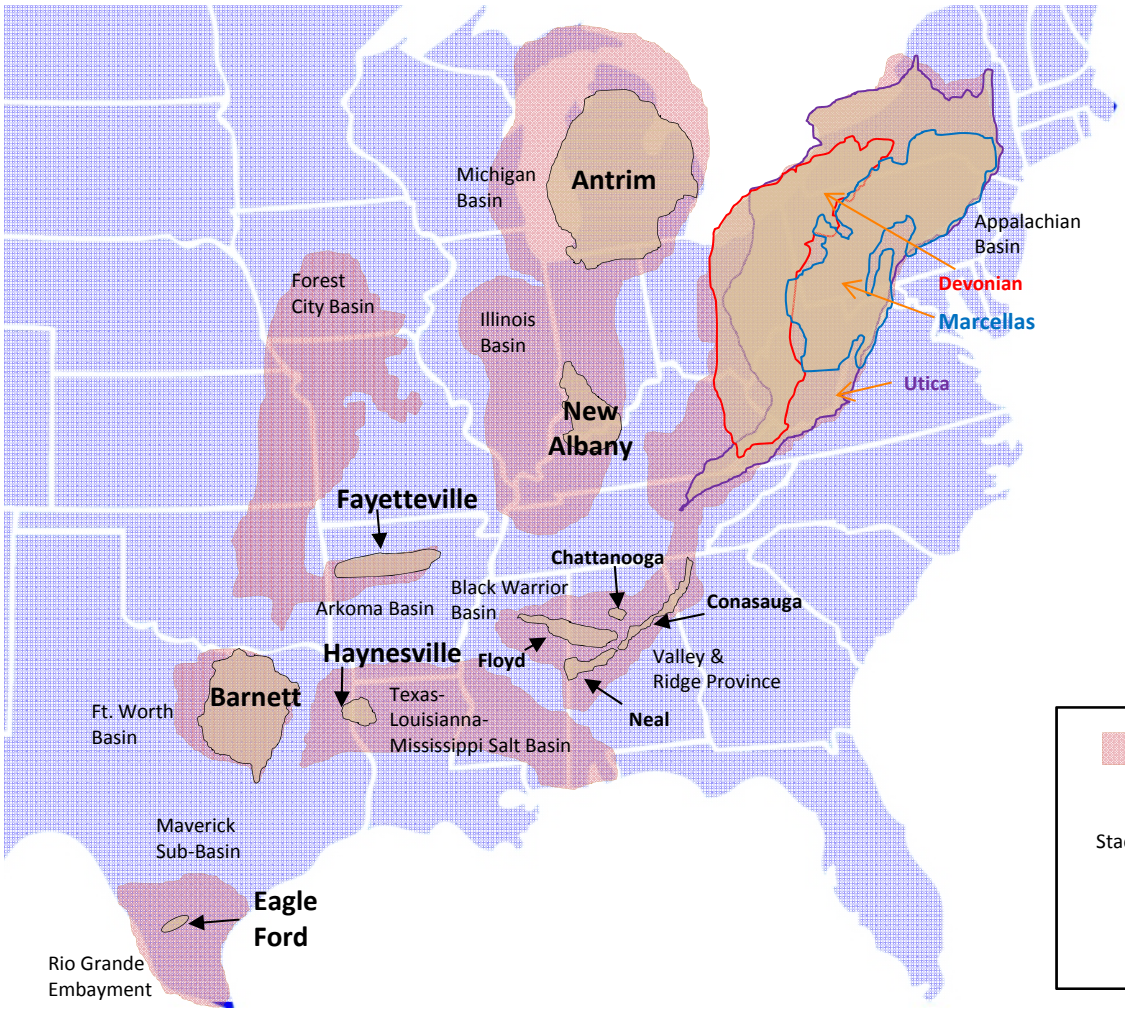
Natural Gas

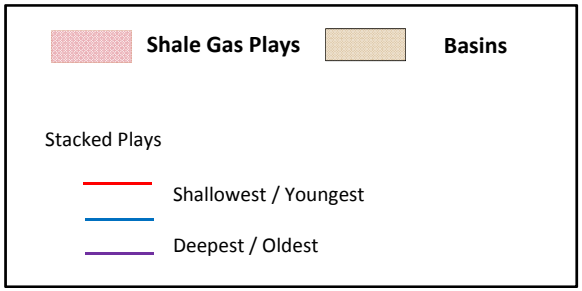
Securing Florida's Energy Needs Today And In The Future

