



Federal Energy Regulatory Commission

XIII Seminario Repsol YPF - Harvard

**“Electricity Market Reform:
The U.S. (FERC) Experience”**

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Salamanca, Spain

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WHAT IS THE FERC?

- **U.S. Government Agency**
 - **Independent Executive Branch Agency**
 - **Decisions subject to review by U.S. Courts**
- **5 Voting Commissioners**
 - **Appointed by the President**
 - **Confirmed by the Senate**
 - **Five Year Terms**
- **1250 Employees**
 - **Engineers, Technical Specialists**
 - **Lawyers**
 - **Economists**



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ROLE OF THE FERC

- **Regulation of Natural Gas Transportation (130 Pipelines Subject to FERC Jurisdiction)**
 - rates and services of interstate pipelines
 - licensing of pipeline construction
- **Regulation of Electric Industry**
 - Wholesale Sales of Electricity
 - Interstate Electric Transmission (174 jurisdictional transmission owning electric utilities and independent system operators)
- **Hydroelectric Licensing (over 1700 hydroelectric projects)**
- **Regulation of Interstate Oil Pipelines**



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TWO LEVELS OF ENERGY REGULATION

Federal

- **FERC**
- **Wholesale Transactions**
- **Rates, terms and conditions of interstate transmission service**

State

- **50 State Regulatory Commissions**
- **Retail Transactions**
- **Rates, terms and conditions of local distribution**



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FERC POLICIES IN THE 1990s

- **Market based pricing for generation service**
- **Third party access to the transmission grid (1996)**
 - **Unbundling: transmission service separated from generation service**
 - **Contract path based**
 - **Congestion costs socialized**



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GRID MANAGEMENT PROBLEMS UNDER THIRD-PARTY ACCESS

- **Vertically integrated grid operators**
 - **Conflict of interest in providing access; discrimination**
- **Grid management fractured among more than 100 operators**
 - **Markets are regional but grid management sub-regional**
 - **Multiple transmission rates keep markets too small**
- **No locational price signals in most markets**



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REGIONAL TRANSMISSION ORGANIZATIONS (RTOs)(2000)

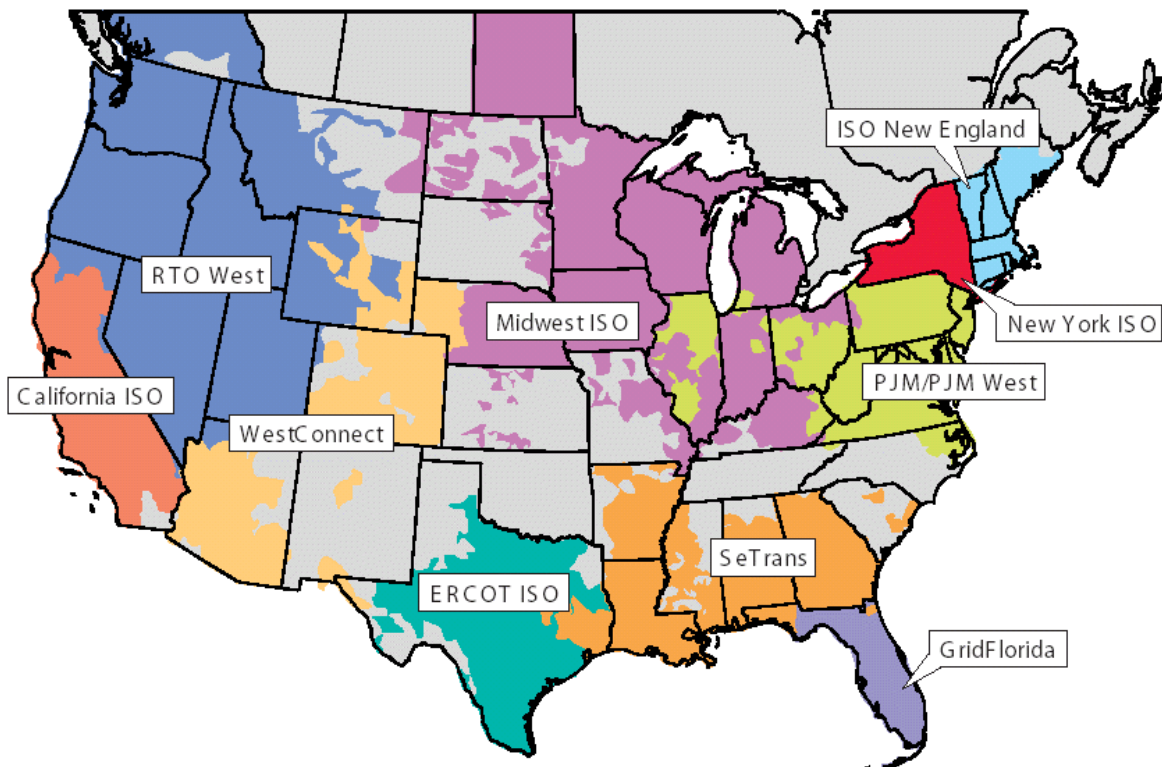
- **Grid manager for large region that is independent of merchant generation interests**
- **Benefits**
 - **Large regional trading hub**
 - **Eliminate conflicting incentives**
 - **Enlarge markets through improved transmission pricing and congestion management**
- **Voluntary, design elements not prescribed**



