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978-1-107-10078-7 - Electricity Restructuring in the United States: Markets and Policy from the 1978 Energy Act to the Present

Steve Isser

Excerpt

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## Introduction

Since all models are wrong the scientist cannot obtain a “correct” one by excessive elaboration. On the contrary following William of Occam he should seek an economical description of natural phenomena. Just as the ability to devise simple but evocative models is the signature of the great scientist so overelaboration and overparameterization is often the mark of mediocrity.

Since all models are wrong the scientist must be alert to what is importantly wrong. It is inappropriate to be concerned about mice when there are tigers abroad.

– George E. P. Box, “Science and Statistics,” *Journal of the American Statistical Association* 71 (December 1976): 792

This book evolved out of what was originally planned as a one-volume work on the evolution of U.S. energy policy since the 1980s. It quickly became apparent that the topic was simply too complex to be contained in one book, so the project has morphed into a number of books. This book covers electricity restructuring in the United States from 1978 to the present.<sup>1</sup> The second book will cover oil and natural gas deregulation through the peak oil issue and shale gas development. The third book will focus on the future of energy, from global warming to new technologies. Since I plan to cover topics such as smart grid, renewable energy, and carbon markets in the future, I’ve given them cursory coverage in this volume.

<sup>1</sup> As opposed to deregulation, because what has become evident is that the electricity regulation has changed, but there are no unregulated electricity markets, nor will there be in the foreseeable future.

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This book was written with academic rigor, but my intended audience are people who do things, not merely write about what others have done: energy lawyers, judges, consultants, regulatory commissioners, and their senior staff who want a deeper understanding of the industry. I have tried to tone down the more esoteric economic and legal concepts and banished many details to footnotes where the curious reader can go for guidance to the relevant legal cases and monographs.

This book is an economic/business history, and a case study of the complexities of transitioning from one regulatory regime to another, more diverse regulatory regime. History matters because one cannot understand the evolution of political decisions such as the passage of the Federal Power Act and the Energy Policy Acts of 1978 and 1992, nor how they shaped regulatory policy, investment decisions, and market outcomes, simply by the application of public choice models. Geography, technology, and politics caused different regions to have different incentives to welcome or resist restructuring and different means to encourage or resist its imposition. Federalism, ideology, and happenstance were as important in determining outcomes as the visible hand of politics and the invisible hand of the market. Regulatory choices determined market outcomes, since the set of rules and incentives that shaped the markets were the products of legislation and regulatory decisions. Market outcomes in turn influenced legislation and regulatory decisions, as economic actors invested resources into obtaining favorable decisions in the political and regulatory arenas.

This work is an unapologetic economic policy history that is more focused on description than theory. There has been a long-term trend in economics (and more recently political science) to denigrate qualitative analysis. Descriptive evidence is often given the pejorative name “anecdote.” Ironically, this term has been used both ways, as “the plural of anecdote is data”<sup>2</sup> and “the plural of anecdote is not data.”<sup>3</sup> To this observer, the confusion simply reveals a prejudice toward data that are quantifiable and easily organized into data matrices amenable to statistical manipulation. Anecdotes tend to be messy. Anecdotes that are simple observations are of limited value, but I would suggest that “anecdote”

<sup>2</sup> This phrase was coined by Raymond Wolfinger in 1969, but first appeared in print in Nelson W. Polsby, “Where Do You Get Your Ideas?” *PS: Political Science and Politics* 26 (1993): 83–87, <http://blog.revolutionanalytics.com/2011/04/the-plural-of-anecdote-is-data-after-all.html> (last visited May 1, 2012).

<sup>3</sup> This phrase has frequently been attributed to both Roger Brinner and George Stigler, but I cannot find a definitive source for its origins.

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also applies to what are referred to as case studies, frequently created and applied by business professors, and economic histories, which unfortunately have fallen out of favor in the economics profession.<sup>4</sup> An economic history could be characterized as a more complete and thoroughly researched case study.<sup>5</sup> The value of economic history is that it allows economic theory and econometric results to be reviewed in light of their correspondence with reality. A good descriptive study will reveal nuances missed by theory and left out of econometric studies.