JR Mclelland
TECO Energy
Managing Director of Fuels

US Eastern Shale Basins

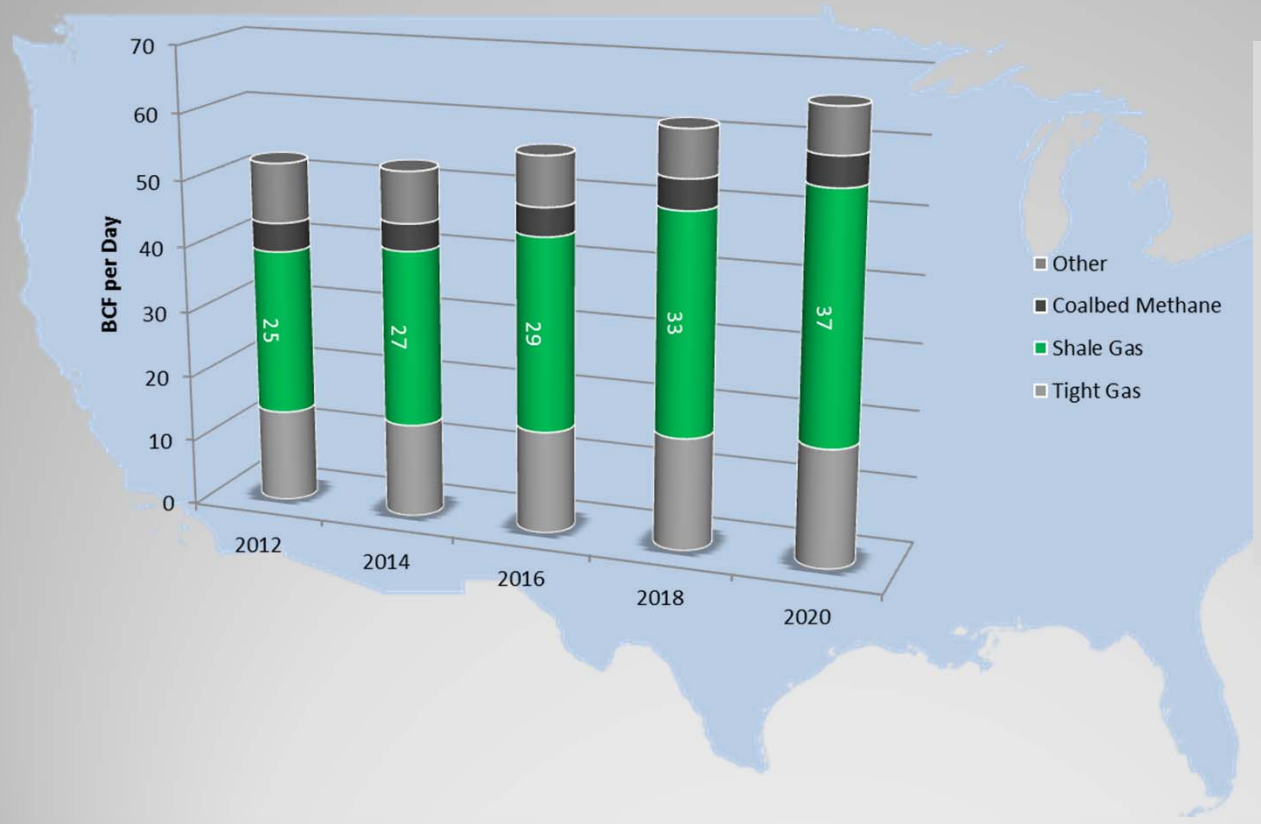


- Advances in drilling technologies have completely revolutionized the outlook for natural gas in the United States.
- The new supplies of natural gas that we have been able to obtain in the last few years mean that we are now able to meet the growing demand for natural gas through the next several generations.
- Shale basins that supply Florida
  - Barnett
  - Haynesville
  - Fayetteville
  - Marcellus
  - Eagle Ford



US Natural Gas Supply by Fuel Type

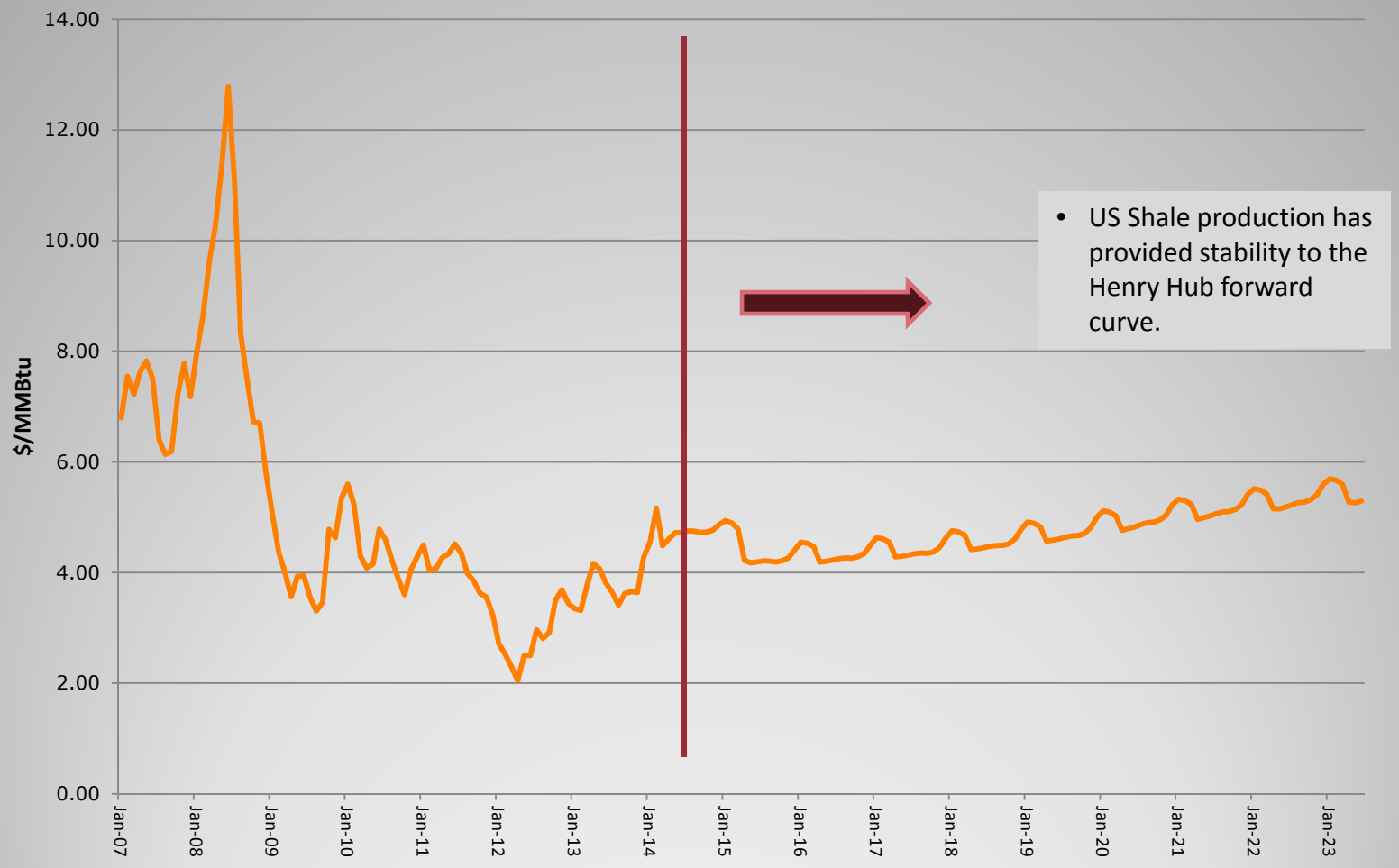
Lower 48 States



- By 2016 Shale gas will account for nearly 50% of total production
- Shale production is projected to climb to two-thirds of total production by 2030.

