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U.S. POWER MARKET Federal and State Regulatory Structure

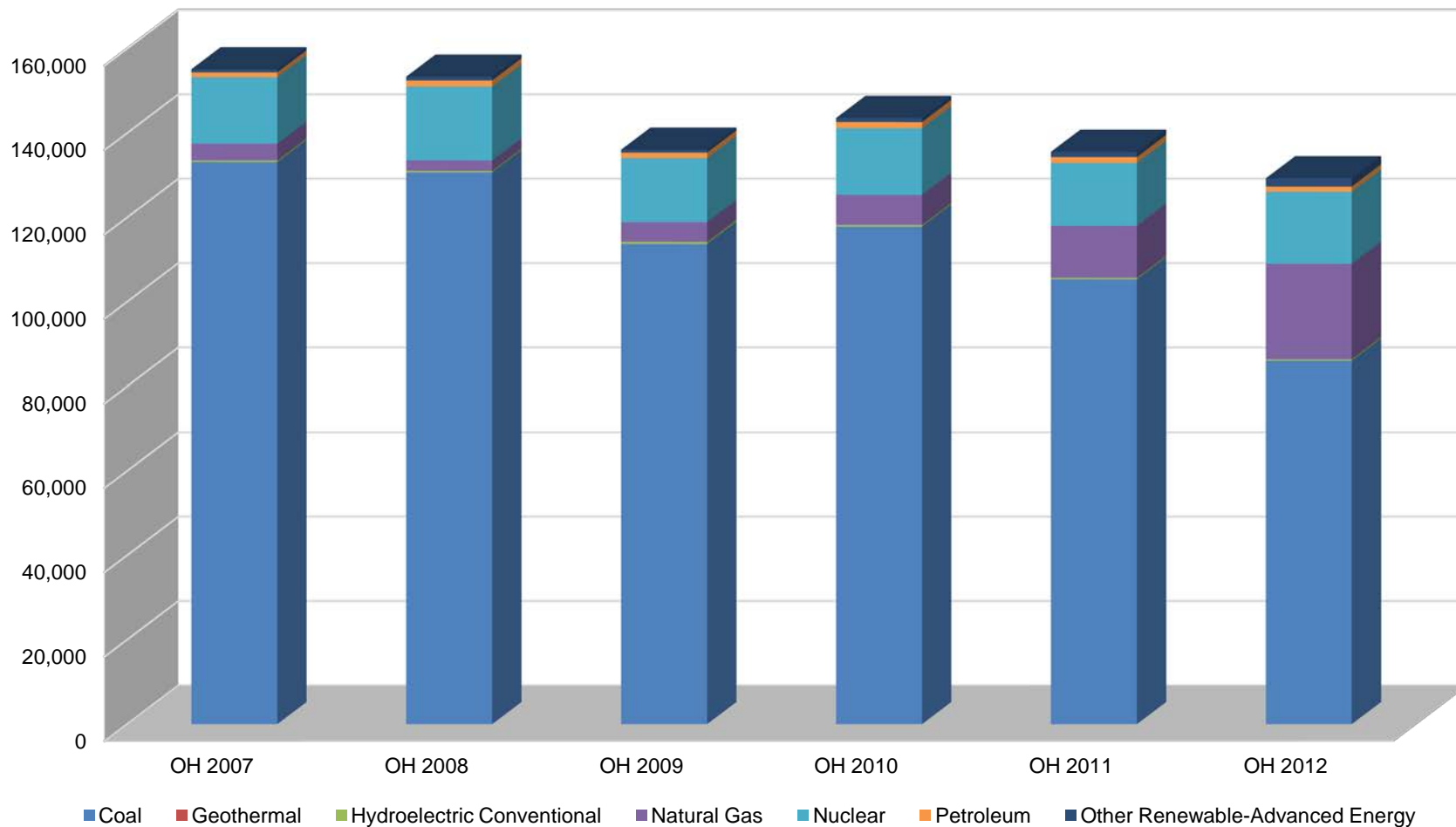


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Ohio Electricity Generation Mix (GWh)



