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American Antitrust Institute

7th Annual Energy Roundtable Workshop

"Lessons Learned from Electricity Restructuring"

Monday, March 5, 2007
National Rural Electric Cooperative Association
4301 Wilson Blvd. Arlington, VA
(by invitation)

Agenda

The American Antitrust Institute (AAI) thanks NRECA for sponsoring the 7th annual Energy Roundtable Workshop.[1] This year will mark the seventh annual gathering of experts in antitrust and regulation from government, industry, academia, and advocacy to discuss key issues in electricity restructuring. Last year's roundtable explored the compatibility (or lack thereof) of the current model of restructuring with the realities of electricity markets. Movement away from market mechanisms, market power, and transmission pricing were key themes discussed in this context.

2006 was a threshold year for assessing several important issues in restructuring, including the costs and benefits of reforms, merger enforcement, and the effectiveness of market oversight. This year's roundtable therefore provides the unique opportunity to (1) explore some of the most important lessons learned from restructuring to date and (2) use those lessons to develop policy options that will shape the path of restructuring.

The morning session will focus on the major issues that have defined the particular approach to restructuring that has been adopted in the U.S., a survey of the cost/benefit analyses of restructuring, and regulatory rationales behind market monitoring. The afternoon session will examine various aspects of merger analysis and policy, ranging from the suitability of merger screens to procedural issues. The panel presentations and

[1] AAI roundtable discussions are off-the-record and do not involve any voting. A rapporteur's summary of the proceedings will be made available shortly after the workshop. The six papers presented at the workshop today will be published in an upcoming symposium issue of the *Review of Industrial Organization*.

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discussion will build on the collective experience with restructuring to date, identify where various approaches have faltered, and suggest reforms based on lessons learned.

8:15 am – 8:45 am Morning Refreshments

8:45 am – 9:00 am: Opening Remarks

Diana Moss: Vice President and Senior Research Fellow, American Antitrust Institute

9:00 am – 9:30 am: The Year in Summary

Susan Kelly: Vice President of Policy Analysis and General Counsel, American Public Power Association

9:30 am – 11:45m: Morning Panel: Approaches to U.S. Electricity Restructuring, Costs and Benefits, and Market Oversight

Speaker Presentations (9:30 – 10:30 am):

John Hilke: **"Economics, Compromise, and Costs in U.S. Electricity Markets"**

Economic Consultant (formerly, FTC Electricity Project Coordinator)

John Kwoka: **"Restructuring In Practice: Assessing Recent Studies of Its Impact on Prices and Costs"**

Neal F. Finnegan Professor of Economics, Northeastern University

Robert Michaels: **"Market Monitoring and the Economics of Regulation"**

Professor of Economics, California State University, Fullerton

Break (10:30 – 10:45 am)

Discussion (10:45 – 11:45 am)

12:00 – 12:45 pm:	**Luncheon and Keynote Address**
Suedeen Kelly:	Commissioner, Federal Energy Regulatory Commission
1:00 pm – 3:15 pm:	**Afternoon Panel: Electricity Merger Analysis, Process, and Policy**

Speaker Presentations (1:00 – 2:00 pm):

Richard Gilbert:	**"Competitive Residual Demand Analysis: An Alternative Approach to Screen Electricity Mergers" (co-authored with David Newbery)** Professor of Economics, University of California, Berkeley
Darren Bush:	**"Merger Analysis: Market Screens, Market Definition and Other Lemmings"** Assistant Professor, University of Houston Law Center
Diana Moss:	**"Antitrust Versus Regulatory Merger Review: The Case for Inter-Agency Coordination"** Vice President and Senior Fellow, American Antitrust Institute

Break (2:00 - 2:15 pm)

Discussion (2:15– 3:15 pm)

3:15 pm – 3:30 pm:	**Closing Remarks**
David Mohre:	Executive Director, Energy & Power Division, National Rural Electric Cooperative Association
3:30 pm:	**Adjourn**

Summary of Proceedings[2]

Introduction

The American Antitrust Institute (AAI) held its 7th annual Energy Roundtable Workshop on March 5, 2007 at the headquarters of the National Rural Electrical Cooperative (NREC) in Arlington, Virginia. AAI appreciates NRECA's generous assistance in making the roundtable workshop possible. Over 40 invited individuals--from government, academia, consulting groups, consumer advocacy groups, trade associations, and industry--participated in the workshop and a lively exchange of ideas and viewpoints. AAI Vice President Diana Moss developed the agenda and presided over the discussion.[3] The proceedings themselves were off the record and not transcribed. This report briefly summarizes most of the presentations and the accompanying discussion. The following speakers made presentations:[4]

***Susan Kelly**, Vice President of Policy Analysis and General Counsel, American Public Power Association. *The Year in Summary*.

*__John Kwoka__, Neal F. Finnegan Professor of Economics, Northeastern University. *Restructuring in Practice: Assessing Recent Studies of Its Impact on Prices and Costs*.

***Robert Michaels**, Professor of Economics, California State University, Fullerton. *Market Monitoring and the Economics of Regulation.*

Peter Fox Penner, Chairman Brattle Group. *Comment on Morning Panel*.

Suedeen Kelly, Commissioner, Federal Energy Regulatory Commission. *Luncheon and Keynote Address.*

***Richard Gilbert**, Professor of Economics, University of California, Berkeley. *Competitive Residual Demand Analysis: An Alternative Approach to Screen Electricity Mergers* (co-authored with David Newbery).

***Darren Bush**, Professor of Law, University of Houston Law Center. *Merger Analysis: Market Screens, Market Definition and Other Lemmings*.

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[2] The summary of proceedings was prepared by Richard Brunell, Director of Legal Advocacy, AAI and Diana Moss, Vice President, AAI.

[3] Dr. Moss was formerly Senior Economist and Coordinator for Competition Analysis in the Office of Markets, Tariffs, and Rates at FERC. She is also Adjunct Professor in the Department of Economics, University of Colorado.

[4] Those marked with an asterisk submitted presentations, which are available on AAI's website, www.antitrustinstitute.org, by permission of the authors. John Hilke, Economic Consultant and David Mohre, NRECA were unable to present at the workshop.

