

# **Introduction to Electric Power Regulation and Electricity Markets**

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June 25, 2015

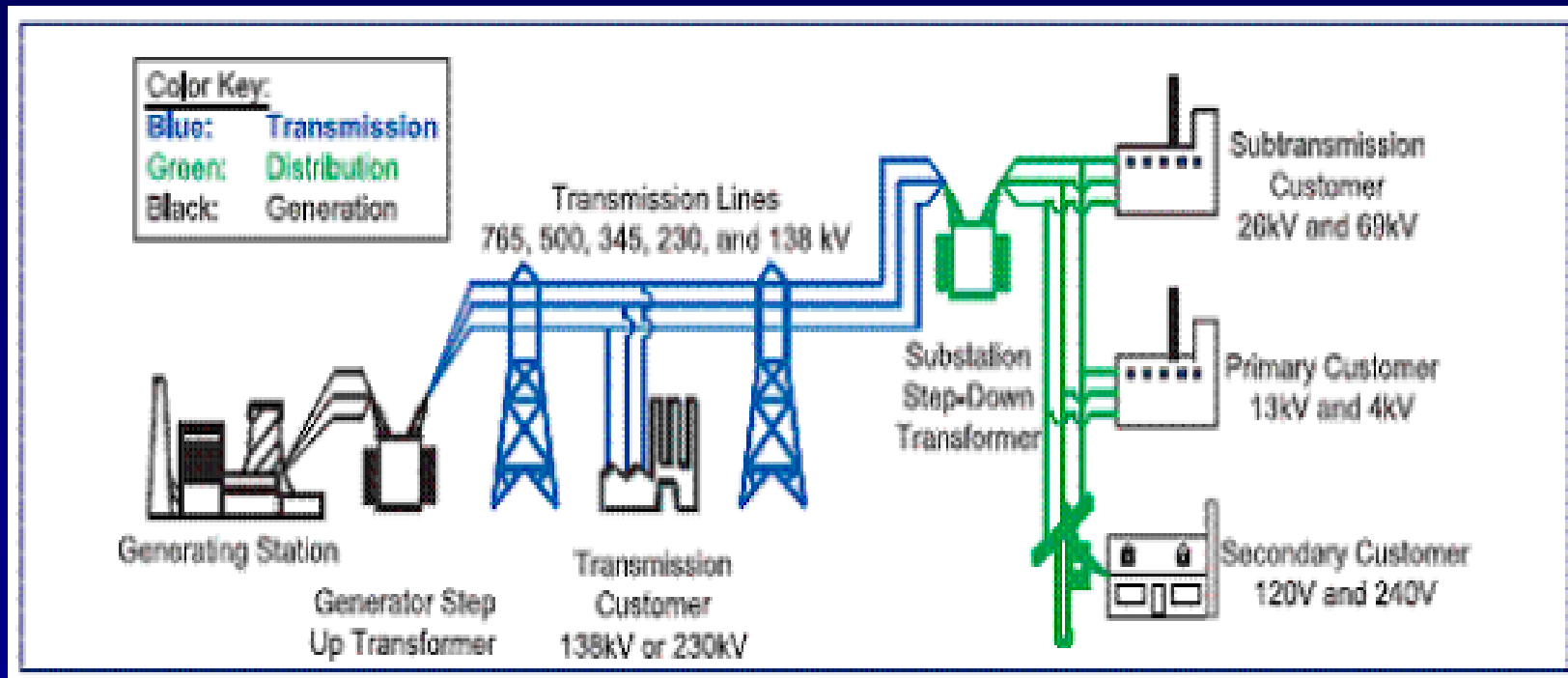


# Obligatory Disclaimer

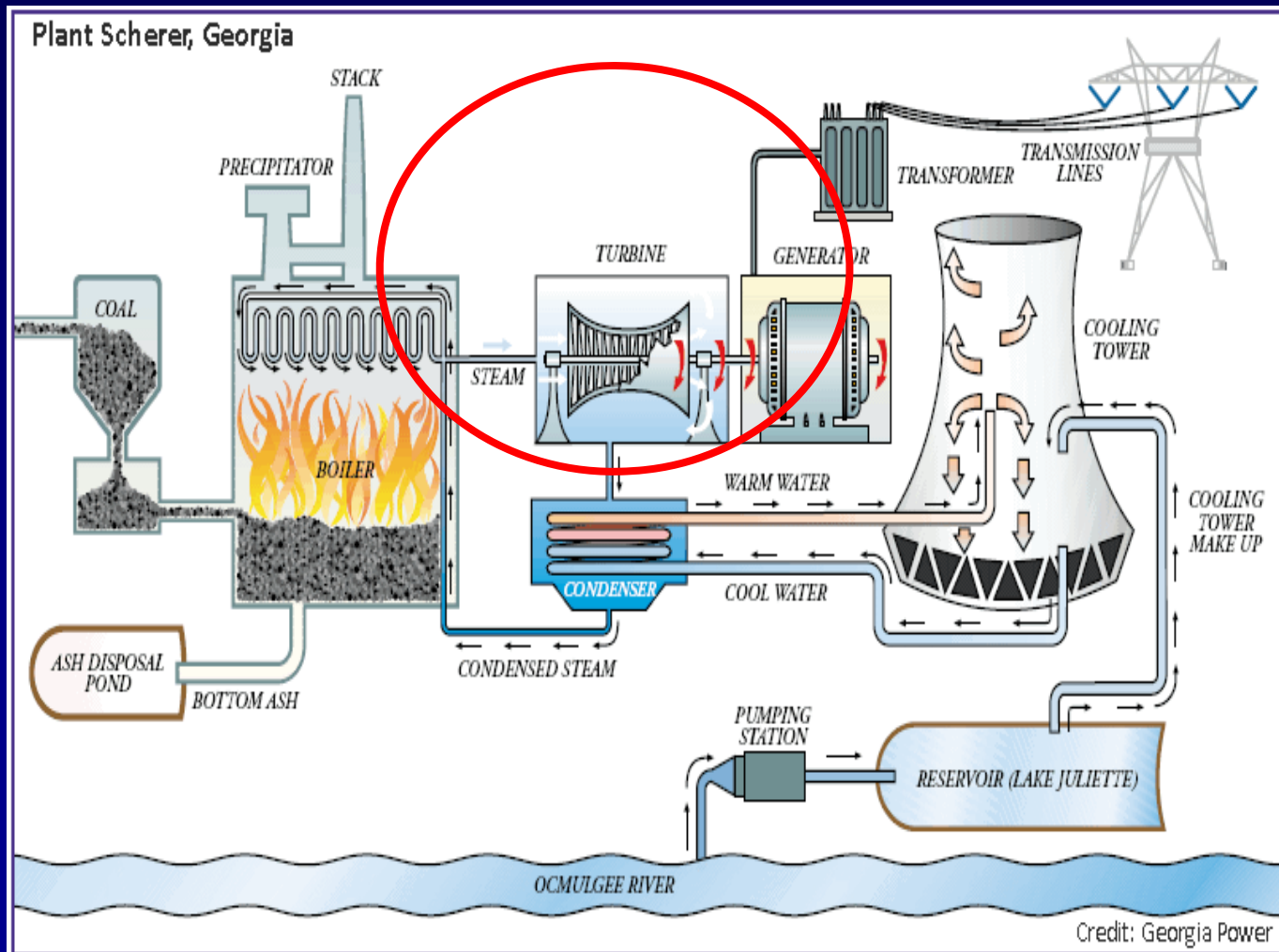