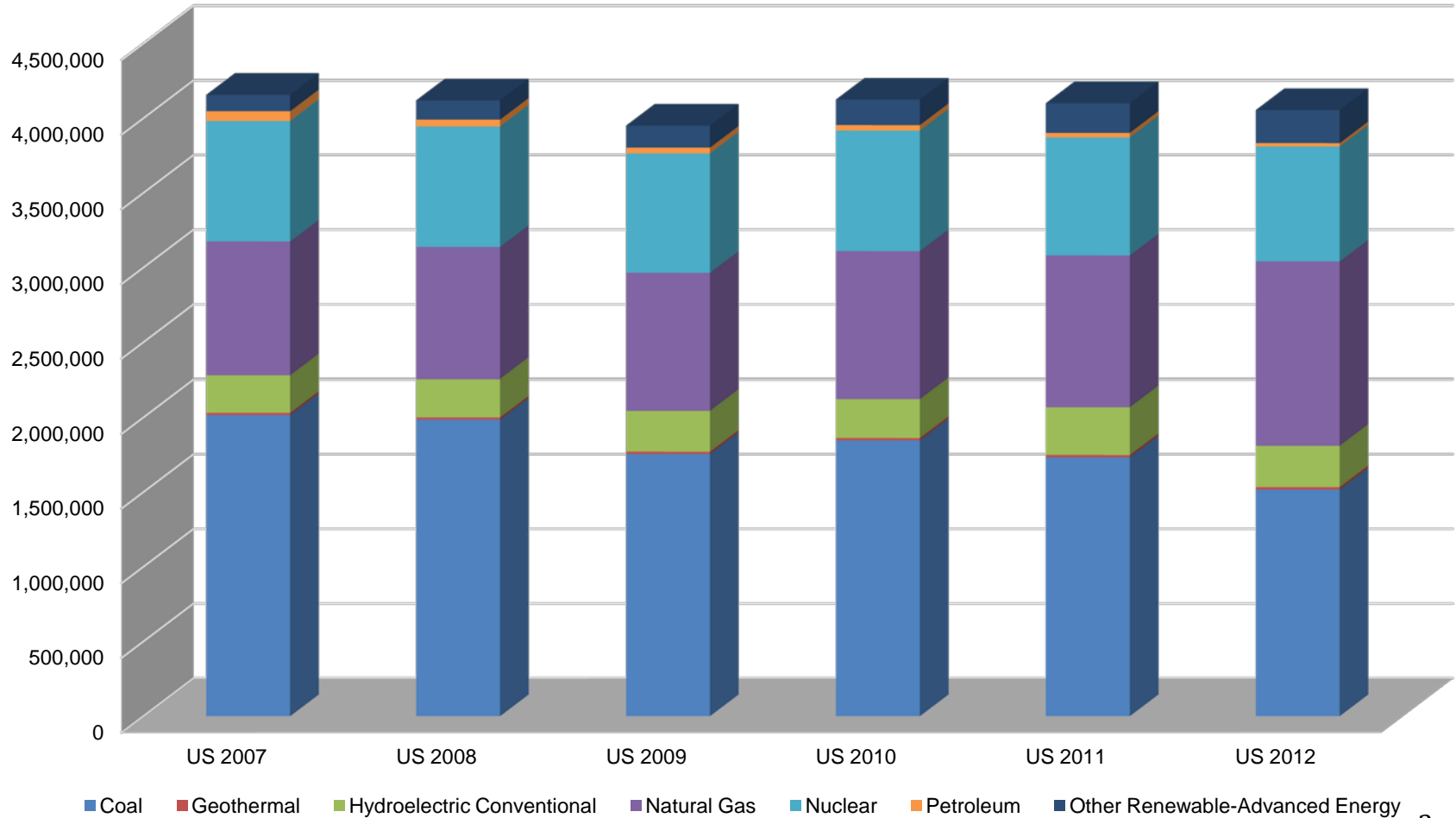


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US Electricity Generation Mix (GWh)





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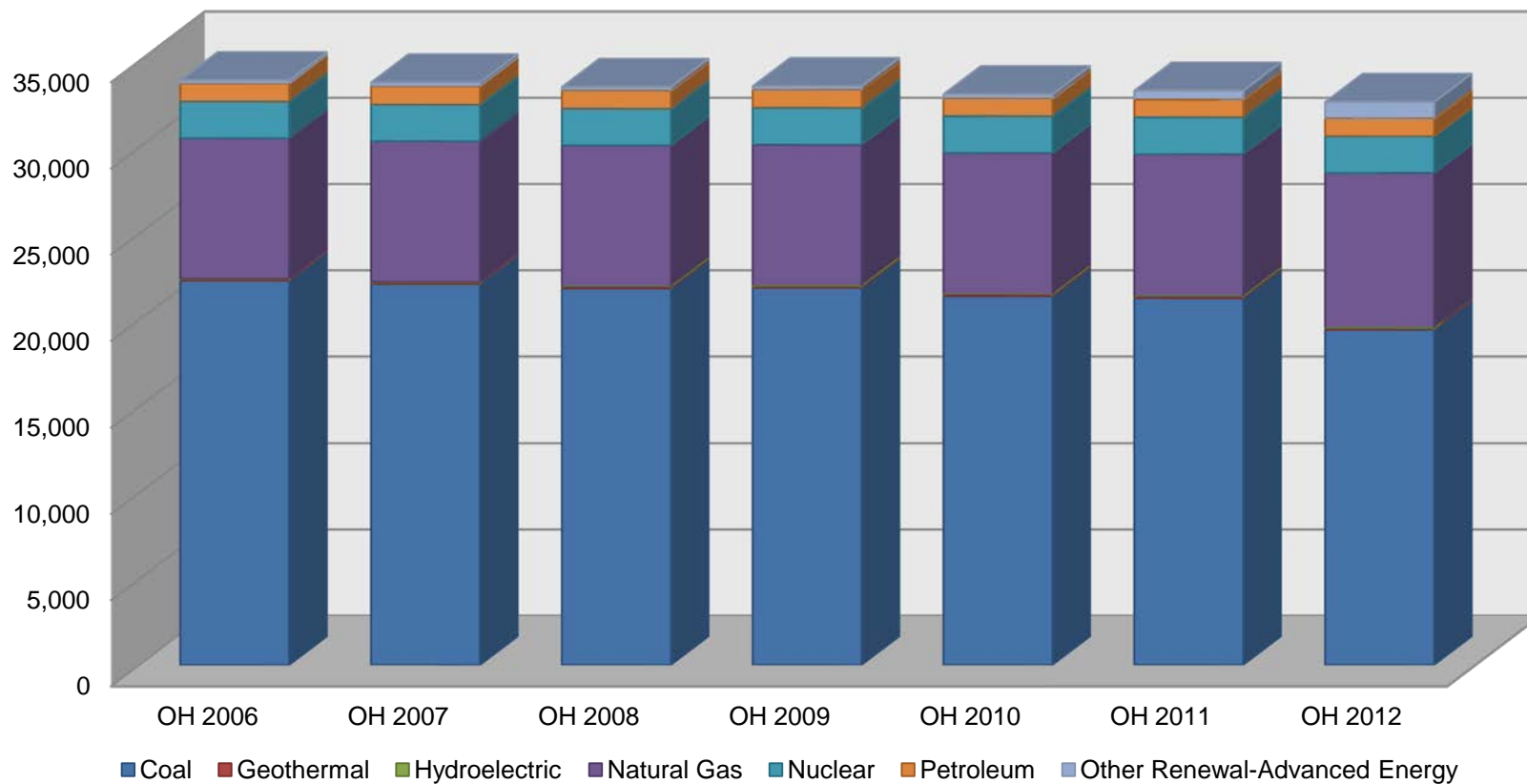


