



Electric Paradigms: Competitive Structures Benefit Consumers

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Restructuring the electric power industry to align with today’s technological advances and challenges can improve reliability, encourage efficiencies, reduce emissions, fortify governance and deliver consumer benefits.

Executive Summary

Last century, almost all electric power customers in the United States were served by vertically integrated monopolies. In the 1990s, however, consumer unrest over rising rates prompted reforms in roughly one-third of states, allowing for competition at wholesale and retail levels. Since then, many additional states have expanded wholesale competition incrementally, although retail competition has remained relatively static. The result is that a cohort of states have retained the traditional monopoly paradigm, whereas others have adopted either a hybrid model or a restructured model.

Eighteen states still use the traditional model, relying on state-regulated monopolies. Nineteen states use a hybrid model, in which regulated monopolies serve all or most retail customers and own power plants that participate in wholesale electricity markets administered by regional transmission organizations (RTOs). Thirteen states and Washington D.C. have adopted a restructured model, which embraces competition for retail services and power plant owners, who also participate in RTO markets. Although these paradigms use different combinations of wholesale generation and retail regulatory structures, distribution remains a regulated monopoly in all of the models.

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This report assesses paradigm performance from a consumer's viewpoint across four consumer-centered dimensions: reliability, economics, environment and governance.

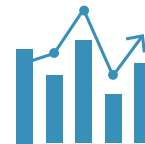
1. Reliability

Restructuring improves the reliability behavior of power plants by aligning their profit motive with performance and increasing voluntary demand reduction during times of grid stress. The reliability advantages of restructuring were evident in Winter storms Uri and Elliott. RTO markets offer reliability advantages over standard utility practices. For example, RTO capacity markets satisfy regional reliability criteria by coordinating resource entry and retirements while accounting for transmission constraints, which utility integrated resource planning (IRP) does not. This advantage grows over time, as the reliability value of resources becomes increasingly dependent on regional conditions.



2. Economics

Restructuring has clear benefits at the wholesale level, while retail benefits are largely tied to the quality of state reforms. Competitive generators operate more efficiently, innovate, manage risks better and make sounder investment decisions than monopoly utilities. States that restructured have seen substantially enhanced demand-side participation. Texas, alone, implemented retail choice well. Other restructured states have flawed implementation, but nevertheless retail choice has helped reduce energy costs, manage risks and expand service offerings like green energy tariffs. Retail rates are often higher in restructured states because of unrelated drivers like higher fuel, tax, land, labor and environmental compliance costs in the Northeast.



3. Environment

Emissions have fallen faster in restructured areas. Competition has promoted voluntary emissions reductions through consumers exercising choices for cleaner energy and accelerated clean technology adoption, especially reducing barriers to unconventional technologies. Despite competitive wholesale markets driving efficiency, some utilities persist in using older, high emission generation resources.



4. Governance

The business model of monopoly utilities is predicated on securing favorable regulatory and legislative treatment, while restructured areas shift decisions to market forces. Patterns of government cronyism and corruption follow the monopoly utility model, whereas better governance is evident under competitive structures. RTOs present new governance challenges due to their unique, quasi-autonomous organizational structure.



Restructuring the electric power industry to align with today's technological advances and challenges can improve reliability, encourage efficiencies, reduce

emissions, fortify governance and deliver consumer benefits. The key is to implement quality reforms. We therefore offer three main recommendations.

1. States using a traditional model should contemplate moving to a well-implemented hybrid model, with an emphasis on joining or creating an RTO and moving toward complete restructuring.
2. States employing a hybrid model should transition toward full restructuring. If such steps are not currently viable, gradual improvements include enabling direct market access rates for large consumers, implementing robust all-resource competitive procurement to serve remaining captive customer customers and utilizing RTO data for prudence reviews of utility IRP and asset management.
3. Restructured states should take steps to further enhance competition. A crucial enhancement, exemplified by Texas, is to “quarantine the monopoly” by enforcing a complete separation between regulated monopoly wires businesses and competitive generation and retailing businesses. Additional improvements include minimizing state interventions like subsidies, adopting supplier-consolidated billing, improving retail market oversight and energy provider licensing, ensuring secure access to advanced metering infrastructure (AMI) data and providing better information to consumers.

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Introduction

In the last century, almost all electric power customers in the United States were served by vertically integrated monopolies. One company owned all power plants and transmission and distribution equipment and was responsible for sales of power to all power customers in its territory. The economies of scale available to monopolies allowed for more cost-effective production, and state regulation protected consumers against abuse from the resulting market power.

The state-regulated monopoly model persisted for decades with limited dissension. In fact, the period from the early 1900s to about 1970 has been called the Golden Era in electric power.¹ However, by the 1970s the industry’s reputation was falling badly—the result of a massive blackout in 1965, growing environmental concerns, and delays and massive cost overruns for nuclear power plants then under construction.² At the same time, technological progress was boosting smaller power plant efficiency, undermining economies-of-scale arguments for monopolies.³

Consumer unrest over rising costs and rates prompted state and federal policymakers to begin reforms in the 1990s that introduced two more ways of organizing the electric industry. Several states implemented reforms to allow competition among power plants at the wholesale level. Another group of states implemented reforms

1. Richard Munson, *From Edison to Enron: The Business of Power and What It Means for the Future of Electricity* (Bloomsbury Publishing, 2005), p. 77. <https://www.abc-clio.com/products/c7837c>.

2. *Ibid.*

3. Peter Z. Grossman, *US Energy Policy and the Pursuit of Failure* (Cambridge University Press, 2013). <https://www.cambridge.org/us/academic/subjects/economics/natural-resource-and-environmental-economics/us-energy-policy-and-pursuit-failure>; Michael J. Graetz, *The End of Energy: The Unmaking of America’s Environment, Security, and Independence* (The MIT Press, 2011). <https://direct.mit.edu/books/book/3335/The-End-of-EnergyThe-Unmaking-of-America-s>.

to allow competition among power plants to supply retail customers. In all states, however, transmission and distribution equipment remained in the hands of a regulated monopoly, although the adoption of regional transmission organizations (RTOs) led to independently planned and competitively procured transmission.⁴

Twenty years ago, reform advocates, academics, lobbyists and regulators could only speculate about the consequences of proposed reforms. Today, however, with the debate over industry structure heating up again, we now have over two decades of reform experience to guide policymaking. This report will describe the traditional approach to electricity, as well the two main alternatives: hybrid and restructured. It will then compare how these three paradigms perform on the key customer-centric measures of reliability, economics, environment and governance, finishing with recommendations on the best approach and how we can move toward that approach with each of the three paradigms.

Three Main Paradigms

Today, three main combinations of wholesale and retail regulation exist. Some states have stayed with monopoly at both the wholesale and retail levels, others have shifted to markets at the wholesale level but remain with monopoly for retail customers, and still others who have selected markets for both wholesale and retail levels of the industry.

At the retail level, competition is provided through rules governing customer choice. In some cases, states allow a fraction of customers to shop for their own retail supplier rather than being locked into the local monopoly. In other cases, all electric customers have the ability to shop.

The core mechanism for wholesale competition in the electric power industry is the RTO. RTOs operate day-ahead and real-time energy imbalance markets across a regional transmission system. In addition, they work to maintain reliable operations by coordinating access to reserves and other grid-support services. They also provide regional transmission planning services, as well as offer or contract market monitoring services to ensure that market rules are followed.

A common misconception conflates an RTO territory as synonymous with restructuring or “deregulation.”⁵ Restructuring actually refers to competitive generation and retail functions. RTO market participants can take the form of competitive suppliers or local monopoly utilities across a region. Of the seven domestic RTOs, four primarily consist of restructured states, and three retain mostly monopoly states. This results in three main paradigms: traditional (monopoly without RTO), hybrid (monopoly with RTO) and restructured (competitive generation and retail suppliers with RTO).



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4. Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (The MIT Press, 1999). <https://mitpress.mit.edu/9780262082730>.

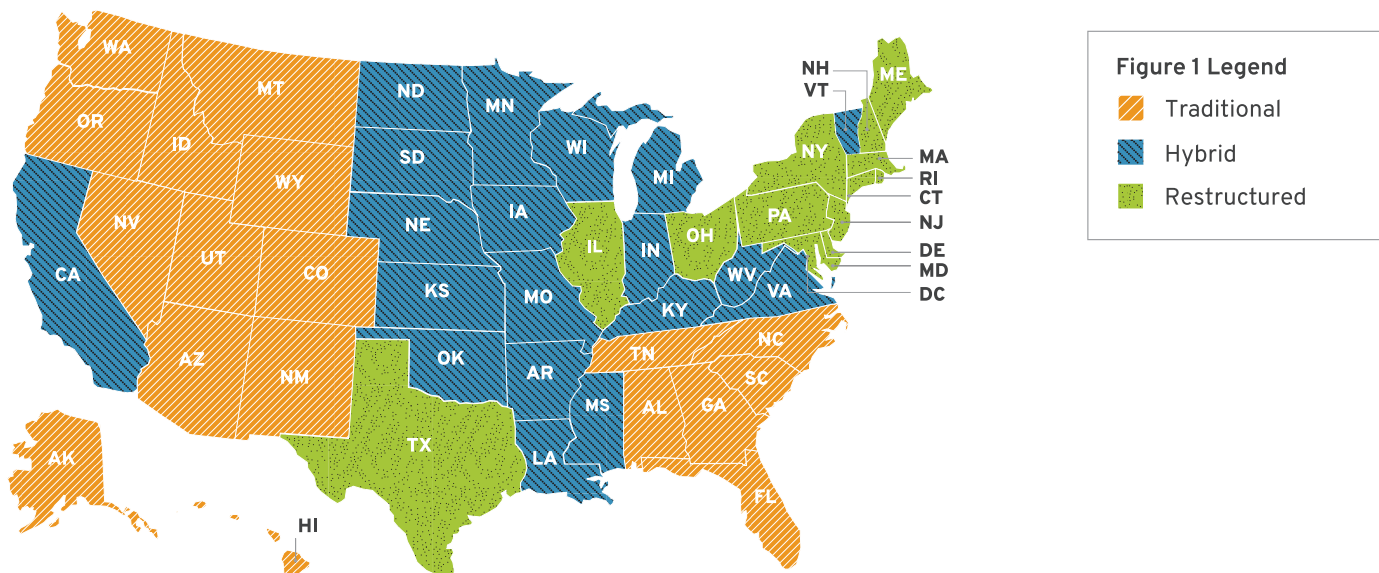
5. See, e.g., Ivan Penn, “Why Are Energy Prices So High? Some Experts Blame Deregulation,” *The New York Times*, Jan. 4, 2023. <https://www.nytimes.com/2023/01/04/business/energy-environment/electricity-deregulation-energy-markets.html>.

