

FLORIDA'S ENERGY FUTURE

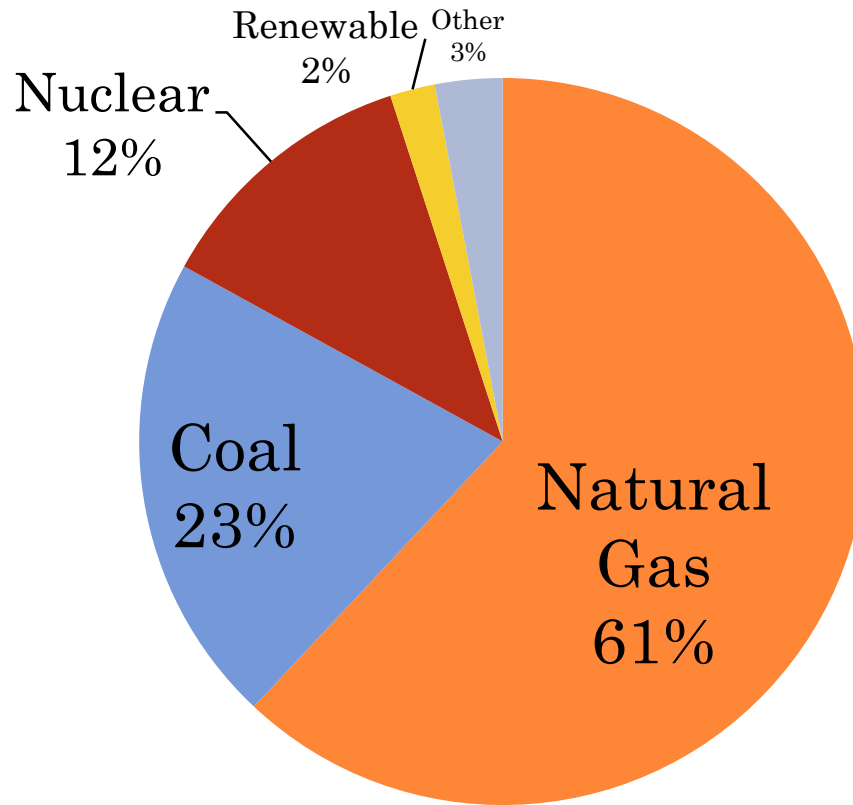
STATE OF THE UNION ON FLORIDA
ENERGY

MARCH 23, 2016

Professor Amy L. Stein
University of Florida Levin
College of Law

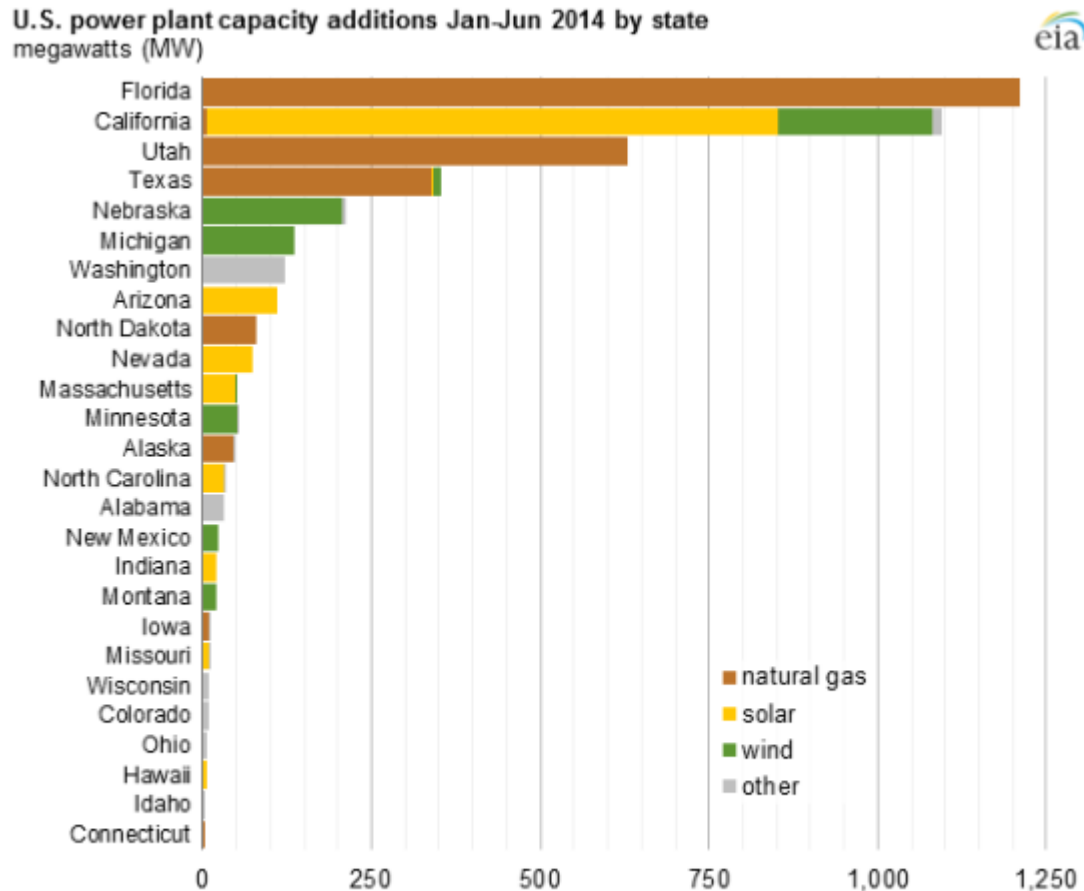
FLORIDA IS HEAVILY DEPENDENT ON NATURAL GAS

2014 Florida Net Electricity Generation



Source: Energy Information Administration, 2014, <http://www.eia.gov/state/?sid=FL>

