

# **ELECTRICITY RESTRUCTURING: OVERCOMING MARKET FAILURES WITHOUT OVERTURNING MARKETS**

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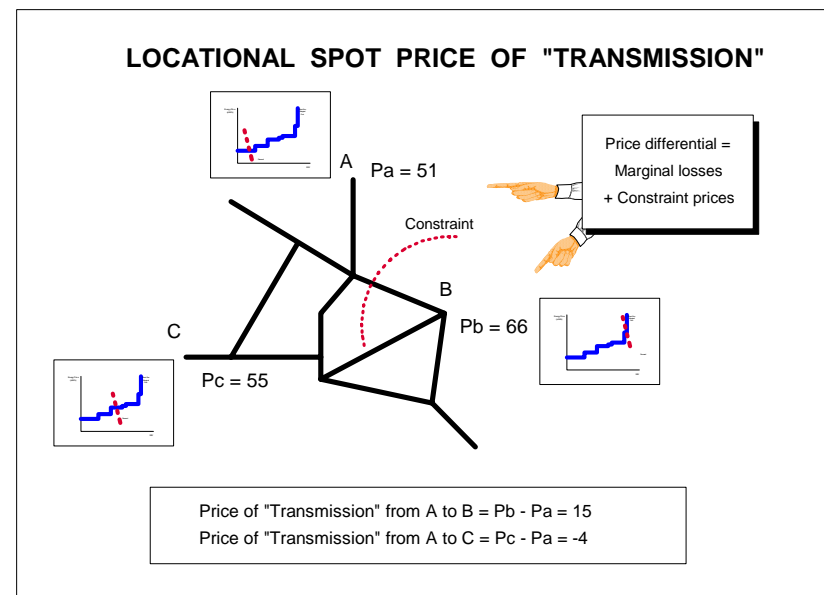
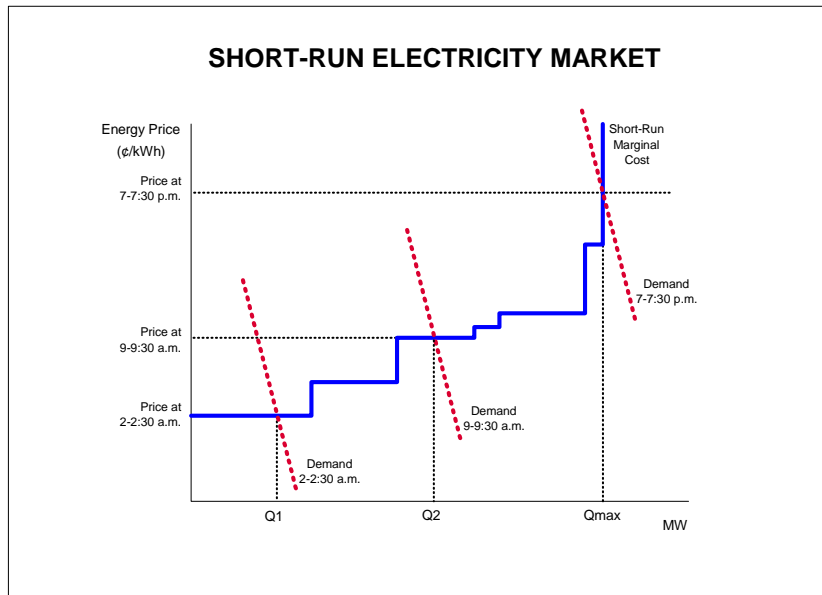
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# ELECTRICITY MARKET

# Electricity Restructuring

There is a tension between the role of market decisions and the special requirements of electricity systems.

“Market mechanisms should be used where possible, but in circumstances where conflicts between reliability and commercial objectives cannot be reconciled, they must be resolved in favor of high reliability.” (Blackout Task Force Report, April 2004, p. 139.)