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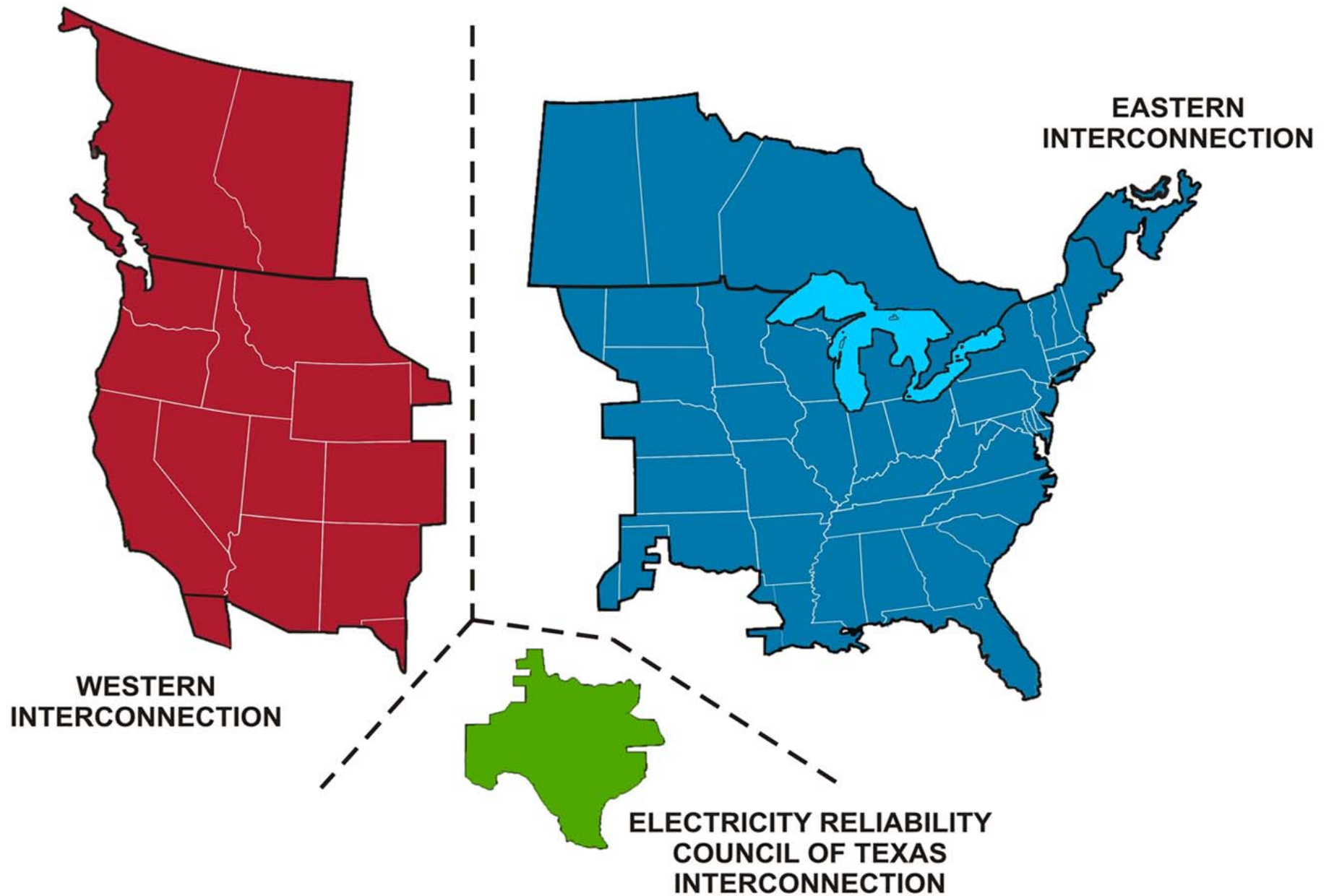
# *The Electric Power System*