FLORIDA TOPS LIST OF NEW CAPACITY ADDITIONS NATIONWIDE



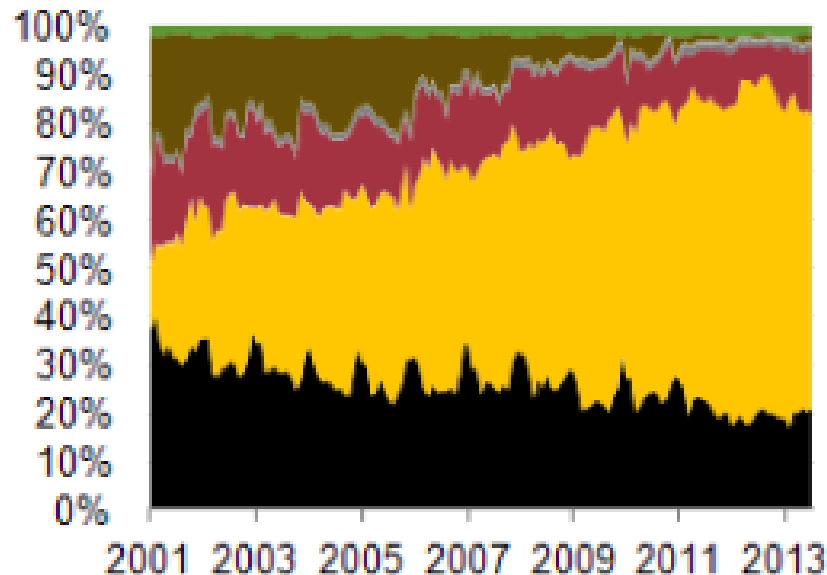
Source: U.S. Energy Information Administration, [Electric Power Monthly](#), August 2014 edition with June 2014 data
Note: Data include facilities with a net summer capacity of 1 MW and above only.



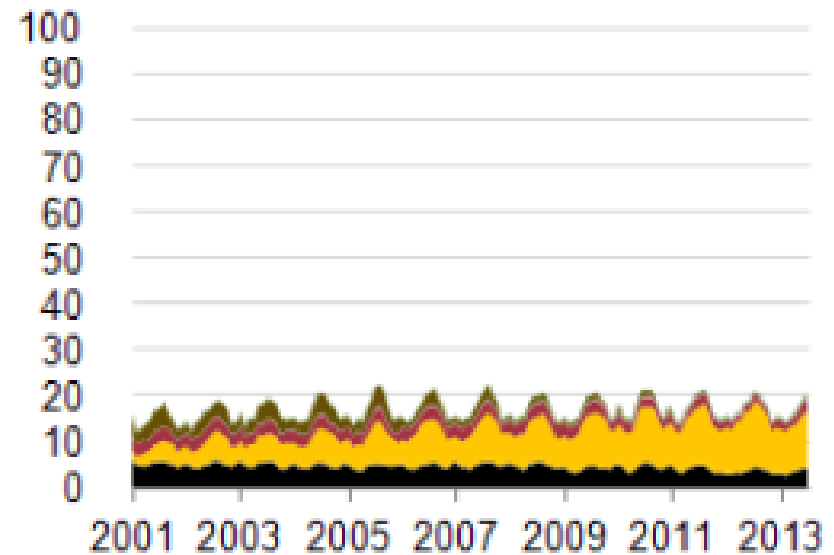
NATURAL GAS BOOMING

Fuel shares of total electricity generation in Florida

share of total



total generation (terawatthours)

