

# Southern's Present, Past and Future

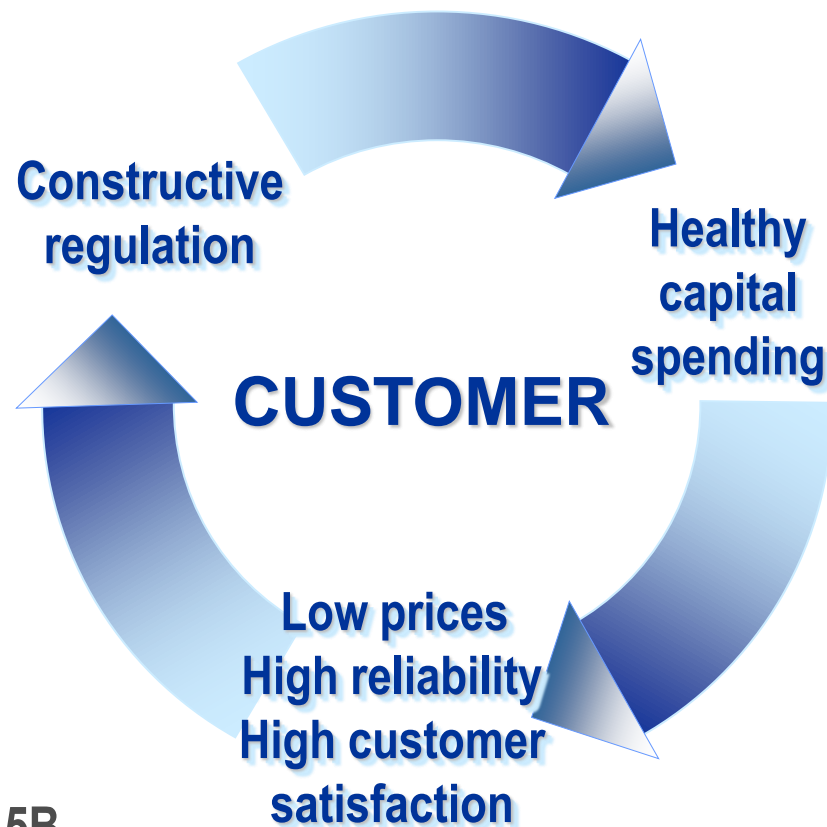
**Brian Fuller**  
Coal Services Director



# Southern Company Power Generation Overview

- **Vertically integrated, Investor Owned Utility** serving ~4.6 million retail customers
- **Fuel Services provides fossil fuel for:**
  - ~14,000 MW coal generation capacity
  - ~25,000 MW natural gas/oil generation capacity
- **3<sup>rd</sup> largest U.S. consumer of coal**
  - 2018: 35M tons
- **3<sup>rd</sup> largest user of natural gas in the U.S.**
  - 2018: 721Bcf, a record setting burn for SO
- **2018 fossil fuel purchases of more than ~ \$4.5B**

– Coal: \$1.7B (38%)	Commodity: \$0.9B (53%)	Transportation: \$0.8B (47%)
– Gas: \$2.74B (61%)	Commodity: \$2.4B (88%)	Transportation/Storage: \$.33B (12%)
– Limestone: \$56M		
– Oil: \$38M		