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Ohio Capacity Mix (MW)



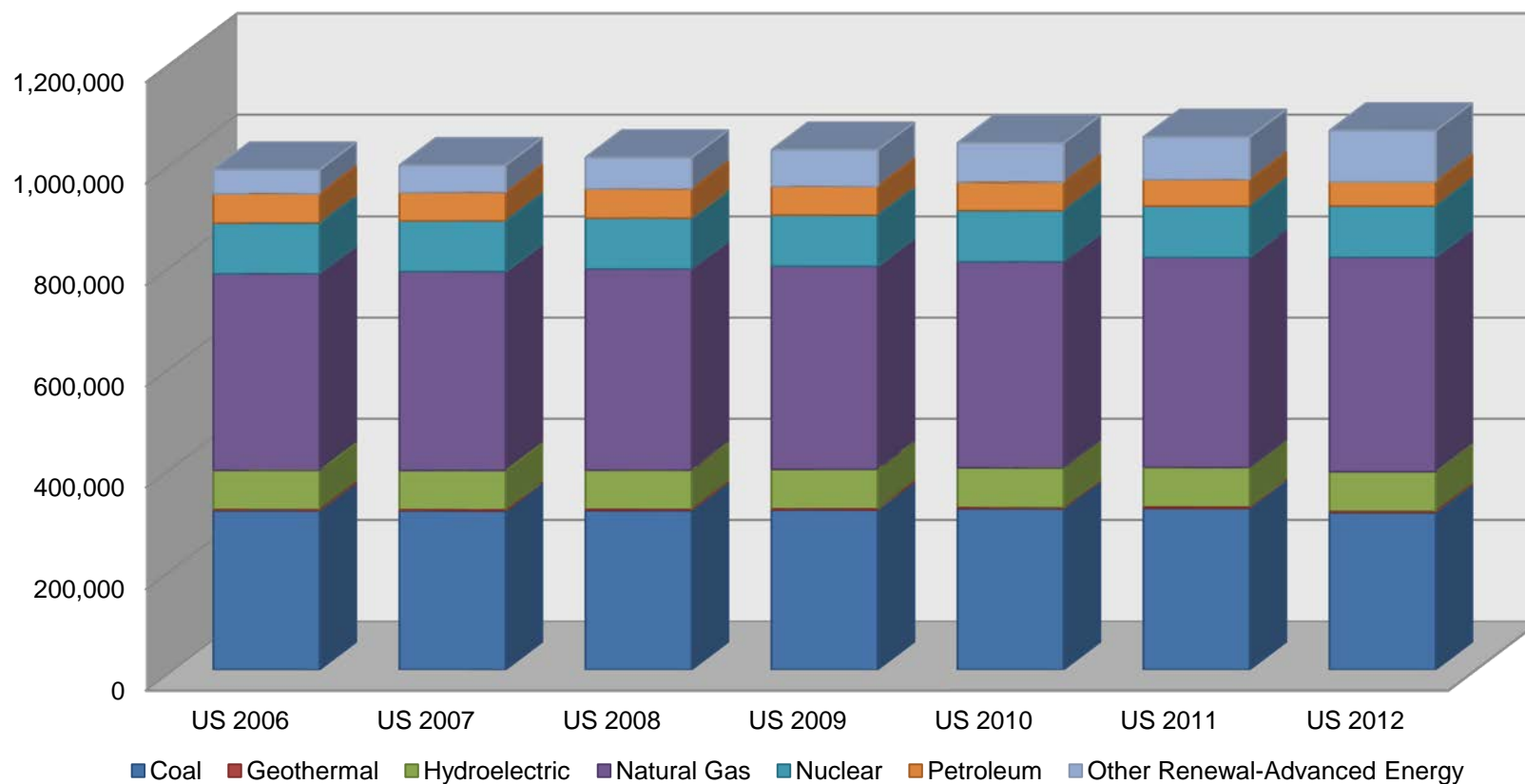


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US Capacity Mix (MW)





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U.S. Total Energy Production = 75.0 quadrillion Btu