- Source EIA 2014 Annual Energy Outlook

Historical Natural Gas Pricing



- US Shale production has provided stability to the Henry Hub forward curve.

- Source NYMEX HH Futures

US Energy Consumption by Fuel Type

- The US annual energy consumption is nearly 100,000 BCF
- The US ranks 2nd in the world regarding total energy consumption with China being the largest energy consumer with a forecasted consumption of 125,000 BCF in 2014
- Approximately **27%** of the US fuel consumption is natural gas

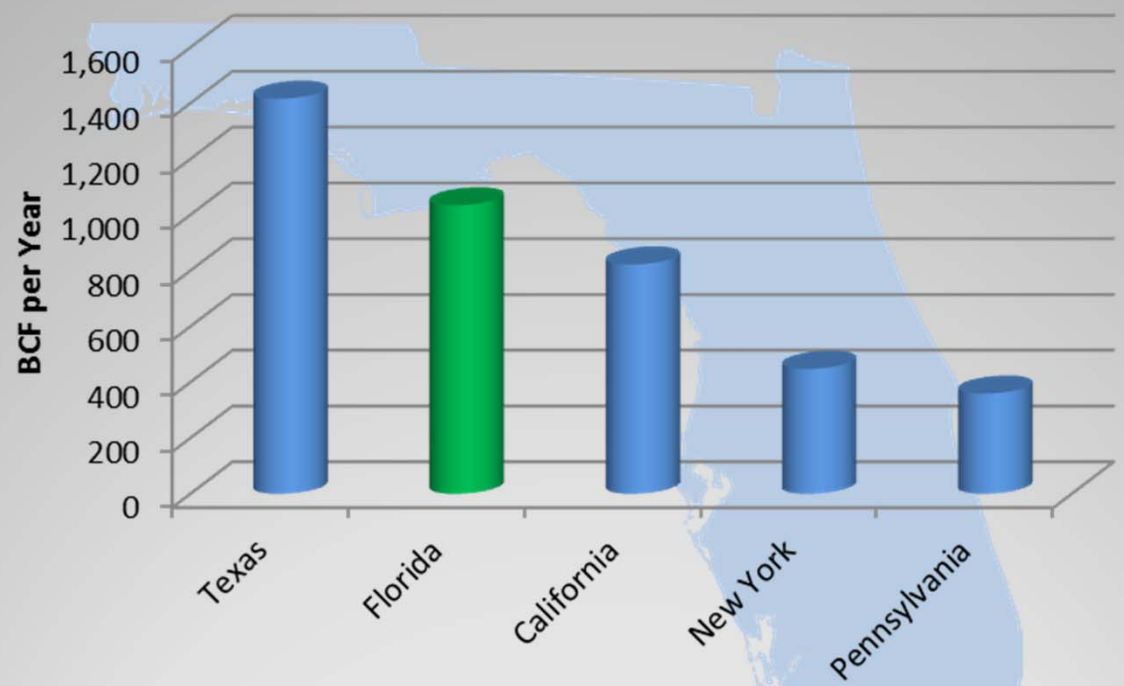
- Source EIA 2014 Annual Energy Outlook

US Natural Gas Consumption by Sector

- Natural Gas Consumption used for Power Generation is approximately **35%** of the US Total Natural Gas Fuel Consumption
- Natural Gas Power Generation Consumes approximately **8.5%** of the entire US Energy Consumption.

- Source EIA 2014 Annual Energy Outlook

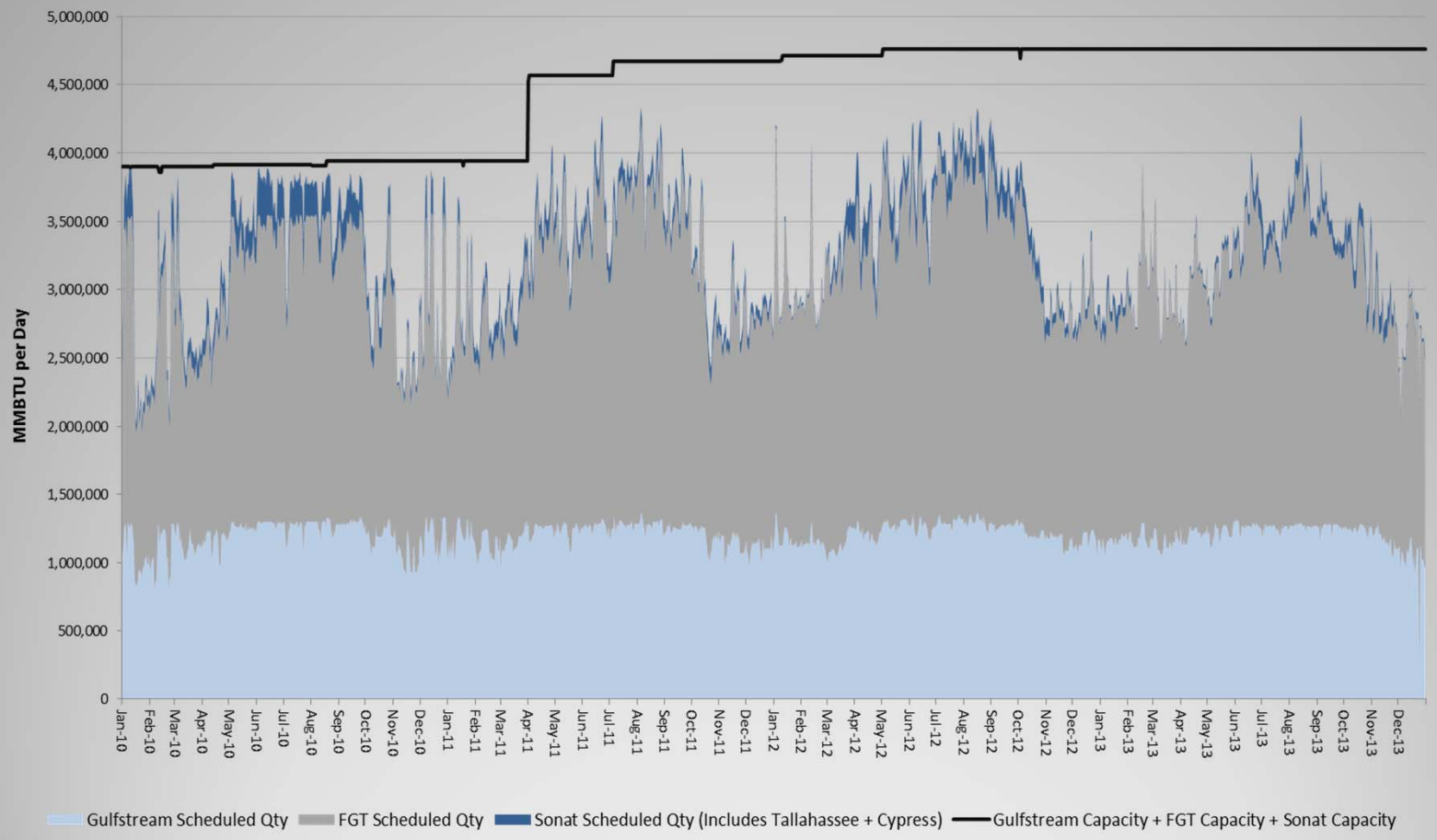
NG Consumption for Power Gen by State - 2013