# Generation of Electric Power



# North American Electric Reliability Corporation Interconnections





## *A Bit of History . . .*

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- Early utility systems were localized, serving small numbers of nearby customers
- Systems grew as technology improved and utilities sought greater economies of scale
- States first regulated electric utility service as a matter of consumer protection (and investor preference)
- *PUC of RI v. Attleboro Steam & Elec. Co.* (1927)
  - Held that Commerce Clause prohibited one state (RI) from regulating the rate charged by its utility for sales of power to utility in another state (MA).
- Federal Power Act (FPA) (1935) fills the “Attleboro Gap” (but preserves state role)

# *Electricity Regulation: Who is Responsible for What?*

## Federal Regulation (FERC)

- Federal Power Act
- Wholesale sales of electricity for resale in interstate commerce
- Transmission of electricity in interstate commerce
- (Very) Limited “backstop” transmission siting authority
  - See 16 U.S.C. § 824p
- Siting/Permitting of hydro plants
  - Otherwise, no generation planning or siting control
- Reliability of bulk power system

## State Regulation (PUCs)

- State Public Utility Acts or similar
  - See, e.g., VA. CODE ANN. §§ 56-235 *et seq.* and 56-576 *et seq.* (Electric Utility Regulation Act)
- Retail sales to end users
- Low-voltage distribution lines
- Siting of power plants and transmission lines
  - See, e.g., MD. CODE ANN. PUB. UTIL. COS. § 7-207 (transmission and gen.)
- Resource planning; *i.e.* the generation types (coal, natural gas, renewable) used by a utility to serve customers



## *What is FERC?*

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- ❑ FERC is an Independent Regulatory Agency in the Executive Branch of the U.S. Government
- ❑ Created by Department of Energy Organization Act (1977)
- ❑ Five Commissioners, appointed by the President and Confirmed by the Senate, serve staggered five-year terms
  - No more than three from a single political party
  - President designates Chairman





# *Overview: What FERC Regulates in the Electric, Natural Gas and Oil Industries*

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## Electric Power Industry

- Interstate transmission rates and services
- Wholesale electric energy rates and services
- Corporate transactions, mergers, securities issued by public utilities
- Mandatory electric reliability standards for the “bulk power system”
- Hydroelectric facilities; siting and licensing (including environmental matters), safety, recreational uses, etc. (Part I of the Federal Power Act)



# *FERC Also Regulates Closely-Related Natural Gas Industry and Oil Pipelines*

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## Natural Gas Industry

- Interstate transportation rates and services
- Interstate gas pipeline siting, construction, and related environmental matters

## Oil and Products Pipelines

- Interstate transportation rates and services  
(common carrier regulation under the ICA)



## *What FERC Does NOT Regulate*

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- ❑ Planning or financing of generation investments
- ❑ Pollution produced by electric generators  
(*Environmental Protection Agency*)
- ❑ Pipeline safety (*Department of Transportation*)
- ❑ Siting of electric transmission lines (except for limited backstop)
- ❑ Siting of generating plants



# *FERC Jurisdiction*

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- ❑ FPA Section 201 (16 U.S.C. § 824) grants FERC plenary jurisdiction over “the transmission of electric energy in interstate commerce and . . . the sale of electric energy at wholesale in interstate commerce”, including “all facilities for such transmission or sale of electric energy”. 16 U.S.C. § 824(b)(1).
- ❑ However, FERC jurisdiction “shall not apply to any other sale of electric energy,” and FERC “shall not have jurisdiction . . . over facilities used for the generation of electric energy or over facilities used in local distribution.” *Id.*



# *Transmission vs. Distribution*

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- FERC established a seven factor test to determine whether facilities are jurisdictional transmission or local distribution:
  1. local distribution facilities are normally in close proximity to retail customers
  2. local distribution facilities are primarily radial in character
  3. power flows into local distribution systems, and rarely, if ever flows out
  4. when power enters a local distribution system, it is not reconsigned or transported on to some other market
  5. power entering a local distribution system is consumed in a comparatively restricted geographic area
  6. meters are based at the transmission/local distribution interface to measure flow into the local distribution system
  7. local distribution systems will be of reduced voltage



# *Entities Subject to FERC Jurisdiction*

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- ❑ An entity that own or operate facilities used in transmission or wholesale of electric energy in interstate commerce is a “public utility” subject to FERC jurisdiction (16 U.S.C. § 824(e)).
- ❑ Federal, state and municipally-owned utilities and most electric cooperatives are excluded from definition of “public utility”, and thus not generally subject to FERC regulation (although they may be subject to specific FPA provisions) (16 U.S.C. § 824(f)). Examples:
  - Bonneville Power Administration, Tennessee Valley Authority
  - Los Angeles Department of Water and Power
  - Tri-State Generation and Transmission Cooperative



# *FPA Requirements for Public Utility Rates and Services*

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## □ FPA Section 205 (16 U.S.C. § 824d)

- Requires that all rates and charges for the transmission or sale of electric energy , and rules and regulations affecting or pertaining to those rates (i.e., terms and conditions), must be “just and reasonable”
- Prohibits granting of “undue preference or advantage” in jurisdictional rates or terms and conditions of service
- Rates, charges, and terms and conditions must be filed with FERC with 60 days notice.

