

# **Design Choices in the Organization of Electricity Markets**

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# Outline

- **Overview of Restructuring Goals**
- **Market Organization Choices**
  - **Details to Support the Rhetorical Goals**
- **Case Studies**
  - **Market Design and Redesign in the UK**
  - **International Comparisons of Price Formation**
  - **The California Electricity Market**
    - » **Transmission pricing**

# Restructuring Goals

- **Economic Efficiency**
  - Short term (pricing and trade)
  - Long term (investment)
  - Revenue from asset sales\*
- **Technical Efficiency**
  - System operation and reliability
- **Equity**
  - Stranded costs
  - Benefits of competition
- **Quality**
  - new product development
- **Externalities and Public Goods**

# Some Red Herrings

- **Centralized vs. Decentralized**
  - many dimensions over which to compare
- **Rely on “markets” first**
  - ‘markets’ rely on many interacting processes
- **Customer “Choice” vs. Customer “Captivity”**
  - customers need something to choose from
- **Zonal vs. Nodal pricing - size matters?**
  - *How* transmission is priced is as important as *where*
- **Consumer vs. Supplier Fees**
  - No economic difference
- **Fixed cost recovery**
  - No guarantees in a deregulated world

# Design Choices: Details

- **Organization of Firms**
- **Pricing the Products**
  - **Energy Price Formation Process**
  - **Pricing and Allocation of Transmission Services**
  - **Provision and Pricing of Ancillary Services**
- **Implementing Price Responsive Demand**
  - **Not necessarily at the household level**
- **Market Power Mitigation**

# Organization of Firms

- **Public vs. Private Ownership**
  - Restructuring and privatization are not synonymous
- **Transmission Company vs. Independent System Operator**
  - Planning and Funding of Grid Expansion
  - Grid Reliability / Economic Efficiency trade-offs
  - Governance Issues
- **Generation and Distribution Functions**
  - Separation or Affiliation?
  - Form of Regulation
- **Market Making**
  - Exchanges, Pools, and Marketers

# Pricing Energy

- **Mandatory vs. Voluntary Pool**
- **Day-ahead or contract market vs. ex-post market**
- **Frequency of Bids - daily vs. hourly**
- **Price setting mechanism**
- **Requirements for Capacity Commitment**
  - Self vs. Central commitment
  - Penalties for deviations
- **Existence of short-term 'deviations' market**

# Pricing Transmission

- **Nodal pricing vs. 'Path' pricing**
- **Number of nodes or 'zones'**
- **Market role of ISO/Grid owners**
- **Access fees/cost recovery**

# Pricing of Ancillary Services and Reserves

- **Separate products or bundled with energy**
  - demand side, supply side
- **Mandatory market vs. self-provision**
- **Long-term vs. short-term markets**
- **Complementary services - allow for substitution?**

# **Implementing Price Responsive Demand**

- **Role of distribution companies**
- **Prices seen by final customers**
- **Contract flexibility**
- **Metering vs. Load ‘profiling’**

# Market Power

- **Vertical separation**
- **Vertical ‘affiliation’**
- **Horizontal Divestiture**
- **Vesting Contracts**
- **‘Locational’ market power**
  - Uplift charges, RMR contracts