- The State of Florida ranks second only to Texas regarding NG consumption for power generation. Florida consumes approximately **13%** of all US Natural Gas consumed for Power Generation or **4%** of all the Natural Gas Consumed in the US.

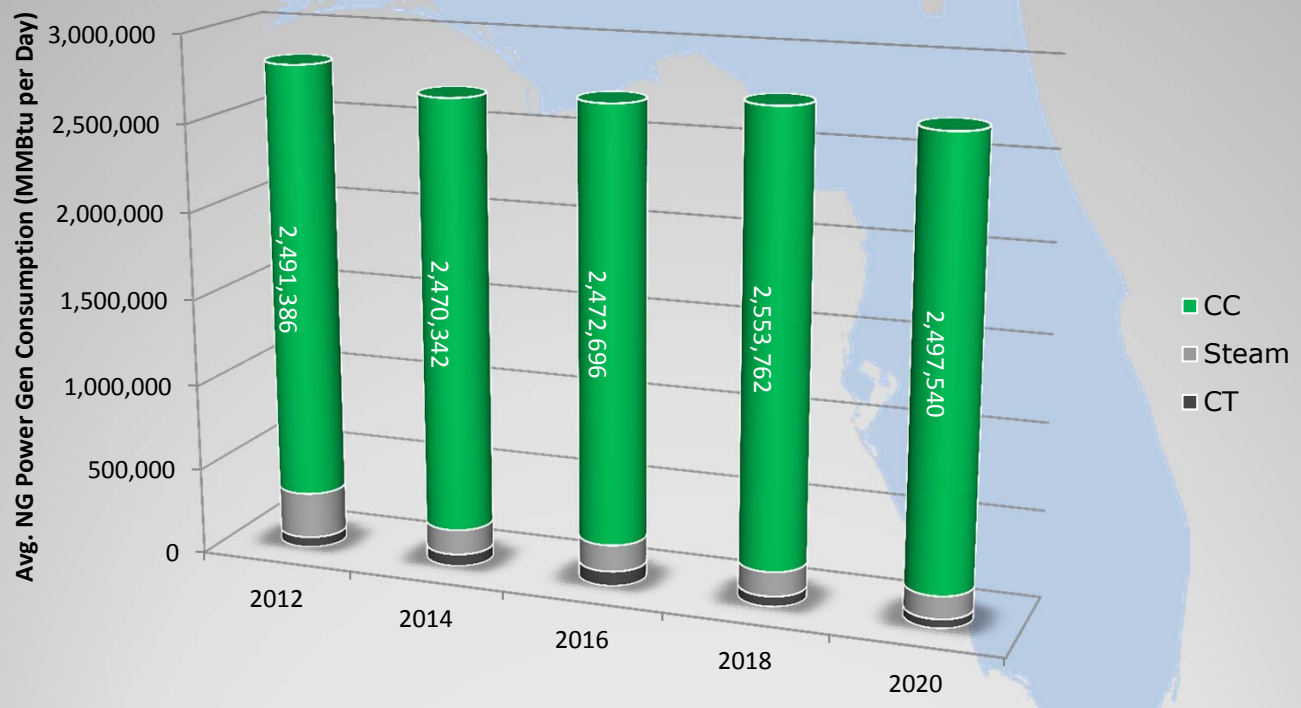
- Source EIA 2014 Annual Energy Outlook

FL Natural Gas Historical Consumption



- Florida has been one of the fastest growing gas markets in the U.S, consumption has more than doubled since 2000. Between 2010 and 2013 demand has averaged over 3.2 Bcf per day.