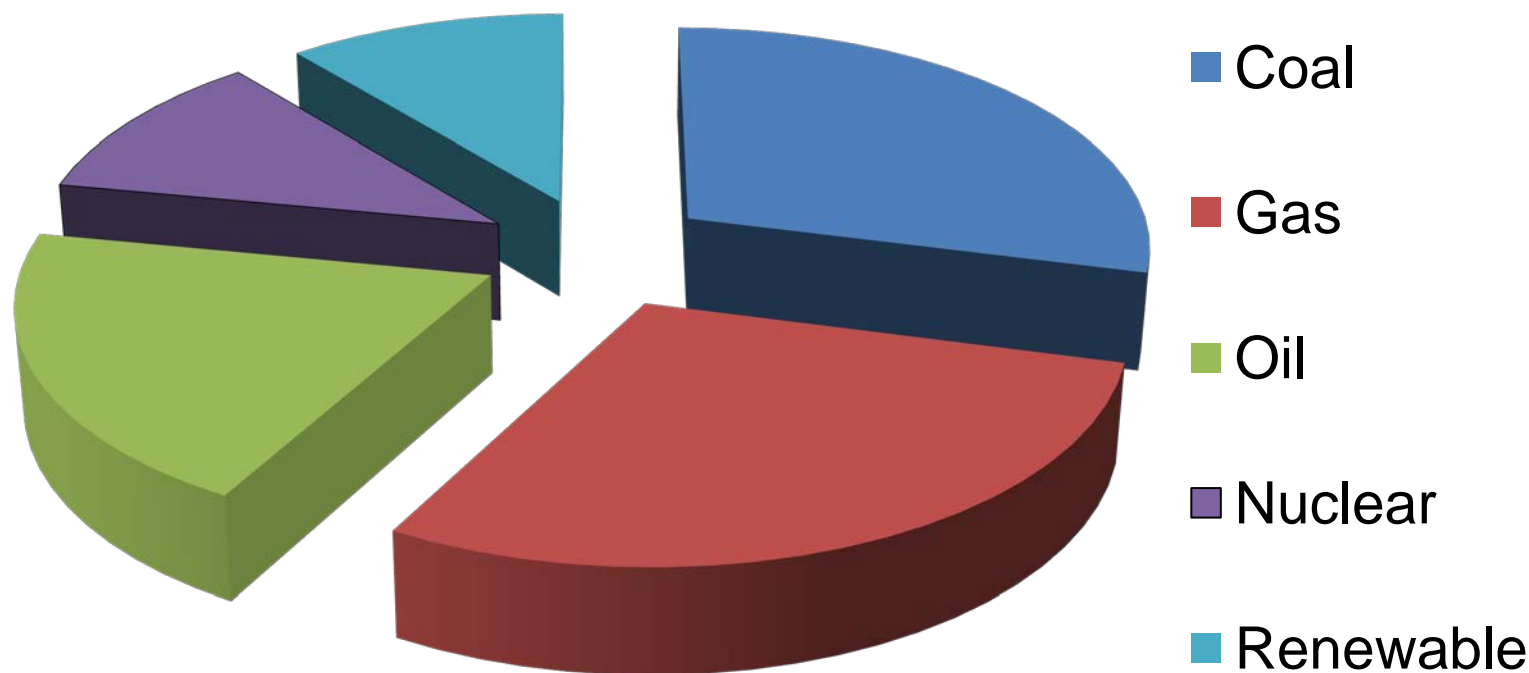
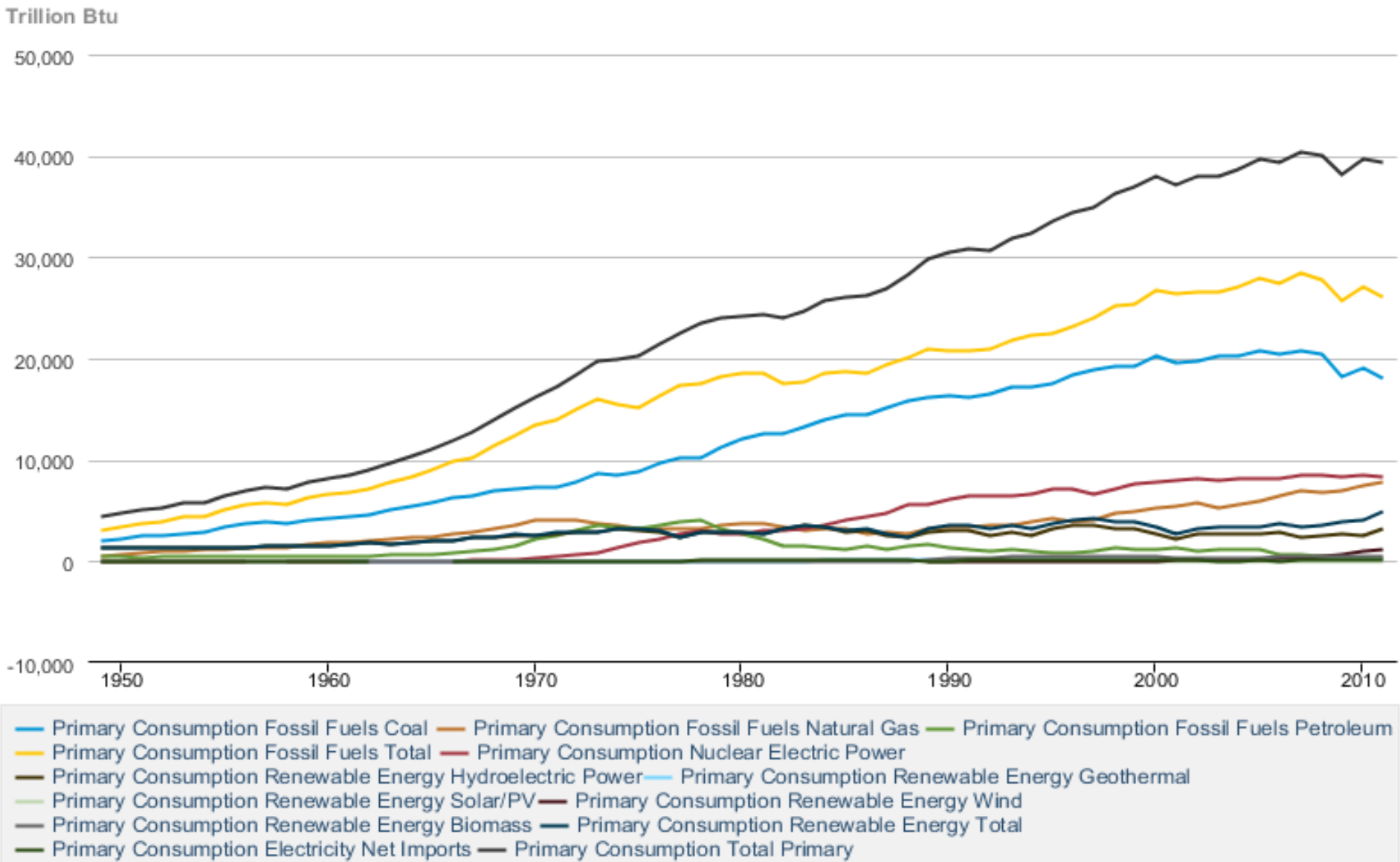
