

# **FERC & Electric Industry Restructuring**



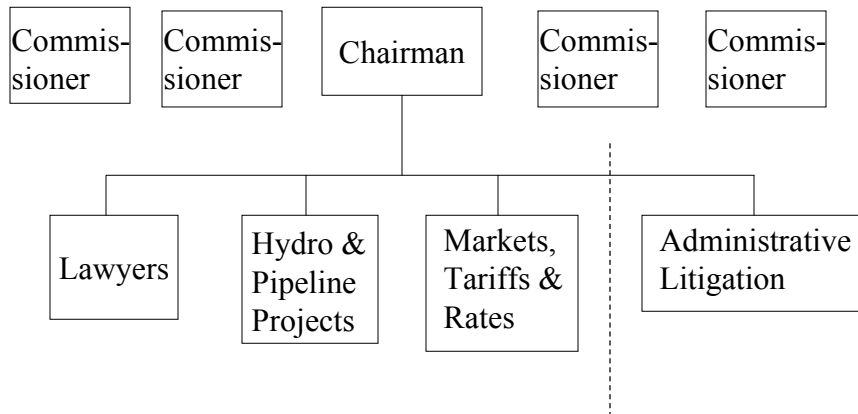
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## **Overview**



- Introduction to FERC
- Electric power industry structure
- Industry restructuring
- FERC rulemakings
- Creating competitive markets
  - o How to price products
  - o Impediments to competition
- Summary

# FERC Organization



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# FERC Authority

- Independent agency
  - o Commissioners appointed by President
  - o Budget from Congress
- Industries
  - o Natural gas pipelines
  - o Oil pipelines
  - o Hydroelectric dams
  - o Electric transmission lines

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## **Energy Legislation**

- FERC has jurisdiction over wholesale energy transactions, comes from Federal authority over interstate commerce
- 1935: Federal power act and public utility holding company act
- 1978: Public utility regulatory policy act
- 1992: Energy policy act
- 2002?: Legislation to address jurisdiction for reliability, mergers, mandate company restructuring

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## **FERC Authority from the FPA**

- Approve transmission and wholesale energy rates
  - o Rates must be “just and reasonable,” FPA 205 (Federal Power Act, section 205)
  - o FERC control revenue from regulated facilities
- Approve transfers of ownership or control of regulated facilities
  - o Filing must be “consistent with the public interest,” FPA 203
  - o FERC authority over mergers, ISOs, RTOs

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## **FERC Policy Making**

- FERC makes policy by
  - o Issuing rules (rulemaking) - not tied to any specific case
  - o Case by case - decisions on filings made under the FPA, refine interpretation previous Rules
  - o Litigation - Administrative law hearings
  - o Hold conferences - coordination with states and stakeholders

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## **Recent FERC Electricity Rules**

- Orders 888 and 889: Open Access for the high voltage transmission system, issued 1996
- Order 592: Merger Policy Statement, issued 1996
- Order 2000: Regional Transmission Organizations, issued 12/1999

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## Traditional Power Industry Structure

- Supply: Vertically integrated suppliers
  - o Electric utilities control generation, transmission and distribution
- Demand: Native load
  - o Captured customers in a monopoly franchise area
- Product: Buying and selling bundled electric service, energy (kWh) and transmission
- Market: No competitive marketplace

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## Power Industry Structure: Which Segments are Competitive?

- Generation
  - o Can be competitive
  - o Public goods, joint products (ancillary services)
- Transmission network
  - o Natural monopoly (common carrier)
  - o \* *Can not direct or control power flows* \*
  - o The control of transmission affects the operation of the energy market - source of market power concerns

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## Power Industry Structure: Which Segments are Competitive?