***Diana Moss**, Vice President and Senior Fellow, American Antitrust Institute. *Electricity Mergers, Economic Analysis, and the Merger Review "Thicket."*

Overview

The purpose of AAI's annual energy roundtable workshop is to bring together various stakeholders and perspectives to discuss issues relating to competition and regulation in electricity markets. Like prior workshops,[5] this year's discussion focused on electricity restructuring but unlike past workshops relied heavily on the presentation of papers that will later be published in a symposium issue of the *Review of Industrial Organization*. After an overview of major events during the year, the morning panel focused on a review of the various studies evaluating the costs and benefits of restructuring, as well as the institutional role of market monitors. Commissioner Kelly gave the luncheon keynote address. The afternoon panel focused on electricity mergers.

Highlights of Presentations

Morning Panel

Susan Kelly's summary of the year emphasized the enormous amount of work that FERC did this past year on implementing the Energy Policy Act of 2005 (EPAct 2005). Kelly noted the intense debate surrounding John Kwoka's review of the studies on restructuring (discussed below). She also noted that as rate caps came off in several retail access states, substantial rate hikes triggered public outcry. One developing response to rate hikes at the state level may be "re-regulation," but it is in a form that favors utilities over consumers, as was adopted in Virginia. Kelly observed, however, that the public cares more about the pocketbook result than the technicalities of auction rules and such.
Kelly explained that climate change, demand-side response, and energy efficiency have come back as prominent issues. A new round of generation and transmission infrastructure is needed, Kelly said, but generators, utilities and PUCs all want to minimize their risks. In terms of utility mergers, she noted that the big story of 2006 was the increased scrutiny exercised by the states--not FERC or DOJ--which sank the two biggest mergers of the year. Referring to the recently proposed TXU/Texas Pacific leveraged buyout, she suggested that private equity and hedge fund money may stoke a post-PUHCA 1935 merger and acquisition wave.

John Kwoka presented the results of a review that he performed on behalf of APPA of various studies that have been done analyzing the costs and benefits of restructuring.[6] Of the 13 studies that he reviewed, eight concluded that restructuring had favorable effects, three found negative effects, and two found mixed results. Kwoka concluded that all of the studies had methodological flaws and failed to meet the standard of good economic

[5] A summary of prior annual workshop proceedings may be found in the archives at http://www.antitrustinsttiute.org.

[6] The complete study can be found at http://www.appanet.org/files/PDFs/RestructuringStudyKwoka1.pdf.

research. Specifically, the studies inadequately account for the facts that: (1) restructuring was not a one-time event, but occurred over time; (2) post-restructuring prices were artificially set and not a reflection of market equilibrium prices; and (3) temporary events (such as excess generating capacity) likely influenced generating prices during the post-restructuring period. As a result, Kwoka concluded that there is unconvincing evidence that consumers are better off as a result of electricity restructuring.

Robert Michaels's presentation focused on the political economy of market monitoring institutions (MMIs). Michaels traced the origin of these new institutions to a political bargain in California whereby California's utilities proposed MMIs as a device to permit them to offer market based rates. Subsequently, FERC adopted MMIs as a required element of RTOs "almost by accident" and without a formal rulemaking. Michaels suggested that the case for MMIs employed by RTOs was weak and that the market monitoring function may be better served by FERC itself.

Afternoon Panel

Rich Gilbert presented a proposal developed with David Newbery for a competitive residual demand (CRD) screen for analyzing electricity mergers as an alternative to the market concentration screen currently used by FERC. Electricity is idiosyncratic in that inelastic demand, limited storage, and transmission constraints mean that firms with relatively small market shares may have an incentive to withhold supply to raise prices. The DOJ/FTC horizontal merger guidelines were constructed primarily to deal with the risk of coordinated interaction but the principal risk from electricity mergers is the exercise of unilateral market power. There is thus a mismatch between market concentration analysis and the most likely theories of competitive harm. Gilbert explained that CRD analysis examines the residual demand facing the merging firms pre- and post-merger. The analysis determines whether the merged firm has an incentive to reduce output and raise prices relative to pre-merger prices, which is a function of the merging firms' capacities, marginal costs, and the slope of the supply function for the rest of the industry.[7]

Darren Bush's presentation focused on the different approaches followed by FERC and DOJ in two mergers even though both agencies purport to follow the same methodology. In Exelon/PSEG, DOJ articulated a "fuel curve" theory of harm, which coincided with high market shares, and proposed a remedy designed to ameliorate the harm. In contrast, FERC focused solely on market concentration and endorsed divestures as a means of lowering concentration but which would not necessarily eliminate the source of the merging firms' market power. Bush suggested that the DOJ approach more closely ties the relevant market analysis and remedy to the theory of competitive harm. In Pacific Enterprises/Enova, both agencies articulated similar vertical foreclosure theories, with DOJ requiring a divestiture remedy to eliminate the incentive to discriminate and FERC imposing a conduct-based remedy.

[7] The CRD analysis does not tell the agencies or courts what to do if the merger does not pass the screen.

Diana Moss's presentation made the case for greater interagency coordination between DOJ/FTC and FERC. She highlighted major differences in the way the antitrust agencies and FERC review competition issues in mergers, particularly in the use of data and the nature of the economic analysis. While the antitrust agencies use a compulsory process to obtain confidential information from a variety of market participants to support a balanced consideration of factors under the horizontal merger guidelines, FERC relies on publicly available data and tends to limit its analysis to market concentration. Moreover, the antitrust agencies perform independent in-house economic analysis while FERC relies on the merging parties' analysis which is often biased and inconsistent. For example, an analysis of filings in a series of mergers involving the same markets over five years showed widely divergent market concentration levels in the parties' filings. Moss suggested that the antitrust agencies collaborate with FERC and the states on technical issues and remedies and that FERC develop an in house economic model to corroborate applicant-filed analysis. Alternatively, she noted, the FERC could rely on the antitrust agencies for competitive analysis, incorporating their results in its merger orders.

Summary of Discussion

In the open discussion that followed the morning and afternoon panels, a number of issues emerged:

1. ***Oversold benefits, a large political component, and misunderstood concepts have likely contributed to restructuring ills***. There is evidence that restructuring has made generation somewhat more efficient and that RTOs have in some cases provided reliability benefits. At the same time, however, consumers are not seeing the benefit from lower costs and have in many instances experienced higher prices and higher price volatility.[8] While experts may have expected only modest benefits from restructuring over the medium- to long-term, advocates likely oversold the benefits to consumers. It is also the case that state legislators probably did not fully understand marginal cost pricing when they approved various market designs. Stakeholder influence in restructuring has also given the process and outcomes a large political component. Thus, standard economic efficiency measures may not necessarily be an appropriate or, at least, sufficient, benchmark for evaluating restructuring.