I value the insights to be gleaned from academic economists (and strained out of reports by consulting economists), but this is not an economic analysis of electricity markets.<sup>6</sup> I am interested in the economic debates as they pertain to policymaking, and the consequences of adopting a specific economic conclusion or recommendation. So my focus is not on economic theory, but the adoption of theory to political positions, regulatory decision making, and actual market design and operation. In this context, I am less interested in the validity of economic models than their influence on politics and policymakers and how these economic models were transformed into operational concepts. There is quite a leap from equations in a paper to the complex software models and detailed market rules embedded in an electricity market.

One problem with the economists' approach to restructuring was the tendency to dismiss the institutional environment and the restrictions created by technological limitations and requirements, which had an important influence on the actual outcome of economic policy change.<sup>7</sup> Markets

<sup>4</sup> This trend has been proceeding for a few decades. Donald McCloskey, "Does the Past Have Use Economics?" *Journal of Economic History* (1976): 434–61. White claims there is still a place for economic history apart from Cliometrics; Eugene White, "The Past and Future of Economic History in Economics," *Quarterly Review of Economics and Finance* 36 (1996): 61–72. An interesting article uses geology, not physics, as the paradigm for economic history; Larry Neal, "A Shocking View of Economic History," *Journal of Economic History* 60 (June 2000): 317–34.

<sup>5</sup> I always thought business history was economic history, but it seems there is a serious intellectual divide between the two. I confess to being more of a business historian if those distinctions have meaning. Naomi Lamoreaux, Daniel Raff, and Peter Temin, "New Economic Approaches to the Study of Business History," *Business and Economic History* 26 (Fall 1997): 57–79. Case studies tend to be snapshots, focused on a single issue or strategy, while an economic or business history will range over a longer period or wider scope of issues.

<sup>6</sup> I recommend Steven Stoft, *Power System Economics: Designing Markets for Electricity* (New York, IEEE Press and Wiley-Interscience, 2002) as an accessible introduction to electricity economics.

<sup>7</sup> Paul Joskow, "Regulation and Deregulation after 25 Years: Lessons Learned for Research in Industrial Organization," *Review of Industrial Organization* 26 (2005): 176–77.

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are created by and operate within a complex legal structure. Depending on the type of goods and transactions, tort, property, and contract law principles may apply. Depending on the market structure and the perceived existence of externalities, competition and environmental regulations may impact the transaction. There may be overlapping legal jurisdictions, federal, state, and local, that have authority over different aspects of a transaction. There may also be written and unwritten standards of behavior created by customary practice and industry associations.

Complex market/institutional systems such as the electricity industry tend to be characterized by path dependence and lock-in on multiple levels. Path dependence occurs when initial conditions are followed by a series of contingent (or chance) events whose influence on the path taken is larger than that of the initial conditions themselves. Contingency in organizational life can take many shapes (e.g., unexpected encounters, trial-and-errors leading to unattended consequences).<sup>8</sup> In a path-dependent pattern, selection processes during a critical juncture period are marked by contingency. Once a path has been contingently selected, various mechanisms can lead to its self-reinforcement, such as positive network externalities, increasing returns, sunk costs, or adaptive expectations. It becomes progressively more difficult to return to the initial point at which multiple alternatives were still available. Features of self-reinforcement are very common in organizational life.<sup>9</sup> A mechanism that decreases the relative attractiveness of alternatives will lock in one of the possible outcomes if no exogenous shock disturbs the system. Lock-in is a hard-to-escape situation. Because paths are selected contingently, lock-in can happen on any path. Path dependence potentially leads to a large diversity of outcomes owing to the stochastic nature of the underlying process.<sup>10</sup>

Path dependence is also the basis of a theory of institutional change. Institutions are seen as ‘carriers of history’ that maintain existing

<sup>8</sup> Jean-Philippe Vergne and Rodolphe Durand, “The Missing Link Between the Theory and Empirics of Path Dependence; Conceptual Clarification, Testability Issue, and Methodological Implications,” *Journal of Management Studies* (2010): 741–43.