Eighteen states remain wedded to the traditional paradigm in which all generation and transmission infrastructure development and retail services are conducted by monopoly utilities that are regulated at the state level. The Federal Energy Regulatory Commission (FERC) regulates wholesale power sales and transmission rates for traditionally regulated monopolies as well as oversees reliability standards for the transmission grid.

Nineteen states have settled on a hybrid paradigm, in which most generation and retail services remain served by regulated monopolies that participate in RTOs. Generation investment decisions are determined through state regulation and have the potential to coordinate with RTO planning processes, though RTO price signals generally do not determine resource entry and exit. RTOs conduct regional transmission planning, and FERC oversees RTO-coordinated operations, except in the portion of Texas within the Electric Reliability Council of Texas (ERCOT), which is overseen by the Public Utility Commission of Texas.

Finally, 13 states and the District of Columbia have adopted a restructured paradigm, where competitive independent power producers (IPPs) and competitive retail energy providers (REPs) participate in RTOs. Restructured states unbundle the competitive generation and retail sectors from the transmission and distribution sectors that remain local monopolies. Bilateral and RTO markets, with rules that require FERC approval (except in Texas), determine generation investment and retirement decisions. Retail supply remains regulated by the state but allows competition between REPs to determine supply rates and other terms of service.

Figure 1: State Status by Electric Paradigm



Note: participation in an organized energy imbalance market is not considered an RTO. California, Michigan and Virginia are in RTOs with a significant minority market share for competitive generators and limited access to competitive retail providers. Georgia and Oregon allow limited direct market access options for large customers, but do not have an RTO.

Source: Figure created on mapchart (<https://www.mapchart.net/usa.html>) based on R Street criteria.

Considerable variation exists within these three broad paradigms. Small municipal utilities may own distribution systems but few generation or transmission assets. Rural electric cooperatives are sometimes divided into companies that only engage in distribution services and companies that only own generation and transmission resources. A few states began restructuring and then backtracked after California’s market experiment failed in 2000-2001.⁶ Several such states grandfathered in choice for large industrial customers. Michigan initiated retail choice but subsequently capped participation at 10 percent of the market.⁷ Texas required privately owned monopolies connected to the ERCOT power system to restructure completely, but monopolies outside of ERCOT remained traditionally regulated.⁸ Most of these monopolies subsequently joined an RTO and thus became hybrid in the years after Texas launched retail competition within ERCOT. Texas allowed municipal utilities and cooperatives within ERCOT to remain monopolies at the retail level, and most have chosen to keep their monopoly.

Table 1 below classifies states according to the system that most consumers face in a given state. Many states have cases that vary from the dominant paradigm. For example, while most consumers in North Carolina fall under the traditional paradigm, the northeastern corner of the state resembles the hybrid paradigm because the local utility participates in the PJM market.

Table 1: Characteristics of the Three Paradigms

	Traditional	Hybrid	Restructured
Generation	Monopoly	Primarily monopoly	Competitive IPPs
Retail	Monopoly	Primarily monopoly	Competitive REPs
RTOs	N/A	Midcontinent Independent System Operator (MISO), Southwest Power Pool (SPP), California Independent System Operator (CAISO)	PJM Interconnection, New York Independent System Operator (NYISO), ISO New England (ISO-NE), Electricity Reliability Council of Texas (ERCOT)



Considerable variation exists within these three broad paradigms.

Four Dimensions of Performance

The four dimensions of industry performance that we consider in our comparison of the three main electric power paradigms are reliability, economics, environment and governance. Consumers are not all the same, but almost all consumers care about the convenience and cost of electricity—in other words reliability and economics. More and more consumers are placing a

6. James F. Wilson, “Restructuring the Electric Power Industry: Past Problems, Future Directions,” *Natural Resources & Environment* 16:4 (Spring 2002), pp. 232-272. <https://www.jstor.org/stable/40924209>; Reuters Staff, “Virginia set to end retail competition,” *Reuters*, Feb. 6, 2007. <https://www.reuters.com/article/us-dominionresources-virginia/virginia-set-to-end-retail-electric-competition-idUSN0646413120070206>.

7. Michigan Public Service Commission, *Status of Electric Competition in Michigan*, Licensing and Regulatory Affairs, Feb. 1, 2023. p. 1. https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/regulatory/reports/elec-comp/2022_Electric_Competition_Status.pdf.

8. Ross Baldick et al., “ERCOT: success (so far) and lessons learned,” in Jean-Michael Glachant et al., eds., *Handbook on Electricity Markets* (Edward Elgar Publishing, 2021), pp. 210-211.

higher value on environmental considerations. Larger industrial and commercial consumers are becoming increasingly engaged with industry governance.⁹ We selected these four dimensions for our assessment of the three paradigms to cover core consumer concerns.¹⁰

Reliability

Providing reliable electricity requires attention to a wide variety of issues affecting generation, transmission and distribution infrastructure, as well as demand.¹¹ Cybersecurity is also a growing concern.¹² Most interruptions of power service to consumers result from weather-related damage to local distribution systems.¹³ These interruptions tend to be localized, often only affecting a neighborhood or part of a city, though a large winter storm or hurricane can take down wires over several states.¹⁴ Because distribution wires remain state-regulated monopolies in all three electric power industry paradigms, restructuring would not result in notable differences in these kinds of interruptions.

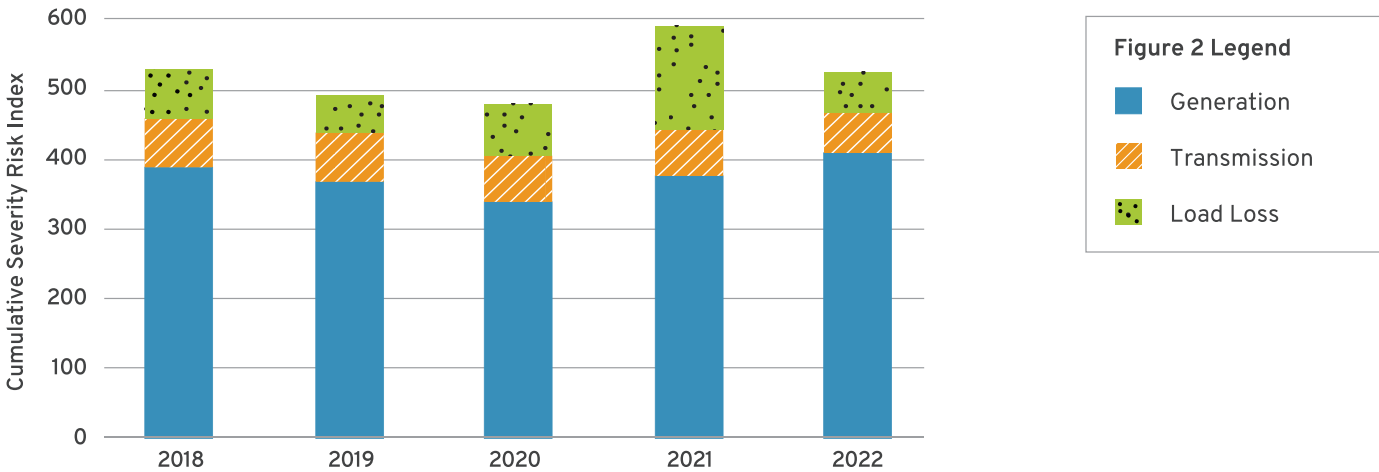
Restructuring may, however, affect bulk electric reliability, which is determined by the ability of generation and transmission resources to meet customer demand under a wide range of possible circumstances. Bulk system failures can result in widespread outages, but they are much less common than distribution-related interruptions, accounting for well under 1 percent of customer interruptions.¹⁵

From 2018-2022, the total severity risk index (SRI) of bulk electric reliability remained relatively unchanged, but generation risk increased and transmission risk decreased.¹⁶ In addition, in recent years, generation outages rates have increased, especially because of gas-fired plants, while transmission reliability has improved.¹⁷ This is noteworthy because the effects of restructuring on bulk electric reliability primarily affect generation, which transitioned from cost-of-service regulation to a market model. Transmission remains under cost-of-service regulation everywhere, but hybrid and restricted models have transferred regional transmission planning from utilities to RTOs. RTO regions have since demonstrated more robust regional transmission than non-RTO regions.¹⁸



9. Lori Bird and Jenny Sumner, *Consumer Attitudes About Renewable Energy: Trends and Regional Differences*, National Renewable Energy Laboratory, 2011. <https://www.nrel.gov/docs/fy11osti/50988.pdf>.
10. Travis Kavulla, "Problems in Electricity Market Governance: An Assessment," *R Street Policy Study* No. 180 (Aug. 30, 2019), pp. 1-16. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>; Catherine Morehouse, "Groups ask Congress for first-of-its-kind cost analysis of RTOs amid market expansion debate," *Utility Dive*, July 8, 2021. <https://www.utilitydive.com/news/groups-ask-congress-for-first-of-its-kind-cost-analysis-of-rtos-amid-market/602995>.
11. Office of Electricity Delivery and Energy Reliability, "United States Electricity Industry Primer," U.S. Department of Energy, July 2015. <https://www.energy.gov/sites/prod/files/2015/12/f28/united-states-electricity-industry-primer.pdf>.
12. "2023 Outlook: US power sector trends to watch," *Utility Dive*, Jan. 13, 2023. <https://www.utilitydive.com/news/2023-us-power-sector-trends-renewables-reliability-FERC-cybersecurity-hydrogen-nuclear-storage-EVs/640307>.
13. Alison Silverstein et al., "A Customer-focused Framework for Electric System Resilience," *Grid Strategies*, May 2018. <https://gridprogress.files.wordpress.com/2018/05/customer-focused-resilience-final-050118.pdf>.
14. U.S. Energy Information Administration, "U.S. electricity customers averaged seven hours of power interruptions in 2021," U.S. Department of Energy, Nov. 14, 2022. <https://www.eia.gov/todayinenergy/detail.php?id=54639>.
15. Trevor Houser et al., "The Real Electricity Reliability Crisis," *Rhodium Group*, Oct. 3, 2017. <https://rhg.com/research/the-real-electricity-reliability-crisis-doe-nopr>.
16. "2023 State of Reliability Technical Assessment," North American Electric Reliability Corporation, June 2023, p. 16. www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2023_Technical_Assessment.pdf.
17. *Ibid.*, p. 46.
18. See, e.g., "Transmission Planning and Development Regional Report Card," Americans for a Clean Energy Grid, June 2023. www.cleanenergygrid.org/wp-content/uploads/2023/06/ACEG_Transmission_Planning_and_Development_Report_Card.pdf.