## □ FPA Section 206 (16 U.S.C. § 824e)

- Authority of Commission, on its own motion or on complaint, to remedy rates or terms and conditions that it finds are “unjust, unreasonable, unduly discriminatory or preferential”



# *FERC Rate Regulation*

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## Wholesale Electricity – Almost entirely market-based rates

- Analyze sellers for market power in defined products and geographic markets, utilizing screens that assess market share and ability of seller to be “pivotal supplier”
- RTO/ISO regions v. Non-RTO/ISO regions

## Electric Transmission - Almost entirely cost of service-based rates

- The “Cost of Service” is the amount needed to cover operating expenses, taxes, interest, return of investment, and a reasonable rate of return on that investment
- Seeing increasing use of “negotiated” rates for new transmission facilities



# Transmission Service Regulation – “Open Access”

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## □ Order Nos. 888/889 (1996)

- Open Access – Public utilities must provide non-discriminatory transmission service pursuant to an Open Access Transmission Tariff (OATT)
  - FERC’s *pro forma* OATT establishes minimum requirements for service
  - In short, public utilities must provide the same transmission service to others that they provide to themselves
- Functional Unbundling – Public utilities were required to separate transmission and generation or power marketing functions, and state separate rates for these functions

## □ Order Nos. 890 (2007) and 1000 (2011)

- Planning – Public utilities must participate in regional and interregional transmission planning processes
- Cost Allocation - Processes must include transparent *ex ante* cost allocation methods that meet certain principles (e.g., “beneficiary pays”)



# *Reliability Standards*

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- ❑ FERC approves and enforces reliability standards to provide for the reliable operation of the “bulk power system” (16 U.S.C. § 824o)
- ❑ Reliability standards are developed by the FERC-certified “Electric Reliability Organization” through industry stakeholder process and filed with FERC; FERC may then either approve or remand, but doesn’t write the standards (although it can direct that a new standard be developed).
- ❑ “Bulk power system” generally 100 kv and up, with certain inclusions of critical facilities and exclusion of non-critical facilities or facilities used solely in distribution
- ❑ Reliability standards cover planning, operations, communications, physical and cyber protection, etc. Do NOT require construction of specific facilities.

