

# A Changing Energy Landscape

Jeremy Lawton Susac

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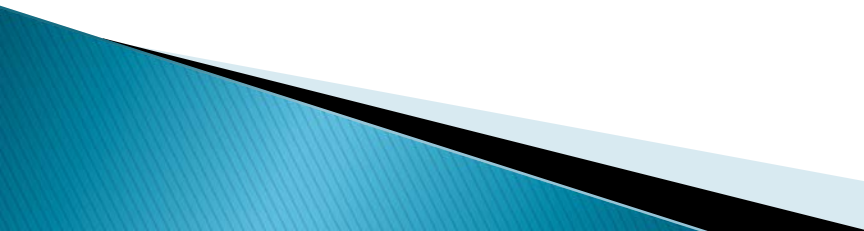
[jsusac@bergersingerman.com](mailto:jsusac@bergersingerman.com)

850-521-6736

# Overview of Presentation

- ▶ **Clean Power Plan**
  - \$34B to \$71B in annual compliance;
  - Environmental Benefits and Economic Costs
  - Is it worth it? Highest best use of taxpayer money?
- ▶ **Battery Innovation**
  - Home battery?
  - Utility-scale storage?
- ▶ **Florida Solar Overview**
  - Costs dropping
  - Utility-scale position to grow
  - PSC reviewing solar programs
- ▶ **Legislative Session Update**

# Florida at a Glance

- ▶ Top heavy on use of natural gas
  - ▶ Nuclear uprates at FPL Facilities, and one new facility
  - ▶ Decommissioning nuclear at Crystal River
  - ▶ Focus of new generation to achieve fuel diversity using competitive renewables
  - ▶ All generating IOUs building utility-scale solar
  - ▶ Statutes in Chapters 336, F.S., Ch. 377, F.S., and Ch. 163, F.S. promote renewables
  - ▶ All regulatory Agencies expressed concern with draft Clean Power Plan
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# Clean Power Plan

- ▶ Four building blocks
- ▶ Essentially fuel switching docket with EE:
  1. Increase efficiency at existing source;
  2. Fuel switch to natural gas;
  3. Fuel switch to renewables;
  4. Demand-side reductions/energy efficiency



# CPP Continued

- ▶ EPA proposed draft “guidelines” to reduce carbon dioxide emissions 30% by 2030 from existing fossil fuel-fired power plants;
  - ▶ Applies to both coal and natural gas plants;
  - ▶ Outlines four building blocks a state can use to decrease emissions;
  - ▶ EPA assumes heat rate of a coal plant can be approved by 6%;
  - ▶ NERA estimates annual compliance costs as low as \$41 billion and as high as \$73 billion for the 15-year compliance period;
  - ▶ EPA does not provide sea-level rise analysis;
  - ▶ EPA does not provide temperature impact analysis;
  - ▶ EPA did provide seal level and temperature impact in tailpipe reduction rule;
- ▶ EPA proposed draft “guidelines” to reduce carbon dioxide emissions 38% by 2030 from existing fossil fuel-fired power plants (See table 8, pages 346–348 of CPP);
  - ▶ EPA assumes of coal plants can be increased by 6%;
  - ▶ EPA assumes electricity from natural gas can be increased 37% using 2012 numbers;
  - ▶ EPA assumes electricity from coal can be reduced by 91%;
  - ▶ EPA assumes renewables from non-hydro sources increased by ~390%;
  - ▶ EPA assumes no retirement of nuclear;
  - ▶ EPA assumes Florida consumers will reduce electricity by 10%;
  - ▶ Florida’s office of public counsel estimates a \$28B impact to ratepayers;

Nation

Florida

# CPP: Environmental Benefits

- ▶ In 2013, U.S. sector emitted 2.05 billion metric tons of CO<sub>2</sub> (EIA); 4% of global anthropogenic GHG emissions
  - See IPCC Working Group III's contribution to the Fifth Assessment Report of the IPCC);
  - EIA Annual Report
- ▶ CPP reduces global atmospheric CO<sub>2</sub> concentration by less than 0.5%
- ▶ Global average temperature reduced by less than 2/100ths of a degree Fahrenheit; and
- ▶ Sea level rise would be reduced by 1/100<sup>th</sup> of an inch (e.g., three sheets of paper)
- ▶ Better Strategies? E.g. New Orleans, Chicago River, Venice



Minimal Benefits

Built Below Sea Level

# Battery Innovation or hype?



- ▶ GE, Siemens, Tesla, Panasonic, and others;
- ▶ Bloomberg reported Tesla Powerwall home batteries come in two sizes:
  - 7kW and
  - 10 kW
- ▶ Bloomberg reported the 7kWh version is made for daily use,
- ▶ 10kW handles 50 charging cycles per year (backup when the electricity goes out)
- ▶ Dispatching atteries could be used for utilities to offset peak

# Solar Costs Decline



Solar PV

- ▶ All investor owned utilities that generate electricity are developing utility-scale solar
- ▶ Photovoltaic (PV) installations continues to increase in 2013;
  - In 2013, added 4,751 more than 2012
  - 41% increase over 2012
  - Solar was the second-largest source of new electricity generating capacity in the U.S. in 2013 (natural gas 1<sup>st</sup>).
  - Solar cost fell 15% below the mark set at the end of 2012.
  - US DOE estimates that the U.S. has increased solar capacity by approximately 16.3 GWs in the last 6 years.
- ▶ U.S. DOE reported 16.3 GWs added in 2013
  - equivalent of ~3.5 million average American homes.
  - Predicted price to decrease on top of a recent 12 - 19 percent drop in 2013, and 3 - 12 percent drop in 2014



# FL Solar laws

- ▶ **Net metering in Florida**
  - Retail rate credited using up to 2MWs;
  - Pay after 12 months at wholesale rate;
  - Allows third party leasing
- ▶ **FL Homeowner's Solar Act**
  - Local government cannot prohibit access to sunlight;
  - Originally applied to basic needs for hot water and drying clothes
  - Specifics: Solar collectors, clothes lines
- ▶ **Solar not taxed like traditional energy**
- ▶ **Solar Ballot**
  - 3<sup>rd</sup> party sales up to 2MWs;
  - Not regulated like utilities;
  - "health, welfare, and safety";
  - Need 683,149 signatures. Currently over 86,000 collected
  - FSC15-780



# PSC Bill CS/HB 7109

- ▶ 42 page bill;
- ▶ A commissioner appointed after July 1, 2015, may not serve more than three consecutive terms;
- ▶ Pertinent PSC meetings will be available on-line at <http://www.psc.state.fl.us/>
- ▶ Encourages PSC commissioners to attend and participate in educational forums like FESC;
- ▶ Enables utility to issue nuclear asset recovery bonds for decommissioning purposes

# Conclusion



Jeremy L Susac  
[jsusac@bergersingerman.com](mailto:jsusac@bergersingerman.com)  
850-521-6736  
Tallahassee, FL

All of the Above