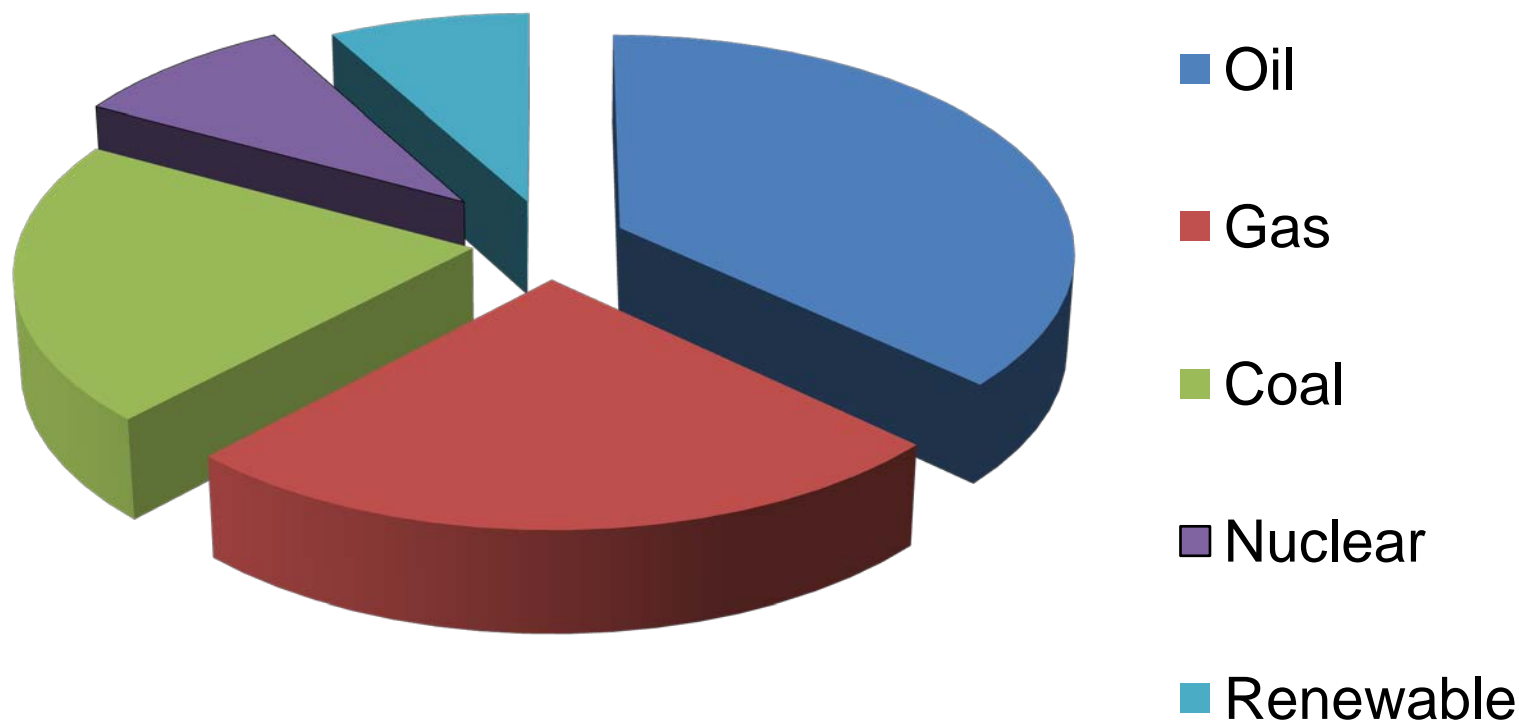