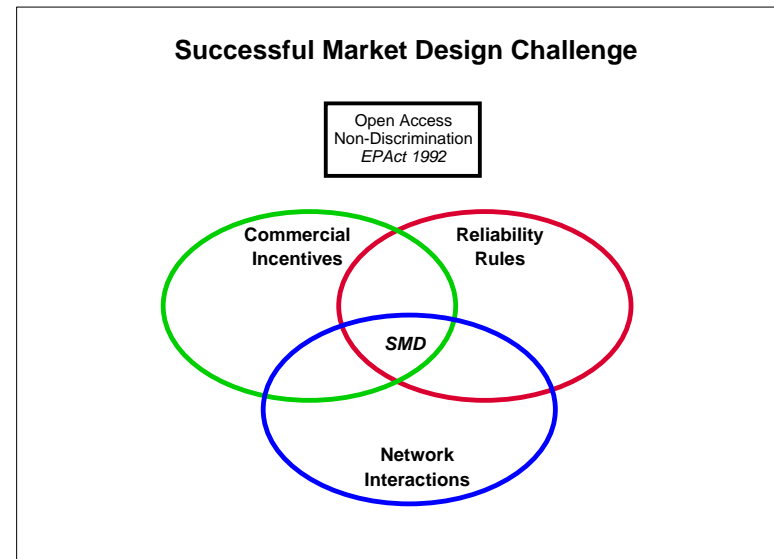


A decentralized market with supply and demand equilibrium over the network sets an ideal. But this “completely bilateral” market is not possible in the case of electricity.

The public policy debate over reshaping the electricity industry confronts major challenges in balancing public interests and reliance on markets.

“The need for additional attention to reliability is not necessarily at odds with increasing competition and the improved economic efficiency it brings to bulk power markets. Reliability and economic efficiency can be compatible, but this outcome requires more than reliance on the laws of physics and the principles of economics. It requires sustained, focused efforts by regulators, policy makers, and industry leaders to strengthen and maintain the institutions and rules needed to protect both of these important goals. Regulators must ensure that competition does not erode incentives to comply with reliability requirements, and that reliability requirements do not serve as a smokescreen for noncompetitive practices.” (Blackout Task Force Report, April 2004, p. 140.)

The focus should be on investment incentives and innovation, not short-run operational efficiency. With workable markets, market participants spending their own money would be better overall in balancing risks and rewards than would central planners spending other people’s money. If not, restructuring itself would fail the cost-benefit test.



**The Successful Market Design challenge dictates the need for some central institutions to support markets through the seeming oxymoron of “coordination for competition.”**

**Central institutions differ in the degree of involvement and impact on the market.**

- **Central Coordination.** Organized markets required to facilitate exchange between willing buyers and willing sellers in voluntary transactions. (E.g., energy purchase and sales in spot markets.)
  - Design can be compatible with largely decentralized decisions.
  - Emphasis is on consistent incentives.
  - Evaluation remains neutral on market choices.
  
- **Central Procurement.** Administrative determination of required products and services with imposition of mandatory payments as a condition of participation in the system. (E.g., operating reserves with charges collected through uplift payments.)
  - Emphasis is on assured outcomes.
  - Central judgment and mandatory payment replace market forces.
  - Slippery slope could undermine broad purpose of electricity restructuring.

## **Guidelines for design of electricity market institutions include:**

- Define Products and Services Consistent with Real Operations.
- Create Property Rights.
- Establish Consistent Pricing Mechanisms.
- Design Central Institutions to Emulate Efficient Market Operations and Incentives.
- Target Structure and Scope of Central Interventions to Address Market Failures.
- Set Principled Limits for Interventions Based on the Nature of the Market Failure.
- Keep Focus on Goal of Workable, not Perfect, Markets.