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Approved RTOs and Existing ISOs Utility Participation as of March 2003



Note: Map includes service territories of transmission-dependent utilities.

This map is available to EEI electric company members at http://www.eei.org/products/rto/maps/rto_map.pdf (PDF) or [rto_map.ppt](#) (PowerPoint)

© 2003 Edison Electric Institute. Service territory data source: POWER map, 2nd quarter 2002 release, © Platts, a Division of the McGraw Hill Companies.



MARKET DESIGN: CALIFORNIA PROBLEMS

- **Over-reliance on spot market**
- **No hedging instruments allowed**
- **No assurance of adequate generation capacity**
- **No market power mitigation**
- **Insufficient demand response**
- **Poor congestion management**



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PROPOSED STANDARD MARKET DESIGN (2002)

- **Mandatory**
- **Similar to PJM market design**
- **Transmission system and spot market run by independent entity**
- **Standard tariff for all transmission service**



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STANDARD MARKET DESIGN FEATURES

- **Spot market: bid-based security constrained economic dispatch that uses locational marginal prices (LMP)**
- **Day ahead market – allows time to adjust production and consumption**



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STANDARD MARKET DESIGN FEATURES

- **Transmission service**
 - **Basic access fee gives scheduling rights**
 - **Firm transmission rights hedge congestion costs**
 - **Grid expansion creates new transmission rights**
 - **Applies to wholesale and retail uses**



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STANDARD MARKET DESIGN FEATURES

- **Regional planning – generation, transmission or demand solutions**
- **Market monitoring and market power mitigation**
 - **Monitor staff must be independent of RTO**
 - **Ex ante mitigation measures (bid caps, bid limitations, maintenance coordination)**
- **Regional generation adequacy requirements**



CRITICISM OF STANDARD MARKET DESIGN

- Interferes with state jurisdiction (rates, resource adequacy, planning)
- No respect for regional differences
- Too prescriptive and detailed



MODIFICATIONS TO STANDARD MARKET DESIGN (April 2003)

- Retain core principles
- RTO design elements more flexible
- Respect for regional differences (timing, benefits vs. costs)
- Greater role for states
 - Planning
 - Resource adequacy
 - Access charge
 - Allocating firm transmission rights



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LESSONS

- Electricity network flows do not follow political boundaries
- Insist on fundamental design elements
 - Spot market with locational pricing signals
 - Independent grid and market operation
 - Consistent rules over entire market region
 - Firm transmission rights to hedge congestion costs
 - Market monitoring and mitigation
- Accommodate regional differences while eliminating seams between regions



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U.S. AND EUROPE: COMMON GOALS

- Consistent tariffs among trading regions
- Enlarging markets – reduces supplier market power
- Market transparency
- Independent operation of grid/power markets
- Consistent congestion rules among trading regions