# Southern Company Fuel Diversity

*“All the Arrows in the Quiver”*

## ➤ 21 coal-fired units

- ~14,000 MW capacity
- Located at 8 plant sites

## ➤ 110 gas-fired units

- ~25,000 MW capacity
- Located at 35 plant sites

## ➤ 6 nuclear units

- 5,800 MW capacity
- 3 nuclear plants

## ➤ 113 hydro units

- 3,600 MW capacity
- 34 hydroelectric plant sites

## ➤ 18 oil-fired units

- 1,000 MW capacity
- Located at 5 plant sites

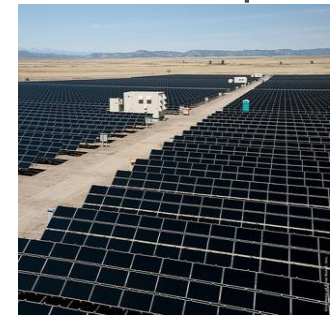
## ➤ Biomass

- 300 MW capacity



## ➤ Solar

- 3,100 MW capacity

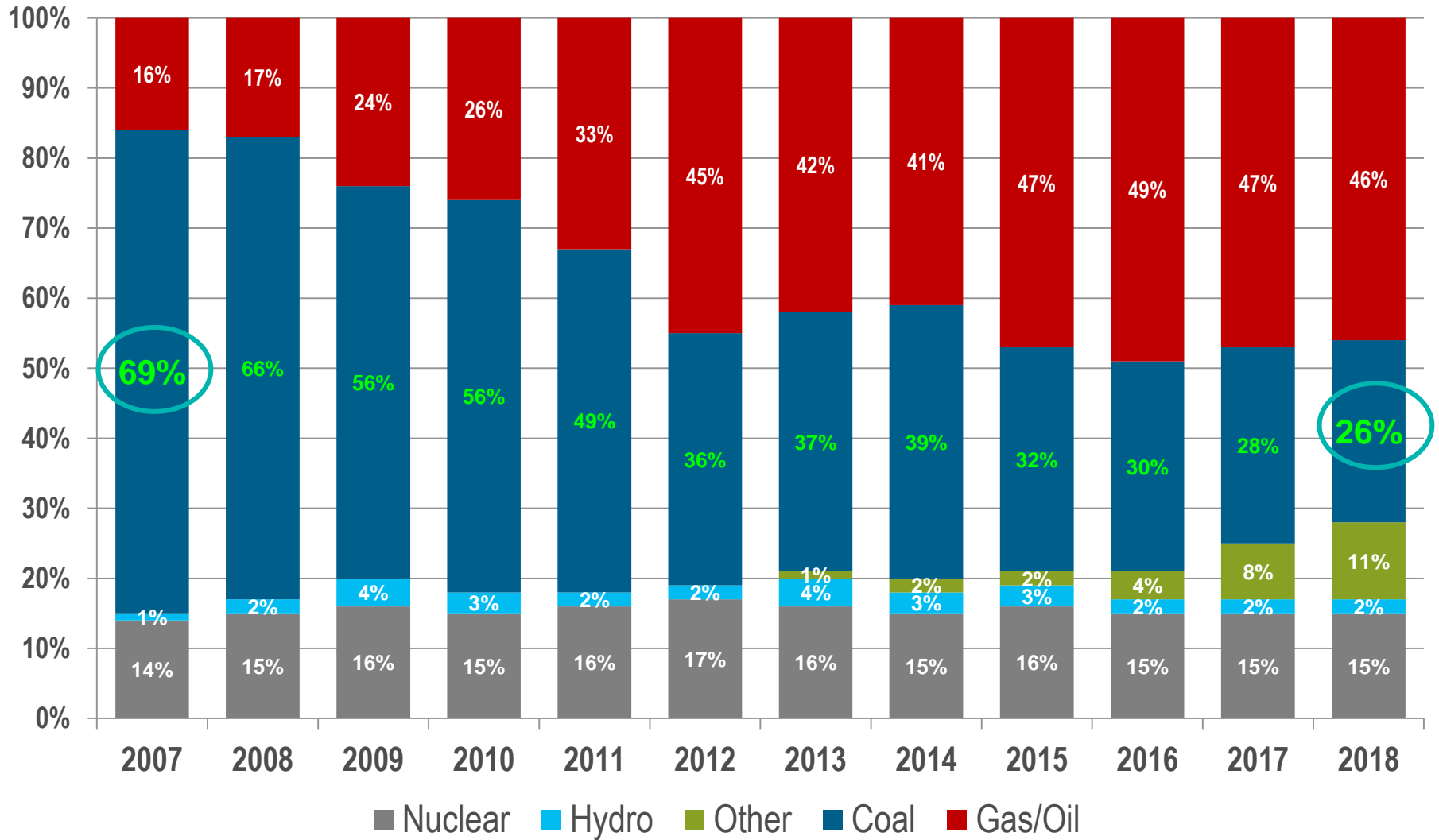


## ➤ Wind (PPA)

- 2,100 MW



# Southern Company Energy Mix



- Gas/Oil includes non-affiliate PPAs. Net SO reported. Does not include non-territorial capacity.
- Other includes biomass, wind, landfill gas and solar.