**The demand for action by regulators  
demands that regulators keep their eye on the ball.**

**Focus on market design and market failures.** Better to fix a bad design than to micromanage bad decisions.

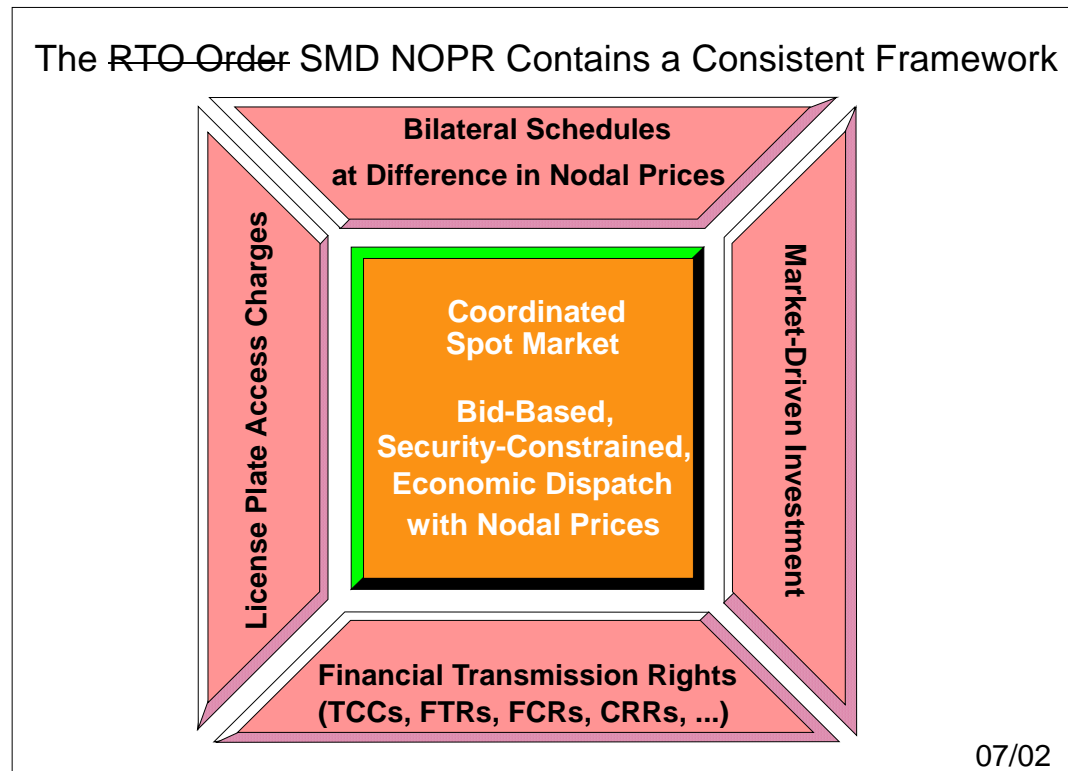
**Be afraid of the reflexive market intervention that sows the seeds of intervention.** Good advice might be: “Don’t just do something, stand there.” Better advice would be: “Look, and look hard, before you leap.”

**Intervene where needed, and know how to stop!**

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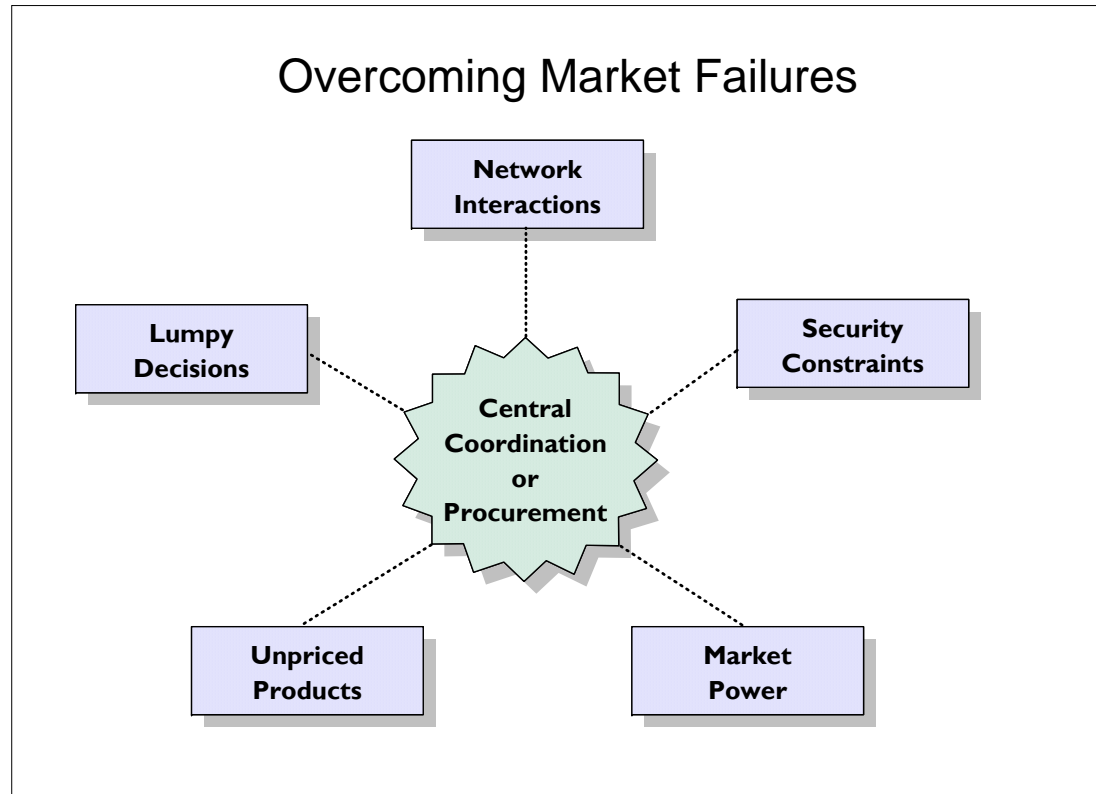
# A Market Framework

The example of successful central coordination, ~~GRT, Regional Transmission Organization (RTO) Millennium Order (Order 2000)~~ Standard Market Design (SMD) Notice of Proposed Rulemaking (NOPR), provides a workable market framework that is working in places like New York, PJM in the Mid-Atlantic Region, and New England.