Figure 2: Annual Cumulative Severity Risk Index



Note: the SRI is a daily metric of bulk electric system reliability based on aggregated transmission loss, generation loss and load loss events.

Source: “2023 State of Reliability Technical Assessment,” North American Electric Reliability Corporation, June 2023. www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2023_Technical_Assessment.pdf.

Generator outage rates both during high-risk conditions and in general can indicate the effects of restructuring on generation reliability. For the most part, the introduction of competition in the 1990s induced a reduction in generator outages.¹⁹ The most severe reliability events from 2018-2022 affected regions functioning under all three paradigms and primarily resulted from severe cold-weather events.²⁰ Prospective evaluations from the North American Electric Reliability Corporation (NERC) therefore find reliability risk with all three paradigms.²¹

The seven most severe reliability days from 2018-2022 resulted from two storms: Winter Storm Uri in February 2021 and Winter Storm Elliott in December 2022.²² Uri imposed catastrophic effects on restructured Texas, but the core problems, except perhaps for power plant weatherization, were unrelated to restructuring: poor gas-electric system coordination, insufficient gas supply to some generators and a lack of significant inerties to neighboring systems.²³ Importantly, competitive generators had lower outage rates than monopoly utilities, which supports a key reliability argument of restructuring: aligning profit motives with wholesale prices that signal scarcity encourages generator availability when market conditions are tight.²⁴

19. Lucas W. Davis and Catherine Wolfram, “Deregulation, Consolidation, and Efficiency: Evidence from US Nuclear Power,” *American Economic Journal: Applied Economics* 4:4 (October 2012), pp. 194-225. <https://www.aeaweb.org/articles?id=10.1257/app.4.4.194>.
 20. “2023 State of Reliability Technical Assessment,” pp. 15-16. www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2023_Technical_Assessment.pdf.
 21. “Two-thirds of North America Faces Reliability Challenges in the Event of Widespread Heatwaves,” North American Electric Reliability Corporation, May 17, 2023. <https://www.nerc.com/news/Pages/Two-thirds-of-North-America-Faces-Reliability-Challenges-in-the-Event-of-Widespread-Heatwaves.aspx>.
 22. Ibid.
 23. “FERC, NERC and Regional Entity Staff Report: The February 2021 Cold Weather Outages in Texas and the South Central United States,” Federal Energy Regulatory Commission, November 2021, pp. 15-18. <https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and>.
 24. Michelle Michot Foss et al., “The Texas Freeze Out: Electric Power Systems, Markets and the Future,” International Association for Energy Economics and Energy Forum, 2021. www.bakerinstitute.org/sites/default/files/2021-06/import/00-foss-online-texas-freeze-iaee.pdf.

Winter Storm Elliott resulted in rolling outages in several southeastern states and revealed deficiencies in the traditional paradigm. Monopoly utilities were forced to curtail service and were only able to contain the depth and duration of rolling outages because of massive increases of imported power coming from the restructured area served by PJM and the hybrid system served by MISO. PJM was able to cut up to 7,000 megawatts (MW) of demand through voluntary load management programs during the storm.²⁵ Demand programs were one reason PJM was able to avoid involuntary load shedding when traditional utilities in the Southeast had to resort to forced load curtailment.

Indeed, Winter Storm Elliott underscored a key aspect of RTO reliability benefits. Just a month or so before the storm, the Southeast Energy Exchange Market (SEEM) launched. SEEM is an automated power trading venue that utilities in Southeastern states can use to buy and sell power.²⁶ It offers some of the benefits of wholesale trading, but it has been frequently criticized as falling far short of the benefits available to an RTO.²⁷ SEEM is, more or less, an automated bulletin board for power trading, with a weak connection to grid conditions and no direct engagement with real-time grid operations. The lack of any kind of integrated market-to-grid condition capability makes SEEM relatively useless during emergency conditions. While utilities in the Southeast used SEEM to trade power before and after the storm, bids and offers dropped to zero during the storm.²⁸

Some regulators suggest that utility integrated resource planning (IRP) in the traditional paradigm is better suited to ensure adequate resources than capacity markets and other RTO-centered programs.²⁹ The evidence suggests the opposite. Organized markets, including capacity markets, have distinct reliability advantages over utility IRP. The reliability parameters of capacity markets ensure the coordinated regional substitution of entry and retirements while accounting for anticipated transmission constraints.³⁰ Utility IRP does not. The reliability value of resources like natural gas, renewables and energy storage is increasingly dependent on regional conditions. This requires regionally based capacity accreditation, which is the explicit design of capacity markets but not fragmented utility IRPs.

Furthermore, in hybrid systems, including California and most states served by MISO and SPP, states are responsible for ensuring adequate electric power generation. Nonetheless, California and MISO have seen recurring reliability



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25. "Winter Storm Elliott," PJM, Jan. 11, 2023. <https://pjm.com/-/media/committees-groups/committees/mic/2023/20230111/item-0x---winter-storm-elliott-overview.ashx>.

26. Southeast Energy Exchange Market, last accessed July 10, 2023. <https://southeastenergymarket.com>.

27. Jennifer Chen and Michael Bardee, "How Voluntary Electricity Trading Can Help Efficiency in the Southeast," *R Street Policy Study* No. 201, August 2020. <https://www.rstreet.org/research/how-voluntary-electricity-trading-can-help-efficiency-in-the-southeast>; Michelle Lewis, "Here's why the Southeast Energy Exchange Market is a concern," *Electrek*, March 19, 2021. <https://electrek.co/2021/03/19/southeast-energy-exchange-market-seem-is-a-concern>.

28. Miranda Wilson, "Deep freeze and data concerns test Southeast power market," *EnergyWire*, March 28, 2023. <https://www.eenews.net/articles/deep-freeze-and-data-concerns-test-southeast-power-market>.

29. Mark C. Christie, "It's Time to Reconsider Single-Clearing Price Mechanisms in U.S. Energy Market," *Energy Law Journal* 44:1 (2023), pp. 1-30. <https://www.eba-net.org/wp-content/uploads/2023/05/3-Commr-Christie1-30-1.pdf>.

30. See, e.g., Devin Hartman, "The Market Advantage: A Q&A with Joe Bowling," *R Street Shorts* No. 40, June 2017. www.rstreet.org/wp-content/uploads/2018/04/RSTREETSHORT40-1.pdf.

challenges from insufficient generation.³¹ MISO's planned resource adequacy shortfall resulted from new investment occurring independent of retirement decisions, which plainly falls on the monopoly utility procurement practices that comprise over 90 percent of MISO's market.³² Reliability experts stress the need to correctly attribute reliability risks under the hybrid paradigm to deficiencies in state regulatory processes like IRP, not misattribute risks to RTOs.³³

RTOs have superior situational awareness, scale and tools to operate systems reliably. RTO operations use an integrated, region-wide look at generator and transmission availability in real time, coupled with contingency plans to help ensure that the system will remain in service in the case of an unexpected loss of a generating unit or a power line. The organized markets operated by RTOs further enhance operational reliability and provide incentive for reliable behavior among market participants. SEEM was unable to promote reliability during the winter storm because it was not designed to have the constant situational awareness and instant ability to respond that RTOs possess.

The quality of RTO market design is a key, yet often underappreciated, component of reliability. Market design choices have not been included in recent winter storm analyses conducted by FERC and NERC, revealing a potential reliability assessment blind spot.³⁴ Optimal market design may need to differentiate between the restructured and hybrid paradigms because competitive generators' incentives align with price signals much better than with monopoly utilities.³⁵ For example, scarcity pricing in design has less bearing on reliability in hybrid SPP and MISO than in primarily restructured footprints like PJM, NYISO and ISO-NE. A common thread of all three paradigms is that economic institutions and policies, from IRP to market design, are siloed from reliability institutions and policy development.³⁶ Given changes in technology, evidence supports the increasing reliability and economic advantage of competitive markets over traditional practices like IRP.³⁷

Economics

Restructuring was promoted as a way for states with high electricity rates to help bring rates down. A few states with moderate rates also reformed, expecting



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31. "2022 Summer Reliability Assessment," North American Electric Reliability Corporation, May 2022. https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2022.pdf.
32. Devin Hartman, "Strengthening Electric Reliability Through Markets in the Midwest," R Street Institute, June 23, 2022. <https://www.rstreet.org/commentary/strengthening-electric-reliability-through-markets-in-the-midwest>.
33. See, e.g., Ethan Howland, "FERC commissioners tell senators of major grid reliability challenges, with some blaming markets," *Utility Dive*, May 5, 2023. <https://www.utilitydive.com/news/ferc-grid-reliability-senate-energy-hearing/649523>.
34. Michael Giberson, "Stakeholder Soapbox: New FERC Stance Needed to Improve Winter Storm Readiness," *RTO Insider*, April 23, 2023. <https://www.rtoinsider.com/articles/31937-stakeholder-soapbox-new-ferc-stance-needed-to-improve-winter-storm-readiness>.
35. See, e.g., Devin Hartman and Michael Giberson, "Comments of the R Street Institute before the Federal Energy Regulatory Commission on Modernizing Wholesale Electricity Market Design," Docket No. AD21-10-000, Jan. 19, 2023. <https://www.rstreet.org/outreach/comments-of-the-r-street-institute-before-the-federal-energy-regulatory-commission-on-modernizing-wholesale-electricity-market-design>.
36. Devin Hartman, "Climate Change, Extreme Weather, And Electric System Reliability before the Federal Energy Regulatory Commission," Docket No. AD21-13-000, June 1, 2021, p. 2. www.rstreet.org/wp-content/uploads/2021/05/Final-Hartman-Opening-Statement-Climate-Reliability-tech-conference-June-2021-Devin-Hartman-1.pdf.
37. Devin Hartman, "Enhancing Market Signals for Electric Resource Adequacy," *R Street Policy Study* No. 123, December 2017. www.rstreet.org/wp-content/uploads/2018/04/Final-123-1.pdf.