2. ***It is unclear that even a study taking into account all the issues identified in the Kwoka critique would be convincing to everyone or desirable at this time.***[9] Aside from whether lower prices resulting from rate caps or excess generating capacity should be considered a benefit of restructuring, such a study may not be a good use of resources. A better focus may be how existing restructuring programs should be modified, rather than studying the costs and benefits of restructuring to date. This is particularly important when opponents of consumer

[8] There appears to be general agreement that real-time pricing at the retail level has produced significant savings and should be pursued regardless of the course of restructuring.

[9] Such a study might be commissioned by a collective group of stakeholders or FERC.

interests are advocating re-regulation in forms that would likely be adverse to consumers. Virginia's recent approach to deregulatory problems, for example, has drawn much fire.

3. ***FERC's unique mission and status makes it alternately better or less well-suited to certain functions that are important in a restructuring industry.*** For example, given concerns over the role and function of market monitors within RTOs, FERC could take over market monitoring functions given concerns over the role and function of market monitors within RTOs. Hoverer, this function may stretch the capabilities of FERC and eliminate checks and balances. Another example is the role of FERC's broader public interest mission in merger review. Here, the agency might view the goals of transmission access and demand response (and its authority to continually oversee the firms it regulates) in promoting competition as a higher priority than the predicted price effects of a given merger. This focus, however, does not resolve the potentially troubling differences between data and economic analysis in antitrust and regulatory merger review, as discussed below.

4. ***There are impediments to closer coordination between FERC and the antitrust agencies on merger policy but FERC could still reconcile many differences between antitrust and regulatory merger review by itself.*** It was noted that interagency coordination on merger policy has been relatively limited in recent years because of perceived concerns over confidentiality. However, generic coordination is probably better than no coordination. There are also a number of issues that could be resolved by FERC outside the context of agency coordination. For example, FERC could obtain demand and supply data from RTOs in connection with specific merger inquiries (as do the antitrust agencies) and rely on it without providing access to intervening parties. FERC could also use trial-type hearings for mergers where the merging parties' analysis could be tested under cross examination. Moreover, there are fundamental differences in methodology and economic analysis used by FERC and the antitrust agencies that are not necessarily justified by FERC's broader public interest approach.

2006: The Year of the Tipping Point (Again)

Susan N. Kelly
VP, Policy Analysis
American Public Power Association
AAI 7th Annual Energy Roundtable
March 5, 2007

My Mission

- I have been asked to summarize 2006 to start off the round table
- My thesis: 2006 was a "tipping point" year (acknowledgement to Malcolm Gladwell), and we could well see the results in 2007
- Of course, I co-wrote an article in Electricity Journal in 2005 saying 2004 was the "tipping point" too!
- Take this with the proverbial grain of salt—these are my own views only

2006--Year of EPAct 2005 Implementation

- FERC had a very full agenda in 2006 implementing EPAct 2005
  - Transmission Investment Incentives
  - Long-term Transmission Rights
  - Certification of Electric Reliability Organization (NERC)
  - PUHCA 2005 Books and Records Authorities
  - FPA 203 Cross-subsidization and generation authorities
  - Transmission Backstop Siting Regulations

EPAct 2005 Implementation, Con.

- You may not like everything FERC did, but it met all its statutory deadlines and did yeoman's work
- But where is Waldo (a/k/a the report of the five agency "Electric Energy Market Competition Task Force") ???? It was due to be submitted to Congress in August 2006 but is still AWOL (although a draft was issued for comment)

2006—The Year of Slogging through OATT and MBR Comments

- FERC continued its rulemaking to reform the Order No. 888 OATT—a total of five rounds of comments
- FERC revived its 2004 rulemaking on market-based rates and took comments on standards, screens
- APPA filed more FERC pleadings in various FERC dockets in 2006 than ever before—a high water mark I hope we don’t repeat in 2007

RIP PUHCA: 1935-2006

- APPA’s view: “You don’t know what you’ve got ‘til its gone” (although PUHCA enforcement was anemic in recent years); it will take years for the full effects to be understood
- Some argued PUHCA was outmoded and prevented new investment in the industry, but greed and the desire to dominate a market never go out of fashion

2006—The Year the States Stepped Up

- I confess to not having predicted this, but the big electric utility merger story of 2006 was the increased scrutiny exercised by the states, not FERC or DOJ
- State PUC/legislative concerns sunk the Exelon-PSEG and FP&L-Constellation mergers—temporarily dampening merger activities

2006—The Year the Restructuring Debate Continued to Rage…

- Battle of the studies and the sound bites: are we living in parallel universes?
  - Is it all fuel prices or is there more to it?
  - Are RTO-run centralized markets producing efficient prices? Are they permitting windfall profits? Is mitigation preventing marginal generators from recovering their costs? Are both things happening at the same time?
  - The mystery of the "missing money"

The Raging Debate, Con.

- What are the benefits of RTOs? Can they be accurately quantified?
- What are the costs? Can they be accurately measured?
- Kwoka: The cost/benefit studies done to date contain sufficient flaws to undermine their conclusions
- The "Kelly Corollary": the bigger the "savings" and more they are hyped, the more flawed they likely are….)

2006—The Year of Capacity Markets, Version 2.0

- "First generation" RTO capacity markets are being replaced with new locational capacity markets, to "incent" new generation to build in the "right" places (déjà vu all over again???)
- Generators are touting increased revenues in presentations to financial analysts—but will they build what is needed where it is needed?

2006--The Year The Bloom *Really* Came Off the Retail Access Rose

- As rate caps came off in retail access states, substantial rate hikes triggered public outcry and predictable political responses—such as the one that engulfed the proposed FP&L/Constellation merger
- MD, DL, CT, IL, PA (Pike County)
- Moral: The public looks at the pocket book result, not the auction rules

2006—The Year the Democrats Came Back

- Democrats retook the House and Senate, and some State Houses as well
- Electric restructuring was an issue in some state races, e.g., Maryland

2006—The Year Climate Change Broke Through

- This issue roared onto the scene due to the change in control of Congress, Al Gore's Oscar, and the traction the issue gained in the popular media
- It could substantially affect utilities' plans for new generation and transmission
- Demand side response and energy efficiency are back with a vengeance

2007: Looking Forward. . .

