply sources to the FPL system

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**A reserve margin criterion is designed to ensure reliable electric service for a utility's customers**

## **Why Have a Reserve Margin?**

**A reserve margin criterion is designed to help ensure that FPL can continue to serve its customers reliably in the future even if unexpected circumstances occur, including, but not limited to:**

- Higher-than-forecasted peak loads
- Unscheduled generating unit outages
- Lower-than-projected DSM capability

# Consideration of potentially changing the current 20% criterion to 15% has both system reliability and cost aspects

## Overview of the 20% Reserve Margin Criterion

- **FPL's view of the 20% reserve margin criterion can be summarized as follows:**
  - A reserve margin of at least 20% is necessary to provide reliable service for FPL's customers
  - Switching to a 15% criterion would significantly reduce the reliability of service to FPL's customers (as shown by the example that follows)
  - Reducing the reserve margin criterion would not necessarily result in significant short-term cost savings to customers (and long-term cost savings are also questionable)
    - Capital and other fixed costs would be reduced, but fuel and other variable costs would be increased
    - The net cost impact will be highly dependent upon fuel and other variable costs

# The 20% criterion is necessary to maintain reliability

## Possible Outcomes in 2017 With 20% Planned Reserve Margin

Year	Month	Total Generating Capacity at 20% RM (MW)	Unavailable Generation Capacity (MW)	Available Generating Capacity (MW)	Projected Peak Load for 2017 (MW)	Projected Reduction in Load Due to Energy Efficiency (EE) (MW)	Reflection of Upper 75% Variance in 6 - Year Ahead Forecast (MW)	Actual Peak Load (MW)	Generating Capacity Reserves above/(below) Peak Load (MW)	Projected Load Control (LC) Available for Use (MW)	Remaining LC Reserves above/(below) need (MW)	Total Remaining Reserves on Peak Day (MW)
2017	August	26,735	0	26,735	25,025	(666)	0	24,359	2,376	2,080	2,080	4,456
<p>The above outcome assumes everything (installed capacity, peak load, DSM additions) occurs in 2017 exactly as projected six years earlier with no plant unavailabilities. The projected reserve margin is set exactly at FPL's previously approved "minimum reliability criterion" of 20%.</p>												
2017	August	26,735	(1,800)	24,935	25,025	(666)	0	24,359	576	2,080	2,080	2,656
<p>The above outcome assumes that 1,800 MW of generation are unavailable; all else is as projected. This outage estimate is based on the possibility that one of FPL's largest units is unavailable and that 1/2 of another unit is also unavailable, a not uncommon situation.</p>												
2017	August	26,735	(1,800)	24,935	25,025	(666)	2,311	26,670	(1,735)	2,080	345	345
<p>The above outcome <b>also</b> assumes that the actual peak load before DSM is 9.2% higher than the 25,025 MW forecasted. This variance is consistent with the projected variance for a 6-year-ahead forecast based on historical data.</p>												
2017	August	26,735	(1,800)	24,935	25,025	(333)	2,311	27,003	(2,068)	2,080	12	12
<p>The above outcome <b>also</b> assumes that only 50% of the EE materializes.</p>												



