

OVERVIEW OF STRUCTURE AND REGULATION OF ENERGY MARKETS:

A SHALLOW PARSING OF A COMPLICATED HISTORY – THE U.S. GAS,
POWER, PETROLEUM AND PRODUCTS MARKETS

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Agency With Regulatory Authority by Sector-Commodity-Activity

Jurisdiction follows function: commodity, transportation, market operation, and financialization each trigger different regulators.

Sector / Activity	Commodity	Federal Regulator	State Role	Core Point
Wholesale trading (physical)	Crude oil, products	FTC / DOJ	State AGs	Deregulated pricing; fraud & competition enforcement
Wholesale trading (physical)	Natural gas	FERC	None	Deregulated commodity; FERC enforces manipulation
Wholesale sales (interstate)	Electricity	FERC	None	Federally regulated wholesale market
Interstate transportation	Oil, products, gas, power	FERC	Limited	Rates, access, and practices regulated
Organized wholesale markets	Power, gas	FERC	None	ISO/RTO & pipeline markets under tariffs
Retail sales	Power, gas	—	State PUC / PSC	Retail rates and service



Agency With Regulatory Authority by Sector-Commodity-Activity (cont.)

Sector / Activity	Commodity	Federal Regulator	State Role	Core Point
Local distribution	Power, gas	—	State PUC / PSC	Poles, wires, local pipes
Generation / production	Power, gas	—	State	Siting, ownership, cost recovery
Hydroelectric facilities	Electricity (hydro)	FERC	Limited	Federal licensing
LNG terminals	LNG	FERC / DOE	Limited	Facilities & exports regulated
Derivatives trading	Power, gas, oil	CFTC	None	Futures, swaps, options
Market manipulation	Power, gas	FERC	None	Physical market enforcement
Market manipulation	Oil, products	FTC / DOJ	State AGs	Petroleum fraud & competition
Antitrust	All	FTC / DOJ	State AGs	Merger & conduct enforcement



Public-Interest Theory vs. Positive Theory: Whether regulation benefits/protects consumers from monopoly power (public interest theory) or protects producers' interests by shielding them from competition (positive theory)

Historical Overview

- **Municipal Regulation** (1879–1907): Cities issued overlapping franchises, fostering competition among utilities.
- **Shift to State Regulation** (Post-1907): Driven by concerns over inefficiency and corruption in municipal systems; state commissions gained control over rates, capacity, and market entry.

Results

- Early-regulated states had **lower prices and profits** pre-regulation, suggesting producers sought regulation to escape competition.
- Post-regulation, prices and profits **increased**, supporting the positive theory.



Typical Rationale for Regulation of Energy Industry

Core Economic Problem

Certain energy markets could not sustain effective competition

Regulation developed as a substitute for competition to control market power where competition cannot realistically arise

Structural Barriers to Entry

Extreme capital intensity

Generation plants, pipelines, transmission, storage require massive upfront investment

Long payback periods and financing risk deter new entrants

Sunk and irreversible assets

Assets cannot be repurposed if market conditions change

Increases incumbent advantage and discourages entry

Geographic and physical constraints

Rights-of-way, siting limits, and network topology restrict duplication

Economies of scale

Average costs decline as output increases

Favors a single large provider over multiple competitors



Typical Elements of Regulation of Energy Markets

- Rate regulation
 - Based on costs of service
 - Prevents excessive or monopoly pricing
- Obligations to serve
 - Ensures universal access to essential energy services
- Market Oversight
 - Control over entry to market
 - Centralized control to improve reliability, compatibility, security, etc.
- Non-discriminatory access
 - Prevents exclusion of competitors and customers
- Transparency Requirements
 - mandated disclosures, data-sharing rules, and information access to reduce the ability to manipulate markets.



- **Federal Power Act (1935)**
 - Provided for pervasive regulation with respect to electric utilities
 - Rates
 - Services/terms
 - Market entry
 - Reliability
 - Prevent market manipulation
 - Mergers
- **Natural Gas Act (1938)**
- Federal control over interstate natural gas pipelines and wholesale sales of natural gas.
- Market entry –authority to approve construction of jurisdictional facilities
- Many of the same topic areas as under the FPA for power
- **Public Utility Holding Company Act (1935)**
- Empowered SEC to regulate utility holding companies (and their service companies)
 - limit their geographic scope
 - require registration with the SEC
 - prevent excessive monopolistic control and profits
 - Approval over holding company structure
 - Regulation over financial health of holding companies
 - In 2005, PUCHA regulatory burdens lessened with jurisdiction transferred to FERC

FPC established prior to 1935 pursuant to **Federal Water Power Act (1920)** (establishing FPC and empowering FPC to regulate construction and operations of hydroelectric facilities).