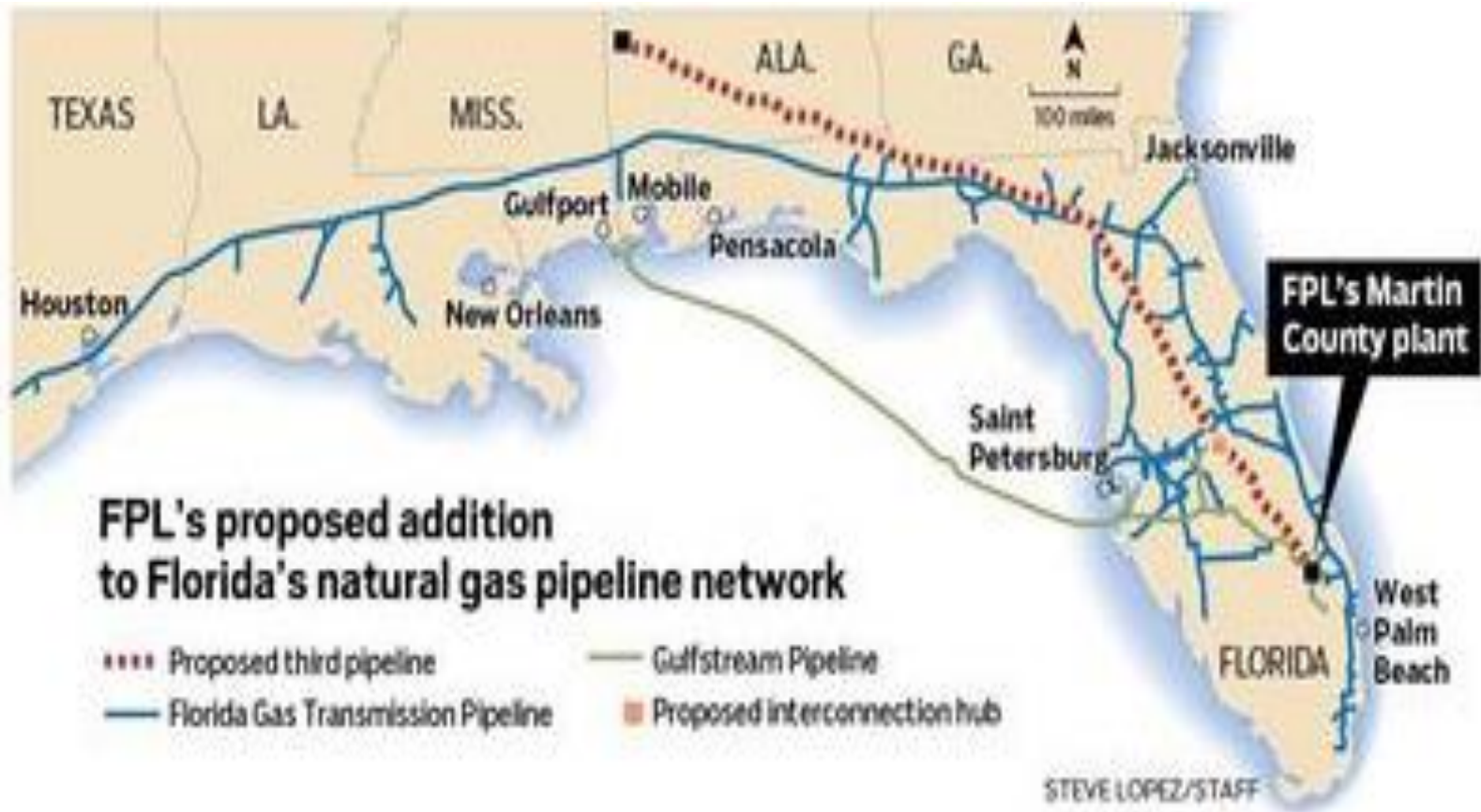


■ coal ■ hydro ■ natural gas ■ nuclear ■ petroleum ■ non-hydro renewable ■ other

Source: U.S. Energy Information Administration, [Electricity Monthly Update](#)

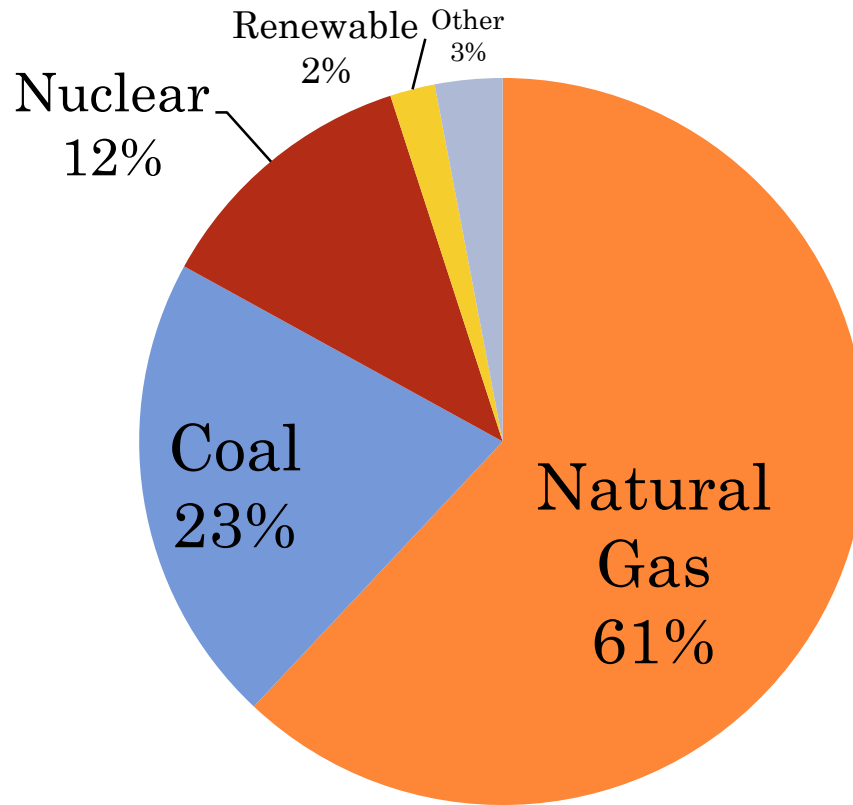


CONCERNS ABOUT SUPPLY: SABAL TRAIL PIPELINE



FLORIDA ONLY GENERATES 2% OF ITS ELECTRICITY FROM RENEWABLES

2014 Florida Net Electricity Generation



Source: Energy Information Administration, 2014, <http://www.eia.gov/state/?sid=FL>

FP&L TO TRIPLE SOLAR

Current Solar

- DeSoto – 25 MW Solar
- NASA – 10 MW
- Martin – 75 MW
- Existing: 110 MW

Future Solar

- Citrus – 75 MW
- Babcock – 75 MW
- Manatee – 75 MW
- Planned: 225 MW

TOTAL: 335 MW



DUKE UNIVERSITY REPORT (2015)