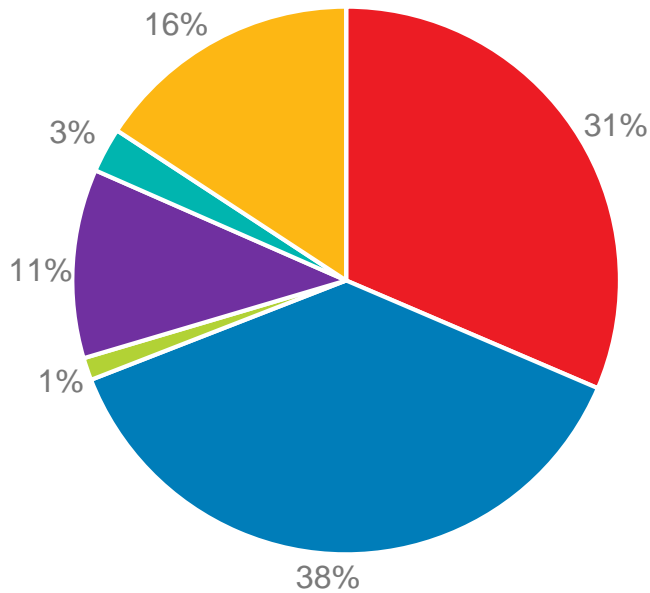
# Southern Company Coal Supply Regions

## Transitioning to the Most Cost-Effective Fuels for Our Customers



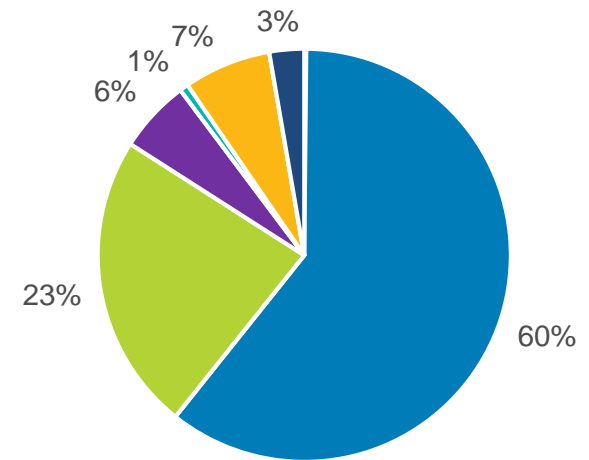
**2008**

Receipts:  
75 M tons



**2018**

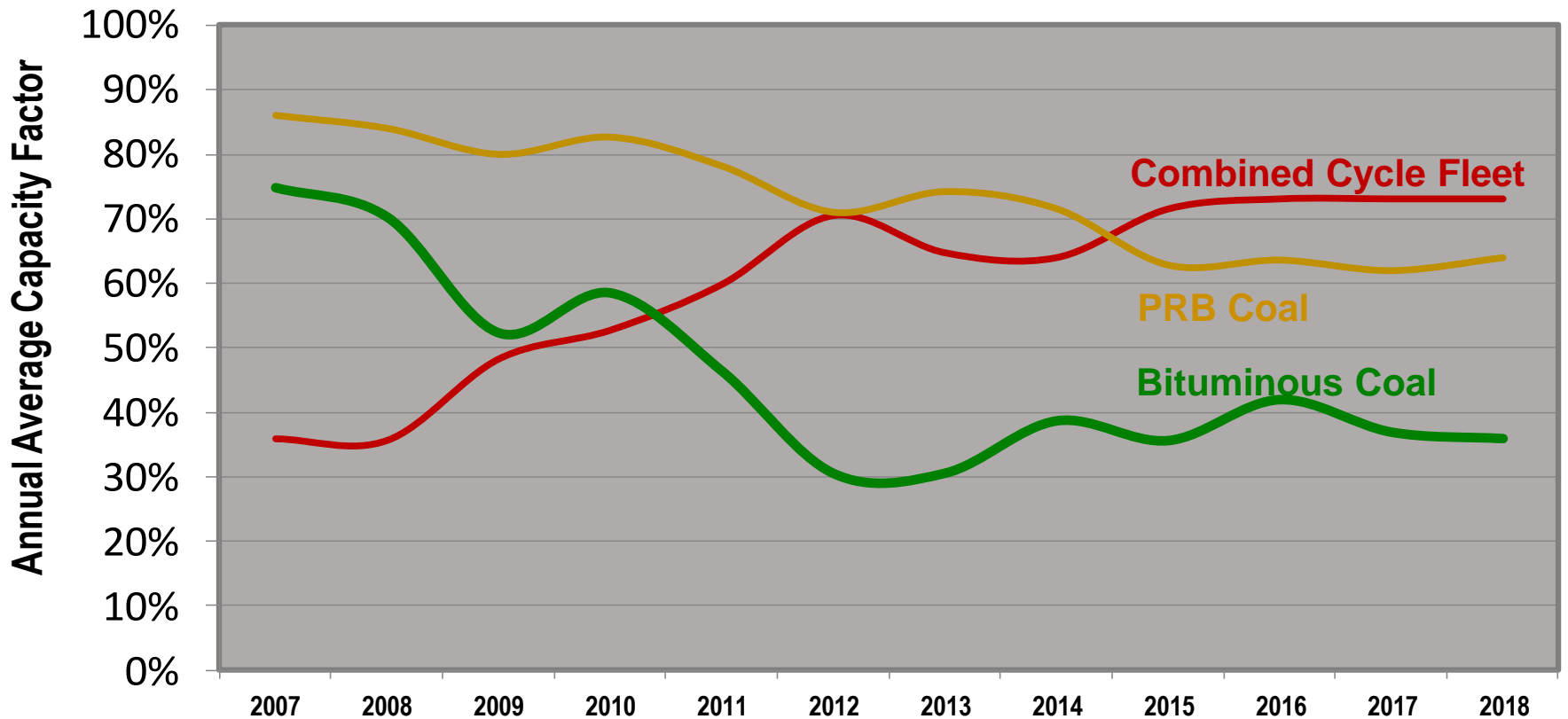
Receipts :  
32 M tons



■ CAPP  
 ■ PRB  
 ■ ILL Basin  
 ■ Alabama  
 ■ Colorado  
 ■ Import  
 ■ NAPP

# Unit Capacity Factors Respond to the Market

## Combined Cycle Units vs Coal Units



# Current Environment and Outlook

- Primarily a two-basin system (PRB and IB/NAPP), with some other sources mixed in
- Dynamic markets persist driven by **volatile** natural gas prices and weather events
- Coal generation on the margin results in burn **volatility**
- Inventory management **more challenging due to burn volatility** and lagging response in railroad service
- More **flexibility** from coal producers and more **optionality** in coal and rail contracts continues to be needed
- Utilities have to be willing to be shock absorbers at times



# Headwinds



- **Environmental**

- SO retired over ~5000 MW due to MATS, another ~3000 MW converted from coal to gas. Gone, not coming back
- Ash/Water
- ACE

- **Natural gas prices**

- Short-Term variability can swing coal consumption (see Polar Vortex period, Fall 2018). Longer-term, the projections “chill” a decision to invest in base-load generation.
- How long does it last?

- **Other generation types**

- Impacts of solar and wind (intermittent resources) are just beginning to be felt. Other generation types (both gas and coal) ~~will feel~~ *are feeling* the swing in operations as these have become a larger player in our portfolio.
- Southern will have around 4000 MW of solar (inside territory) within the next 3 years
- For coal? More variability





# What Does it Mean for Coal Transportation?

- If we thought today was difficult to plan.....
- Disruptions are more painful (see Midwest Flooding)
- Flexibility will be a premium across the generation business
- Carriers also need certainty to invest and prepare for deliveries
- So where's the balance?.....