Department of Energy Organization Act of 1977

- Created the Department of Energy
- Established the Federal Energy Regulatory Commission (FERC) to replace the FPC
- FERC inherited FPC regulatory and enforcement responsibilities under the FPA and NGA.
 - Interstate transmission and wholesale markets (outside of ERCOT) regulated by FERC.
 - Interstate natural gas pipelines (interstate transportation) regulated by FERC.
 - ISOs/RTOs

Natural Gas Policy Act of 1978

- Enacted in response to U.S. natural gas shortages in the late 1970s
- Authorized FERC to regulate interstate and some intrastate natural gas production and transportation and (in some cases) pipeline safety issues for interstate pipelines (delegated authority from DOT).
- Designed to encourage the development of new natural gas supplies by gradually deregulating wellhead gas prices.
- Established maximum lawful prices (ceilings) for the sale of natural gas, which were phased out over a series of years, allowing market forces to set natural gas prices.



Regulation of Interstate Oil Pipelines

Interstate oil pipeline transportation regulated by FERC (on a common carrier model)

Interstate Commerce Act of 1887

- Interstate Commerce Commission regulated common carriers -- e.g., trains, busses, trucking industry, oil pipelines
- Broad regulatory authority covering rates, terms of service, mergers and acquisitions, and construction but focus was on rates and non-discrimination
- Establishment of equal service conditions to provide shippers with equal access to pipeline transportation.

Energy Policy Act of 1992

- ICC's jurisdiction over interstate oil pipelines transferred to FERC to create greater consistency in developing various types of energy infrastructure – in part, to promote energy independence
- FERC takes broader approach to market oversight, recognizing the important goals of fostering competition, considering environmental impacts, promoting energy independence, and aligning with modern energy policy.





Economic Shifts (1970s–1980s)

Rising input costs, environmental regulations, and slowing demand stressed utilities.

Regulatory lag and political resistance to rate hikes led to financial strain.



Critique of Natural Monopoly Theory

Demsetz (1968): Monopoly pricing isn't inevitable; competition for the market can yield efficient outcomes.

Primeaux (1963–1968): Cities with competing utilities had **lower costs and prices**.



Key Takeaways

Traditional regulation failed under economic pressure.

Political interference distorted pricing and investment.



Legislation

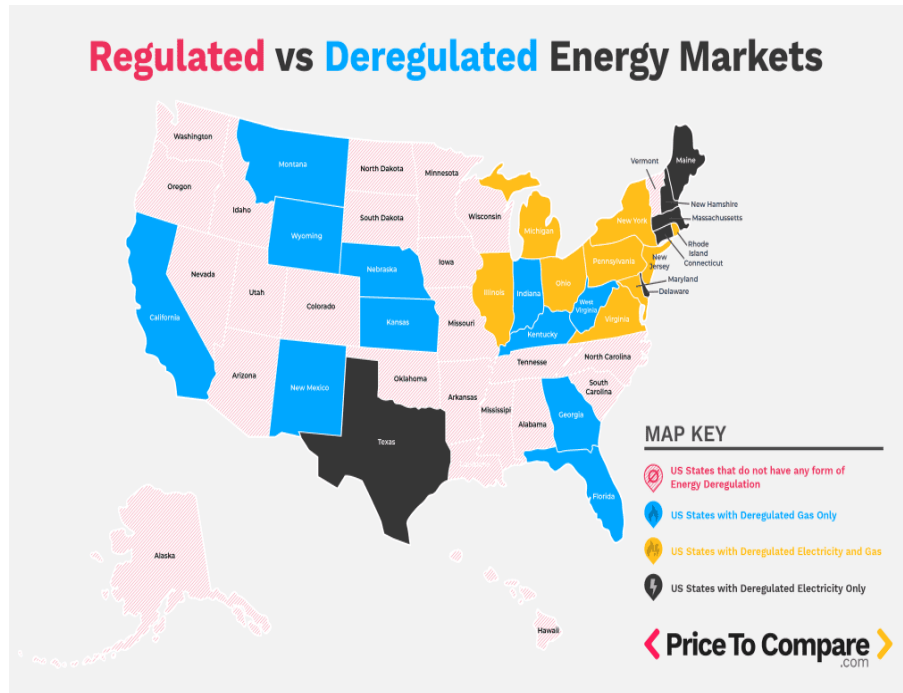
- 1935
 - **Public Utility Holding Company Act**
 - **Federal Power Act**
 - **Natural Gas Act**
- 1978
 - **Public Utility Regulatory Policies Act (PURPA)**
 - Encouraged energy conservation and introduced new entity type, qualifying facilities, power producers that could sell power more freely.
 - **Natural Gas Policy Act**
 - Eliminated geographic pricing restrictions, fostering a more unified and flexible natural gas market.
- 1992 – **Energy Policy Act of 1992 (EPAct 1992)**
 - Expanded FERC's authority to order IOUs access to their transmission facilities and introduced a new type of wholesale generator, exempt from most regulation (EWGs)
- 2005 – **Energy Policy Act of 2005 (EPAct 2005)**
 - Repealed/softened PUHCA and transferred this diminished regulatory authority from the SEC to FERC.