Table 1: 2013 State Rankings of Solar Capacity and Solar Power Generation

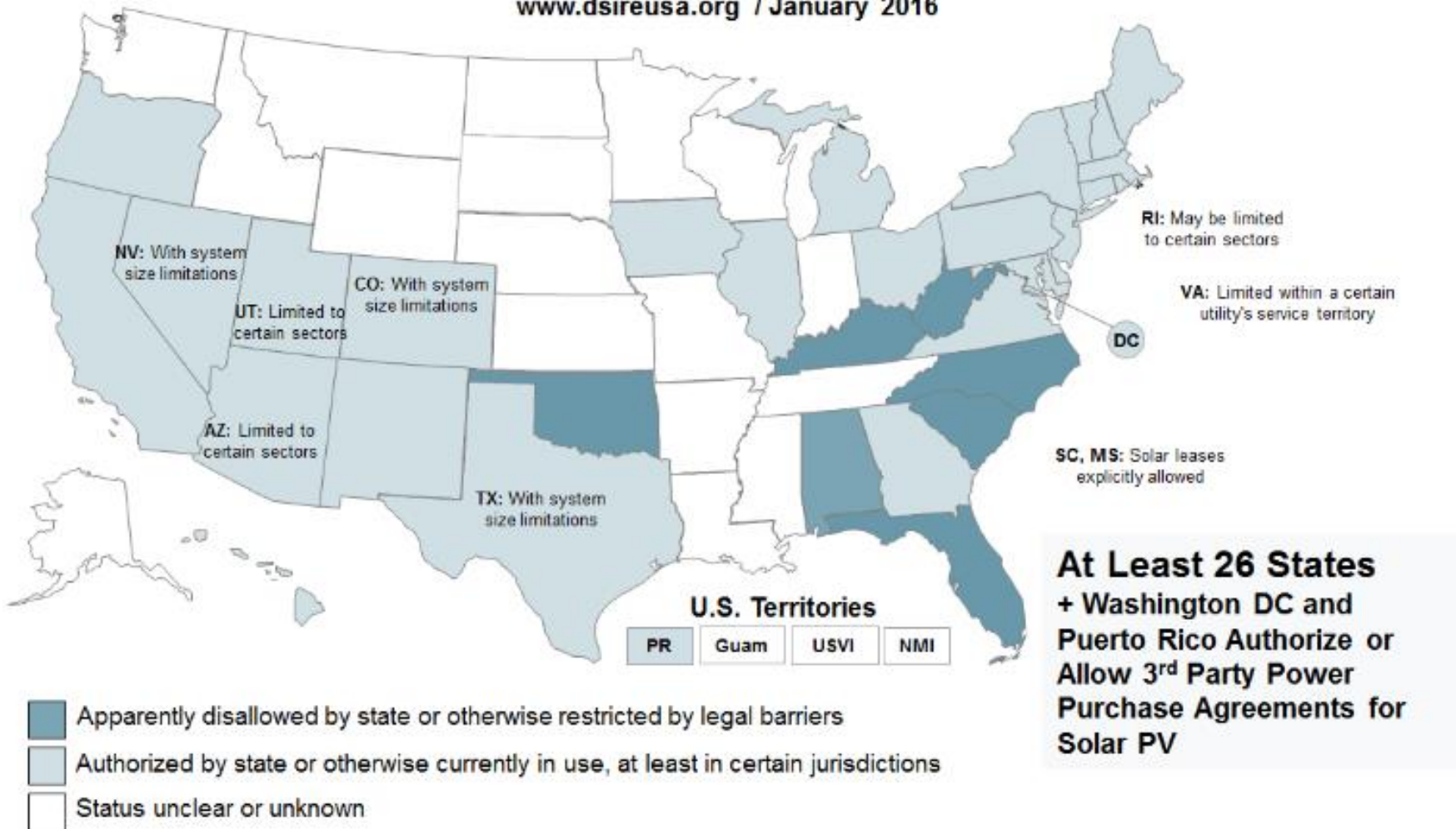
Rank	State	Installed Solar Capacity (MW)	Rank	State	Solar Power Generation (thousand MWh)
1	California	4,146	1	California	3,865
2	Arizona	1,250	2	Arizona	2,041
3	New Jersey	948	3	Nevada	749
4	North Carolina	375	4	New Jersey	546
5	Massachusetts	356	5	New Mexico	414
6	Nevada	339	6	North Carolina	379
7	Colorado	288	7	Florida	240
8	Hawaii	286	8	Colorado	199
9	New Mexico	206	9	Texas	176
10	New York	193	10	Massachusetts	109
11	Texas	173	11	Pennsylvania	82
12	Pennsylvania	144	12	Maryland	80
13	Maryland	140	13	Illinois	64
14	Florida	110	14	Ohio	64
15	Georgia	88	15	Delaware	57

Note: Installed solar capacity is total grid-connected PV installations in MW at the end of calendar year 2013, as reported by IREC, "U.S. Solar Market Trends," July 2014. Reported DC converted to AC.

Source: Solar capacity, IREC, "U.S. Solar Market Trends 2013," 2014; power generation, EIA 2013, Electricity Generation and Consumption (EIA-906/920/923), Net Generation by State by Sector (table 1.6)

3rd Party Solar PV Power Purchase Agreement (PPA)

www.dsireusa.org / January 2016



CONSTITUTIONAL AMENDMENT PETITION FORM

Note:

- All information on this form, including your signature, becomes a public record upon receipt by the Supervisor of Elections.
- Under Florida law, it is a first degree misdemeanor, punishable as provided in s. 775.082 or s. 775.08, Florida Statutes, to knowingly sign more than one petition for an issue. [Section 104.185, Florida Statutes]
- If all requested information on this form is not completed, the form will not be valid.

Your Name: _____
(Please Print Name as it appears on your Voter Information Card)

Your Address: _____

City: _____ Zip: _____ County: _____

☐ Please change my legal residence address on my voter registration record to the above residence address (check box, if applicable).

Voter Registration Number: _____ (or) Date of Birth _____

I am a registered voter of Florida and hereby petition the Secretary of State to place the following proposed amendment to the Florida Constitution on the ballot in the general election:

BALLOT TITLE: Limits or Prevents Barriers to Local Solar Electricity Supply

BALLOT SUMMARY: Limits or prevents government and electric utility imposed barriers to supplying local solar electricity. Local solar electricity supply is the non-utility supply of solar generated electricity from a facility rated up to 2 megawatts to customers at the same or contiguous property as the facility. Barriers include government regulation of local solar electricity suppliers' rates, service and territory, and unfavorable electric utility rates, charges, or terms of service imposed on local solar electricity customers.



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Voter Registration Number _____ **or Date of Birth** _____

I am a registered voter of Florida and hereby petition the Secretary of State to place the following proposed amendment to the Florida Constitution on the ballot in the general election:

BALLOT TITLE: Rights of Electricity Consumers Regarding Solar Energy Choice

BALLOT SUMMARY: This amendment establishes a right under Florida's constitution for consumers to own or lease solar equipment installed on their property to generate electricity for their own use. State and local governments shall retain their abilities to protect consumer rights and public health, safety and welfare, and to ensure that consumers who do not choose to install solar are not required to subsidize the costs of backup power and electric grid access to those who do.

Rankings: Average Retail Price of Electricity to Residential Sector, December 2015 (cents/kWh)

23	Minnesota	11.77	
24	Florida	11.49	
25	Colorado	11.44	
26	New Mexico	11.36	
27	Texas	11.33	
28	Alabama	11.23	
29	Mississippi	11.16	
30	Indiana	11.11	
31	Virginia	10.98	
32	North Carolina	10.96	
33	Arizona	10.75	