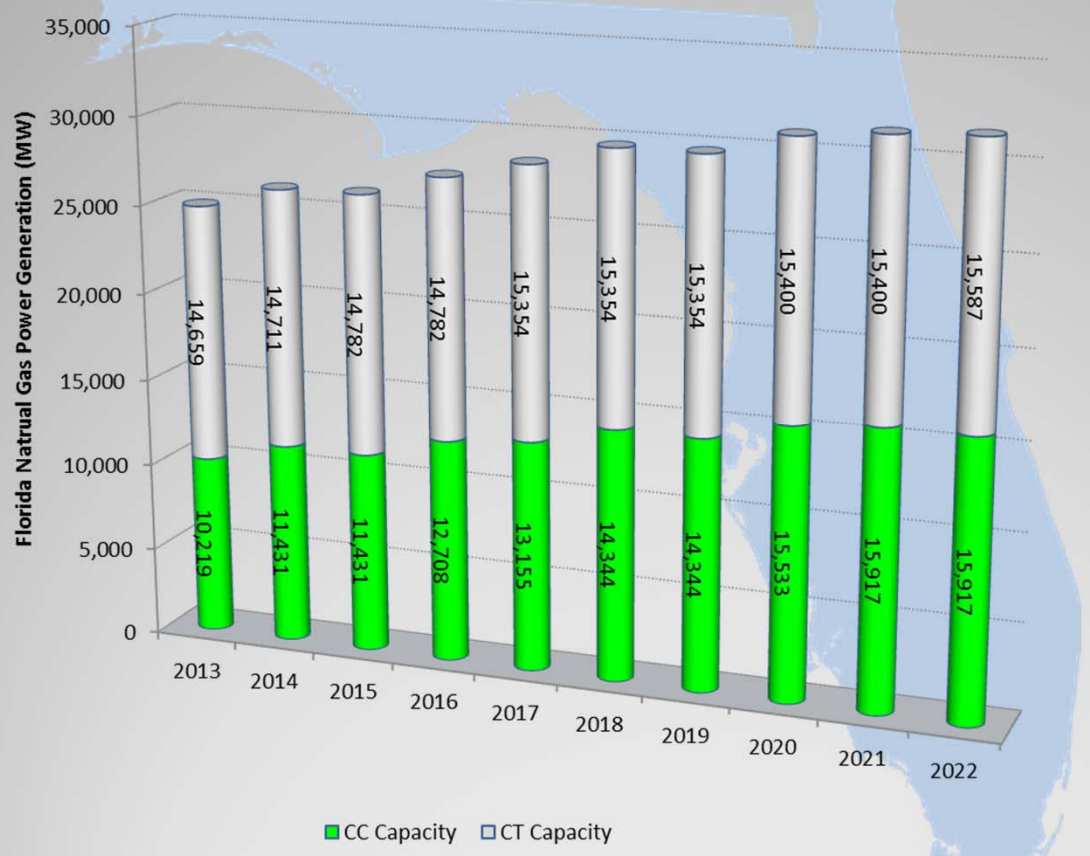
FL NG Consumption - Power Gen



Growth has been driven primarily by increased use within the electric generation segment which represent more than 88% of total gas use

- Source EIA 2014 Annual Energy Outlook

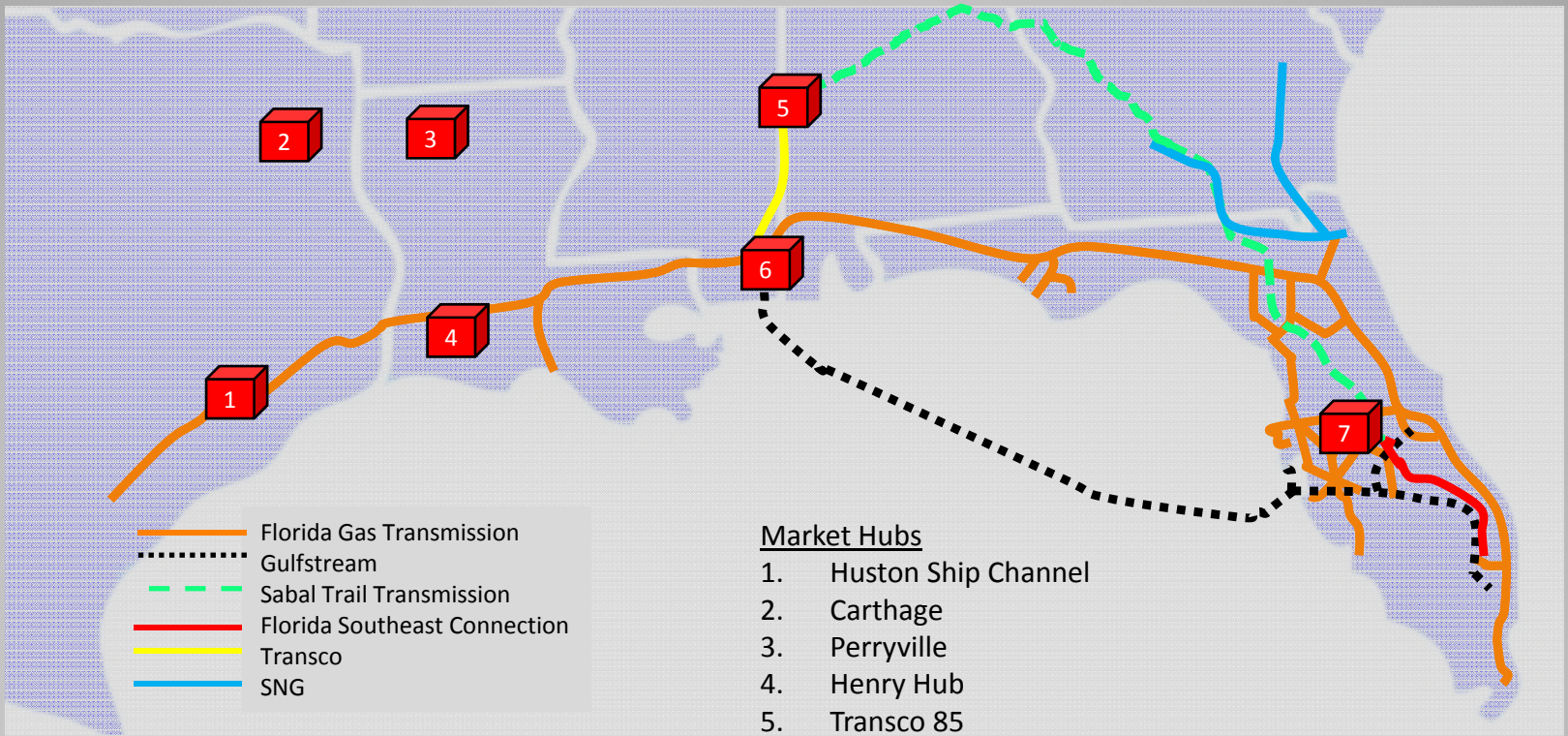
FL NG Power Gen Capacity



- Natural gas Combine Cycle and Simple Cycle power plants account for approximately half of the installed capacity in Florida
- Energy from these assets accounts for 60% of the State's total energy needs