FERC Orders

- 1996
 - **Order 636** – Required functional unbundling of commodity (gas) from the transmission of gas
 - **Order 888** ("Open Access") mandated utilities to file open-access transmission tariffs (OATs) and unbundle generation from transmission. It also encouraged the creation of ISOs.
 - **Order 889** ("Standards of Conduct") required use of OASIS (Open Access Same-Time Information System) to ensure fair and transparent access to transmission and set conduct standards within utilities.
- 1999 – **Order 2000**
 - Encouraged the formation of **Regional Transmission Organizations (RTOs)**—neutral entities to operate regional grids, enhance reliability, and manage wholesale markets.



State Level Deregulation (1990s-present)



Mid-to-Late 1990s

- States like California, Texas, Rhode Island, New York, Pennsylvania, and Massachusetts enacted partial retail deregulation, allowing consumers to choose their electricity suppliers

2000s

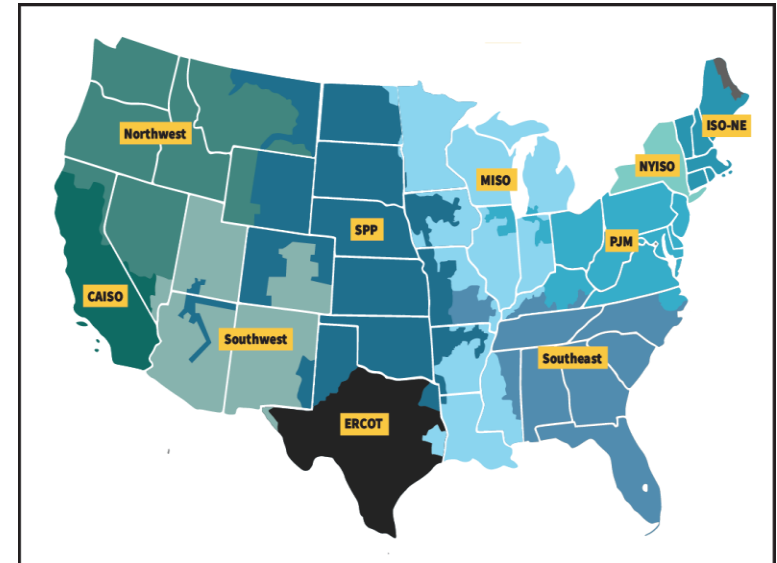
- Around 24 states and the District of Columbia had enacted restructuring legislation or orders to introduce competition into their energy markets

2010s

- Nearly two dozen states have fully or partially deregulated electricity and/or natural gas markets. Texas stands out with one of the most deregulated systems, offering consumers the most choice in providers



- **ISO/RTOs coordinate generation and transmission across wide geographic footprints**
 - replaced the old patchwork of utility-by-utility dispatch with regional, security-constrained, least-cost optimization. They run the grid in real time and administer the key wholesale markets.
- **Each ISO/RTO is a distinct control area with its own market design and operational quirks**
 - from ERCOT's energy-only market and isolated interconnection, to PJM's capacity market model, to CAISO's deep renewables integration and congestion-management complexity
- **Their control regions span multiple states and utility service territories,**
 - pulls formerly balkanized systems into unified balancing authorities
- **SO/RTOs provide open, non-discriminatory access to transmission**