competition to bring costs down and to provide customers with more options. Traditional regulation has a well-known bias toward excess investment in capital and often only mild pressure to keep operating costs low.³⁸ A competitive generation sector was expected to promote both more efficient investment decisions and more efficient operations. Some observers expected better investment to be the biggest contributor to overall savings from restructuring.³⁹

The evidence on wholesale power markets shows that competition has promoted efficiencies in generator operations and in investment and retirement decisions.⁴⁰ Restructuring has allowed investors to make investments with lower costs and rates of return than monopoly utilities while transferring the risk from ratepayers to investors.⁴¹ One industry analysis explained that “firms that do not have the security of a guaranteed rate of return on their investments will be more prudent in their capital expenditures and the way they manage risk.”⁴² This effect was especially evident during the 2010s, when markets drove innovation in gas technology and the adoption of combined cycle plants.⁴³ Investors had to make wiser decisions based on fuel prices, demand, environmental regulations and technological advances.⁴⁴ By contrast, monopoly utilities kept investing in some uneconomic facilities—three of them alone have cost consumers tens of billions of extra dollars.⁴⁵

In hybrid areas, wholesale competition has mixed results. The regional coordination of generation and transmission assets has tended to improve the use of more efficient generation units. Both restructured states and states with hybrid systems have seen savings from RTOs because of more efficient reserve sharing, better coordination of generation and transmission resources, and better use of low-cost generation assets. The Midcontinent Independent System Operator (MISO), mostly made up of regulated local power monopolies, calculates that its members enjoy benefits totaling over \$3 billion annually with a 12:1 benefit-to-cost ratio.⁴⁶ Yet monopolies make investment and operating decisions irrespective of wholesale price signals, such as when they build generation plants despite cheaper options being available.⁴⁷ In fact, the uneconomic operations of utility coal plants alone may have cost consumers an extra \$1 billion or more per

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38. H.A. Averch, “Averch–Johnson Effect,” In *The New Palgrave Dictionary of Economics* (Palgrave Macmillan, 1987). https://doi.org/10.1057/978-1-349-95121-5_388-1.
39. Paul L. Joskow, “Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector,” *Journal of Economic Perspectives* 11:3 (Summer 1997), pp. 119-138. <https://www.aeaweb.org/articles?id=10.1257/jep.11.3.119>.
40. Ibid.
41. “Resource Investment in Competitive Markets,” PJM Interconnection, May 5, 2016. https://hepg.hks.harvard.edu/files/hepg/files/pjm_resource_investment_0516.pdf.
42. Severin Borenstein and James Bushnell, “An Empirical Analysis of the Potential for Market Power in California’s Electricity Industry,” *The Journal of Industrial Economics* 47:3 (September 1999), pp. 285-323. <https://onlinelibrary.wiley.com/doi/abs/10.1111/1467-6451.00102>; James Bushnell et al., “Review of the Economics Literature on US Electricity Restructuring,” Feb. 23, 2017. https://arefiles.ucdavis.edu/uploads/filer_public/e0/ee/e0eefda6-9fe2-4f88-8ca6-a00f25379754/restructuring_review.pdf.
43. Hartman, “The Market Advantage, A Q&A with Joe Bowring.” <https://www.rstreet.org/wp-content/uploads/2018/04/RSTREETSHORT40-1.pdf>.
44. Devin Hartman, “University of Georgia study is disconnected from grid economics,” *Utility Dive*, Feb. 21, 2018. <https://www.utilitydive.com/news/university-of-georgia-study-is-disconnected-from-grid-economics/517553>.
45. Ibid.
46. “Value Proposition,” Midcontinent ISO, last accessed June 28, 2023. <https://www.misoenergy.org/about/miso-strategy-and-value-proposition/miso-value-proposition>.
47. Kathleen Spees et al., “Enhancing the Efficiency of Resource Adequacy Planning and Procurements in the Midcontinent ISO Footprint: Options for MISO, Utilities, and States,” The Brattle Group, November 2015. www.brattle.com/wp-content/uploads/2017/10/5886_enhancing_the_efficiency_of_resource_adequacy_planning_and_procurements_in_the_miso_footprint_newell_spees_1115.pdf.

year since 2012.⁴⁸ Furthermore, the combination of local monopoly and regional wholesale competition can lead to conflicts, as when IPPs compete against utility power plants backstopped by guaranteed rates of return.⁴⁹

Research comparing operating costs for generators in competitive and monopoly structures finds that competitive generators were associated with a higher availability of nuclear power plants, lower costs at coal plants and more intensive use of highly efficient combined-cycle natural gas plants. Competitive generators that better manage risk and market prices have led to more cost-effective decisions regarding when to retire resources and when to build new generation. Converting power generation from the cost-of-service monopoly model to a competitive marketplace has resulted in wholesale cost-saving efficiencies, improved risk management, and advanced technological and managerial innovation.⁵⁰ Meanwhile, monopoly utilities frequently manage generation assets inefficiently, with the costs socialized on captive ratepayers.

Restructuring has also dramatically improved demand-side engagement in power markets. For example, economic demand response exists almost exclusively in restructured states, whereas the hybrid and traditional models have mostly yielded only limited emergency-demand response.⁵¹ Regulatory flaws have highly restricted the ability for demand to participate in wholesale and retail markets more organically. Communication and computer technologies are making it easier for customers to participate voluntarily in responsive-demand programs, which can reduce the use of utility-directed customer outages for system reliability. Such programs are available in restructured markets and can work in hybrid and monopoly systems if regulators legitimize the concept of differentiated reliability for end-use customers.⁵² Regulators must remain aware, however, that while competitive retailers in restructured states face incentives to reduce customer use when prices are high, rate designs for monopolies typically reward utilities for selling power to customers—whatever the price of wholesale power.⁵³

The economic efficiencies of competition are clear, but they do not automatically translate into consumer benefits. Grid conditions can sometimes give generators substantial market power, and even small levels of market power can translate into large transfers from consumers to producers.⁵⁴ Many lessons were learned after the western energy crisis and led to the adoption of independent market



Regulators must remain aware, however, that while competitive retailers in restructured states face incentives to reduce customer use when prices are high, rate designs for monopolies typically reward utilities for selling power to customers—whatever the price of wholesale power.

48. Joe Daniel, “How Utilities Can Save Customers Billions of Dollars,” RMI, Jan. 16, 2023. <https://rmi.org/how-utilities-can-save-customers-billions-of-dollars>; Travis Kavulla, “Reviewed Work: ‘The Billion-Dollar Coal Bailout Nobody is Talking About: Self-Committing in Power Markets,’” R Street Institute, June 12, 2019. <https://www.rstreet.org/commentary/reviewed-work-the-billion-dollar-coal-bailout-nobody-is-talking-about-self-committing-in-power-markets>.
49. “The Commonwealth of Virginia’s 2022 Energy Plan,” Virginia Department of Energy, Oct. 3, 2022. https://energy.virginia.gov/energy-efficiency/documents/2022_Virginia_Energy_Plan.pdf.
50. Bushnell et al. https://arefiles.ucdavis.edu/uploads/filer_public/e0/ee/e0eefda6-9fe2-4f88-8ca6-a00f25379754/restructuring_review.pdf.
51. Devin Hartman, “Pathways to Competition in Demand Response,” *R Street Institute Shorts* No. 30, July 19, 2016. <https://www.rstreet.org/research/pathways-to-competition-in-demand-response>.
52. Devin Hartman, “Differentiated Reliability,” Presentation at the Future Power Markets Forum, July 22, 2021. <https://www.rstreet.org/wp-content/uploads/2021/07/Hartman-FPMF-Differentiated-Reliability.pdf>.
53. Jim Lazar et al., “Revenue Regulation and Decoupling: A Guide to Theory and Application (incl. Case Studies),” Regulatory Assistance Project, Nov. 8, 2016. <https://www.raponline.org/knowledge-center/revenue-regulation-and-decoupling-a-guide-to-theory-and-application-incl-case-studies>.
54. Severin Borenstein and James Bushnell, “Electricity Restructuring: Deregulation or Reregulation?,” *Regulation* 23:2 (2000), pp. 46-52. <https://bushnell.ucdavis.edu/uploads/7/6/9/5/76951361/electricity-restructuring.pdf>.

monitors and sophisticated market power mitigation measures in RTOs.⁵⁵

Despite early isolated problems, active RTO market monitoring has ensured that electricity markets have been reasonably competitive.⁵⁶

Critics of restructuring often point out that reformed states tend to have higher-than-average electricity rates. They neglect to point out that these high-cost states typically had higher-than-average prices to begin with, back when they were traditionally regulated.⁵⁷ Because of such differences in starting conditions, examining trends after restructuring policies reveals a more accurate assessment of results than comparing absolute levels. One study comparing retail price trends showed that the weighted-average retail price in monopoly states rose 15 percent between 2008 and 2016, whereas it fell 8 percent in restructured states.⁵⁸ Restructured regions also tend to have greater cost burdens associated with environmental compliance, labor, taxes, land values and fuel costs. In fact, the surge in electricity industry costs over the past decade is largely attributable to cost-of-service transmission and distribution, not generation and retail services.⁵⁹ Assessing restructuring effects on rates must account for these confounding cost variables.

Research comparing rates in the Texas competitive retail market to rates for Texas utilities that kept retail monopoly service found that the competitive retail rates better reflected wholesale price movements—both when wholesale prices went up and when they went down.⁶⁰ Because wholesale prices fell on average over the period studied, competitive retail rates also fell. In addition, the study found evidence that the retailing function was more efficient in the competitive market. On the other hand, an academic study of restructuring in Connecticut found its market dominated by the default service offering instead of by competition among retail suppliers.⁶¹ Wholesale prices and retail rates were not closely linked, and residential consumers did not appear to benefit much from reforms.

An extensive, soon-to-be published study found mixed results from retail competition.⁶² The authors found that, on average, rates in restructured states initially increased but returned to what rates would have been under traditional regulation. However, individual state results show much variation. Restructuring drove retail prices higher in four out of five New England states and perhaps Maryland and the District of Columbia (though the margin of error makes it



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55. Jeffrey Mayes, et al., “Effective monitoring and mitigation in the organized wholesale electric power markets,” *Journal of Regulatory Economics* 41 (Jan 2012), pp. 120-138. <https://doi.org/10.1007/s11149-011-9173-0>.

56. Bushnell et al. https://arefiles.ucdavis.edu/uploads/filer_public/e0/ee/e0eefda6-9fe2-4f88-8ca6-a00f25379754/restructuring_review.pdf.