- FRCC – 2013 Load and Resource Plan

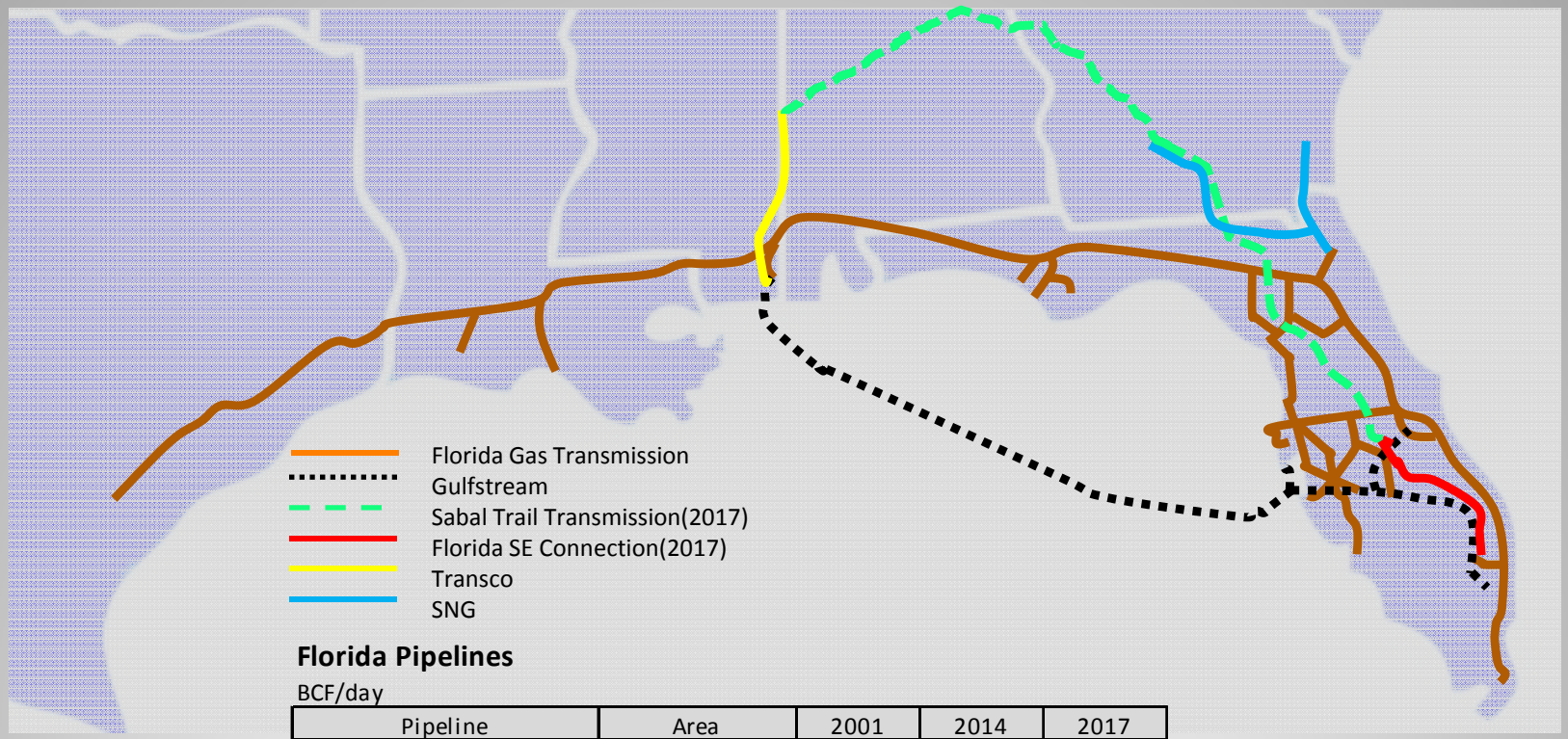
Natural Gas Market Hubs



Market Hubs

1. Huston Ship Channel
2. Carthage
3. Perryville
4. Henry Hub
5. Transco 85
6. Florida Z3
7. Florida – Citygate

Florida Pipeline Capacity

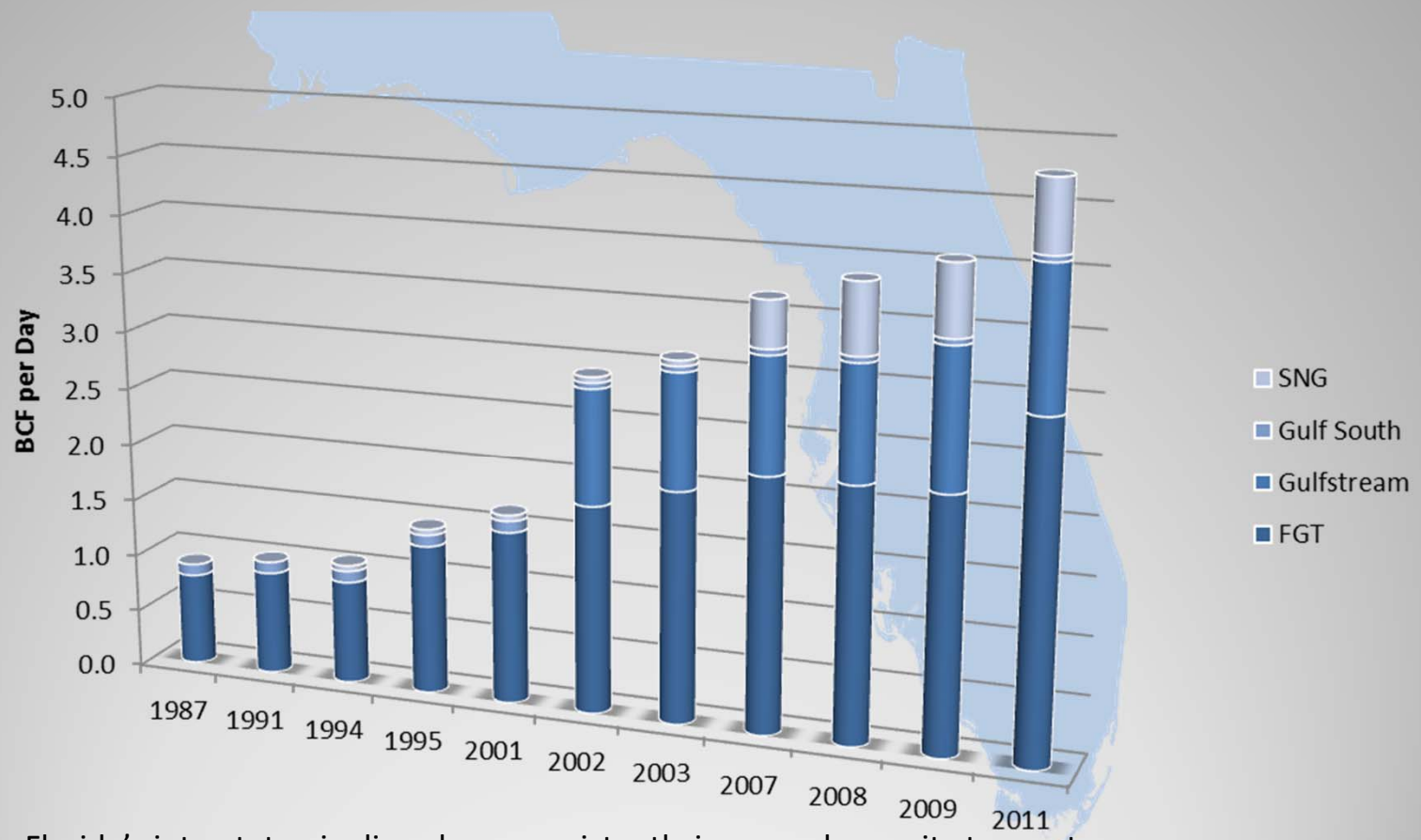


Florida Pipelines

BCF/day

Pipeline	Area	2001	2014	2017
FGT	Total State	1.65	3.10	3.10
Gulfstream	Central and SE	0.00	1.30	1.30
Gulf South	Pensocola	0.20	0.20	0.20
SNG/Cypress	Northeast	0.05	0.37	0.37
Sabal Trail/SE Connector [1]	Central and SE	0.00	0.00	1.00
		1.90	4.97	5.97

FL Pipeline Expansion History



Florida's interstate pipelines have consistently increased capacity to meet market demand