Source: <https://www.eia.gov/state/rankings/?sid=US#/series/31>



UF SOLAR

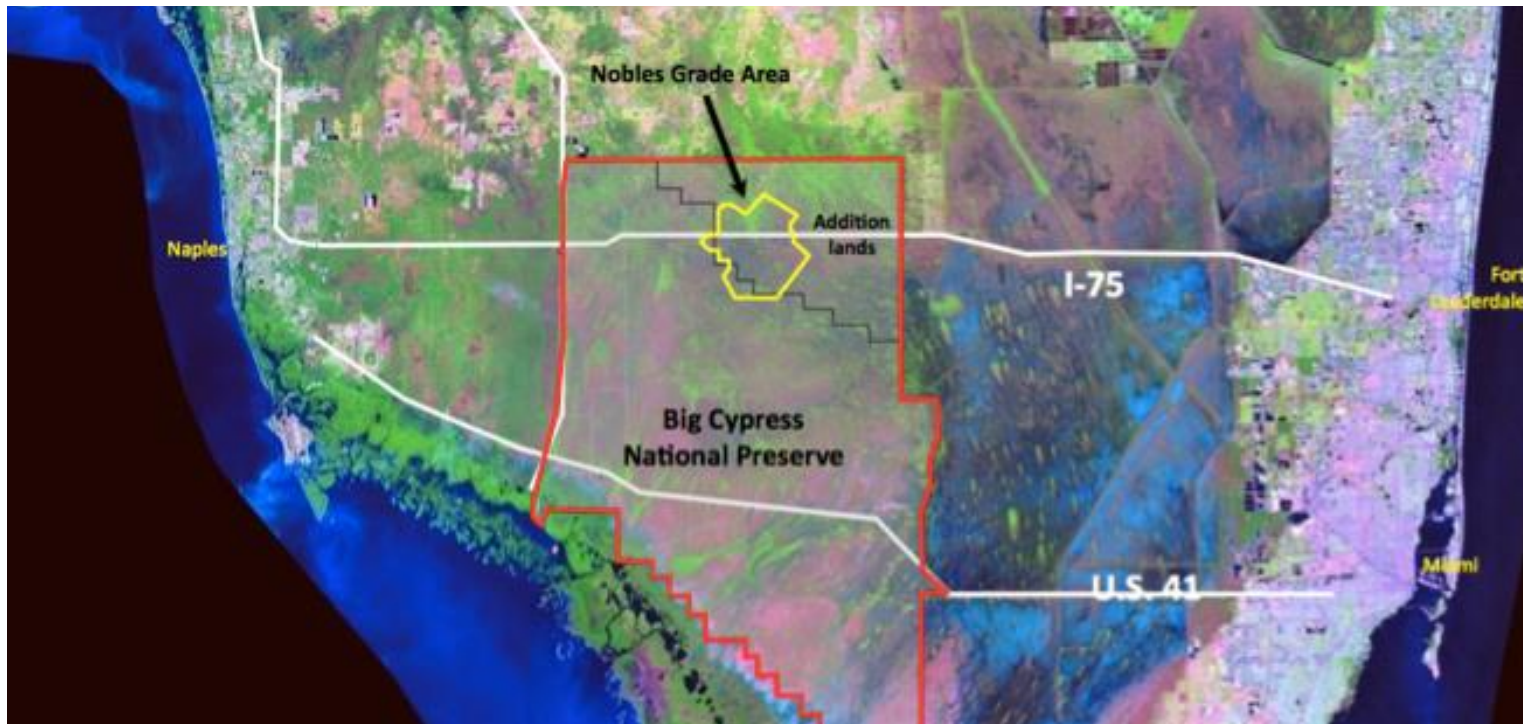
- 75kW solar array on Powell Hall generates roughly 1/3 of the energy consumed in the building.
- 214kW solar installation on our Eastside Campus
- UF Hillel
- Beta Theta Pi house fraternity house
- UF Law School
- 70 kW Energy Research and Education Park
- 20 kW Microbiology and Cell Science
- 2 kW Rinker Hall



CONCERNS ABOUT DRILLING: BIG CYPRESS AND COLLIER RESOURCES







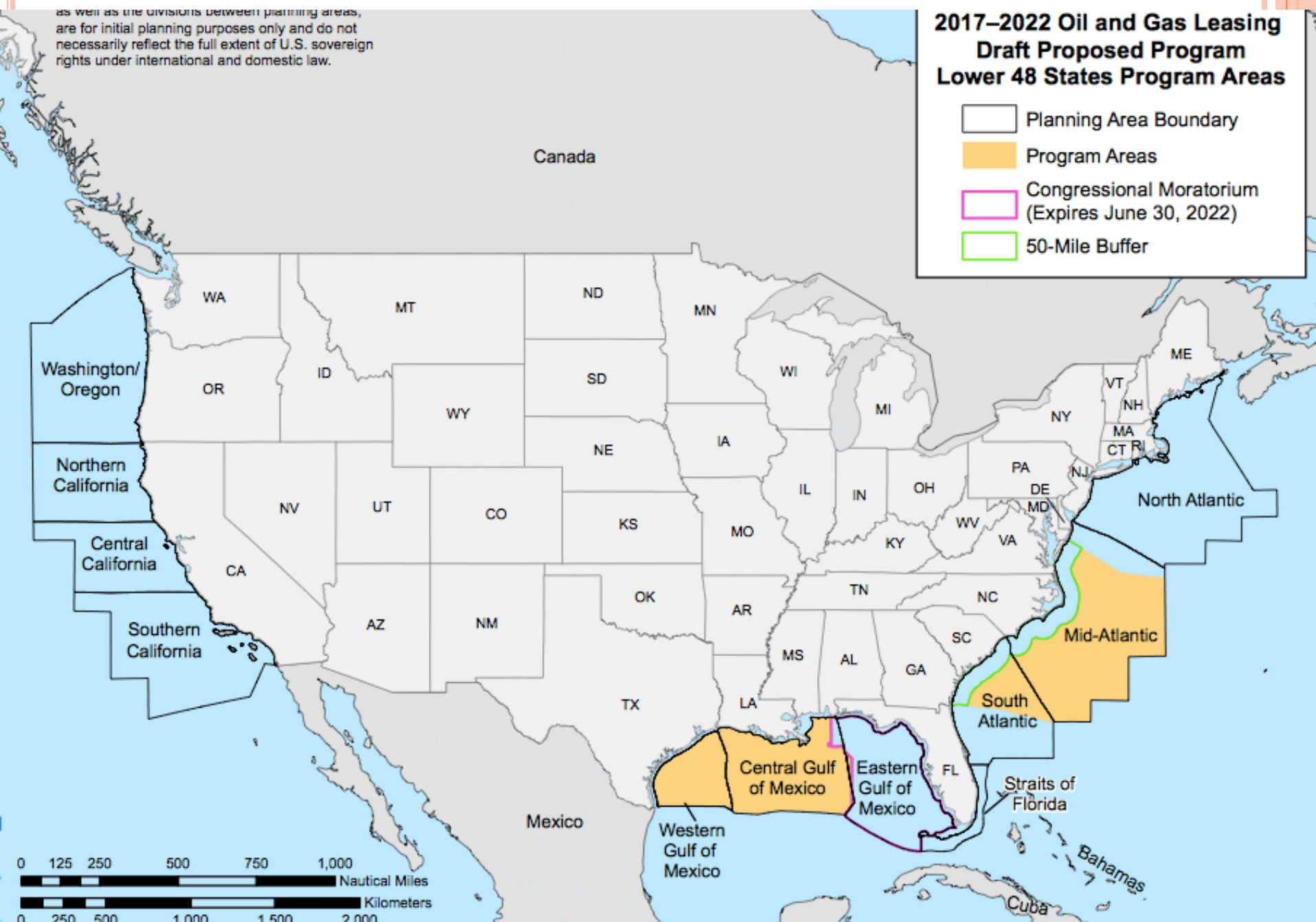
Alachua County supports Florida fracking ban