57. Michael Giberson, “Competition in Electric Markets Offers Benefits, but Smart Implementation is Key,” *OurEnergyPolicy*, April 7, 2023. <https://www.ourenergypolicy.org/competition-in-electric-markets-offers-benefits-but-smart-implementation-is-key>.

58. Philip R. O’Conner, “Restructuring Recharged: The Superior Performance of Competitive Electricity Markets 2008-2016,” Retail Energy Supply Association, April 2017. https://www.resausa.org/wp-content/uploads/2022/04/RESA_Restructuring_Recharged_White-Paper_0.pdf.

59. See, e.g., Hartman, “University of Georgia study is disconnected from grid economics.” <https://www.utilitydive.com/news/university-of-georgia-study-is-disconnected-from-grid-economics/517553>.

60. Peter R. Hartley et al., “Electricity reform and retail pricing in Texas,” *Energy Economics* 80 (May 2019), pp. 1-11. <https://www.sciencedirect.com/science/article/abs/pii/S0140988319300039?via%3Dihub>.

61. Chen-Hao Tsai and Yi-Lin Tsai, “Competitive retail electricity market under continuous price regulation,” *Energy Policy* 114 (March 2018), pp. 274-287. <https://www.sciencedirect.com/science/article/abs/pii/S0301421517308273>.

62. Kenneth Rose et al., “Retail Electricity Market Restructuring and Retail Rates,” *The Energy Journal* 45:1 (2024). <https://www.iaee.org/energyjournal/article/4102>.

difficult to conclude this with certainty), but rates in Pennsylvania and Texas decreased with restructuring.

The study also found that retail rates in restructured states more closely reflected natural gas prices, and this may explain some of the divergence among the states. Both Pennsylvania and Texas were well positioned to access cheap natural gas resulting from advanced drilling techniques like fracking. New England, on the other hand, has limited ability to bring in domestically produced natural gas and must resort to importing expensive liquefied natural gas to run natural gas generators during periods of high gas demand.⁶³

Whether consumers see the benefits of wholesale market efficiencies appears to depend on the quality of state retail reforms.⁶⁴ Poor regulation can mask the benefits of competition, such as Ohio's cross-subsidy policies that impose fees on all consumers to help subsidize uneconomic generating units owned by the corporate affiliates of distribution monopolies.⁶⁵ In retail footprints that "quarantine" the distribution monopoly from the competitive generation and retail markets, competition has been successful.⁶⁶

It is important to note that the benefits of retail competition are not solely determined by the effect on rates. Consumers may find product offerings that better suit their unique preferences, like 100 percent renewable power supply; different pricing structures and durations suited to risk tolerance; different payment options suited to personal finances; consumption management options; or options that offer "free nights and weekends" or other "Time of Use" factors, which may support lifestyle choices.⁶⁷ Some customers prefer alternative payment options, such as pre-paid energy plans.⁶⁸ It is challenging to add up these non-price benefits, but customers' willingness to seek out such options and sometimes pay more to get them proves that the products offer value.

The primary value proposition of wholesale competition—superior generation investment decisions—has delivered results but remains understudied. For example, economics research has not identified causal effects of restructuring on the types or levels of investment.⁶⁹ Evidence from practitioners, however, indicates that competitive generators make more economical investment and retirement



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63. J. Robinson, "New England winter gas prices surge as global LNG market tightens," S&P Global Commodity Insights, Dec. 21, 2021. <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/natural-gas/122121-new-england-winter-gas-prices-surge-as-global-lng-market-tightens>.
64. Jerry Ellig, "Retail Electric Competition and Natural Monopoly: The Shocking Truth," in Adam Hoffer and Todd Nesbit, eds., *Regulation and Economic Opportunity: Blueprints for Reform*, (Center for Growth and Opportunity at Utah State University 2021). <https://www.thecgo.org/books/regulation-and-economic-opportunity-blueprints-for-reform/retail-electric-competition-and-natural-monopoly-the-shocking-truth>.
65. Devin Hartman, "Testimony on Embracing Electricity Markets in Ohio," R Street Institute, Nov. 28, 2017. <https://www.rstreet.org/commentary/testimony-on-embracing-electricity-markets-in-ohio>.
66. Michael Giberson and Lynne Kiesling, "The Need for Electricity Retail Market Reforms," *Regulation* 40:3 (Fall 2017), pp. 34-40. <https://www.cato.org/sites/cato.org/files/serials/files/regulation/2017/9/regulation-v40n3-4.pdf>.
67. Paul J. Hibbard, "At the Crossroads: Improving Customer Choice for Products in the U.S. Electricity Sector," The Analysis Group, July 2023. <https://www.retailenergychoice.org/wp-content/uploads/2023/07/At-the-Crossroads-Improving-Customer-Choice-for-Products-in-the-U.S.-Electricity-Sector.pdf>; "What Is a Free Nights & Weekends Plan?," Constellation, last accessed June 28, 2023. <https://www.constellation.com/energy-101/what-is-free-nights-and-weekends-plan.html>.
68. "Texas Prepaid Lights: A Trusted Prepaid Electricity Broker Celebrating Over 20 Years of Service in Texas," khon2, June 14, 2023. <https://www.khon2.com/business/press-releases/ein-presswire/639539269/texas-prepaid-lights-a-trusted-prepaid-electricity-broker-celebrating-over-20-years-of-service-in-texas>.
69. Bushnell et al. https://arefiles.ucdavis.edu/uploads/filer_public/e0/ee/e0eefda6-9fe2-4f88-8ca6-a00f25379754/restructuring_review.pdf.

decisions. For example, last decade, monopoly utilities retained certain uneconomic coal plants, which held high relative book value, rather than investing in lower-cost, high-efficiency natural gas plants.⁷⁰ Following a thorough 2017 Department of Energy study of generation retirements, the lead technical expert on the report concluded that “as a root cause of retirements, wholesale competition worked as intended, driving inefficient, high-cost generation out of the market.”⁷¹

Importantly, the rise of renewable energy and energy storage places greater emphasis on capital productivity, in which technology choice and siting are far more complex than with conventional power plant decisions. This will likely exacerbate problems associated with the overcapitalization bias of cost-of-service utilities, which only recently began to self-build such facilities.⁷² This increases the value of restructuring as well as RTO membership for traditionally regulated states because the economics of renewables and storage are particularly sensitive to regional conditions. Under the hybrid model, RTOs can provide regional information and coordination services to help state regulators gauge the prudence of utility generation investment and retirement decisions.⁷³

Environment

In the early days of electric power restructuring, analysts knew that it would affect air pollution and climate policy goals, given the industry’s heavy reliance on burning coal and natural gas, but they were divided on whether the effects would be positive or negative. A survey of energy experts published in the year 2000 found that some analysts pessimistically projected higher pollution from a vast expansion of low-cost coal power generation, whereas others suggested that markets would promote investment in highly efficient, combined-cycle natural gas generation and cut emissions.⁷⁴ Analysts were similarly divided on whether restructuring would encourage or discourage the integration of wind and solar energy resources.⁷⁵

As shown in **Figure 3**, the implementation of electric restructuring in the late 1990s and early 2000s has coincided with notable reductions in sulfur dioxide and nitrogen oxide emissions.⁷⁶ Furthermore, modest reductions in carbon emissions occurred, even as electric power generation in the United States grew.⁷⁷ However, most credit for the improvements should go to the Clean Air Act Amendments of 1990.⁷⁸

Following a thorough 2017 Department of Energy study of generation retirements, the lead technical expert on the report concluded that

“ [A]s a root cause of retirements, wholesale competition worked as intended, driving inefficient, high-cost generation out of the market. ”



70. Johannes P. Pfeifenberger, et al. “Open Letter by Brattle Economists Offers Responses to U.S. Senators’ Questions Concerning the Efficacy of U.S. Electricity Capacity Markets,” Brattle, May 5, 2016. <https://www.brattle.com/insights-events/publications/open-letter-by-brattle-economists-offers-responses-to-u-s-senators-questions-concerning-the-efficacy-of-u-s-electricity-capacity-markets>.

71. Alison Silverstein, “Silverstein: If I’d written the DOE grid study recommendations,” *Utility Dive*, Oct. 2, 2017. <https://www.utilitydive.com/news/silverstein-if-i-d-written-the-doe-grid-study-recommendations/506274>.

72. See, e.g., Brian R. Murphy, “Renewable energy ownership: A game plan for utilities,” *Utility Dive*, May 22, 2019. <https://www.utilitydive.com/news/renewable-energy-ownership-a-game-plan-for-utilities/555268>.

73. Hartman, “Strengthening Electric Reliability Through Markets in the Midwest.” <https://www.rstreet.org/commentary/strengthening-electric-reliability-through-markets-in-the-midwest>.

74. Dallas Burtraw et al., “Electricity Restructuring: Consequences and Opportunities for the Environment,” Resources for the Future, September 2000. <https://media.rff.org/documents/RFF-DP-00-39.pdf>.

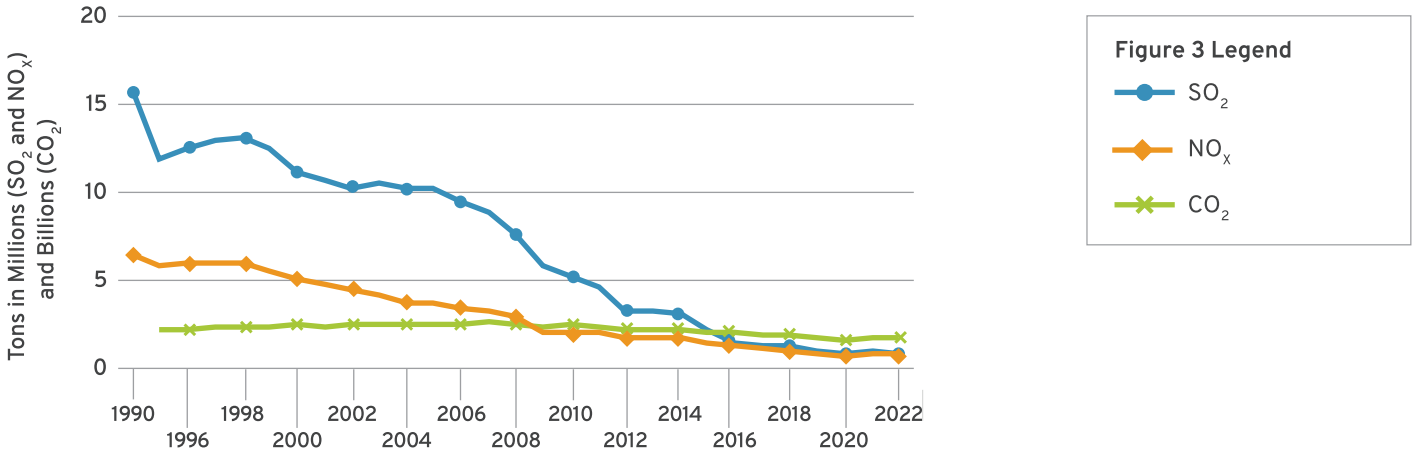
75. M.K. Heiman, “Expectations for renewable energy under market restructuring: the US experience,” *Energy* 31:6-7 (May–June 2006), pp. 1052-1066. <https://www.sciencedirect.com/science/article/pii/S0360544205000484>.