- Greed will overcome fear, and new deals will again be proposed—the TXU-Texas Pacific/KKR leveraged buy-out is already setting new standards for chutzpah
- Private equity and hedge fund money could be the financial Viagra that stokes a post-PUHCA 1935 merger/acquisition spree

2007 Outlook Continued

- Unless electric prices moderate substantially (not that likely) the public outrage will not go away
- Post-restructuring/”reregulation” legislation will be more prevalent
- “Reregulation” might be as much a misnomer as “deregulation” was—witness what is happening here in Virginia

2007 Outlook, Further Continued

- We are at the end of the natural gas-fired generation surplus new entrants built in late 1990s-2002; those left are sadder and wiser
- A new round of generation and transmission infrastructure is needed, but generators, utilities and PUCs will all want to minimize their risks
- What/if to build will be bound up in the climate change debate

Summation

- Convergence of factors and trends in 2006 have created a very volatile environment that could easily flash over into a fierce policy and political debate in 2007:
  - Continued high prices
  - Renewed merger/acquisition trend
  - Need for large new Gen/Tx investment
  - Climate change—the big unknown

Electricity market monitoring and the economics of regulation

Robert J. Michaels
California State University, Fullerton

American Antitrust Institute
7th Annual Energy Round Table
Arlington, VA
Mar. 5, 2007

Market monitors: Cops, professors, or what?

- Market-based rates in complex markets
  - Evaluate how they function, J&R prices
  - Region-specific issues
  - Disinterested non-regulatory observers
  - Conduit to FERC
  - Idea mill – protocols and performance
- Detection, deterrence and hope
  - Their sometime role in MBR approvals

Cops or professors II

- Conduits, not cops
  - RTO governors’ jurisdiction and FERC’s
  - Bid mitigation and ratemaking powers
  - Can initiate investigations but must send to FERC
- Unacademic professors
  - Set to establish “workable competition,” ambivalent re booked vs. opportunity costs
  - No peer review
  - Never a dissent on the record
    - Despite novelty of markets and difficulties of evaluating conduct

Cops, professors or artifacts of politics?

- Economists’ jaundiced view of regulation
  - Interest-group politics determines onset of regulation
  - Determines forms of regulatory policy
  - Predictability and investments
    - Remember the “compact”?
  - How did we get markets at all?
    - Maybe there is a public interest component

How market monitoring institutions ["MMIs"] originated [I]

- No rulemaking or suggestion in previous FERC orders
  - No obvious pressure on FERC for MMIs
- The California bargain
  - PX /ISO markets don't pass MBR screen
  - Calif. utilities propose four monitors
    - Likely victims of market power didn't
  - Transition rules and utilities' need for low prices

How monitors originated [II]

- California's original plan
  - Internal and external monitors at PX and ISO
  - MMIs are to collect cost data and compare bids, can only monitor generators, not buyers or operators
  - MMIs can levy fines, no data release, no appeals
  - MMIs can work for interested parties with permission of governing boards
- What California ended up with
- How did the nation get MMIs?

Virtual bidding in three RTOs

- Buyer incentives to underschedule in two-settlement markets
  - Keep day-ahead market ["DAM"] price low while real-time market ["RTM"] price for residual production rises
- Virtual bid by making a transaction in the DAM and reversing it in the RTM
  - Speculation [arbitrage] improves efficiency by making price signals more accurate
- Three MMIs, three different attitudes

PJM: No particular controversy

- FERC returns original MBR application [1999] noting problems in risk management under LMP
- MMI [2000] opens virtual trade, interfaces with FTR market, subsequently declares success
- Why no problem?
  - Most utilities had little stranding exposure, settlements reached
  - Many parties appear on both sides of market
  - Facilitated retail choice in Pennsylvania

New York: uncertainty resolved

- At phase-in of retail competition, utilities face stranding uncertainty, rate freeze, divest 91% of generation
- 1999-2001: NYISO allows load servers access to DAM and RTM, generators can only bid physicals into DAM
  - Market advisor says trades by utilities alone will equalize prices
  - Claims to see no evidence of underbidding despite persistent price differences
- 2002: Utility transitions over, virtual bids begin, MMIs laud efficiency and NYISO encourages trading

California: who migrated and why?

- Over 70% of DAM volume bought by PG&E and SCE, underscheduling evident early
- Utilities migrate up to 30 percent of demand, ISO operating problems alleviated by generators' de facto virtual bids
  - MMIs see generator market power because bids into sequential markets are at opportunity costs instead of expense
  - PX monitor report suggests utility bidding refinements to increase divergence
  - MMIs see generators as leading movement to RTM despite far lower price caps there

California: what the monitors did

- MMI reports to FERC uniformly neglect to discuss utilities' behavior
  - FERC faults them for this, then excuses utilities but not generators
- ISO external MMI testifies for group consisting of state agencies and utilities
- ISO internal monitor plays major role in refund calculations
- Monitors appear tolerant of new market design's delayed start of virtual bidding

How good was the case for MMIs?

- No rulemaking to determine costs/ benefits of MMIs vs. alternatives
  - Or proper location, responsibilities, or numbers
- Nearness to markets means nearness to regional politics, data transfer not an issue
  - And problems go to FERC anyway
- Monitors are either RTO employees or selections by politically conscious boards
  - Neither appears more likely to get at truth or ensure uniform treatment than an independent administrative agency
  - What is the case against expanding OMOI?

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UCBERKELEY
Competition Policy Center

Analytical Screens for Electricity Mergers

Richard Gilbert
University of California at Berkeley

Richard Gilbert, Chair
UCBERKELEY
Competition Policy Center

Challenges Posed by Electricity Mergers

- Inelastic demand, limited storage
- Many product markets:
  - E.g. PJM Interconnection
    - Hourly day-ahead and real-time energy
      - 17,520 annual product markets
- Transmission constraints imply many geographic markets
- Other product markets: generation capacity, transmission capacity, ancillary services such as voltage stability and spinning reserves

FERC Merger Screen

- Based on DOJ/FTC merger guidelines
- Pass if
  - HHI < 1000
  - $1000 \leq$ HHI <1800 and Δ HHI < 100
  - HHI $\geq$ 1800 and Δ HHI < 50
- Can produce type I and type II errors

Example

- Firm A has 3 plants
  - 455 MW $28.0/MWh
  - 454 MW $31.2/MWh
  - 602 MW $37.5/MWh
- Firm B has 1 plant
  - 1383 MW $35.0/MWh
- Many other generators
  - Pre-merger HHI = 833
  - Post-merger HHI = 964
- A and B propose to merge