as well as the divisions between planning areas, are for initial planning purposes only and do not necessarily reflect the full extent of U.S. sovereign rights under international and domestic law.

2017–2022 Oil and Gas Leasing Draft Proposed Program Lower 48 States Program Areas

-  Planning Area Boundary
-  Program Areas
-  Congressional Moratorium (Expires June 30, 2022)
-  50-Mile Buffer



NUCLEAR



Source: http://www.webpal.org/SAFE/state/FL/fl_nuclear.htm

FLORIDA RANKS 27TH FOR ENERGY EFFICIENCY

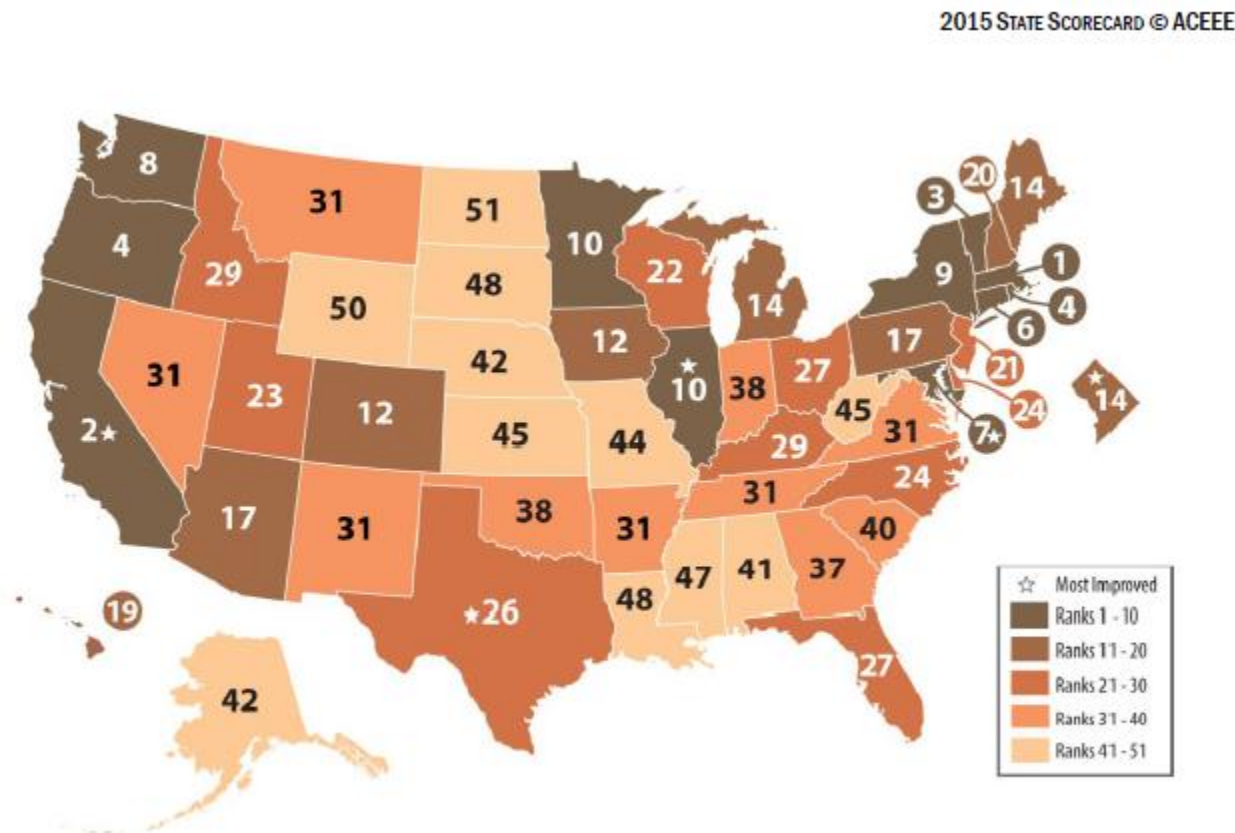
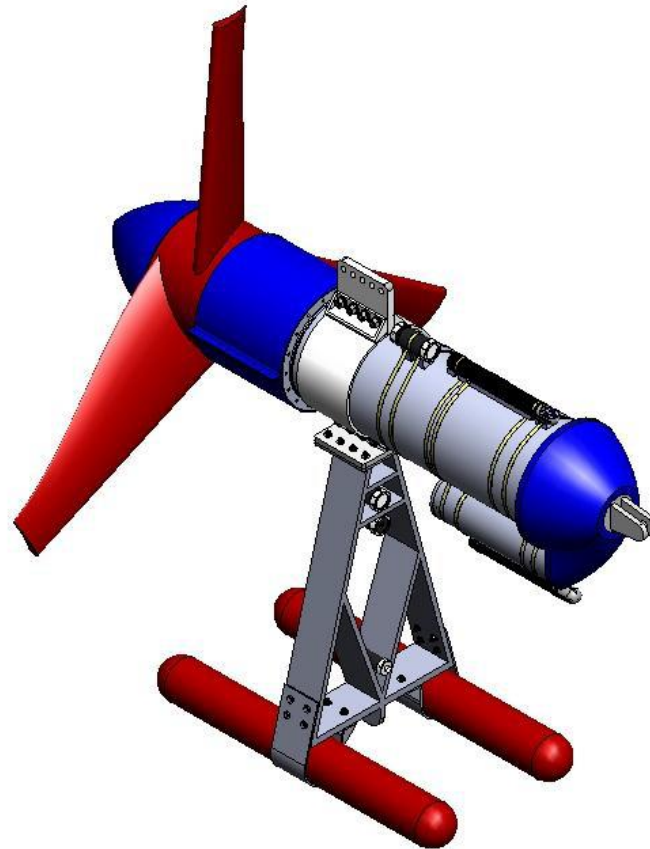