Table 2.1f Electric Power Sector Energy Consumption, 1949-2011



Total U.S. Energy Consumption = 98.1 quadrillion Btu



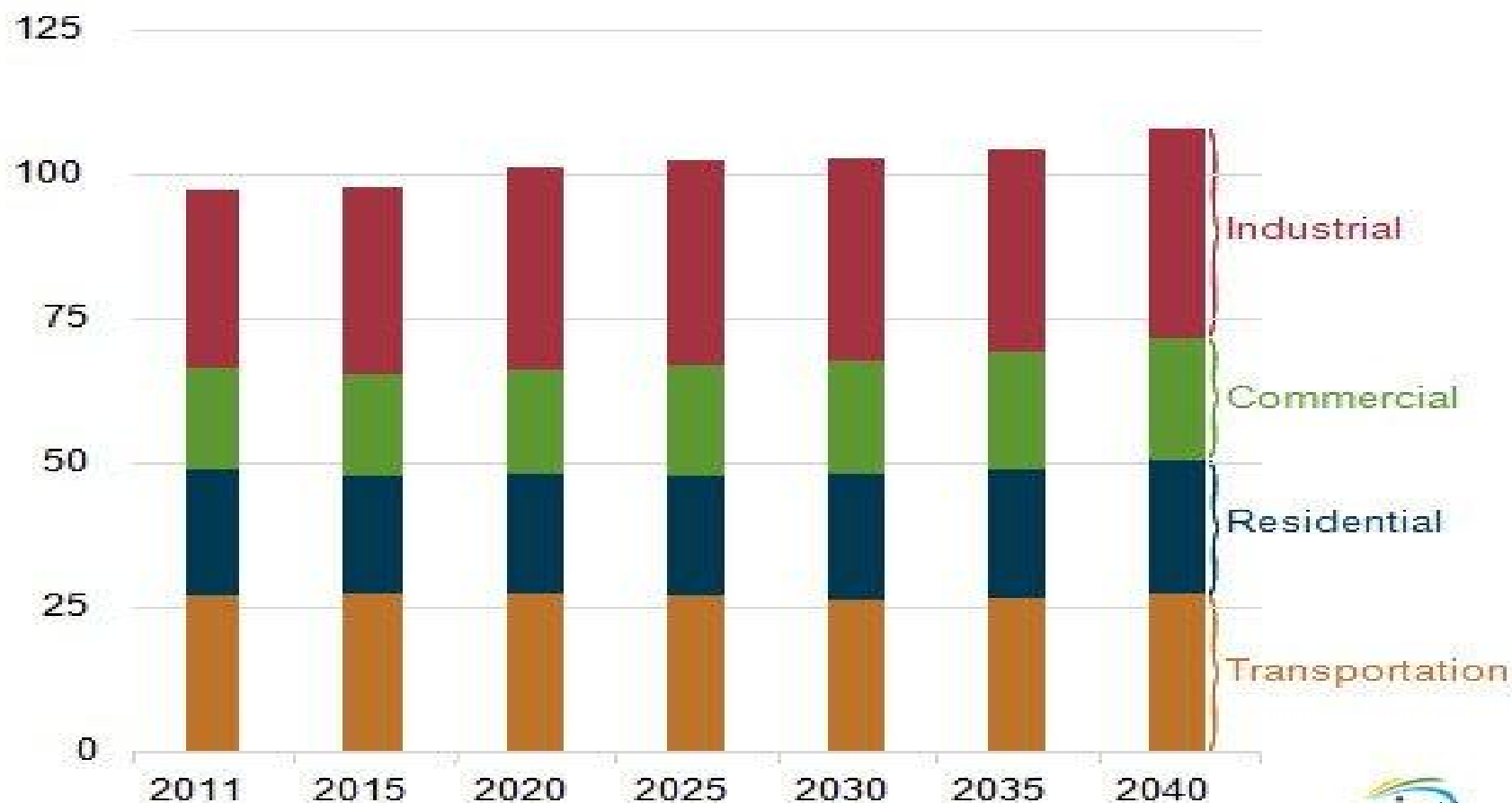


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Figure 53. Primary energy use by end-use sector, 2011-2040 (quadrillion Btu)





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Historical Perspective: Why Regulation?

- Electricity has historically been considered a “natural monopoly.”
- Entry into this market required huge investments in infrastructure.
- Electricity was considered a “public good” and the concept of the “social compact” evolved.
- Very few people could make the investment to get into the electric business and those who did could take advantage of the monopoly.



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Federal Energy Regulatory Commission (FERC) Order 888 (1996) and Order 2000 (1999)

- Determined the public interest would be best served by a competitive wholesale market
- FERC asserted jurisdiction over transmission (pricing)
- Code of Conduct rules
- Same Time Information System
- Provided for non-discriminatory and open-access on the transmission system/Open Access Transmission Tariff
- Transmission owners shall join an Independent System Operator (ISO) in order to apply for market-based rates

ISO: “An independent, federally regulated entity established to coordinate regional transmission in a non-discriminatory manner and ensure the safety and reliability of the electric system.”



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Ohio's Market Prior to Electricity Restructuring

- Ohio's investor-owned utilities accounted for 91% of electric sales
Seven electric distribution utilities (EDU's):
 - American Electric Power
 - Columbus Southern Power
 - Ohio Power
 - Dayton Power & Light
 - Duke Energy
 - FirstEnergy
 - Cleveland Illuminating
 - Ohio Edison
 - Toledo Power
- Utilities sold “bundled” services—owned and operated generation, transmission and distribution
- Utilities received cost recovery for generation investment
- Risk in generation investment borne by ratepayers, including cost overruns, expensive generating assets, etc.



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Turn of the Century System

- Unbundling of vertically integrated system
- Customers served by generator of choice
- Transmission and distribution remain regulated
- For generation, the rate of return system of regulation replaced by competition