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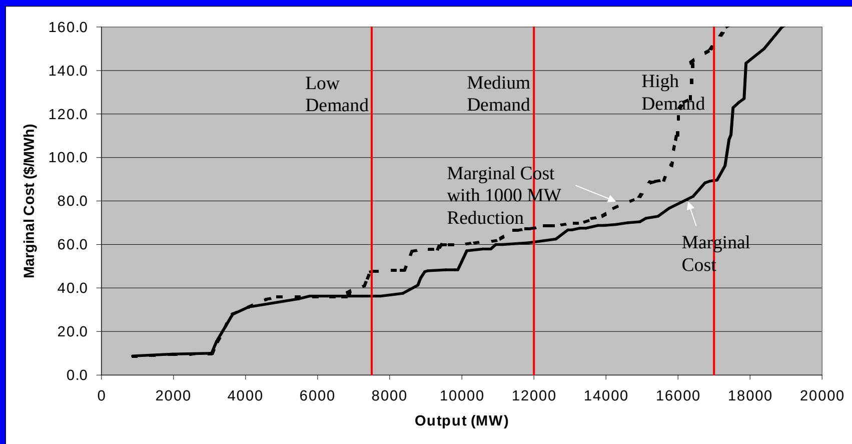
Effects of 1000 MW Output Reduction



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In This Example

- Merger increases HHI from 833 to 964
- Yet potentially large price increases if the merged firm reduces output by 1000 MW
- Question is whether merged firm has the *incentive* to reduce output to cause a significant price increase

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Conventional Approaches

- HHI analysis not very useful
  - Merger incentives and effects depend on merging firms' capacities, marginal costs, and slope of supply function for rest of industry
- Same for pivotal supplier analysis
- More sophisticated game theoretic approaches
  - Complex
  - Not transparent

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Competitive Residual Demand (CRD) Analysis

- Assume demand is fixed
- Assume all firms other than the merging firms behave as perfect competitors
- Calculate incentive for merged firm to reduce output
- Calculate pre-merger incentives for the merging firms to reduce output
- Estimate price effects based on output differential

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High Demand
Merged Firm
Capacity of merged firm = 2894 MW

Output Reduction	0	91	305	410	484	533	686	833	878	1378	1878	2894
Market Price	89.6	89.6	96.4	108.3	110.3	122.9	125.4	127.1	143.2	150.0	160.0	180.0
Profit	161418	175737	193941	191475	216454	218172	208267	227910	236750	194410	152230	0
% Profit Increase		8.9%	20.1%	18.6%	34.1%	35.2%	29.0%	41.2%	46.7%	20.4%	-5.7%	-100.0%
% Price Increase		0.0%	7.6%	20.9%	23.1%	37.2%	40.0%	41.9%	59.8%	67.4%	78.6%	100.9%

Profit-maximizing output reduction = 878 MW

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High Demand
Firm A
Capacity of Firm A = 1511 MW

Output Reduction	0.0	91	305	410	484	533	686	833	878	1378	1511
Market Price	89.6	96.4	108.3	110.3	122.9	125.4	127.1	143.2	150.0	160.0	180.0
Profit	85906	90821	92568	87336	94889	93149	80574	77392	76656	17556	0
% Profit Increase		5.7%	7.8%	1.7%	10.5%	8.4%	-6.2%	-9.9%	-10.8%	-79.6%	-100.0%
% Price Increase		7.6%	20.9%	23.1%	37.2%	40.0%	41.9%	59.8%	67.4%	78.6%	100.9%

Profit-maximizing output reduction = 484 MW

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High Demand
Firm B
Capacity of Firm B = 1383 MW

Output Reduction	0	91	305	410	484	533	686	833	878	1378	1383
Market Price	89.6	96.4	108.3	110.3	122.9	125.4	127.1	143.2	150.0	160.0	180.0
Profit	75512	79329	79017	73267	79022	76840	64194	59510	58075	625	0
% Profit Increase		5.1%	4.6%	-3.0%	4.6%	1.8%	-15.0%	-21.2%	-23.1%	-99.2%	-100.0%
% Price Increase		7.6%	20.9%	23.1%	37.2%	40.0%	41.9%	59.8%	67.4%	78.6%	100.9%

Profit-maximizing output reduction = 91 MW

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CRD Analysis

- Estimated pre-merger output reduction = 575 MW
  - 484 MW by Firm A, 91 MW by Firm B
- Estimated pre-merger price = $125.4/MWh (from industry supply curve less 575 MW)
- Estimated post-merger output reduction = 878 MW
- Estimated post-merger price = $143.2/MWh (from industry supply curve less 878 MW)
- Price increase of about 14%

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Competition Policy Center

CRD Analysis Can Be Replicated Easily for Other Demand States

- High demand
  - Predicts price increase of about 14%
- Moderate demand
  - Predicts no price increase
- Low demand
  - Predicts price increase of about 15%

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UC BERKELEY
Competition Policy Center

CRD Analysis

- Only a screen
  - Not an equilibrium analysis
- But likely to identify incentives for merger to raise prices
- Easy to replicate
- Transparent

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Vertical Merger Screen

- See paper

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Antitrust Versus Regulatory Merger Review: The Case for Inter-Agency Coordination

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Vice President
American Antitrust Institute

7th Annual AAI Energy Roundtable Workshop
Arlington, Virginia - March 5, 2007

Overview

- Worsening merger review "thicket"
- Recent merger wave in brief
- Key differences between antitrust and regulatory review
  - statutory standards
  - data
  - economic analysis
  - remedies
- Case for inter-agency coordination

The Worsening Merger Review "Thicket"

- Multi-agency review rivals most other regulated industries
  - federal antitrust (DOJ or FTC)
  - federal regulatory (FERC)
  - state antitrust (AGs)
  - state regulatory (PUCs)
  - state/federal nuclear and environmental
- Larger electricity mergers may exacerbate the thicket
  - e.g., Duke/Cinergy, Exelon/PSEG, FPL/Constellation
  - More state involvement
  - Larger competitive issues
    - horizontal concentration
    - elimination of potential competitors
    - vertical issues (foreclosure, evasion)