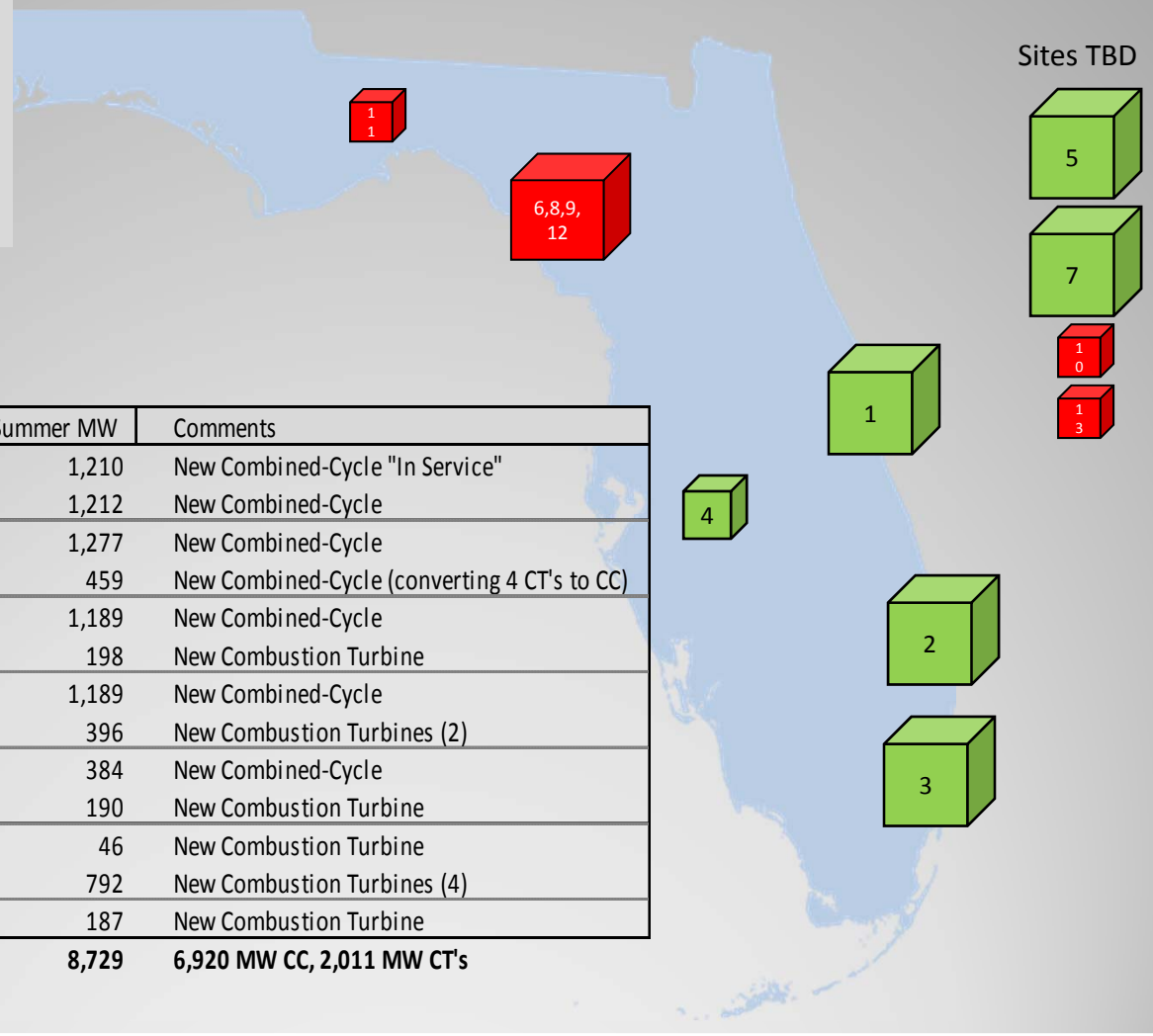
Demand Growth

- Power Generation
- Industrial
- Transportation
  - Compressed natural gas for fleets
  - LNG for long haul trucking
  - Bulk Transportation Marine fuel and rail

- Room for growth for all segments but must be distributed to load centers.
- Electric peaking demand and fuel switching no longer constrained by pipeline capacity after 2017.
- Significant efficiency gains from new generation additions temper demand growth in the near term.
- Growth from emerging transportation markets will be significant compared to historical growth from R,C & I markets.