# Major Utility Statements

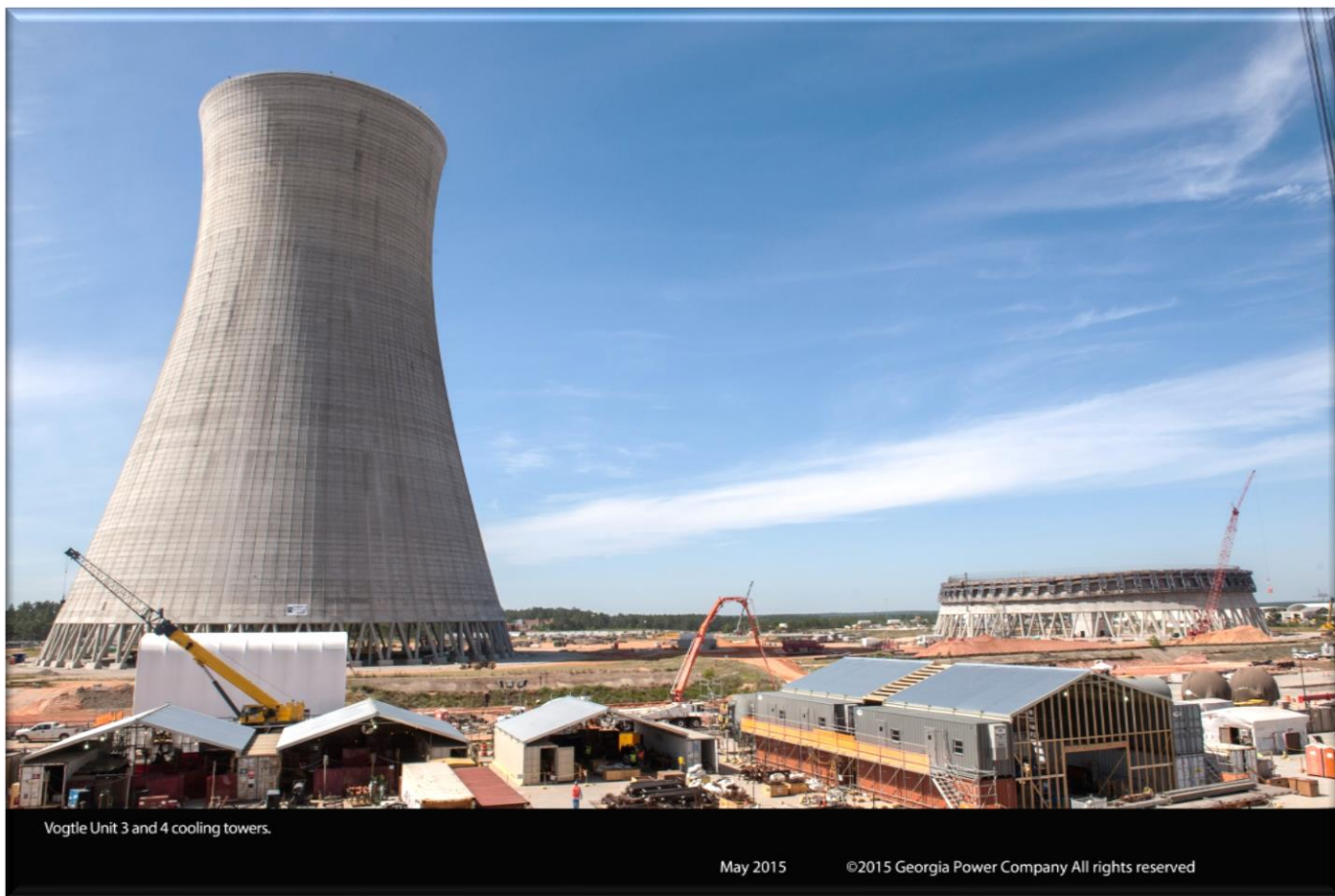
- “Clean Energy Transformation” ..... AEP
  - 60% carbon reduction by 2030, 80% by 2050
  - 2000-2018 represent a 59% reduction to date
- “Reduce Carbon” ..... Duke
  - 40% by 2030
  - 31% reduction thru 2018
- “Future of Energy in low-to no-carbon by 2050” ..... Southern
  - 50% reduction by 2030
  - 36% reduction since 2007



# Plant Vogtle-Nuclear

Vogtle 3 April 2021 1100 MW

Vogtle 4 April 2022 1100 MW



# Summary

- Southern will be a majority gas/renewables fleet by ~2030
- ~~Will~~ Are target inventory levels ~~have to be changed~~ changing?
- Where do we go from here?
  - Explore all manners of burn strategies and contracting
  - **Prepare In for a world where coal is not baseload**
  - The word “average” will not mean much in the future
- What if the presumption of low gas prices is wrong? Hmmm.....