# The 20% criterion is necessary to maintain reliability

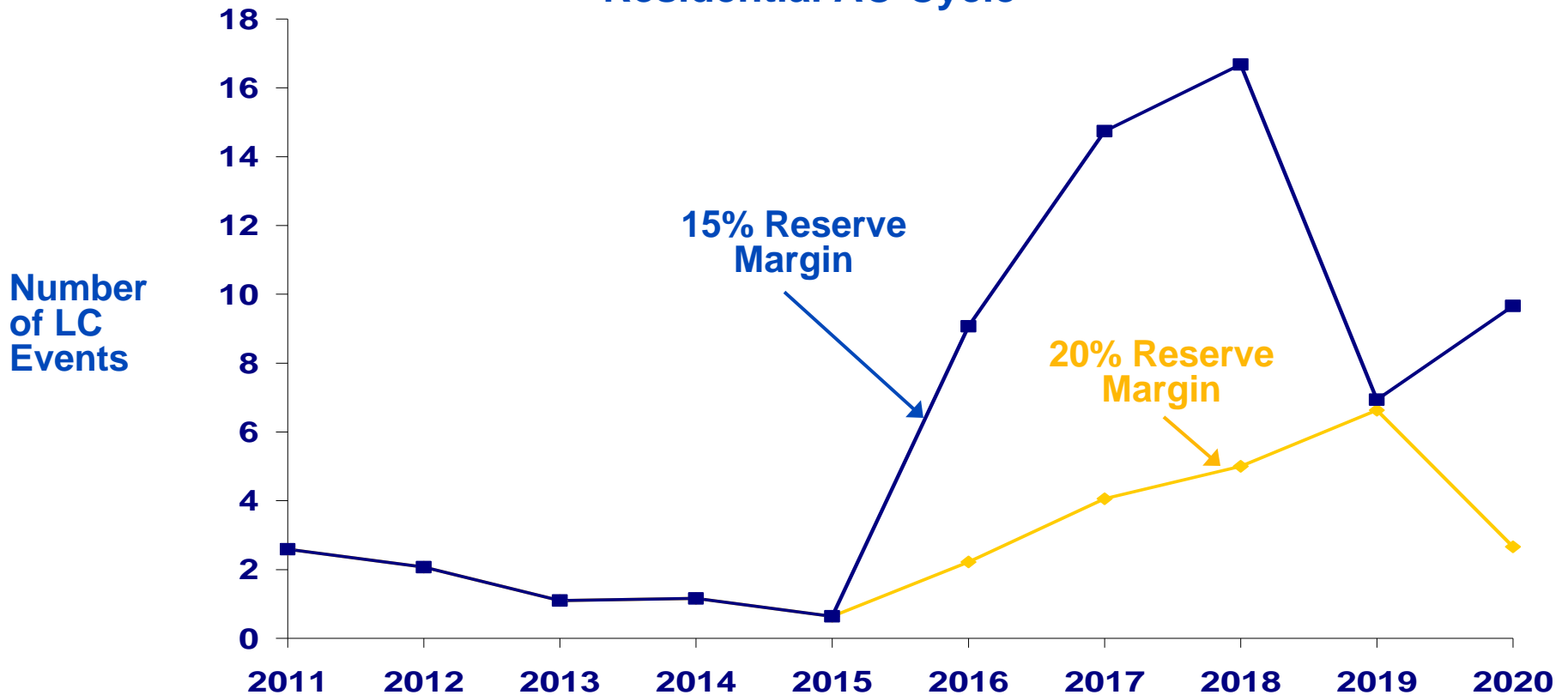
## Possible Outcomes in 2017 If Planned Reserve Margin is Reduced to 15%

Year	Month	Total Generating Capacity at 15% RM (MW)	Unavailable Generation Capacity (MW)	Available Generating Capacity (MW)	Projected Peak Load for 2017 (MW)	Projected Reduction in Load Due to Energy Efficiency (EE) (MW)	Reflection of Upper 75% Variance in 6 - Year Ahead Forecast (MW)	Actual Peak Load (MW)	Generating Capacity Reserves above/(below) Peak Load (MW)	Projected Load Control (LC) Available for Use (MW)	Remaining LC Reserves above/(below) need (MW)	Total Remaining Reserves on Peak Day (MW)
2017	August	25,613	0	25,613	25,025	(666)	0	24,359	1,254	2,087	2,087	3,341
<p>The above outcome assumes everything (installed capacity, peak load, DSM additions) occurs in 2017 exactly as projected 6 years earlier with no plant unavailabilities, <b>except that FPL's generating capacity is reduced, because the projected reserve margin is arbitrarily set (for this example) at 15%.</b></p>												
2017	August	25,613	(1,800)	23,813	25,025	(666)	0	24,359	(546)	2,080	2,080	1,534
<p>The above outcome assumes that 1,800 MW of generation are unavailable; all else is as projected. This outage estimate is based on the possibility that one of FPL's largest units is unavailable and that 1/2 of another unit is also unavailable, a not uncommon situation.</p>												
2017	August	25,613	(1,800)	23,813	25,025	(666)	2,311	26,670	(2,857)	2,080	(777)	(777)
<p>The above outcome <b>also</b> assumes that the actual peak load before DSM is 9.2% higher than the 25,025 MW forecasted. This variance is consistent with the projected variance for a 6-year-ahead forecast based on historical data.</p>												
2017	August	25,613	(1,800)	23,813	25,025	(333)	2,311	27,003	(3,190)	2,080	(1,110)	(1,110)
<p>The above outcome <b>also</b> assumes that only 50% of the EE materializes.</p>												



Another aspect that is related to the reserve margin criterion is the projected frequency of FPL's load control (LC) resources

## Projected Load Control Usage Frequency Residential AC-Cycle



These projected LC frequencies could increase significantly with higher load, unscheduled outages on peak days, etc.