FL Natural Gas Power Plant Additions

- Natural gas consumption for power generators is expected to add in excess of 1 BCF per day of demand to the state over the next 10 years.

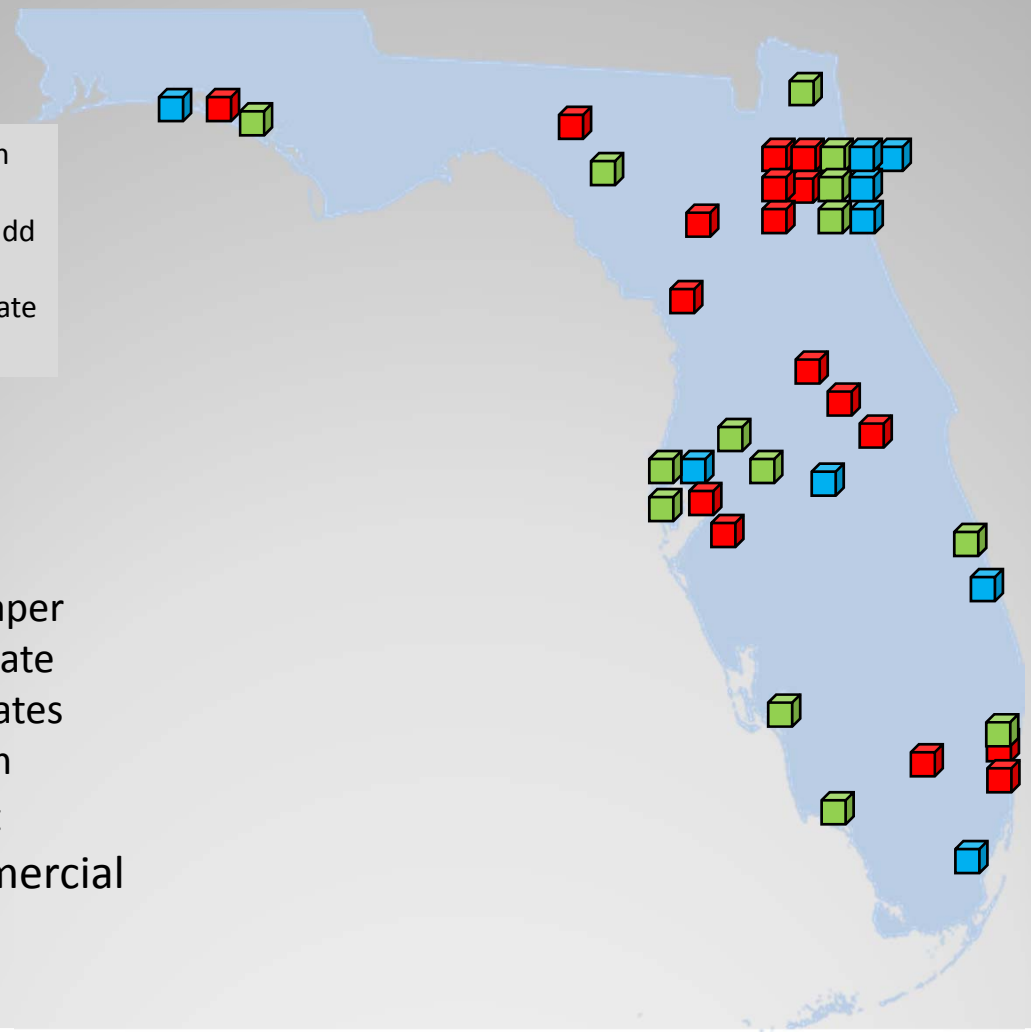


	Year	Name	Plant Location	Summer MW	Comments
1	2013	FPL	Cape Canaveral	1,210	New Combined-Cycle "In Service"
2	2014	FPL	Riviera	1,212	New Combined-Cycle
3	2016	FPL	Port Everglades	1,277	New Combined-Cycle
4	2017	TECO	Polk	459	New Combined-Cycle (converting 4 CT's to CC)
5	2018	Progress	Undetermined	1,189	New Combined-Cycle
6	2019	Seminole	Gilchrist	198	New Combustion Turbine
7	2020	Progress	Undetermined	1,189	New Combined-Cycle
8	2020	Seminole	Gilchrist	396	New Combustion Turbines (2)
9	2020	Seminole	Gilchrist	384	New Combined-Cycle
10	2020	TECO	Undetermined	190	New Combustion Turbine
11	2020	Tallahassee	Hopkins	46	New Combustion Turbine
12	2021	Seminole	Gilchrist	792	New Combustion Turbines (4)
13	2022	Progress	Undetermined	187	New Combustion Turbine
			Total MW	**8,729**	**6,920 MW CC, 2,011 MW CT's**

- FRCC 2013 Load and Resource Plan

Recent and Proposed LNG and Industrial Projects

- Natural gas consumption for LNG and Industrial projects is expected to add in excess of 0.2 BCF per day of demand to the state over the next 5 years.



- LNG
- Industrial
  - Pulp/Paper
  - Phosphate
  - Aggregates
  - Gypsum
  - Asphalt
- Major Commercial

Summary

- Shale development has fundamentally transformed the outlook for natural gas resulting in lower commodity costs and creating new opportunities for supply diversity.
- Increases in consumption and future need will be driven primarily by gas fired generation additions, industrial conversions, and emerging transportation fuel markets.
- Emerging transportation markets will bring to Florida new load and new market participants. Access to natural gas at Florida's ports will be key to future growth.
- Florida's Gas Industry has a long history of expansion to meet demand growth
- Florida is well positioned to take advantage of natural gas abundance however continued investment in natural gas infrastructure will be important to support peak demand, growth and reliability.