<sup>9</sup> W. Brian Arthur, “Competing Technologies, Increasing Returns, and Lock-In By Historical Events,” *Economic Journal* 99 (1989): 126–28; Paul Pierson, “Increasing Returns, Path Dependence, and the Study of Politics,” *American Political Science Review* 94 (2000): 263–66.

<sup>10</sup> Scott Page, “Path Dependence,” *Quarterly Journal of Political Science* 1 (2006): 90; Jean-Philippe Vergne and Rodolphe Durand, “The Missing Link between the Theory and Empirics of Path Dependence: Conceptual Clarification, Testability Issue, and Methodological Implications,” *Journal of Management Studies* (2010): 743.

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behavioral norms and cultural patterns throughout time. Institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints (e.g., rules, laws, constitutions), informal constraints (e.g., norms, conventions, codes of conduct), and their enforcement characteristics. Together they define the incentive structure of societies and economies. When it is costly to transact, then institutions matter.<sup>11</sup> Specific path processes are caused by limited rationality on the one hand and high transaction costs for changing institutional systems on the other. Institutional perspectives understand “institutions” as enduring entities that cannot be changed instantaneously or easily. Repeated patterns of investment in human or material resources lead to routine creation and asset specificity, which both introduce stickiness at the governance level and prevent subsequent adjustment. Organizations that thrive within a given institutional matrix have a stake in perpetuating the “rules of the game” that favor their own survival, even when such rules are globally inefficient, thereby hampering institutional change. Path dependence provides an explanation for the “inefficiency of history” that results from the stickiness of institutions. Institutions create reliability of expectations, and ongoing applicability raises an interest in their perpetuation. Change is bounded until something erodes or swamps the mechanisms of reproduction that generate institutional continuity.<sup>12</sup>

Law is a key institution, and both the law, its interpretation and implementation by regulatory agencies, and review by courts impact economic actors. Laws, rules, and regulations are not created in a policy vacuum by disinterested technocrats pursuing an optimal solution. There is a complex interplay of interest groups, ideologically driven actors,<sup>13</sup> and

<sup>11</sup> Douglass North, “Economic Performance through Time,” *American Economic Review* (1994): 360.

<sup>12</sup> Douglass North, *Institutions, Institutional Change and Economic Performance* (Cambridge, Cambridge University Press, 1990); Paul Pierson, “Increasing Returns, Path Dependence, and the Study of Politics,” *American Political Science Review* 94 (2000): 262; James Mahoney, “Path Dependence in Historical Sociology,” *Theory and Society* 29 (2000): 510–16; Paul David, “Why Are Institutions the ‘Carriers of History’: Path Dependence and the Evolution of Conventions, Organizations and Institutions,” *Structural Change and Economic Dynamics* 5 (1994): 217–19.

<sup>13</sup> Joseph Kalt and Mark Zupan. “Capture and Ideology in the Economic Theory of Politics,” *American Economic Review* 74 (June 1984): 279–300; Steve Isser, *The Economics and Politics of the United States Oil Industry, 1920–1990: Profits, Populism, and Petroleum* (New York, Garland Publishing, 1996): 423–35; Lawrence Grossback, Sean Nicholson-Crotty, and David Peterson, “Ideology and Learning in Policy Diffusion,” *American Politics Research* 31 (2003): 1–25.

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self-selected bureaucrats<sup>14</sup> who often have their own vision of the public good. While regulatory agencies are constrained by procedural rules,<sup>15</sup> and potential intervention by both Congress<sup>16</sup> and the executive branch,<sup>17</sup> in practice they have a great deal of discretion because of the cost of oversight.<sup>18</sup> Judicial oversight also acts to limit agency discretion,<sup>19</sup> and although it is shaped by political considerations,<sup>20</sup> it is also constrained by doctrine laid down by the Supreme Court.<sup>21</sup>

There can be little doubt that path dependence is an important phenomenon in law. Some evidence of this is that the convergence of legal systems is much slower than the convergence of technology and economic institutions. The modern law is full of vestiges of early law. The more heavily the judges rely on precedent, the more likely is current doctrine to be determined by history. Courts' early resolutions of legal issues become locked in and resistant to change. Thus, the order in which cases arrive in the courts can significantly affect the specific legal doctrine that ultimately results. This inflexibility can lead to inefficiency when legal rules fail to respond to changing underlying conditions. Legislators are not constrained by precedent, but their ability to innovate is limited by the inertia built into the legislative process. The Constitution makes it