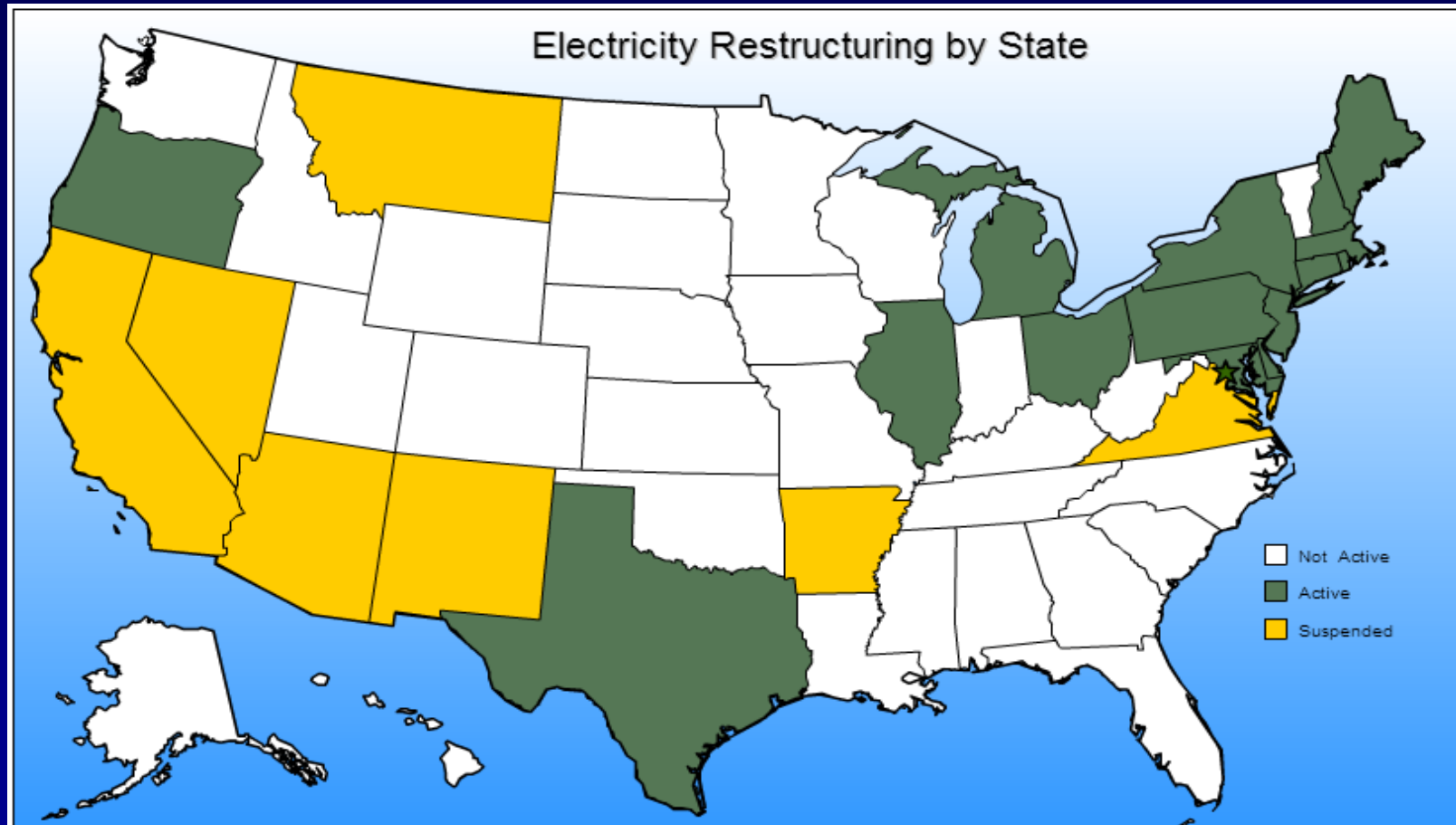


# *State PUC Regulation*

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- ❑ Extends to all other matters not addressed in FPA
- ❑ Retail rates paid by end-use customers
- ❑ Investments in distribution (including meters, poles, wires, etc.)
- ❑ Investments in generation resources and the mix of resources used to serve customers (e.g., RPS)
  - States with restructured retail markets may have more limited authority over generation investment
- ❑ Demand-side management and energy efficiency programs
- ❑ Siting of transmission lines\* and power plants
  - \* FERC has limited “backstop” siting authority in designated areas of congestion where states have not acted on a siting application within one year
  - \* Local governments (counties) have this authority in some states