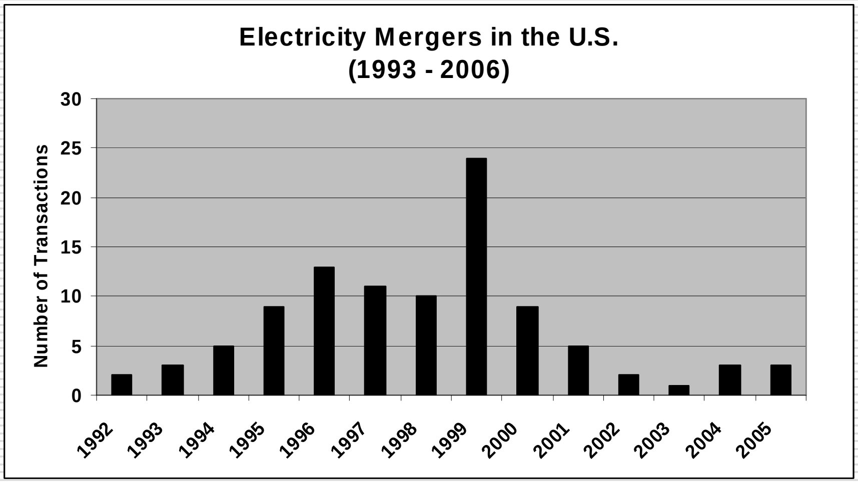
The Worsening Merger Review "Thicket" (cont.)

- Potential downsides are numerous
  - uncertainty
  - duplicative analysis
  - different analytical outcomes
  - conflicting remedies
- Suggested reforms get traction at the Antitrust Modernization Commission (preliminary recommendations)
  - see hearings on state enforcement, regulated industries, and mergers

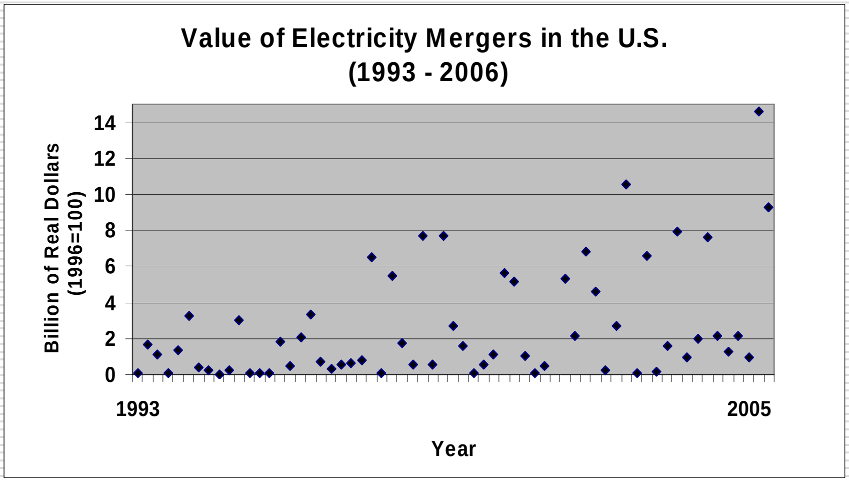
Electricity Mergers from 1992 - 2006

- 100 mergers proposed, 75 completed
  - About two-thirds electric-electric
  - About one-third electric-gas
- 80 mergers under FERC jurisdiction
- Remedies (up-front fixes or agency-imposed)
  - DOJ/FTC - 9% of cases
  - FERC - 6% of cases

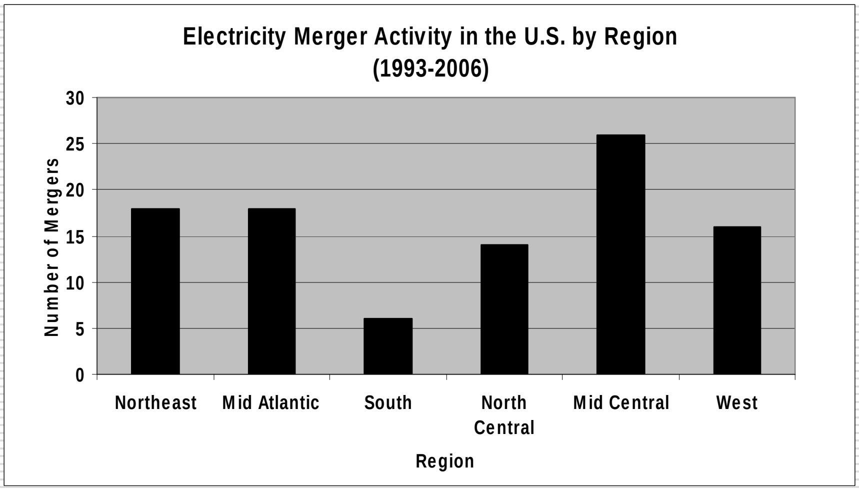
The "Wave"



Larger Transactions



Regional Disparities



Antitrust Versus Regulatory Review: Statutory Standards

- Antitrust - “no harm” to competition
  - merger can be opposed on this basis alone
- Regulatory - “public interest”
  - includes a “no harm” factor
  - considers other factors such as lower prices, consumer choice, same quality of service
  - if delivers other benefits, anticompetitive merger could satisfy regulators

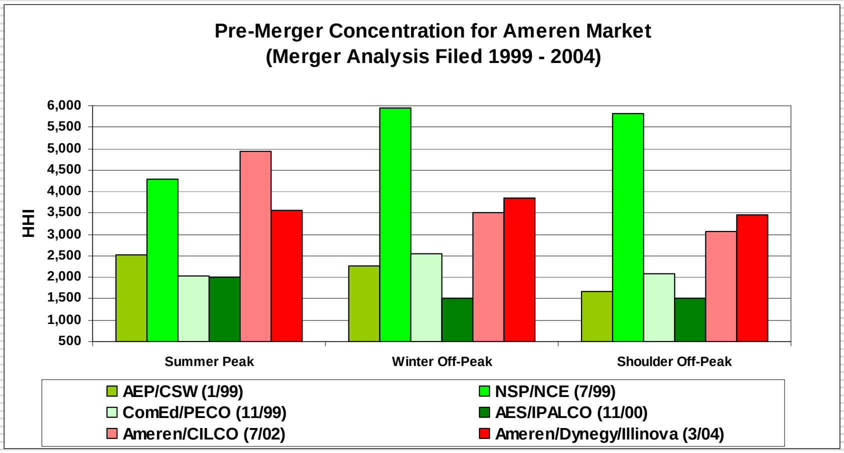
Antitrust Versus Regulatory Review: Data