- Distribution system
  - o Natural monopoly
  - o State jurisdiction
- System operation
  - o Natural monopoly
  - o Intangible good
  - o Operation of the transmission system *and generators* together as one system (one machine)
  - o FERC only has jurisdiction over transmission

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## Restructuring the Power Industry

- Vertically Dis-integrate the Incumbent Utilities
  - o Generation
    - Deregulate
    - Create competitive markets
    - Separate ownership?
  - o Remaining segments
    - Continue regulation - State and Federal
    - Allow market based rates on case by case basis
    - Unbundle electricity products

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# Restructuring the Power Industry

- The “unbundled” products are
  - o Energy
  - o Transmission
  - o Generation capacity
  - o Ancillary services: frequency and voltage support, energy reserves (joint products with energy)
- FERC’s objective
  - o Ensure the independence of transmission and system operation
  - o Promote competition everywhere else
  - o Prevent abuse of market power

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## FERC Order 888

- Require open access to the transmission system
  - o All participants must have unencumbered access to the monopoly owned transmission system
- Define the format for tariffs that utilities must file with FERC
  - o OATT - Open access transmission tariff
  - o Tariffs define rates for transmission and ancillary services, and terms under which service is offered

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## **FERC Order 889**

- Address how buyers and sellers meet
  - o Create OASIS - Open access same-time information system, web-based system to post transmission rates and availability (price & quantity)
- Define “codes of conduct” for communication between affiliated divisions of vertically integrated utilities
  - o Regulated transmission division
  - o Deregulated, merchant, generation division

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## **Order 888 and ISOs**

- Eleven ISO (independent system operator) principles in Order 888
  - o ISO principles added to Order 888 almost as an afterthought
  - o All ISOs at that time were strong centralized power pools (or became one as in California)
  - o ISO owned nothing but controlled almost the entire system - transmission and generation

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## **Problems Post-888**

- The number and variety of new market participants strained the structure designed by Order 888
  - o Number and type of requests for transmission service
  - o Demands for transparency in system operation decisions
- Numerous allegations of abuse of the codes of conduct
- Many unexpected forms of ISOs were proposed - Principles of Order 888 inadequate

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## **Order 2000: Regional Transmission Organizations**

- Expand and discuss in great detail the eleven ISO principles of Order 888
- Create many new markets
  - o Ancillary services
  - o Balancing
  - o Congestion management
  - o Transmission rights
  - o (Energy)

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## **Order 2000**

- **Ratemaking:** Encourage “innovative” transmission pricing proposals
- **Reliability:** Maintain system reliability
- **Independence:** Ensure the independence of the transmission operator from energy market participants
- **Flexibility:** Allow regional flexibility in defining RTOs

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## **Pending NOPR**

- **NOPR = Notice of Proposed Rulemaking**
- **Current topic is Standard Market Design (SMD)**
  - o White paper out now – a notice of a NOPR
  - o NOPR end of Spring
  - o Endless comments will be filed
- **Rulemaking**
  - o FERC does what it wants mixed with inputs from comments
  - o Rulemaking becomes federal policy

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# Regulation

- What FERC does
  - o Approve transmission and wholesale energy rates
    - Price regulation
    - Rates must be “just and reasonable,” FPA 205 (Federal Power Act, section 205)
  - o Approve transfers of ownership or control of regulated facilities
    - Filing must be “consistent with the public interest,” FPA 203
  - o Reactive rather than proactive, but provide guidance

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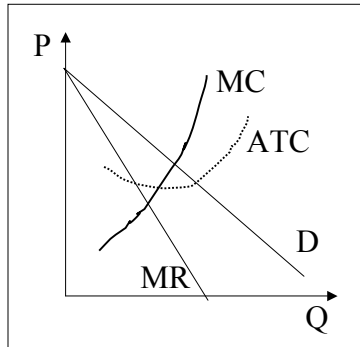
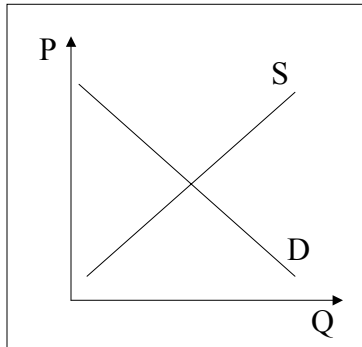
# Deregulation?

- Removing regulatory oversight from a highly concentrated, vertically integrated industry will not result in a competitive market.
- In this situation, competitive markets must be intentionally designed and created.
- The regulatory role changes, but will not disappear until ... ?