Figure ES1. 2015 State Scorecard rankings

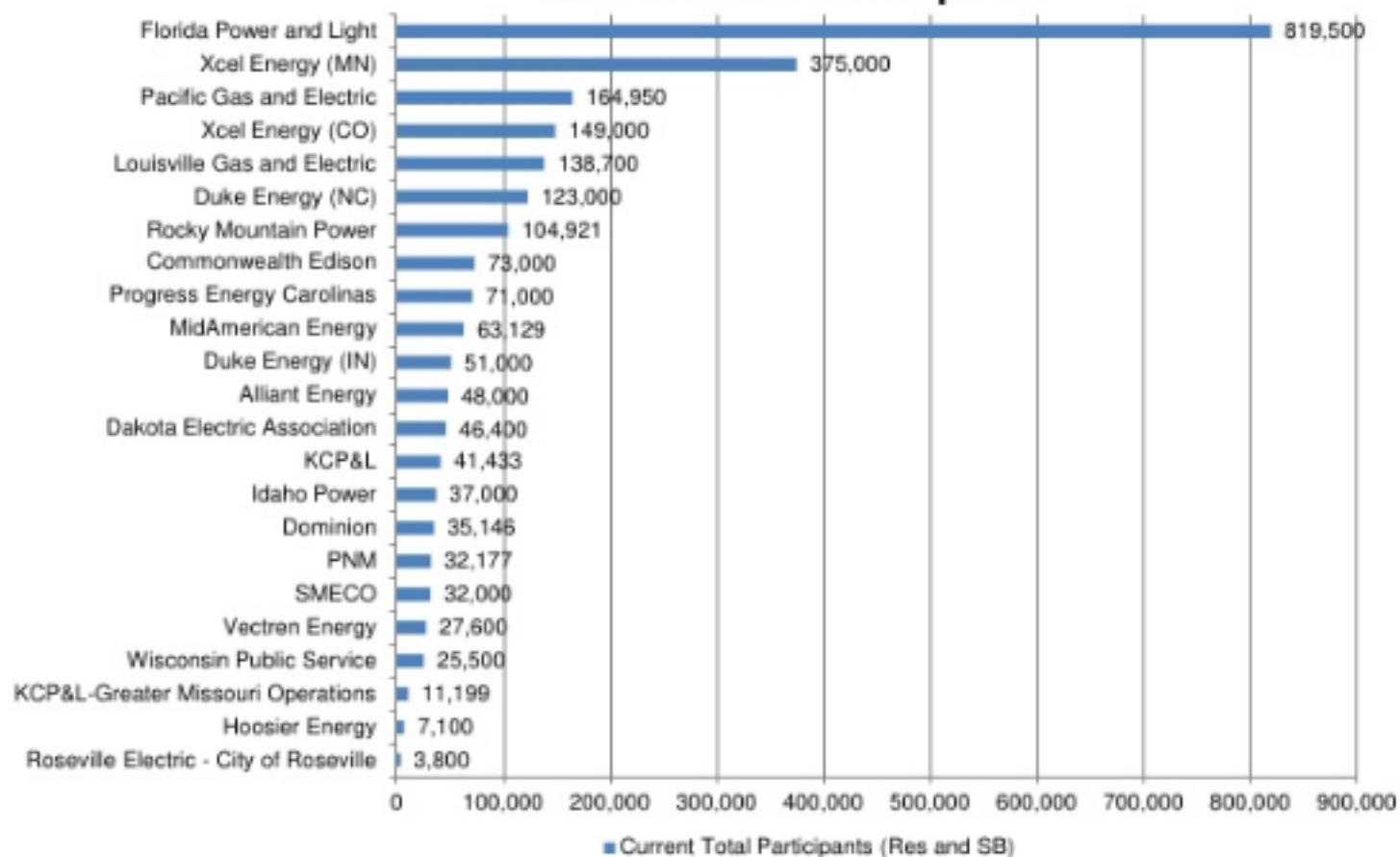
Source: ACEEE, The State Energy Efficiency Scorecard (2015)

FLORIDA ATLANTIC UNIVERSITY'S (FAU) SOUTHEAST NATIONAL MARINE RENEWABLE ENERGY CENTER (SNMREC)



Participation

Current Total Participants



Source: E Source





THE CLEAN POWER PLAN



epa.gov/cleanpowerplan

#ActOnClimate #CleanPowerPlan

FINAL RULE RESULTED IN A REDUCTION IN FLORIDA'S EMISSION LIMIT

Final rule emissions rate reduction

(lbs CO₂ / MWh)

2012 Adjusted Baseline Emissions Rate

1,221

2022-2029 Interim Goal (-195)

1,026

2030 Final Goal (-107)

919

Draft rule emissions rate reduction

(lbs CO₂ / MWh)

2012 Rate

1,199

2030 Proposed Goal (-459)

740



Florida

24.7% emissions rate reduction

302 lbs CO₂ / MWh reduction

DRAFT RULE REDUCTION: 38.3% (459 lbs CO₂ / MWh)

WEST VIRGINIA V. EPA

- 24 States on Brief: Alabama, Arizona, Arkansas, Colorado, **Florida**, Georgia, Indiana, Kansas, Kentucky, Louisiana, Michigan, Missouri, Montana, Nebraska, New Jersey, North Carolina, Ohio, South Carolina, South Dakota, Utah, Wisconsin and Wyoming joined the lawsuit filed by West Virginia and Texas
- Oklahoma, North Dakota and Mississippi filed separately
- 27 States Total