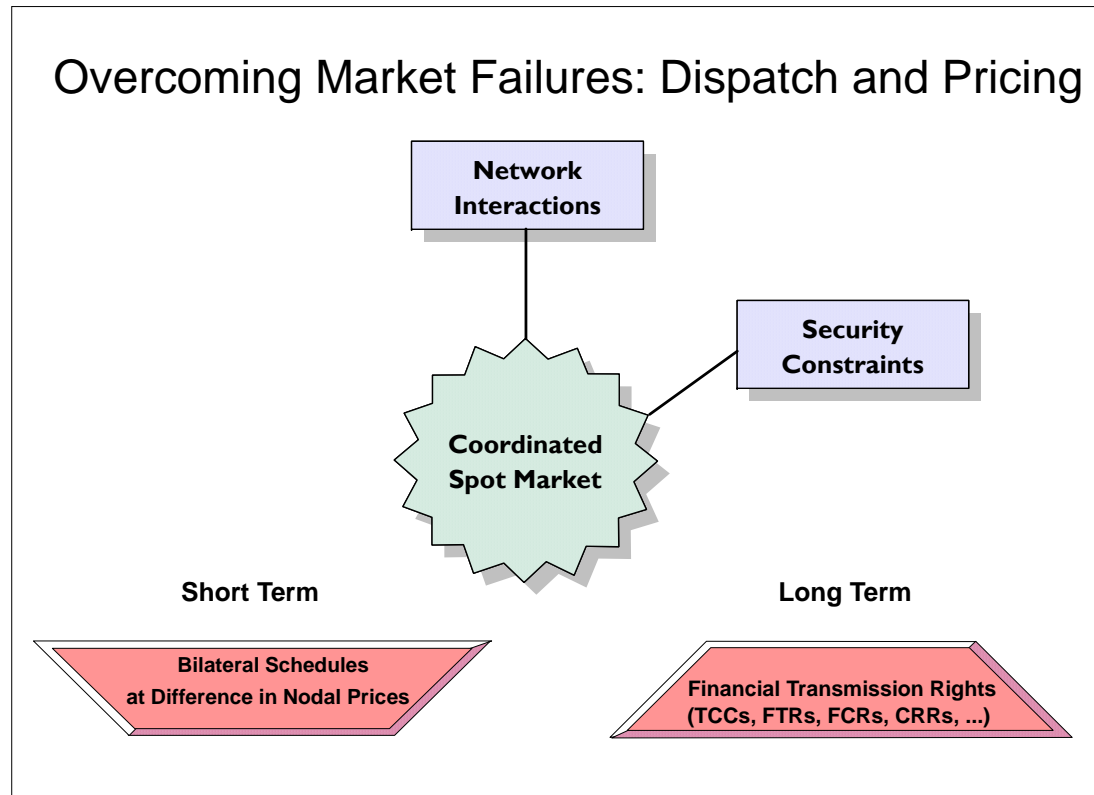
Poolco...OPCO...ISO...IMO...Transco...RTO... ITP...WMP...: "A rose by any other name ..."

The need for central institutions arises from the existence of prominent forms of market failure.