<sup>14</sup> Sue Frank and Gregory Lewis, "Government Employees: Working Hard or Hardly Working," *American Review of Public Administration* 34 (March 2004): 36–51; Sanjay Pandey and Edmund Stazyk, "Antecedents and Correlates of Public Service Motivation," in James L. Perry and Annie Hondeghem, eds., *Motivation in Public Management: The Call of Public Service* (Oxford, Oxford University Press 2008), 80–98.

<sup>15</sup> Lisa Bressman, "Procedures as Politics in Administrative Law," 107 *Columbia Law Review* 1749 (2007).

<sup>16</sup> Jack Beermann, "The Turn Toward Congress in Administrative Law," 89 *Boston University Law Review* 727 (2009).

<sup>17</sup> Gary Coglianese, "Presidential Control of Administrative Agencies: A Debate Over Law or Politics?" 12 *Journal of Constitutional Law* 637 (2010); Lisa Bressman and Michael Vandenbergh, "Inside the Administrative State: A Critical Look at the Practice of Presidential Control," 105 *Michigan Law Review* 47 (2006).

<sup>18</sup> Mathew McCubbins and Thomas Schwartz, "Congressional Oversight Overlooked: Police Patrols versus Fire Alarms," *American Journal Political Science* 28 (February 1984): 165–79.

<sup>19</sup> Thomas Merrill, "Article III, Agency Adjudication, and the Origins of the Appellate Review Model of Administrative Law," 111 *Columbia Law Review* 939–1003 (June 2011).

<sup>20</sup> Thomas Miles and Cass Sunstein, "The Real World of Arbitrariness Review," 75 *University of Chicago Law Review* 761 (2008).

<sup>21</sup> *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). See also Evan Criddle, "Chevron's Consensus," 88 *Boston University Law Review* 1271 (2009); Kenneth Bamberger and Peter Strauss, "Chevron's Two Steps," 95 *Virginia Law Review* 611 (2009).

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difficult to enact statutory law, but once enacted, it is, by the same token, difficult to change. The Constitution, being difficult to amend, is itself a potent source of path dependence.<sup>22</sup>

The concept of path dependence and the associated framework of analysis are anchored in the quest to integrate historicity into economics. Path dependence is an important concept for an economic historian, because the economy is embedded in society, which in turn is shaped by its history.<sup>23</sup> It had become evident to some within the field that trying to understand economic history through the assiduous application of ahistorical concepts and tools was a fool's errand. While some mathematical processes do converge to a stable equilibrium, real history does not. Exogenous shocks are a central motor of change, and history is marked by critical junctures in which old routines lose their force and possibilities emerge for new paths, revolution, and wholesale transformation. History proceeds as both punctuated equilibria and as an incremental accumulation of evolutionary changes. When the institution, or technology, legal regime, or behavioral norm has become deeply embedded in numerous activities throughout the economy, an exogenous shock may be required to disrupt the status quo. In other cases, changes in technology and social attitudes over time may erode the stability of the current equilibrium to the extent that incremental change may move society and the economy to a more efficient equilibrium. A great deal of human ingenuity is devoted to trying to cope with "mistakes" and to assure that their more pernicious effects will be moderated, if not abated altogether. This is done *ex post*, by contriving technological fixes, by creating temporary task forces to handle emergencies, and by sustained efforts at reforming long-standing institutions.<sup>24</sup>

In energy policy in general, and the restructuring of the energy industries in particular, path dependence, exogenous shocks, and adaptive incrementalism have all played a role, at different times and in different

<sup>22</sup> Richard Posner, "Past-Dependency, Pragmatism, and Critique of History in Adjudication and Legal Scholarship," 67 *University of Chicago Law Review* 584 (2000); Oona Hathaway, "Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System," 86 *Iowa Law Review* 105 (2001).

<sup>23</sup> A system whose evolution exhibits characteristic of path dependency may be more suited to the case study method. Andrew Bennett and Colin Elman, "Complex Causal Relations and Case Study Methods; the Example of Path Dependence," *Political Analysis* 14 (2006): 250–67.