76. “Power Sector Evolution,” United States Environmental Protection Agency, May 19, 2023. <https://www.epa.gov/power-sector/power-sector-evolution>.

77. Ibid.

78. Winston Harrington et al., “Did the Clean Air Act Amendments of 1990 really improve air quality?,” *Air Quality, Atmosphere & Health* 5 (2012), pp. 353-367. <https://link.springer.com/article/10.1007/s11869-012-0176-5>.

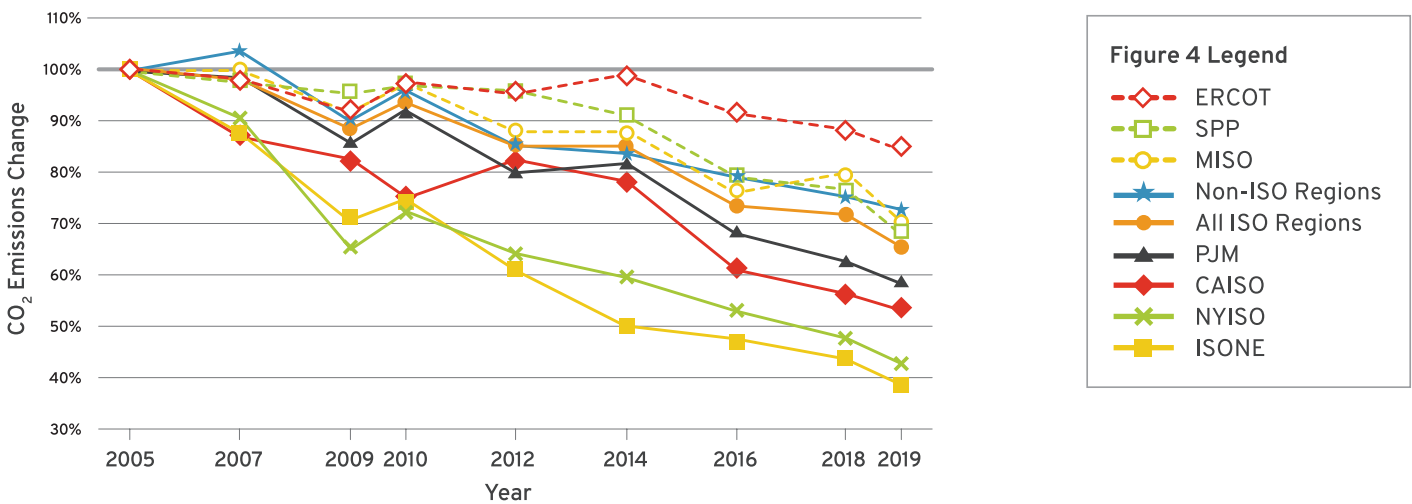
Figure 3: Domestic Power Sector Emissions, 1995-2022



Source: Derived from “Power Sector Evolution,” United States Environmental Protection Agency, May 19, 2023. <https://www.epa.gov/power-sector/power-sector-evolution>.

From 2005-2019, carbon emissions declined 35 percent in RTO regions and 27 percent in non-RTO regions.⁷⁹ This suggests an environmental advantage for the hybrid paradigm over the traditional paradigm. Of note, RTOs with more competitively owned generation, namely ISO-NE, NYISO and PJM, generally had the most significant reductions among RTOs.⁸⁰ This suggests an environmental advantage for restructuring over the hybrid paradigm.

Figure 4: Relative Change in Carbon Dioxide Emissions by RTO, 2005-2019



Note: “All ISO regions” is a generation-weighted average of individual ISO regions.

Source: Joshua D. Rhodes et al., “Assessment of the Emissions Performance of Wholesale Electricity Markets,” Energy Choice Coalition, November 2021, p. 12. https://static1.squarespace.com/static/5c60a6ff809d8e61723abdd4/t/619536b70740600220a236d0/1637168824983/ECC-Assessment+of+Emissions_11182021.pdf.

79. Joshua D. Rhodes et al., “Assessment of the Emissions Performance of Wholesale Electricity Markets,” Energy Choice Coalition, November 2021, p. 3. https://static1.squarespace.com/static/5c60a6ff809d8e61723abdd4/t/619536b70740600220a236d0/1637168824983/ECC-Assessment+of+Emissions_11182021.pdf.

80. Ibid.

Wholesale competition in RTOs could have caused additional reductions for several reasons:

- **Markets promote clean technology innovation and adoption.**

Markets harness creativity and turn it into useful technologies that enable entrepreneurs to profit from creating new forms of value for consumers. Given environmental concerns, some of which have translated into costly regulations, a great deal of entrepreneurial attention has focused on finding ways to cut emissions at low cost.⁸¹ In addition, because RTOs inherently span larger areas than a single utility, RTO markets make it easier to access potential profit opportunities, which also encourages entrepreneurial action.



- **Markets favor low-cost resources.**

Markets provide strong incentives to cut costs. Cost shifts tend to favor cleaner resource expansion and operation. For example, natural gas prices trended lower after 2008, helping shift consumption away from coal-fueled plants to gas. In addition, RTO markets naturally favor technologies with low marginal costs like wind and solar, again mostly at the expense of coal plants when natural gas prices are low. Cost-recovery mechanisms in regulated monopolies result in a weaker interest in cost-cutting innovation.



- **Markets reflect consumer preferences.**

Markets are better at discovering and meeting consumer preferences than regulatory processes. At a time when consumers are increasingly interested in supporting clean power, retail choice lets them exercise their environmental preferences.⁸² Retail choice markets have seen many more customers on green tariffs and higher sales volume than traditional utility regulation. In traditional states, utilities often do not offer green choices or only offer them at less favorable terms.⁸³ In addition, technological advances make it easier for consumers to become price- and emission-sensitive in their power consumption.



An earlier study found that reductions in natural gas prices and the growth of wind power both contributed to the decreased use of coal plants in RTOs, with a resulting reduction in carbon emissions.⁸⁴ The effects pushing emissions down were weaker in SPP, which researchers speculated was caused by the ways in which monopoly-owned generators—dominant in SPP—respond to market incentives as compared to non-utility generators.⁸⁵ More recent research examining electric generation and carbon emissions concluded that participation in wholesale markets lead to lower carbon emissions largely through a shift from coal to natural gas generation.⁸⁶

81. Ibid., p. 6.

82. See, e.g., Devin Hartman, “Intrinsic Value and the Green Case for Individual Choice,” R Street Institute, July 21, 2020. <https://www.rstreet.org/commentary/intrinsic-value-and-the-green-case-for-individual-choice>.

83. Devin Hartman, “Environmental Benefits of Electricity Policy Reform,” *R Street Policy Study* No. 82, January 2017, p. 6. www.rstreet.org/wp-content/uploads/2018/04/82-1.pdf.

84. Harrison Fell and Daniel T. Kaffine, “The Fall of Coal: Joint Impacts of Fuel Prices and Renewables on Generation and Emissions,” *American Economic Journal: Economic Policy* 10:2 (May 2018), pp. 90-116. <https://www.aeaweb.org/articles?id=10.1257/pol.20150321>.

85. Ibid.

86. L. Lynne Kiesling et al., “Do Electricity Markets Promote Decarbonization? Evidence From State Level Data in the United States,” SSRN, Jan. 13, 2023. <https://ssrn.com/abstract=4492039>.

There are clear differences in incentives between traditional and restructured systems with predictable consequences. For example, in response to air-quality regulations, regulated utilities chose more expensive, capital-intensive compliance strategies than non-utility generators.⁸⁷ One study found that coal-fired plants run by non-utility generators operated more efficiently, leading to an estimated 7.5 percent reduction in emissions.⁸⁸ These results are well documented and backed by multiple researchers using different study methods.⁸⁹

Competition promotes turnover in capital stock, leading to reductions in pollution, as newer power plants tend to have lower emissions.⁹⁰ The example of coal-to-natural gas switching driven by merchants in the PJM Interconnection, an RTO in the mid-Atlantic region, demonstrates how rapid transitions can lead to significant emissions reductions. However, as in 2021, when the price of gas rises relative to the price of coal, markets tend to use more coal.⁹¹

Restructuring also changes the making of energy and environmental policy, in part by making generators supportive of more cost-effective environmental policy and broadening the number of voices coming from the electric power industry. The non-utility renewable energy industry has increasingly been able to compete for influence against incumbent monopolies.⁹² Restructuring in the Northeast has resulted in a shift in political incentives and drove the implementation of an auction system for permits—the Regional Greenhouse Gas Initiative—which improved economic efficiency compared to allocating permits for free.⁹³

Competitive electricity markets have had positive environmental results. They drive voluntary and cost-effective emissions reductions, stimulate innovation and support the adoption of new technologies. When emission reductions become less expensive, it is easier for politicians to “buy” more. When power markets are open and competitive, it is easier for eco-conscious consumers to buy low- or zero-emitting electricity. The environmental performance of hybrid regions tends to fall between traditional and restructured regions, with wholesale competition driving generation efficiency and economic dispatch favoring the most efficient generators in the region. Hybrid regions also see utilities sometimes ignoring market-based incentives to keep more costly plants in operation. Environmental



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87. Meredith Fowlie, “Emissions Trading, Electricity Restructuring, and Investment in Pollution Abatement,” *American Economic Review* 100:3 (June 2010), pp. 837-869. <https://www.aeaweb.org/articles?id=10.1257/aer.100.3.837>.
88. H. Ron Chan et al., “Efficiency and environmental impacts of electricity restructuring on coal-fired power plants,” *Journal of Environmental Economics and Management* 81 (January 2017), pp. 1-18. <https://doi.org/10.1016/j.jeem.2016.08.004>.
89. Steve Cicala, “When Does Regulation Distort Costs? Lessons from Fuel Procurement in US Electricity Generation,” *American Economic Review* 105:1 (January 2015), pp. 411-444. <https://www.aeaweb.org/articles?id=10.1257/aer.20131377>.
90. Devin Hartman, “Environmental Benefits of Electricity Policy Reform.” www.rstreet.org/wp-content/uploads/2018/04/82-1.pdf.
91. U.S. Energy Information Administration, “Annual U.S. coal-fired electricity generation will increase for the first time since 2014,” U.S. Department of Energy, Dec. 21, 2021. <https://www.eia.gov/todayinenergy/detail.php?id=50620>.
92. Marie Claire Brisbois, “Powershifts: A framework for assessing the growing impact of decentralized ownership of energy transitions on political decision-making,” *Energy Research & Social Science* 50 (April 2019), pp. 151-161. <https://doi.org/10.1016/j.erss.2018.12.003>.
93. Bruce R. Huber, “How Did RGGI Do It? Political Economy and Emissions Auctions,” *Ecology Law Quarterly* 40:1 (2013), pp. 59-106. <https://www.jstor.org/stable/24113615>.

regulation works in traditionally regulated states, but competitive markets in hybrid and restructured states appear to be making environmental goals easier to achieve.