**A Dangerous Definition of Market Failure.** "The market fails to do what the central planner wants."

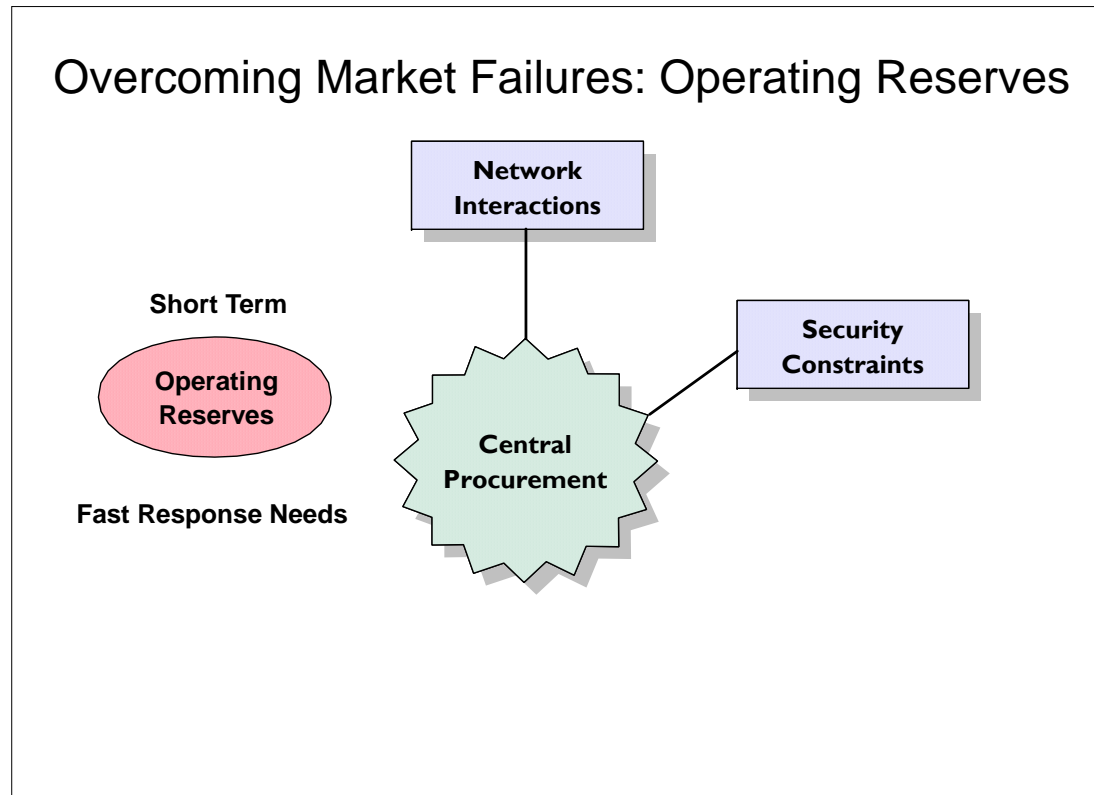
The coordinated spot market provides an example of a limited central role with a targeted purpose.



- Short-term coordination of all transactions.
- Long-term coordination of FTRs for transmission, but not CFDs for energy.

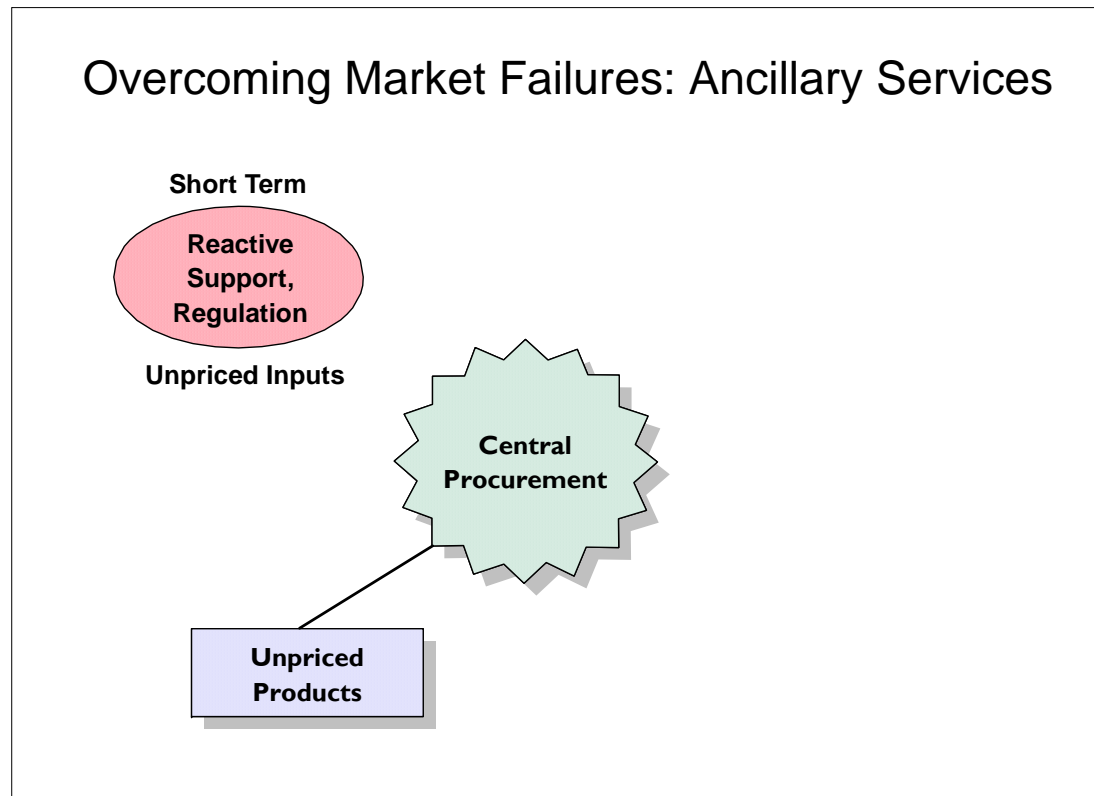


Fast response needs preclude pure market solutions for real-time reliability.