<sup>24</sup> Paul David, "Path Dependence, Its Critics and the Quest for 'Historical Economics'," in Geoffrey Hodgson, ed., *The Evolution of Economic Institutions: A Critical Reader* (Cheltenham, UK, Edward Elgar, 2007): 134–35.



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forms. The shape of natural gas and electricity regulation was determined by a stream of jurisprudence that goes back to English common law and *Munn v. Illinois*,<sup>25</sup> delineating the power of the state to control the activities of industries endowed with a “public interest.”<sup>26</sup> However, the Great Depression, an exogenous shock to the economy, created the impetus to overturn the status quo and motivate New Deal regulation.<sup>27</sup> Along with the evolution of law and regulatory policy, energy technologies also exhibited path dependence, and the dominance of the pressurized water reactor in the nuclear power industry<sup>28</sup> would result in a series of misfortunate investments that helped create the climate for deregulation of conventional electricity regulation. The impact of imprudence decisions concerning nuclear power plants was bounded by state court and Supreme Court decisions.<sup>29</sup> The rise of the environmental movement would result in environmental laws and air pollution regulations that would determine the relative economic viability of different generation technologies, while political forces would contort the implementation of those regulations, aided again by court decisions that limited the impact of some regulations.

Other exogenous shocks, such as the Arab Oil Embargo of 1973, and the subsequent rise and then collapse of oil prices, would shake the energy regulatory regime to its core. Developing a new regulatory regime would be an incremental process in natural gas and electricity, but a revolutionary process in oil, where the U.S. market was almost completely deregulated and tied to the world market (oil pipelines remained regulated, but not crude oil or product sales) over a few years. While some

<sup>25</sup> *Munn v. Illinois*, 94 U.S. 113 (1876).

<sup>26</sup> Walton Hamilton, “Affection With Public Interest,” 39 *Yale Law Journal* 1089 (1930); Thomas McGraw, “Regulation in America: A Review Article,” *Business History Review* 49 (1975): 160–62; Harry Scheiber, “The Road to Munn: Eminent Domain and the Concept of Public Purpose in the State Courts,” *Perspectives in American History* 5 (1971): 329–402; Herbert Hovenkamp, “Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem,” 97 *Yale Law Journal* 1017 (1988).

<sup>27</sup> Daniel Gifford, “The New Deal Regulatory Model: A History of Criticisms and Refinements,” 68 *Minnesota Law Review* 299 (1993); William Emmons III, “Franklin D. Roosevelt, Electric Utilities, and the Power of Competition,” *Journal of Economic History* 54 (1993): 880–907.

<sup>28</sup> Robin Cowan, “Nuclear Power Reactors: A Study in Technological Lock-in,” *Journal of Economic History* 50 (1990): 541–67.

<sup>29</sup> Roger Colton, “Excess Capacity: A Case Study in Ratemaking Theory and Application,” 20 *Tulsa Law Journal* 402 (1984); Jonathan A. Lesser, “The Used and Useful Test: Implications for a Restructured Electricity Industry,” 23 *Energy Law Journal* 349 (2002).



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observers might claim that the path taken to the eventual restructuring of natural gas was irrelevant, given that the final outcome – deregulation of production at the federal level and restructuring of pipelines and distribution regulation – was inevitable, the path taken had important implications for the shape of electricity restructuring.

**The Creation of the Electricity Regulatory Regime**

The structure of the utility industry evolved during the twentieth century from one composed of many small private and municipal electric power companies to large private utilities that integrated electricity generation, transmission and distribution, and sales. These private utilities were created by the merger of small companies or by their absorption by a private utility. This process continued with larger utilities often combining under holding companies. Municipal and cooperative utilities reemerged in the 1930s, when the federal government joined the electric power industry as a wholesale supplier, mainly through the development of large hydro-electric sites. Federal participation spurred the growth of other publicly and cooperatively owned utilities by offering them the preferential sale of lower-priced federally generated power, as well as federal low-interest loans and other technical assistance.<sup>30</sup>