- Antitrust
  - information obtained as part of confidential discovery from variety of market participants
  - supports balanced consideration of *Guidelines* factors
- Regulatory
  - analysis based on publicly available data
  - largely supports market definition so analysis stops at market concentration
  - ignores importance of competitive effects, entry, and efficiencies
  - leads to potentially unnecessary conditions

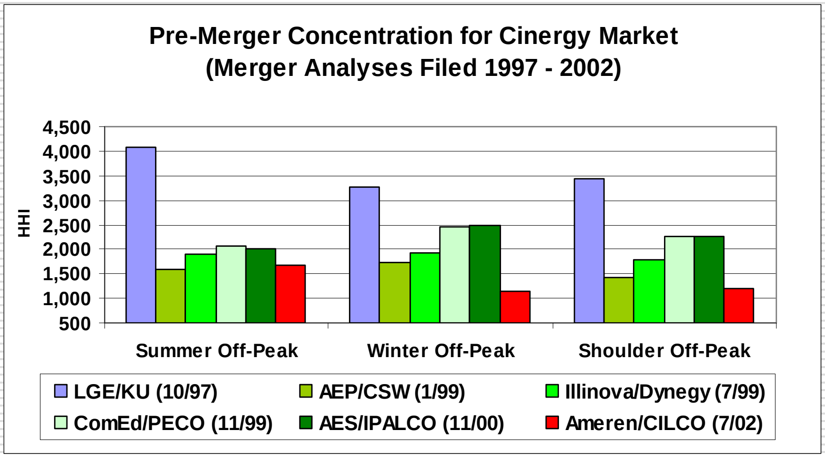
Antitrust Versus Regulatory Review: Economic Analysis

- Antitrust
  - agencies perform independent, in-house economic analysis
  - corroboration allows for vetting of analytical issues
- Regulatory
  - relies on merging parties' analysis
  - lack of corroboration introduces potentially biased and inconsistent analysis (e.g., modeling and data variations)
  - inconsistencies provide no metric for assessing structural changes in markets over time
  - decreases predictability of decision-making, an important part of an efficiently operating legal system

Inconsistencies in Applicant-Filed FERC Merger Analyses



Inconsistencies in Applicant-Filed FERC Merger Analyses



Antitrust Versus Regulatory Review: Remedies

- Antitrust
  - favors structural remedies such as divestiture unless preserving significant vertical efficiencies
  - Important enough to justify guidelines
- Regulatory
  - favors conduct-based remedies (e.g., RTO commitments, price caps, monitoring, etc.)
  - Requires ongoing monitoring and compliance to cure problem already dealt with by structural remedy

Different Antitrust and Regulatory Merger Remedies

- Pacific Enterprises/ Enova Corp.
  - FERC -- same-time pipeline capacity disclosure requirements
  - DOJ -- divesture of gas-fired generators
- Dominion Resources/ CNG
  - FERC -- Pacific/Enova requirements (order later vacated)
  - FTC -- divestiture of gas distribution assets
- Exelon/PSEG
  - FERC – accepted proposed "up-front" actual and virtual divestiture of generation
  - DOJ -- divestiture of fossil-fuel generation

The Case for Inter-Agency Coordination

- Objectives
  - reduce inconsistencies across filings
  - promote harmonization and coordination between agencies
  - promote predictability of decision-making
- Suggestions
  - DOJ/FTC collaborates with FERC/state on technical issues and remedies
  - FERC develops in-house model to corroborate applicant-filed analysis
  - DOJ/FTC perform competitive analysis and FERC/states incorporates in merger orders

RESTRUCTURING IN PRACTICE: ASSESSING RECENT STUDIES OF ITS IMPACT ON PRICES AND COSTS

John Kwoka
Neal F. Finnegan Distinguished Professor of Economics
Northeastern University

March 2007

BACKGROUND

Electricity restructuring:

- "One of the largest single industrial reorganizations in the history of the world"
  -GAO (2003)

Purpose of restructuring was to:

- Achieve lower prices through stronger competition
- Achieve lower costs through greater efficiencies
  - Further lower prices

ELECTRICITY RESTRUCTURING

In past 3 years several studies have evaluated actual effects

- Serve as benchmarks for restructuring to date
- Serve as guidance for further reforms

My review intended to evaluate these studies

- Assess their methodological soundness
- Hence, credibility of their conclusions

Twelve studies in my November review

- One additional study now included

Source	Date
Center for the Advancement of Energy Markets	2003
Synapse Energy Economics	2004
Weaver Study	2004
Global Energy Decisions	2005
Energy Security Analysis, Inc.,	2005
ISO/RTO Council	2005
Carnegie-Mellon Study	2005
Cambridge Energy Research Associates	2005
Joskow Study	2006
Taber et al	2006
New York Department of Public Service	2006
Fagan Study	2006
LECG Study	2006

		Authorship *C=Consulting A=Academic I= Internal*
Center for the Advancement of Energy Markets	2003	C
Synapse Energy Economics	2004	C
Weaver Study	2004	A
Global Energy Decisions	2005	C
Energy Security Analysis, Inc.,	2005	C
ISO/RTO Council	2005	I
Carnegie-Mellon Study	2005	A
Cambridge Energy Research Associates	2005	C
Joskow Study	2006	A
Taber et al	2006	A
New York Department of Public Service	2006	I
Fagan Study	2006	A
LECG Study	2006	C

		Authorship *C=Consulting A=Academic I= Internal*	**Sponsor**
Center for the Advancement of Energy Markets	2003	C	
Synapse Energy Economics	2004	C	PJM
Weaver Study	2004	A	
Global Energy Decisions	2005	C	Several energy companies; Electric Power Supply Assn.
Energy Security Analysis, Inc.,	2005	C	PJM
ISO/RTO Council	2005	I	
Carnegie-Mellon Study	2005	A	Sloan Foundation; Electric Power Research Inst.
Cambridge Energy Research Associates	2005	C	Many energy companies, ISOs, law firms
Joskow Study	2006	A	
Taber et al	2006	A	
New York Department of Public Service	2006	I	
Fagan Study	2006	A	
LECG Study	2006	C	PJM

John Kwoka Neal F. Finnegan Distinguished Professor of Economics Northeastern University
RESTRUCTURING IN PRACTICE: ASSESSING RECENT STUDIES OF ITS IMPACT ON PRICES AND COSTS