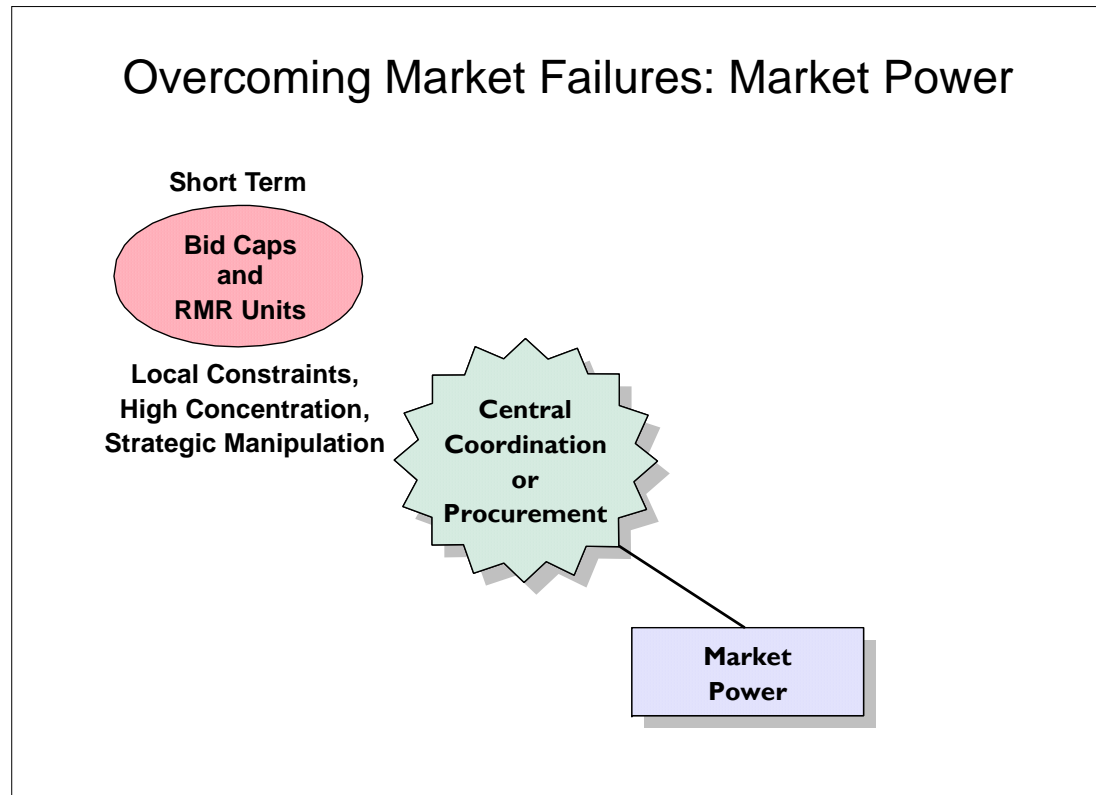
- Administrative determination of required operating reserve types, levels and locations.
- Administrative demand curves to emulate scarcity pricing, with simultaneous determination of reserve and energy prices to maintain consistent incentives.

Electricity operations require multiple products and services that have not been priced, and may be difficult to price even in principle.



