MISSION STATEMENT

Through innovations in energy and environmental policies, programs, and technologies, the Southern States Energy Board enhances economic development and the quality of life in the South.
SSEB Overview

- Established 1960 and expanded in 1978
- 16 U.S. States and Two Territories
- Each jurisdiction represented by the governor, a legislator from the House and Senate, and a governor’s alternate
- Federal Representative Appointed by U.S. President
It’s a brave new world!

• 2017 – Renewables generated 11% of U.S. energy
• Coal plants slide from 40% to 31% of U.S. power
• Natural gas – new champ – 40% of U.S. electricity
• Nuclear hovers at 20%
• America sheds load through energy efficiency
It’s a brave new world!

• Today – *CHANGE* is the new normal
• Electric & autonomous vehicles are upon us
• ISO’s and RTO’s – competing technologies on an hourly basis
• U.S. power grid
  – 7,000+ power plants
  – 5 million miles – transmission lines
  – 3,300 utilities
  – 150 million customers
  – Total Value: $876 Billion
Be brave, because…

- Current power grid – WWII vintage
- Grid loses power 285% more than in 1984
- Cost to American business = $150 billion per year
- July 7-8, California lost power to 80K customers
- Texas is next……
- Imminent need – critical U.S. energy infrastructure
Southern States Regional Energy Profiles

- Released July 8, 2018, 4th Edition
- Published every ~2 years
- Developed by Kentucky Energy & Environment Cabinet and SSEB
- Energy/electricity data comparisons - SSEB region and the United States.
• Demand is flat or declining
• Natural gas and oil prices are low
• Aging fleet of coal-fired generating capacity
• Environmental requirements for generation - uncertainty on carbon limits
• Costs of renewables decreasing and operational flexibility increasing
• Consumers are demanding renewable resources
  – Blackrock Investments for ExxonMobil to consider carbon emissions, Apple, Facebook, WalMart
• Nuclear construction quagmire – Plant Vogtle, Plant Summer
• 2018 Budgets for utility resource R&D uncertain
Coming Electricity Sector Trends!

- Natural gas and renewables dominate new capacity
- Distributed Energy Resources (DER) increase
- Electric Vehicles (EV) are here
- Generation more diverse, decentralized network
- Future grid, self-healing network
- Utilities digitally enabled

*2018 Outlook on Power & Utilities, Deloitte Center for Energy Solutions*
Trending Energy Issues

• DOE federal price support for coal/nuclear
• Energy Storage - need to balance intermittency of renewables
• States considering carbon pricing, e.g., VA joining RGGI
• NERC Summer Reliability Assessment inadequate reserve margins in ERCOT
Electric Generating Resources Nationwide
Selected States (2017) and Electricity Prices

Predominantly Coal
- KY, WV, MO 80-93%
- AR 42%

Predominantly Natural Gas
- MS, FL, LA 62-78%
- TX, VA 45-50%
- OK, GA, AL 38-41%

Predominantly Nuclear
- SC, MD 45-58%
- TN, NC 33-40%
Electricity Generation Mix 2017
Missouri v South Carolina

Missouri Electricity Generation by Fuel, 2017
- Coal: 81%
- Natural Gas: 10%
- Nuclear: 5%
- Wind: 5%

South Carolina Electricity Generation by Fuel, 2017
- Natural Gas: 58%
- Coal: 19%
- Wood: 17%
- Solar: 4%

Kentucky Energy Database, EEC-DEDI, 2018
Total Electricity Consumption
SSEB v U.S. Average

Total Electricity Consumption per Capita, 1963-2017
SSEB Region Compared to Other States

Megawatt Hours


Other States
US Average
SSEB Region

Kentucky Energy Database, EEC-DEDI, 2018
Energy Consumption by Sector
SSEB Region

SSEB Region Energy Consumption by Sector, 1960-2016

Trillion Btu


Transportation Industrial Commercial
Residential

Kentucky Energy Database, EEC-DEDI, 2018
Data Source: EIA-SEDS
Transmission Infrastructure
SSEB Region

![Graph showing transmission infrastructure length (miles)](image-url)
In summary...

- Building next generation energy infrastructure is critical
- By 2050, energy consumption in U.S. grows 75%
- Renewables – largest growth in energy industry currently
- Natural gas – expanding markets; exports to allies
- Infrastructure/grid risks
  - Terrorism, vandalism, and extreme weather events
- Cybersecurity – who has the best AI to counterattack?
- Public/private partnerships – THE FUTURE
- Affordable, reliable, resilient, and sustainable energy & electricity
- Even when regulations are repealed, market forces impact coal and nuclear
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