- Energy Markets
 - Day-Ahead Market (DAM) - participants bid and offer to buy/sell electricity one day in advance. The market clears based on least-cost dispatch and transmission constraints.
 - Real-Time Market (RTM) - Adjusts for deviations from day-ahead predictions. Operates on 5–15 minute intervals.
 - Local Marginal Pricing (LMP) - Determines prices based on location, demand, and transmission congestion. Different nodes/zones can have different prices
- Capacity Markets (Some regions)
 - Ensure sufficient generation is available to meet future peak demand — even if those resources are not dispatched daily.
 - Generators paid for availability in the future
 - Prices are set via auctions used in PJM, ISO-NE, NYISO ERCOT uses energy-only model Ancillary Services Support grid reliability
 - Include, e.g., frequency regulation, spinning/non-spinning reserves, voltage support, etc.
 - Procured via markets or contracts



FERC Focus Areas and Priorities

- Integration of renewable energy
 - Rapid growth of wind, solar, and battery storage
 - FERC recognizes need to modernize market rules to accommodate renewables, storage, and DERs (distributed energy resources)
- Transmission Reform
 - Enhancing long-term transmission planning and cost allocation (see Order 1920, 2024).
 - Addressing significant backlogs in project approvals, especially for renewables and batteries.
- Capacity Market Reform
 - Reevaluating capacity market structures, especially around state resource preferences and clean energy mandates.
 - Capacity and reliability during extreme weather events
- Decarbonization & Clean Energy Integration
 - ESG pressures and carbon pricing initiatives
 - Emerging roles for hydrogen and clean fuels
- Grid Reliability



- Retail Power
 - Regulate retail rates, distribution networks, resource adequacy, and customer protections.
 - Control integrated utilities in regulated states.
 - Electricity Retail rates and utility investments Distribution
 - Approve resource plans and infrastructure
- Natural Gas
 - Utilities rates and terms of service for direct sales to customers
 - Intrastate transportation by Local Distribution Companies
 - Varies widely by state



Wholesale Natural Gas Markets

- Natural gas, the commodity, previously regulated and restricted at the wholesale level (bundled with the transportation of such molecules) is now largely deregulated at the wholesale level
- Wholesale gas market is built on a physical backbone with financial skin wrapped around it
 - Physical molecules move through an enormous pipeline network, but the commercial action happens in bilateral contracts, hub trading (Henry Hub as the benchmark), and monthly/daily scheduling on interstate pipelines.
- Pipeline capacity plays a critical role in natural gas market in setting the structural rules
 - They're FERC-regulated common carriers with posted tariffs, capacity rights, and nomination cycles.
- Trading is almost entirely bilateral and over-the-counter
 - Traded via contracts, hubs, exchanges Henry Hub Prices reflect supply, demand, access
 - Futures and swaps used for hedging (price volatility)
 - Seasonal volatility impacts pricing



Commodity Trading Futures Commission (CFTC)

- **Commodity Exchange Act (CEA) – 1936**
 - The CEA is the federal backbone for regulating futures, options, and swaps, giving the CFTC authority to police derivatives markets, ensure fair trading, prevent manipulation and excessive speculation, and require registration of intermediaries—futures commission merchants, swap dealers, clearinghouses
 - Established federal oversight of commodity futures exchanges.
- **Commodity Futures Trading Commission Act – 1974**
 - Created CFTC and brought regulation of certain futures contracts from USDA to newly-formed independent commission
- **Dodd–Frank Act -- 2008**
 - Brought swaps under the CEA, forcing clearing, reporting, and registration of swap dealers and major swap participants—dragging the bilateral swaps world into full CFTC oversight.
 - Hard-wired transparency and risk controls, adding swap data repositories, position limits, and tougher anti-manipulation tools to curb opacity and rein in systemic risk.
- CFTC's role over swaps and futures (financial instruments) narrower than FERC's regulatory authority over electricity and gas
- Drawing borders between agencies' jurisdictions can be messy
 - FERC/CFTC MOU



Federal Trade Commission Act – 1914

- Created FTC as an independent agency and granted it enforcement authority over violations of the Act's prohibition against unfair methods of competition
- Granted FTC broad investigative, rulemaking, and enforcement powers with regard to its antitrust-related mandate

Wheeler-Lea Act – 1938

- amended the FTC Act to add explicit authority over *unfair or deceptive acts or practices (UDAP)*, transforming the FTC from a competition-only body into the nation's primary consumer-protection enforcer

Energy Independence Security Act – 2007

- Gave FTC direct authority to prohibit manipulation and deception in wholesale crude, gasoline, and distillate markets
- Agency adopted a dedicated petroleum manipulation rule (2010) targeting false reporting, sham or fraudulent trades, and conduct that artificially moves wholesale petroleum prices, including information-based schemes.
- To date, agency has used its enforcement authority under the 2010 rule exceedingly sparingly.



QUESTIONS?



Thank you.

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