WEST VIRGINIA V. EPA

- Jan 21: DC Cir denied motions to stay
- Feb. 9: Supreme Court granted a stay
- June 2: Oral Arguments
 - Panel: Henderson (R), Rogers (D) and Srinivasan (D)



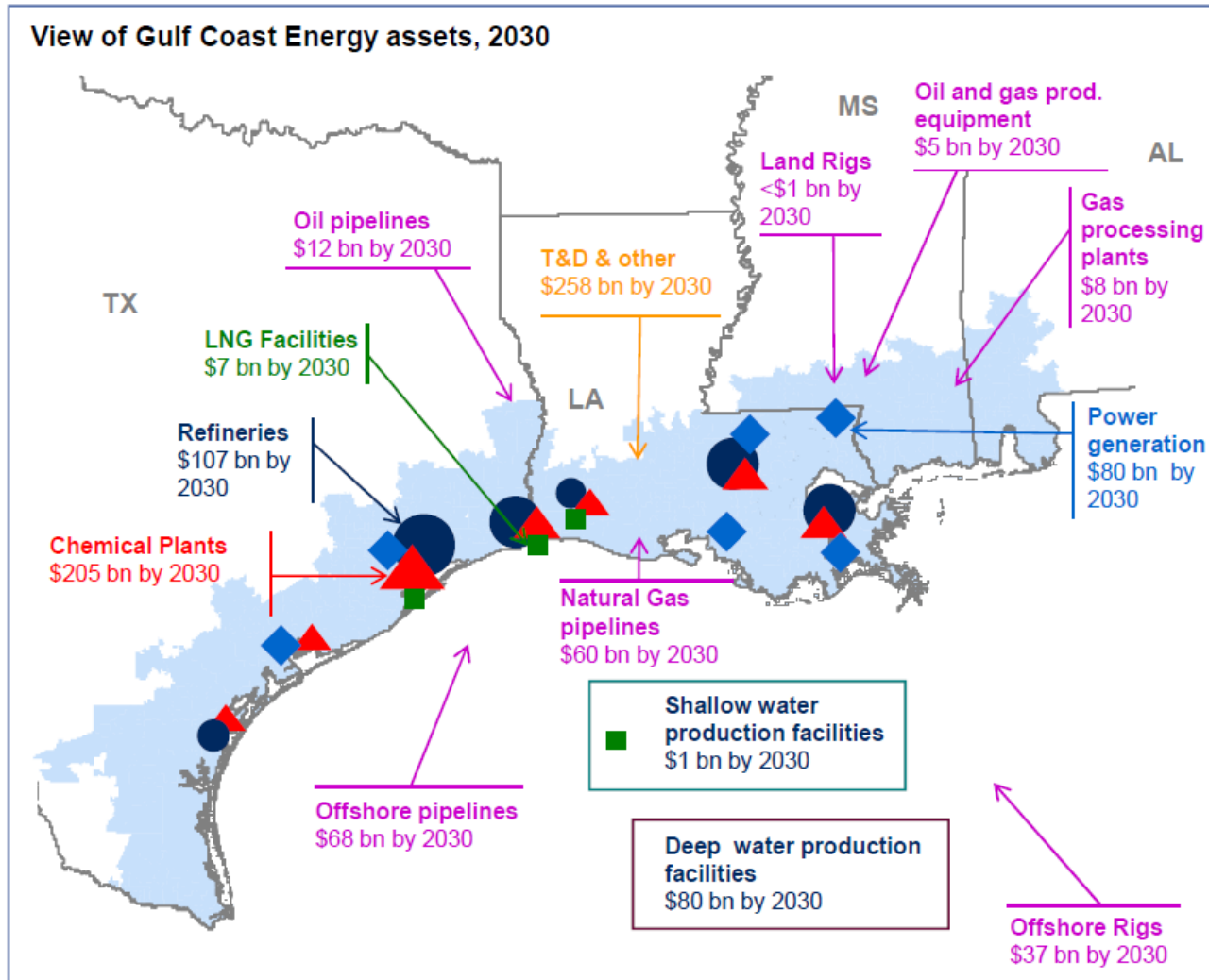
Even among the 26 states that are suing EPA, many are already working on plans

States that have Filed Suit Against CPP



October 28, 2015

*Current Kentucky Governor preparing compliance plan with term ending this year. All gubernatorial candidates have vowed not to comply.
Analysis by Advanced Energy Economy



- Modeled ~ 50,000 oil and gas structures including 90,000 miles of pipelines, 2000 offshore platforms and 27,000 wells
- Considered over 500,000 miles of T&D, and ~300 generation facilities
- Consolidated information across 10-15 key databases, including EIA, MMS, Energy Velocity, OGJ, Tecnon, HPDI, Wood Mackenzie, Ventyx, Energy Velocity, Entergy



SOME DIFFICULT QUESTIONS TO PONDER...

WHAT ARE OUR ENERGY GOALS?

- Resource limitations/potential?
- Economic?
- Environmental?
- Innovation?
- Other?



HOW DO WE BALANCE COMPETING GOALS?

- What happens when sustainability is more expensive in the market?
- What happens when non-sustainable options are more expensive for society?



HOW SHOULD WE GET THERE?

- Mandates?
- Incentives?
- Markets?



WHO SHOULD BE IN CHARGE (SEPARATION OF POWERS)?

○ Federal

- Congress?
- Judicial?
- Executive?
 - DOE
 - FERC
 - DOI
 - EPA
 - NRC

○ State

- Public Utility Commissions
- Utilities
- Environmental Agencies



ASK MORE DIFFICULT QUESTIONS

- How can we best educate the consumers about the expenses facing the grid (regardless of whether we upgrade existing or replace with innovative technologies)?
- How can we ensure reliability?
- How should we manage externalities and risk?
- How can we incorporate long-term sustainability into our decision-making process?



- ▶ Fuel diversity is key to reliable and affordable electricity. Electric companies use a variety of fuels to generate electricity, and tend to use the fuels that are most cost-effective and readily available in their region.



THANK YOU

- Thoughts or questions?
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 - Energy Scholarship: <http://ssrn.com/author=1216973>