Governance

Generally, “governance” refers to the ways decisions get made about the development, operation and evolution of the rules governing the electric power system. The three electric paradigms share some governance settings—state and federal legislatures and regulatory commissions, for example—but hybrid and restructured areas introduce RTOs as another venue for rule-setting. Good governance is critical to encourage public trust, minimize corruption, enhance transparency and accountability, and secure better policy results more generally.

In traditionally regulated monopolies, significant decisions are negotiated between utility executives and government regulators. In theory, the interests of consumers and other public policy groups are considered by regulators, but major decisions are supposed to be made through processes open to third parties who can promote their own views. Investment activity tends to involve a greater level of regulatory oversight, while operating decisions are usually left to the utility. Traditional state regulation of monopoly is a governance system, though rarely discussed as such simply because the previous century-plus of experience has solidified the way decisions are made.

Scholars acknowledge that when companies succeed in using political influence to gain competitive advantages, they create an environment for cronyism.⁹⁴ In the case of regulated electric utilities, state regulators protect monopoly territories and make decisions directly affecting returns to investors. Regulated utilities therefore quite naturally put a great deal of effort into securing favorable regulatory treatment. The regulated monopoly model may be uniquely vulnerable to corrupting influences.⁹⁵ Such a conclusion seems supported by recent scandals involving traditionally regulated electric companies that range from influence peddling and bribery to intimidation of journalists and efforts to manipulate elections.⁹⁶

Fully restructured areas, with competition at both wholesale and retail levels, shift significant decisions away from utilities and regulators to the private sector. Market forces play a much larger role in decisions to build or retire generation resources, though reliability policies continue to exert influence. Retail customers can choose among different suppliers, plans and pricing structures, which fosters innovation, efficiency and customer satisfaction. Advocates of



Good governance is critical to encourage public trust, minimize corruption, enhance transparency and accountability, and secure better policy results more generally.

94. Luis M.B. Cabral, *Introduction to Industrial Organization, Second Edition* (The MIT Press, 2017), pp. 8-9. <https://mitpress.mit.edu/9780262035941/introduction-to-industrial-organization>.

95. Devin Hartman and Mike Haugh, “Electric Competition: The Antidote for Bad Behavior,” *R Street Policy Study* No. 205, Sept. 23, 2020. <https://www.rstreet.org/research/electric-competition-the-antidote-for-bad-behavior>.

96. Patrick Wilson, “Four Types of Scandals Utility Companies Get Into With Money From Your Electric Bills,” *ProPublica*, Oct. 10, 2020. <https://www.propublica.org/article/four-types-of-scandals-utility-companies-get-into-with-money-from-your-electric-bills>.

restructuring have suggested that shifting economic rewards from regulatory to market environments will help combat corruption.⁹⁷

RTOs raise new questions concerning governance. They are designed to oversee electricity markets and the transmission grid in an impartial manner, but even impartial decisions benefit some interests and not others. These interests typically have a say in how RTOs make decisions, but if representation is unbalanced, stakeholder processes will favor the more influential interests.⁹⁸ The regional scope of most RTOs places them in a space “larger than states but smaller than nations” in a form “between government and business.”⁹⁹ As one observer put it, RTOs are quasi-autonomous, non-governmental organizations or “QUANGOs”—an organizational form unlike most other regulated entities.¹⁰⁰ Political forces that help ensure accountability for actions at the state or federal level, however imperfectly, are weakened or absent in RTOs.

While each RTO is different, stakeholders can generally participate as transmission owners, electric generators, end-use customers, marketers/brokers, consumer advocates or environmental organizations. Voting procedures seem to be weighted to give each sector an equal share of influence over outcomes. RTO stakeholder processes often are designed in ways that appear balanced—but that appearance is deceiving.¹⁰¹

An R Street Institute survey of electric consumers revealed several areas of concern over RTO governance: underrepresentation of consumer interest in RTO decision-making processes; excess influence of transmission owners; and difficulties of state regulators to monitor and protect state-level interests.¹⁰² In part, consumers are victim to an impersonal political logic.¹⁰³ Power market operations are nearly the whole of success or failure for power producers, transmission owners and other companies devoted to the industry. Their political efforts are focused on legislators, regulators and—in restructured and hybrid states—the “QUANGOs” that are RTOs. When such companies are big winners or losers from RTO actions, they are motivated to protect the wins and fight the losses. On the other hand, electric consumers have many other concerns beyond their power bills, and the wins and losses they see are more widely dispersed. These interests may, in the aggregate, be substantial winners or losers from actions taken by RTOs, but the fundamental political logic applying to large groups suggests that they will rarely be successful in efforts to protect gains and fight losses.



RTOs raise new questions concerning governance. They are designed to oversee electricity markets and the transmission grid in an impartial manner, but even impartial decisions benefit some interests and not others.

97. Hartman and Haugh, “Electric Competition.” <https://www.rstreet.org/wp-content/uploads/2020/09/Final-No-205-electric-competition-updated.pdf>.

98. Michael H. Dworkin and Rachel Aslin Goldwasser, “Ensuring Consideration of the Public Interest in the Governance and Accountability of Regional Transmission Organizations,” *Energy Law Journal* 28:2 (2007). https://www.eba-net.org/wp-content/uploads/2023/02/10-Governance_of_RTOs.pdf.

99. Ibid.

100. Travis Kavulla, “Problems in Electricity Market Governance: An Assessment,” *R Street Policy Study* No. 180, Aug. 30, 2019. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>.

101. Mark James et al., “How the RTO Stakeholder Process Affects Market Efficiency,” *R Street Policy Study* No. 112, October 2017. <https://www.rstreet.org/research/how-the-rto-stakeholder-process-affects-market-efficiency>.

102. Kavulla. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>.

103. Mancur Olson, Jr., *The Logic of Collective Action* (Harvard University Press, 1971). <https://www.hup.harvard.edu/catalog.php?isbn=9780674537514>.

Despite flaws and controversy, RTO stakeholder governance processes generally serve the needs of stakeholders.¹⁰⁴ The appropriate comparison is not to perfection, but to non-RTO alternatives for regional cooperation. Non-utility stakeholders tend to prefer RTO governance with its flaws. Continuing tensions over RTO governance makes the evolution of governance practices appear inevitable.¹⁰⁵ In some regions, such as CAISO, governance may determine the breadth of the RTO's footprint.¹⁰⁶ While RTO governance can be improved, the dire political economy of monopoly utilities can be largely mitigated through restructuring.

This political logic applies in traditional states, explaining why utilities usually mobilize more powerfully than consumers or others in regulatory forums. Governance matters are largely settled in traditional states, for better or worse, though improvements remain possible. Because RTOs are newer, relatively speaking, governance issues are less settled. Getting governance right requires recognizing that consumption is the point of production—consumer values should ultimately shape the direction of the industry—but the logic of politics means producers will often be more effective at steering decision-making processes in their own direction.

Policy Alternatives

We can summarize the above discussion with the following too-pithy remark: restructuring, when done well, has done well. Restructuring likely benefits reliability, reduces emissions and unleashes efficiencies at the wholesale level that get passed along to consumers when retail competition is allowed to work. While conditions at one time may have made regulated monopoly the preferred way to organize the electric power industry, full restructuring has been the best fit for decades and has greater value with emerging technologies and economic and policy conditions.

Over the last 20 years, there has been a modest shift from traditional to hybrid arrangements in the northern plains states as SPP and MISO have expanded. Western states have seen small steps toward market-based regional coordination over the last decade but have remained within the traditional utility paradigm. These are efforts to secure some of the advantages of new technologies while maintaining monopolies within local areas. Steps such as these move toward a more customer-centered system.

Consumers benefit from restructuring done well, but the utilities that benefit from the existing traditional and hybrid approaches are well-entrenched



While conditions at one time may have made regulated monopoly the preferred way to organize the electric power industry, full restructuring has been the best fit for decades and has greater value with emerging technologies and economic and policy conditions.

104. James et al. <https://www.rstreet.org/research/how-the-rto-stakeholder-process-affects-market-efficiency>.

105. Kavulla. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>.

106. Ari Plachta, "California could keep the lights on by expanding grid across the West, report finds," *The Sacramento Bee*, March 3, 2023. <https://www.sacbee.com/news/politics-government/capitol-alert/article272596813.html>; David Hurlbut et al., "The Impacts on California of Expanded Regional Cooperation to Operate the Western Grid," National Renewable Energy Laboratory, February 2023. <https://www.nrel.gov/docs/fy23osti/84848.pdf>.

politically and economically.¹⁰⁷ Currently, large commercial and industrial (C&I) customers are leading a charge for expanding RTOs and direct consumer market access. National and state C&I groups advocate for direct market access initiatives, expanded demand-resource participation and competitive bidding for generation.¹⁰⁸ C&I customers have also supported retail choice initiatives in Nevada and Florida and are primary proponents of RTO adoption in traditionally regulated western and southeastern states.¹⁰⁹

Opinions about retail choice, however, are decidedly mixed among residential consumer advocates. Some residential consumer groups that oppose choice primarily criticize the implementation rather than the underlying concept. For example, some consumer advocates and AARP criticize choice for requiring consumers to make complex decisions in a marketplace with many misleading or fraudulent retail suppliers.¹¹⁰ They identify a valid problem that is correctable through better restructuring implementation, including better licensing processes and market oversight.¹¹¹ Some claiming to represent consumer interests, including the Massachusetts state attorney general, have suggested rolling back retail choice based on inaccurate comparisons between retail products provided by competitive suppliers and the default utility supply offer.¹¹² A clearer understanding of consumer benefits from purchases in the competitive market will help policy makers better distinguish cases of value-added products from cases of customer overpayment and possible fraud.

