Southern’s Present, Past and Future

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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

- 3rd largest U.S. consumer of coal
  - 2018: 35M tons

- 3rd 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

Projections based on 2019 Energy Budget
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 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 target inventory levels have to be changed?

• Where do we go from here?
  – Explore all manners of burn strategies and contracting
  – Prepare 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……