		Authorship *C=Consulting A=Academic I= Internal*	**Favorable** *(Y/N, M= Mixed)*
Center for the Advancement of Energy Markets	2003	C	Y
Synapse Energy Economics	2004	C	M
Weaver Study	2004	A	N
Global Energy Decisions	2005	C	Y
Energy Security Analysis, Inc.,	2005	C	Y
ISO/RTO Council	2005	I	Y
Carnegie-Mellon Study	2005	A	N
Cambridge Energy Research Associates	2005	C	Y
Joskow Study	2006	A	Y
Taber et al	2006	A	N
New York Department of Public Service	2006	I	Y
Fagan Study	2006	A	M
LECG Study	2006	C	Y

		Type Quantitative *C=Comparative E=Econometric*
Center for the Advancement of Energy Markets	2003	C
Synapse Energy Economics	2004	C
Global Energy Decisions	2005	C
Energy Security Analysis, Inc.,	2005	C
Carnegie-Mellon Study	2005	C
Cambridge Energy Research Associates	2005	E
Joskow Study	2006	E
Taber et al	2006	E
Fagan Study	2006	E
LECG Study	2006	E

EXAMPLE OF STUDY

- Estimates effect of restructuring by comparing actual electricity prices to predictions of what prices would have been without restructuring
- Econometric model of price as function of Fuel prices Rate base costs
  - Estimates relationship using data for 1981-1997 for four regions of U.S.

Uses that relationship to project what rates would have been in 1998-2004 for each region

- Compares projected rates to actual rates
- Calculates rate difference, multiplies by total sales
- Computes overall gains to U.S. consumers

This study concluded benefits totaled $34B

EVALUATION OF STUDY

Several significant flaws:

(1) Big Bang Fallacy:

Uses single year–1997– as breakpoint for restructuring

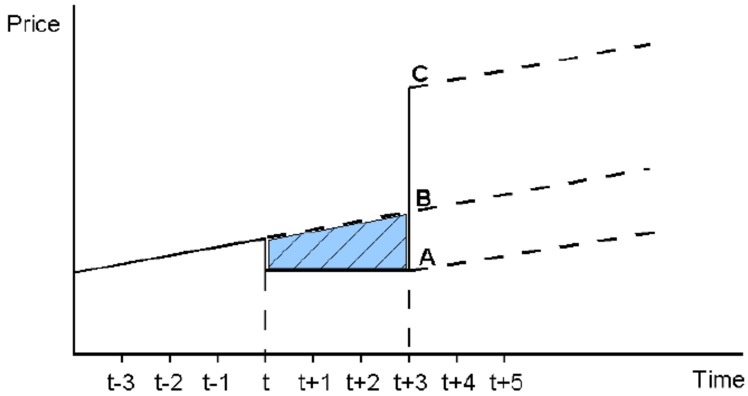
- Reality is that restructuring involved several policy initiatives
  - PURPA (1978)
  - EPAct (1992)
  - Order 888, 889 (1996)
  - Order 2000/RTOs (2000)
  - State-initiated divestiture of generation
  - Retail access/freezes/stranded cost recovery
- Some of these took effect over period of years
  - For example, entry by unregulated suppliers

(2) Mischaracterizes post-1998 prices

- Nearly half of all states had retail plans in 2003
  - Typically involved initial rate reductions of 3-20%
  - Followed by freezes for 2-10 years
  - Rate freezes were part of temporary "bargain" with utilities
- Result was that immediate post-reform price was not true market price
  - Post-Christmas sale fallacy
  - Not indicative of benefits of restructuring

Figure 1

Example of Retail Rate Reduction, Freeze, and Freeze Expiration



Typical retail rate plan with reduction at time t and three-year rate freeze. Shaded area is value of temporary rate reduction relative to likely alternative prices indicated by dotted line in periods t through t+3. Possible price paths after expiration of freeze are denoted by dotted lines rising from points A, B, or C.

(3) Treats excess capacity as consumer benefit of deregulation

- This, too, is temporary phenomenon in many generation markets
  - Much new generation built right after 2000
  - Led to high reserve margins, depressed prices, bankruptcies
- Not an indication of price in market equilibrium
  - Lemmings Fallacy:
    Will persist only if there is a limitless number of uninformed investors willing to continue to put money into generation

(4) Model has prices as function only of fuel costs and rate base

- Other factors known to be important
- Omissions particularly troublesome because pre-1997 data used to project rates in different gas-price world of 1998-2004
- Can easily diverge if utilities change generation techniques

This particular study has other problems

- (1) Predicted regional prices are lower in year or two *before* restructuring
  - Indicates missing explanatory factors
- (2) Largest savings in South where *least* restructuring has taken place
- Something fundamentally wrong with model
  - Conclusions are not reliable

THREE MAJOR DEFICIENCIES OF MOST STUDIES

(1) *What is Restructuring*?
Need to characterize several aspects of restructuring, plus varied timing

- Otherwise data are mischaracterized:
  - Some utilities or years that involve restructuring are lumped in with nonrestructured cases

Two or three studies do this correctly

- Most settle for something too crude

(2) *What is Post-Reform Price?*

- Cannot simply take observed price as indication of effect of restructuring
- Three reasons:
  - Rate reductions and freezes
  - Excess capacity
  - Stranded cost recovery
- Some studies recognize these issues
  - A couple try to fix them

(3) *Is Restructuring the Real Cause*?

- Need to control for other factors that might be responsible for observed price changes
- Need to estimate counterfactual price carefully
- Need to be sure that reforms cause price, not other way around
- Some studies acknowledge these issues

THREE MAJOR OMISSIONS OF MOST STUDIES

(1) Market Structure, Market Power, and Mergers

- Market power in wholesale power markets
- Mergers, both in distribution and in generation
- Unilateral withholding practices

(2) RTO Costs, Governance, and Effectiveness

- Rapid growth of RTO costs
- Increasing concern over adequacy of RTO governance
- Doubts about effectiveness of RTOs with respect to
  - Congestion management
  - Transmission investment

(3) Service Quality and Reliability

- Separation between generation and distribution has altered commitment to reliable service
- Stronger cost incentives has put pressure on reliability
- Much concern about reliability, plus smattering of evidence

CONCLUSIONS

All 13 studies suffer from one or more methodological limitations or flaws

- Some more serious than others
  - At worst, may invalidate study altogether
  - Others may be fixable
- Careful examination useful in that it suggests how to address problems
- Careful examination important in debate over electricity restructuring

CONCLUSIONS

- At present none of these studies meets standards of good economic research
- From policy standpoint, no convincing evidence that consumers are better off as a result of electricity restructuring