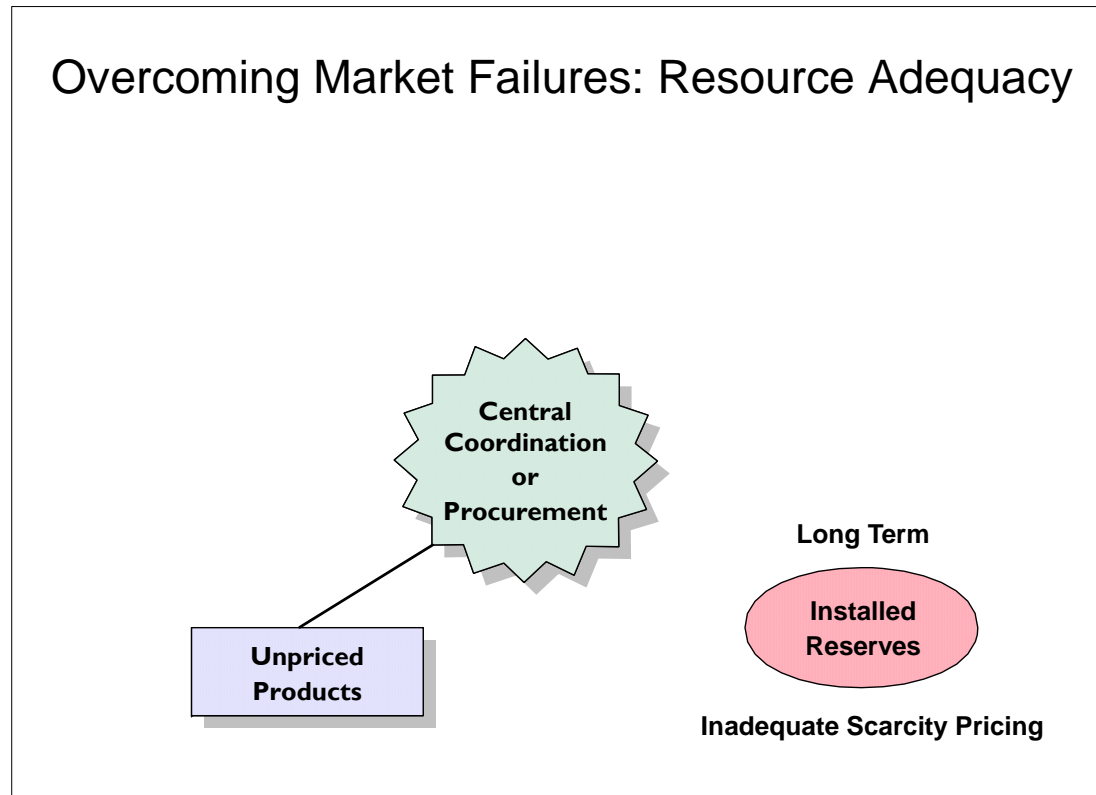
- Without market incentives, central procurement is necessary and imposes burdens.
- Mandatory payments through uplift.

The ability to profit by withholding supply undermines the fundamentals of restructuring.



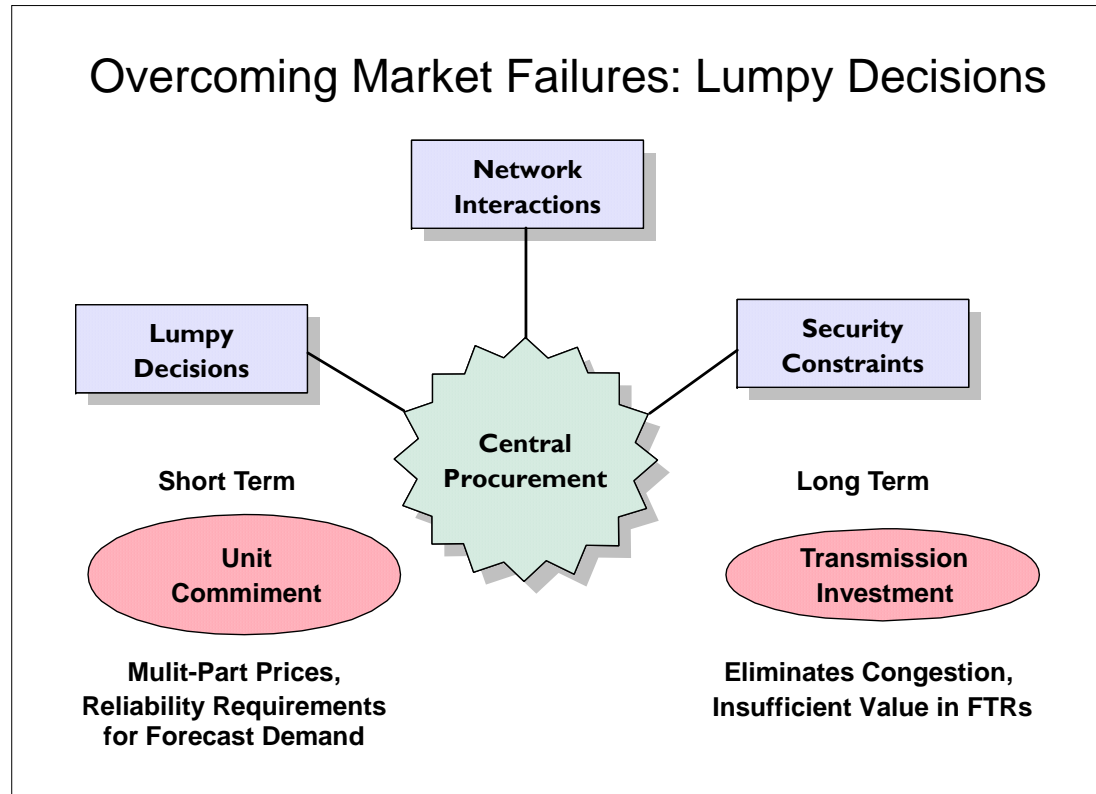
- The difficult problem is distinguishing good high prices from bad high prices.
- Targeted bid caps and “must offer” rules focus on the short-term market failure.