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## Back to Basics

- Characteristics of a competitive market



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## Introducing Competition

- Economic issues
  - o Design a market place
  - o Mitigate market power - a tremendous problem
- Technological constraints
  - o Update existing system operation software to accommodate *more* players who are *competing*
  - o Create new software for internet-based marketplace
- State and Federal jurisdiction battles

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## **Market Design**

- Identify (and create) market participants
- Define rights and responsibilities of all participants
- Identify products
- Design the marketplace (idealized goal)
  - o Where will trades occur?
  - o How will price be determined?
  - o How will participants interact?
- Design the transition period
- Address impediments to competition

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## **The Previous “Marketplace”**

- The participants
  - o Electric utilities
  - o Native, captured load
- The product
  - o Bundled electric energy (kWh), including transmission service
- The marketplace
  - o None

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## **Power Industry Structure: Which Segments are Competitive?**

- Generation
  - o Can be competitive
  - o Public goods, joint products (ancillary services)
- Transmission network
  - o Natural monopoly (common carrier)
  - o Public goods
  - o The control of transmission affects the operation of the energy market
  - o \* Can not direct or control power flows \*
- Distribution (state jurisdiction)

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## **Power Industry Players: Who Wants Competition?**

- Interested in competition
  - o Large industrial customers
  - o Energy marketers
  - o Independent generation owners
  - o Federal regulators
- Only moderately interested
  - o Vertically integrated utilities (IOUs)
  - o Municipal and public power utilities
  - o Retail customers - benefits small and dispersed
  - o Environmental advocates
  - o State regulators

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## **Market Design: Products**

- What are the “unbundled” products?
  - o Transmission
  - o Energy
  - o Capacity
  - o Ancillary services: frequency and voltage support, energy reserves (joint products with energy)
- How should the products be marketed?
  - o Should there be a single energy, capacity and services market, or
  - o Should there be many separate markets?

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## **Market Design: Marketplace**

- Where and how will buyers and sellers meet?
  - o How provide incentives for participation? Force participation?
- Create a centralized or decentralized market?
  - o Require participants to interact through a central facility (internet-based trading floor)?
  - o Require participants to find their own bilateral trading partners?
  - o Allow both methods to be used?

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## Market Design: Information

- Understanding system design
  - o The market rules are new to everyone
  - o People lack information on how to behave and what to expect from others
- Access to data
  - o Buyers need price transparency
  - o Regulators need data to assess extent of competition
  - o Everyone needs technical data, which may now be proprietary

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## Market Design: Price

- How is price determined?
  - o Allow market based prices?
  - o How will market prices be determined *before* a market exists? (The current situation.)
  - o Allow a central authority to set a price cap? Even if set very high, it may be viewed as a security blanket.
  - o Use a theoretical competitive price as a reference point?

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## **Market Design: Standardized**

- Motivation - “Seams issues”
  - o Different regions have different rules
  - o High transactions costs
  - o FERC is in a good position to define the minimum standard market design
- Resistance
  - o There are legitimate regional differences
  - o FERC does not understand these differences and so could create a rule that undermines markets in some regions

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## **Specific Products to Price**

- Transmission
  - Energy
    - Capacity

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# Transmission Ratemaking

- Types of transmission rates
  - o Cost of service rates - old
  - o Market based rates - new
  - o Performance based rates - very new
  - o Discounted rates

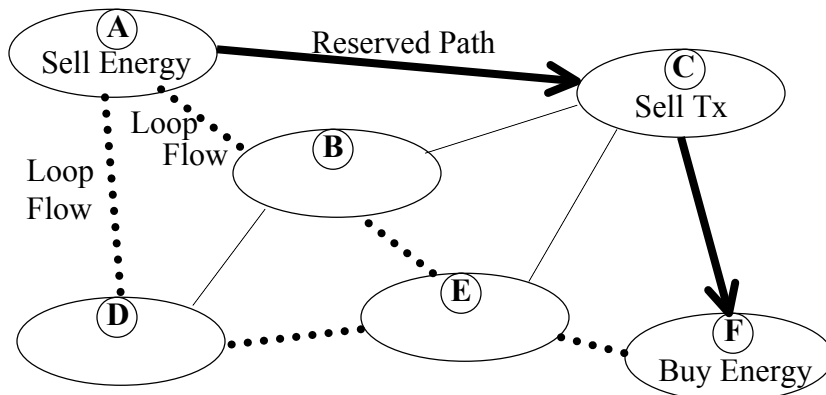
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# Transmission Ratemaking

- Types of service
  - o Reservation path: Point-to-point (“contract path”), network service
  - o Duration: year, month, week, day
  - o Certainty of reservation: firm, non-firm
- Components of service
  - o Bulk, wholesale transmission
  - o Ancillary services
  - o Losses