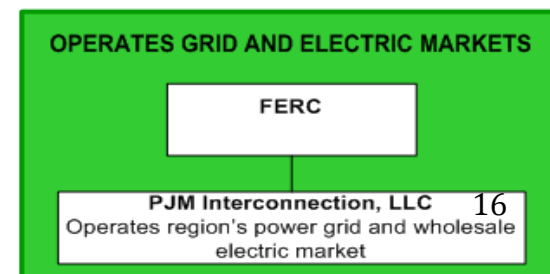
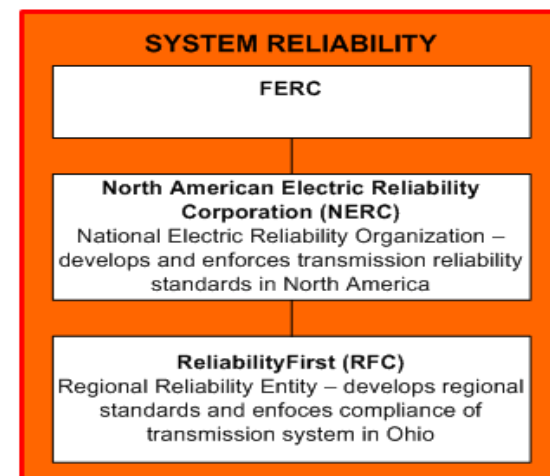
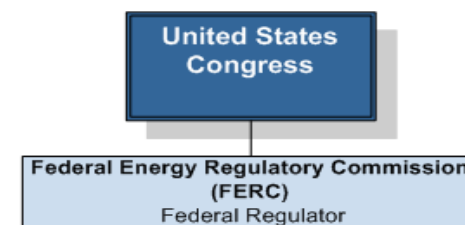
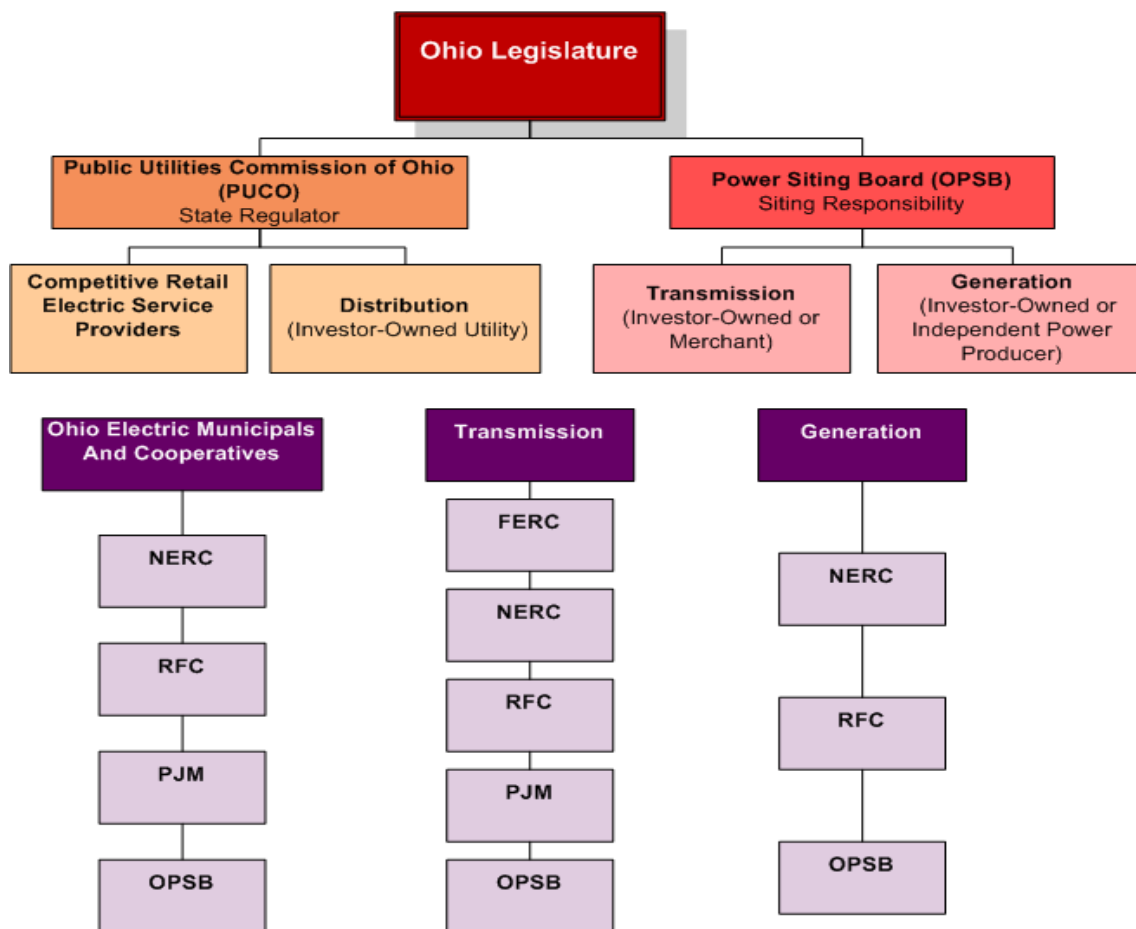


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Electric Regulation





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FERC oversight

- Wholesale electricity - sales for resale
- Bulk power system
- Transmission tariffs
- Wholesale market monitoring
- Reliability assurance (North American Electric Reliability Council and Standards)

State oversight

- Retail electric sales
- Distribution system reliability/safety
- Intrastate infrastructure maintenance/siting
- Renewable portfolio standards/energy efficiency standards (if applicable)