## **There are still other reserve margin criterion-related aspects that FPL is analyzing**

### **20% Criterion is Necessary**

- **Planning based on a 20% criterion will better enable FPL to have sufficient generation in service to allow generating units to be scheduled for planned maintenance in off-peak months**
  - If planned maintenance must be scheduled in peak months, reserve margins would drop, further necessitating the need for additional generation
- **In a related issue, FPL is becoming increasingly dependent upon continued voluntary participation in DSM to meet its 20% criterion**
  - For example, if DSM's contribution were excluded, FPL's "generation-only" reserve margin in 2011 would be 13.1%
  - However, by 2019, FPL's "generation-only" reserve margin is projected to significantly decrease to 5.6% under current plans, and would drop to 1.3% if FPL exactly met a 15% criterion
- **Therefore, FPL is currently analyzing whether an additional reliability criterion should be utilized -- a minimum reserve margin contribution from generation-only resources**

# It is questionable how much short-term economic savings would actually be realized by a change from a 20% to a 15% criterion

## Economic Aspects of Using a Lower Criterion

- Changing to a 15% criterion would defer FPL's next capacity addition from 2016 to 2019
- The projected total savings over 5 years is \$22 MM (nominal) and customers will have higher annual costs in 2 of the 5 years
  - However, as shown on the next page, even a small change in fuel and other variable costs would significantly alter these projected savings

### Initial Analysis of Reducing the Criterion

Year	Annual Fixed Cost Savings (\$MM)	Annual Variable Cost Savings (\$MM)	Annual Total Cost Savings (\$MM)	Cumulative Total Cost Savings (\$MM)
2016	\$110	(\$107)	\$3	\$3
2017	\$189	(\$165)	\$24	\$27
2018	\$186	(\$196)	(\$10)	\$17
2019	\$117	(\$60)	\$57	\$74
2020	\$109	(\$161)	(\$52)	\$22

# A small increase of only 5% in fuel and other variable costs would significantly alter the projection

## Projection With Current Variable Cost Forecast

<u>Year</u>	<u>Annual Fixed Cost Savings (\$MM)</u>	<u>Annual Variable Cost Savings (\$MM)</u>	<u>Annual Total Cost Savings (\$MM)</u>	<u>Cumulative Total Cost Savings (\$MM)</u>
2016	\$110	(\$107)	\$3	\$3
2017	\$189	(\$165)	\$24	\$27
2018	\$186	(\$196)	(\$10)	\$17
2019	\$117	(\$60)	\$57	\$74
2020	\$109	(\$161)	(\$52)	\$22

## Projection With 5% Higher Variable Cost Forecast

<u>Year</u>	<u>Annual Fixed Cost Savings (\$MM)</u>	<u>Annual Variable Cost Savings (\$MM)</u>	<u>Annual Total Cost Savings (\$MM)</u>	<u>Cumulative Total Cost Savings (\$MM)</u>
2016	\$110	(\$112)	(\$2)	(\$2)
2017	\$189	(\$173)	\$16	\$13
2018	\$186	(\$206)	(\$20)	(\$6)
2019	\$117	(\$63)	\$54	\$48
2020	\$109	(\$169)	(\$60)	(\$12)

The projected cost impact of changing to a 15% criterion is now increased costs of \$12 MM (nominal) and customers would see higher annual costs in 3 of the 5 years

# FPL's customers would be best served by the current 20% reserve margin criterion

## Summary

**Consideration of decreasing the current 20% reserve margin criterion to 15% is a consideration of a trade-off between the following:**

- Savings in capital and other fixed costs
- Higher fuel and other variable costs (that will be magnified if fuel and other variable costs are higher than currently forecasted)
- Relatively small net cost savings in the short-term (but which are highly dependent upon continued low fuel prices)

Compared to:

- More frequent use of LC
- Less flexibility in scheduling plant maintenance
- Diminished system reliability for all years

**Because the risks outweigh the potential benefits, FPL believes that the current 20% reserve margin criterion should be maintained**

