Overview

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

- Commissioner
- Commissioner
- Chairman
- Commissioner
- Commissioner

- Lawyers
- Hydro & Pipeline Projects
- Markets, Tariffs & Rates
- Administrative Litigation

FERC Authority

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

FERC Authority from the FPA

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

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

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
Traditional Power Industry Structure

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

Power Industry Structure: Which Segments are Competitive?

- Generation
  - Can be competitive
  - Public goods, joint products (ancillary services)
- Transmission network
  - Natural monopoly (common carrier)
  - *Can not direct or control power flows*
  - The control of transmission affects the operation of the energy market - source of market power concerns
**Power Industry Structure: Which Segments are Competitive?**

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

**Restructuring the Power Industry**

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

- The “unbundled” products are
  - Energy
  - Transmission
  - Generation capacity
  - Ancillary services: frequency and voltage support, energy reserves (joint products with energy)

- FERC’s objective
  - Ensure the independence of transmission and system operation
  - Promote competition everywhere else
  - Prevent abuse of market power

FERC Order 888

- Require open access to the transmission system
  - All participants must have unencumbered access to the monopoly owned transmission system

- Define the format for tariffs that utilities must file with FERC
  - OATT - Open access transmission tariff
  - Tariffs define rates for transmission and ancillary services, and terms under which service is offered
FERC Order 889

- Address how buyers and sellers meet
  - 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
  - Regulated transmission division
  - Deregulated, merchant, generation division

Order 888 and ISOs

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

- The number and variety of new market participants strained the structure designed by Order 888
  - Number and type of requests for transmission service
  - 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

Order 2000: Regional Transmission Organizations

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

Pending NOPR

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

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

**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 ... ?
Back to Basics

- Characteristics of a competitive market

![Graph showing supply and demand](image)

Introducing Competition

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

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

The Previous “Marketplace”

- The participants
  - Electric utilities
  - Native, captured load
- The product
  - Bundled electric energy (kWh), including transmission service
- The marketplace
  - None
Power Industry Structure: Which Segments are Competitive?

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

Power Industry Players: Who Wants Competition?

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

- What are the “unbundled” products?
  - Transmission
  - Energy
  - Capacity
  - Ancillary services: frequency and voltage support, energy reserves (joint products with energy)

- How should the products be marketed?
  - Should there be a single energy, capacity and services market, or
  - Should there be many separate markets?

Market Design: Marketplace

- Where and how will buyers and sellers meet?
  - How provide incentives for participation? Force participation?

- Create a centralized or decentralized market?
  - Require participants to interact through a central facility (internet-based trading floor)?
  - Require participants to find their own bilateral trading partners?
  - Allow both methods to be used?
Market Design: Information

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

Market Design: Price

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

- Motivation - “Seams issues”
  - Different regions have different rules
  - High transactions costs
  - FERC is in a good position to define the minimum standard market design

- Resistance
  - There are legitimate regional differences
  - FERC does not understand these differences and so could create a rule that undermines markets in some regions

Specific Products to Price

- Transmission

- Energy

- Capacity
Transmission Ratemaking

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

Transmission Ratemaking

- Types of service
  - Reservation path: Point-to-point ("contract path"), network service
  - Duration: year, month, week, day
  - Certainty of reservation: firm, non-firm

- Components of service
  - Bulk, wholesale transmission
  - Ancillary services
  - Losses
Transmission Ratemaking

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

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

Region or scope for energy prices

- Postage stamp - single rate for entire region
- Zonal - rate constant within zone
- Nodal - rate different at each bus/node

These mechanisms can be used to price transmission
Unified Pricing

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

Impediments to Competition

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

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

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
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

Impediment: Market Power

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

- Information that is required
  - Price: transmission and energy
  - Quantity: availability of transmission capacity
  - Future events: maintenance, other transactions

- Poor access to information is a big hurdle
  - Past data: Historical competitive prices would be useful for comparison, but don’t exist
  - Future data: Data will probably become proprietary
  - Regulators need data to assess evaluate competition

**Next Steps for Restructuring**

- Federal: Pass federal legislation
  - Reliability, mergers, mandate RTOs

- State: Pass individual state legislation
  - 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
Summary

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

Summary

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

- Competitive markets
  - Promote the efficient use of resources
  - 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