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# Transmission Ratemaking



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# Transmission Ratemaking

- Pancaked rates (bad)
  - o Charges imposed by more than one transmission owner when wheeling through systems - multiple access charges
  - o Not based on economic principles, but rather based on vagaries of ownership
  - o Harms the development of competitive energy markets

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## Energy Prices

- Energy prices
  - o Distinct from transmission rates
  - o No longer regulated
- Centralized energy market
  - o Yes - California, New England, Mid-Atlantic, NY
  - o No - Midwest, South, Southwest, Pacific Northwest
- Decentralized market
  - o Bilateral energy transactions
  - o All regional allow these transactions

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## Energy Prices

- Region or scope for energy prices
  - o Postage stamp - single rate for entire region
  - o Zonal - rate constant within zone
  - o Nodal - rate different at each bus/node
- These mechanisms can be used to price transmission

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## Unified Pricing

- FERC's objective: To price transmission and energy with a single market mechanism
- Good and bad ➤ Why?
- Transmission Congestion Pricing
  - o Transmission rates determined by the difference in energy prices of the nodes at either end of line
  - o Market for financial transmission rights (FTRs)
  - o The alternative for congestion management is command and control (curtail transactions)

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## Impediments to Competition

- Participants lack experience
- Designers lack experience
- General lack of information and data
- Conflicting objectives
  - o Incumbents resist change
  - o Entrants demand immediate change
  - o State regulators protect ratepayers (a.k.a. voters)
  - o Regulatory capture: regulators know and identify with the utilities

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## **Incentives to Incumbents**

- In exchange for accepting mitigation, and to avoid long court battles, regulators offer incentives
- Company incentives (bribes)
  - o Allow companies to recover their capital costs more quickly (stranded costs)
  - o Allow market based rates for some products early
  - o Bribes evolve into entitlements!

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## **What Has Changed? Then...**

- Assume I wanted to build a generator pre-1996
- Utility could prevent me from using the transmission system - no “open access”
- I could not sell to the utility’s retail load
- I could not buy transmission capacity to sell elsewhere
- There was no facility for price clearing to set energy prices

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## What Has Changed? Now...

- Transmission owners must let competitors connect to their transmission system
- Transmission owners must post prices and availability of transmission service and not favor their energy marketing affiliates (sort-of)
- RTOs to provide real-time market-based energy prices
- More participants facilitates bilateral trading
- I still can not serve retail load

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## Impediment: Market Power

- Traditional, vertically integrated monopolies
  - o Have market power by definition
  - o Can use transmission to influence energy market
  - o Want to use their private property as they see fit
- FERC must *create* competition
  - o Simply removing regulatory oversight is not enough
- Mitigate market power
  - o Difficult to identify (prove) who has market power
  - o Design methods to mitigate market power

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## **Impediment: Lack of Information**

- Information that is required
  - o Price: transmission and energy
  - o Quantity: availability of transmission capacity
  - o Future events: maintenance, other transactions
- Poor access to information is a big hurdle
  - o Past data: Historical competitive prices would be useful for comparison, but don't exist
  - o Future data: Data will probably become proprietary
  - o Regulators need data to assess evaluate competition

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## **Next Steps for Restructuring**

- Federal: Pass federal legislation
  - o Reliability, mergers, mandate RTOs
- State: Pass individual state legislation
  - o Coordinate FERC and state policies via regional FERC-State meetings
- Industry: Source of all changes proposed to states and FERC
- Transition period: Learn from industry what does and does not work for the SMD NOPR

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## Summary

- FERC overview - role limited (self-imposed) to setting agenda, and reacting to proposals by others
- FERC restructuring rulemakings
  - o Open access rule (OASIS, mergers)
  - o Regional transmission organizations
  - o Standard market design

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## Summary

- Enabling legislation
- Respond to industry and political winds
- Offer guidance to industry
  - o Define products, new market structures, and participants' responsibilities
  - o Design the implementation, transition period
  - o Provide for market monitoring
  - o Ensure access to data and information
  - o Prevent market power abuse

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## Conclusions

- Competitive markets
  - o Promote the efficient use of resources
  - o Incompatible with market power, so some regulation must persist
- FERC's role is to facilitate market development, but not to design and impose a single structure for all regions
- Markets must be purposefully created