Category	Percentage
Top Bar	100%
Middle Bar	90%
Bottom Bar	80%



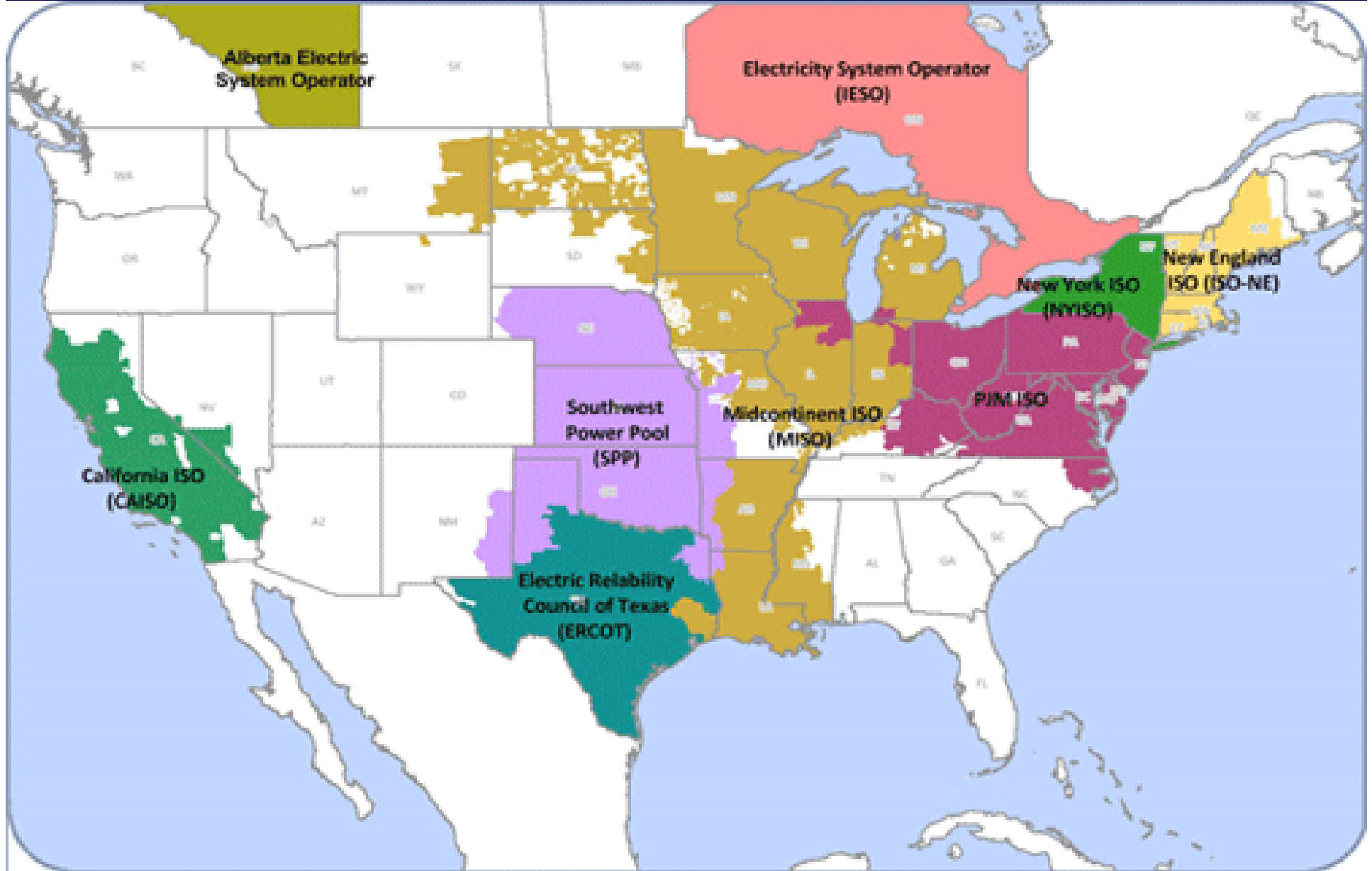
Source: Energy Information Administration



## *Regional Transmission Organization/ Independent System Operators (RTOs/ISOs)*

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- Independent of market participants and transmission owners
- Provide non-discriminatory access to transmission service, interconnection, etc.
- Operate and oversee multiple markets for capacity, energy and ancillary services to facilitate competition among multiple sellers
  - Energy markets: bid-based, security constrained economic dispatch with locational marginal pricing
  - Capacity markets: some RTOs/ISOs operate centralized markets to procure capacity to meet the region's resource adequacy requirements
  - Ancillary services: markets allow multiple sellers to provide support services (frequency response, reserves, etc.)
- Market rules and tariffs developed through stakeholder process, then filed with FERC (no “one-size fits all” approach)
- Generally more non-utility “merchant” generation





# *Current Jurisdictional Issues*

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- Demand Response in Wholesale Markets
  - *EPSA v. FERC* at Supreme Court
  
- Resource Adequacy in RTO/ISO Regions
  - RTO/ISO role in ensuring sufficient resources
  - Participation of state-ordered generation in centralized capacity markets



# *“Bilateral” Markets*

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- ❑ Vertically-integrated utilities operating their own balancing authorities (BAs)
- ❑ Buyers and sellers contract at arms-length, with mostly market-based rates (some cost-based rates where sellers have market power)
  - FERC approves market-based rate authority before entity can make sales, and requires after the fact reporting of market-based sales
  - Cost-based rates filed at FERC prior to providing service
- ❑ Physical transmission service and generator interconnection service purchased from utilities under their filed OATT
- ❑ State PUCs retain all authority for resource adequacy (through integrated resource planning and other tools)
- ❑ Less prevalence of merchant generation
- ❑ Ancillary services typically provided by the utility itself





Thanks!

Questions?

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