During the early 1930s, two developments impeded state public utility commissions (PUCs) from effectively regulating electricity and natural gas rates of Investor owned utilities (IOUs) operating in their states. The *Attleboro* case held that the Dormant Commerce Clause precluded states from regulating interstate wholesale sales of electricity and natural gas, and created a gap between state and federal regulation of electricity.<sup>31</sup> *Attleboro* prevented states from regulating the prices that retail utilities paid for power they purchased at wholesale, allowing utilities to circumvent cost-based state regulation. The second development was the emergence of multistate holding companies, which, because of their size and complexity, defied effective regulation by the states. *Attleboro* allowed these holding companies to shift costs among subsidiaries through price discrimination in the sale of wholesale electricity.

A 1928 investigation by the Federal Trade Commission (FTC) led to hearings by the House Committee on Interstate and Foreign Commerce

<sup>30</sup> EIA, *The Changing Structure of the Electric Power Industry, 1970–1991* (1991): 3–4.

<sup>31</sup> *Pub. Util. Comm'n of Rhode Island v. Attleboro Steam & Electric Co.*, 273 U.S. 83, 89 (1927).

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and the Senate Committee on Interstate Commerce between 1933 and 1935, resulting in the two-part Public Utility Act of 1935,<sup>32</sup> which included both the Public Utility Holding Company Act (PUHCA)<sup>33</sup> and the Federal Power Act (FPA), Part II of the Public Utility Act. The FPA gave federal authorities jurisdiction over interstate electricity transactions. The prices of transmission service (wheeling) and wholesale trades of power between utilities have been regulated by the Federal Power Commission (FPC) or its successor agency, the Federal Energy Regulatory Commission (FERC), since 1935.

PUHCA reshaped the industry by limiting the operations of the holding company system to a single integrated public utility system.<sup>34</sup> Between 1938 and 1955, 214 holding companies controlling 922 electric and gas utilities and more than 1,000 nonutility companies were reduced to 25 holding companies with 171 electric and gas subsidiaries and 137 nonutility subsidiaries, and nearly \$13 billion in assets were divested in the process. The effective result was to reduce holding companies to one integrated gas or electric system with only functionally related subsidiaries.<sup>35</sup> The vertically integrated, investor-owned utility, primarily operating within one state, became the fundamental economic unit of the industry.<sup>36</sup>

The FPA extended regulation not only to the transmission of electricity in interstate commerce but also to the sale of wholesale electric energy that entered interstate commerce. Jurisdiction over local distribution and intrastate transmission was left with the states.<sup>37</sup> The FPC was

<sup>32</sup> See 49 Stat. 803 (1935).

<sup>33</sup> 15 U.S. Code §79 *et seq.* (repealed in 2005). Also known as the Wheeler-Rayburn Act. PUHCA gave the Securities and Exchange Commission broad authority over the structure, finances, and operations of public utility holding companies.

<sup>34</sup> 49 Stat. at 820.

<sup>35</sup> Robert L. Bradley, Jr. "The Origins of Political Electricity: Market Failure or Political Opportunism?" *Energy Law Journal* 17 (1996): 59, 86.

<sup>36</sup> Attempts to break the status quo and move to a more efficient electricity network during the 1920s in the Northeast (Superpower) and Pennsylvania (Giant Power) failed to gain traction, despite large potential gains in trade, estimated to be as high as 40 percent of total costs. While there were large efficiency gains to be obtained, the difficulty of making the political side payments, as well as ideological objections to centralized control, thwarted these attempts at industry rationalization. This illustrates how once the status quo is entrenched, movement to a pareto superior point may be difficult or impossible. William Hausman and John Neufeld, "The Economics of Electricity Networks and the Evolution of the U.S. Electric Utility Industry, 1882–1935," *Business and Economic History On-line* 2 (2004): 20–24; DeGraaf, "Corporate Liberalism and Electric Power System Planning in the 1920s," *Business History Review* 64 (1990): 1–31.

<sup>37</sup> Wholesale electricity markets as well as transmission are regulated by FERC, except for the Electric Reliability Council of Texas (ERCOT), which is connected to the two main national grids only through direct current (DC) ties, and thus falls under the exclusive