Limits on scarcity pricing may underprice reliability and produce inadequate capacity.



- Low “damage control” price caps and zonal pricing rules create market failures.
- Installed capacity markets of increasing complexity arise to undo the consequences.

Lumpy decisions may affect market prices so much that no simple market equilibrium exists.



- **Short Term:** Unit Commitment for bid load based on total cost. Reliability Unit Commitment for forecast load based on commitment cost.
- **Long Term:** Investment for “economic” transmission expansion. Knowing how to stop?

**Drawing a line between merchant and regulated transmission investment is a pressing requirement.**

- **FERC Intentions.** FERC's stated policy is to support both merchant and regulated transmission investment.
- **FERC Actions.** Motivated by pressure to stimulate transmission investment, recent FERC decisions undermine the policy goal. The mandated economic investment rules in PJM and cost socialization rules in New England defy the logic of electricity restructuring.
- **Slippery Slopes.** Regulated investment shifts the risks and provides cost recovery mechanisms not available to the merchant investor. Absent a bright line between regulated transmission investment and competing alternatives, there will be enormous and justifiable pressure on the regulator to put generation and demand investments on the same playing field of reduced risk and mandatory collection through regulated mechanisms. The intended modest domain of regulated transmission would expand to include integrated resource planning. The end state could be recreation of the central regulatory decision problems that motivated electricity restructuring in the first place.

**Draw the line between regulated and merchant investments with a focus on market design and market failure.**

- **A Possible Line Between Merchant and Regulated Investment.** Regulated investment would be limited to those cases where the investment is inherently large relative to the size of the relevant market and inherently lumpy in the sense that the only reasonable implementation would be as a single project like a tunnel under a river. Everything else would be left to the market.
- **A Dangerous Definition of Market Failure.** “The market fails to do what the central planner wants.” This is the de facto definition apparent in FERC’s recent actions on transmission investment. It is not hard to see where this leads. Everything would be left to the central planner, who operates a better collection agency.

**If the central planners (or regulators) know what to do, then do it.**

**But if true, what is the need for electricity restructuring and markets?**

William W. Hogan is the Lucius N. Littauer Professor of Public Policy and Administration, John F. Kennedy School of Government, Harvard University and a Director of LECG, LLC. This paper draws on work for the Harvard Electricity Policy Group and the Harvard-Japan Project on Energy and the Environment. The author is or has been a consultant on electric market reform and transmission issues for Allegheny Electric Global Market, American Electric Power, American National Power, Australian Gas Light Company, Avista Energy, Brazil Power Exchange Administrator (ASMAE), British National Grid Company, California Independent Energy Producers Association, Calpine Corporation, Central Maine Power Company, Comision Reguladora De Energia (CRE, Mexico), Commonwealth Edison Company, Conectiv, Constellation Power Source, Coral Power, Detroit Edison Company, Duquesne Light Company, Dynegy, Edison Electric Institute, Edison Mission Energy, Electricity Corporation of New Zealand, Electric Power Supply Association, El Paso Electric, GPU Inc. (and the Supporting Companies of PJM), GPU PowerNet Pty Ltd., GWF Energy, Independent Energy Producers Assn, ISO New England, Maine Public Advocate, Maine Public Utilities Commission, Midwest ISO, Mirant Corporation, Morgan Stanley Capital Group, National Independent Energy Producers, New England Power Company, New York Independent System Operator, New York Power Pool, New York Utilities Collaborative, Niagara Mohawk Corporation, NRG Energy, Inc., Ontario IMO, Pepco, Pinpoint Power, PJM Office of Interconnection, PP&L, Public Service Electric & Gas Company, Reliant Energy, Rhode Island Public Utilities Commission, San Diego Gas & Electric Corporation, Sempra Energy Resources, SoCalGas, SPP, Texas Utilities Co, TransEnergie, Transpower of New Zealand, Westbrook Power, Williams Energy Group, and Wisconsin Electric Power Company. The views presented here are not necessarily attributable to any of those mentioned, and any remaining errors are solely the responsibility of the author. (Related papers can be found on the web the web at [www.whogan.com](http://www.whogan.com)).