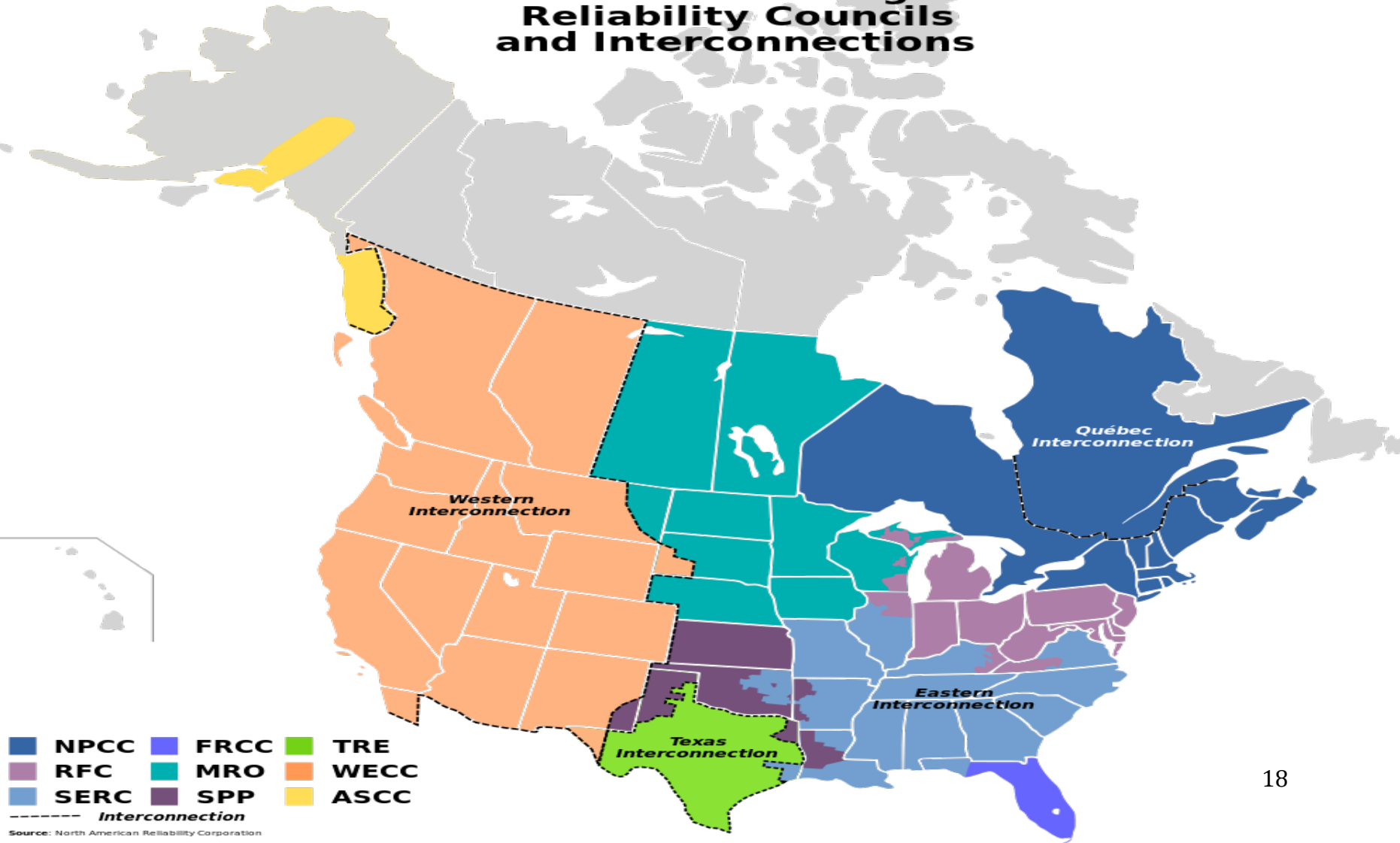


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North American Regional Reliability Councils and Interconnections

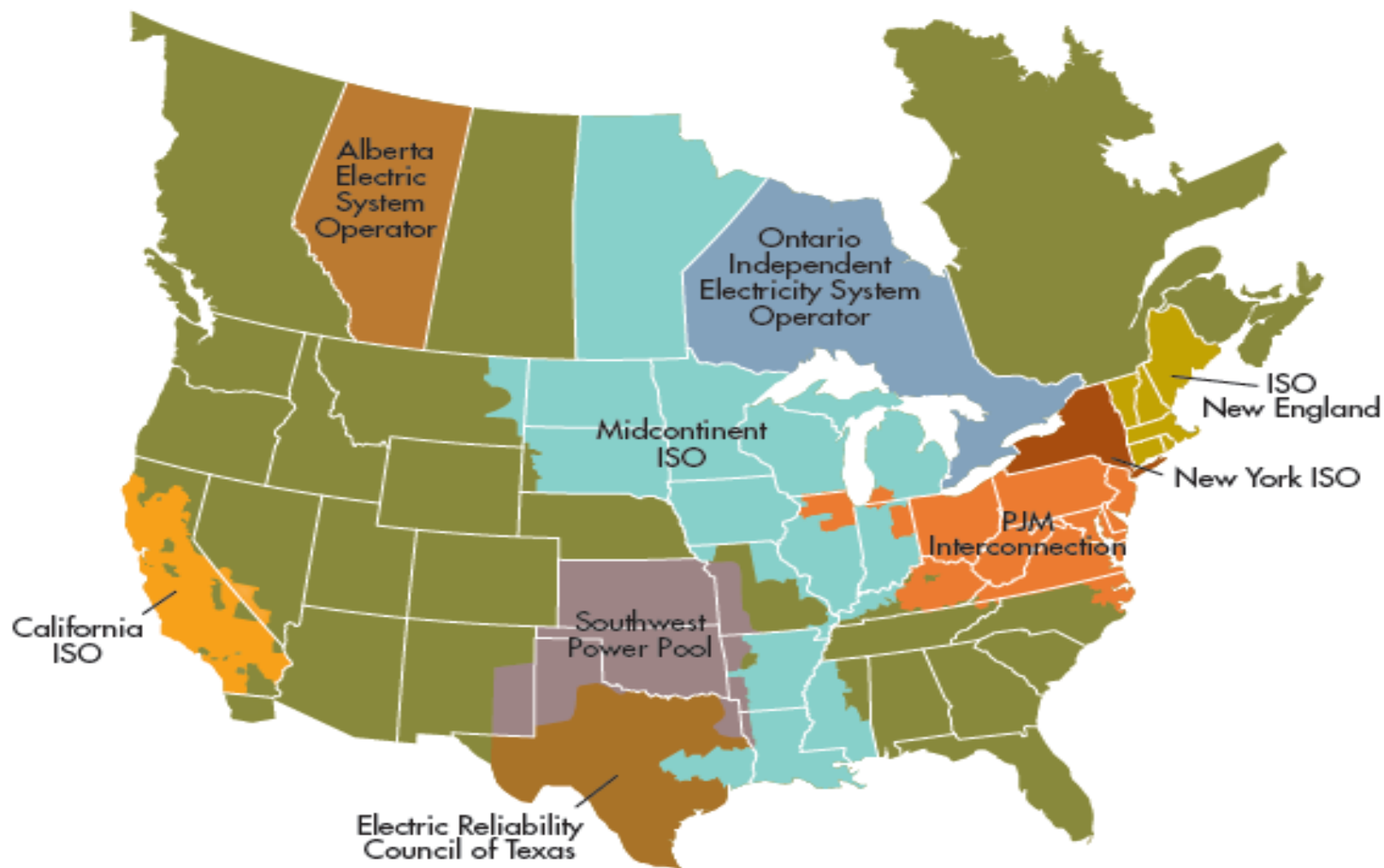




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