Consideration of both potential benefits and political realities leads to two kinds of recommendations. The primary recommendation is to move to a better paradigm when possible. Policymakers in traditionally regulated states should consider a well-implemented hybrid model with full restructuring as the eventual goal. In hybrid states, policymakers should move toward full restructuring. When moves to a better paradigm are impossible at present, policymakers should seek out improvements within existing structures. Importantly, even policymakers in fully restructured states have opportunities to improve competition within that paradigm as well.

Consideration of both potential benefits and political realities leads to two kinds of policy recommendations.

PRIMARY RECOMMENDATION 1

PRIMARY RECOMMENDATION 2

107. Mark Jaffe, "Xcel Energy makes money building power plants. The more it builds the more consumers have to pay — with no end in sight," *The Colorado Sun*, May 31, 2023. <https://coloradosun.com/2023/05/31/xcel-energy-rates-business-model-colorado>.

108. Advanced Energy United, "Can California's Corporate Customers Get 'Direct Access' to Renewable Energy? CPUC Staff Report Says...Maybe," Energy Central, Nov. 11, 2020. <https://energycentral.com/c/ec/can-california%E2%80%99s-corporate-customers-get-%E2%80%98direct-access%E2%80%99-renewable-energy-cpuc>.

109. "Energy Choice: Eight States to Watch," Energy Choice Coalition, Sept. 6, 2019. <https://www.energychoicecoalition.org/blog/2019/9/6/energy-choice-eight-states-poised-to-watch>.

110. "Retail Electricity and Gas Restructuring," AARP, last accessed July 10, 2023. <https://policybook.aarp.org/policy-book/utilities/energy/retail-electricity-and-gas-restructuring>.

111. Michael Humes, "Time to End the Third-Party Residential Electric Supply Market," AARP, Feb. 4, 2019. <https://states.aarp.org/connecticut/time-to-end-the-third-party-residential-electric-supply-market>.

112. Iulia Gheorghiu, "Massachusetts lawmakers consider ending retail electric choice for residential customers," *Utility Dive*, June 8, 2022. <https://www.utilitydive.com/news/massachusetts-rollback-retail-customer-electricity-choice-bill/624968>; John Hanger, "Power of choice can lower electricity bills," *The Worcester Telegram & Gazette*, May 30, 2023. <https://www.telegram.com/story/opinion/columns/guest/2023/05/30/guest-column-power-of-choice-can-lower-electricity-bills/70248441007>.

Traditionally Regulated Monopoly: Large and Small Steps Toward Competition Possible

Traditional states in the west and in the southeast have seen efforts to secure the benefits of RTOs, but the efforts in these two areas are distinct enough to warrant separate recommendations. Industry stakeholders in the west should continue the development of market-based institutions supporting regional cooperation. The CAISO-managed Western Energy Imbalance Market (WEIM) has provided substantial savings to its members.¹¹³ SPP has launched its own energy imbalance service for utilities in the Western Interconnection.¹¹⁴ Collaborative development of day-ahead markets in the region will enable more efficient coordination of thermal resources with hydroelectric resources and fast-growing solar and wind resources. For example, it is estimated that the CAISO-developed extended day-ahead market (EDAM) proposal would result in more than \$1 billion in cost reductions annually.¹¹⁵ Complementary work developing the Western Resource Adequacy Program (WRAP) intends to help participants identify and better coordinate the use of capacity to meet reliability goals.¹¹⁶ Many regulators and industry participants in the region anticipate that these efforts will lead to the formation of a western RTO that will better secure the reliability and cost-saving benefits of the independent, market-based coordination of regional generation and transmission resources.¹¹⁷

In the southeast, utilities have sought to secure some of the benefits of regional energy trading through the creation of SEEM. However, SEEM is too limited to serve as the basis for further development, but an energy imbalance market (EIM) or full RTO would create considerable net benefits.¹¹⁸ (A July 2023 federal appeals court decision overturned FERC's approval of SEEM rules, bringing the future of the trading platform into doubt.¹¹⁹) EIM is a model with quantified success, and the more robust RTO option would be less costly if extending an existing RTO rather than establishing a new market.¹²⁰ A recent assessment indicates that interest in RTO participation in the southeast has increased, suggesting that South Carolina alone could receive annual net benefits ranging from \$115 million to \$362 million by establishing or joining an existing RTO.¹²¹ Large consumers in North Carolina have asked the legislature to study the potential benefit of RTO expansion in the state.¹²²



WESTERN REGION RECOMMENDATION

Industry stakeholders in the west should continue the development of market-based institutions supporting regional cooperation.



SOUTHEAST REGION RECOMMENDATION

EIM is a model with quantified success, and the more robust RTO option would be less costly if extending an existing RTO rather than establishing a new market.

113. "Benefits," Western Energy Imbalance Market, last accessed June 29, 2023. <https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx>.

114. Robert Walton, "'This is just the beginning': Southwest Power Pool begins operating Western imbalance market," *Utility Dive*, Feb. 2, 2021. <https://www.utilitydive.com/news/this-is-just-the-beginning-southwest-power-pool-begins-operating-western/594334>.

115. "CAISO EDAM Benefits Study," Presentation by Energy Strategies LLC prepared for California ISO, Nov. 4, 2022. <http://www.caiso.com/Documents/Presentation-CAISO-Extended-Day-Ahead-Market-Benefits-Study.pdf>.

116. Maya McNichol, "WPP Announces FERC Approval of WRAP Tariff," Western Power Pool, Feb. 10, 2023. <https://www.westernpowerpool.org/news/wpp-announces-ferc-approval-of-wrap-tariff>.

117. Herman K. Trabish, "Transmission as a reliability and affordability strategy drives CAISO and SPP regional market ambitions," *Utility Dive*, Dec. 12, 2022. <https://www.utilitydive.com/news/transmission-reliability-affordability-strategy-caiso-california-iso-spp-southwest-power-pool/638041>.

118. Chen and Bardee. <https://www.rstreet.org/research/how-voluntary-electricity-trading-can-help-efficiency-in-the-southeast>.

119. Ethan Howland, "Federal appeals court strikes down FERC approval of Southeastern SEEM market," *Utility Dive*, July 17, 2023. <https://www.utilitydive.com/news/southern-duke-federal-appeals-court-ferc-seem-southeastern-energy-exchange-market/687962>; Josiah Neeley, "SEEMs Like a Problem," R Street Institute, July 18, 2023. <https://www.rstreet.org/commentary/seems-like-a-problem>.

120. Ibid.

121. John H. Tsoukalis et al., "Assessment of Potential Market Reforms for South Carolina's Electricity Sector," Brattle, April 27, 2023. https://www.scstatehouse.gov/CommitteeInfo/ElectricityMarketReformMeasuresStudyCommittee/2022-04-27%20-%20SC%20Electricity%20Market%20Reform_Brattle%20Report.pdf.

122. David Boraks, "Should NC join a regional electricity market? Duke Energy says 'no,'" WFAE 90.7, April 7, 2023. <https://www.wfae.org/energy-environment/2023-04-07/should-nc-join-a-regional-electricity-market-duke-energy-says-no>.

Current developments in the west and nascent potential in the southeast appear aimed at the development of a hybrid RTO model, with most load served by monopoly utilities. Should states settle for a hybrid structure, some potential consumer benefits will be left on the table that come only with full restructuring. Nevertheless, there are options that could considerably improve implementation while remaining in the hybrid model.

Hybrid: Improving Regulation of Monopoly Utilities Operating in RTOs

The primary recommendation for hybrid states is to create a pathway to full restructuring. Although implementing full restructuring is efficient and less error prone, partial restructuring efforts may result from the restructuring advocacy of C&I consumer groups and reluctance of small consumer groups.¹²³ This can result in a structural bifurcation, in which some consumers gain access to competitive suppliers through direct market access rates while others remain captive utility customers. These direct access rates allow certain consumers to procure their electricity from competitive suppliers and pay the utility only for the delivery of that power. Generally, direct access rates have limited value outside RTOs, given the restricted access of competitive suppliers to monopoly operated transmission systems. Given this, RTOs are effectively a prerequisite to direct access.

Four states offer a direct market access rate to large C&I: Virginia, California, Oregon and Georgia.¹²⁴ Such programs allow large customers to negotiate supply arrangements to match terms with their preferences and without their load putting upward pressure on other consumers' bills. Direct access also enables large power consumers to engage in price-sensitive strategies, cutting back when prices are high and boosting demand when prices are low, which reduces stress on generation and transmission resources and improves power market efficiency.¹²⁵ Introducing direct access rates creates challenging transition issues like utility sunk cost recovery, which underscores a need for stakeholders to address issues like exit fees proactively.¹²⁶ Direct access also has a side effect of removing the incentive for large loads to represent consumer interests on generation decisions before state regulators, which can diminish the quality of consumer representation available to remaining captive utility customers.



HYBRID STATES RECOMMENDATIONS

The primary recommendation is to create a pathway to full restructuring.

123. See, e.g., "In Re: Rulemaking to Research and Evaluate Customer-Centered Options for all Electric Customer Classes as well as Other Regulatory Environments, LPSC Docket No. R-35462," Louisiana Energy Users Group, Oct. 10, 2022. <https://www.laenergyusersgroup.org/s/Customer-Centered-Options-Docket-at-the-LPSC-LEUG-Comments-Filed-at-the-LPSC>.

124. Erin Jordan, "Iowa's large energy users want electricity choice. Here's how that works in four other states," *The Gazette*, Jan. 8, 2023. <https://www.thegazette.com/energy/iowas-large-energy-users-want-electricity-choice-heres-how-that-works-in-four-other-states>.

125. William Driscoll, "Flexible demand through participation by large customers in wholesale markets," *pv magazine*, May 25, 2023. <https://pv-magazine-usa.com/2023/05/25/flexible-demand-through-participation-by-large-customers-in-wholesale-markets>; Richard O'Neill, et al., "Treating Demand Equivalent to Supply in Wholesale Markets: An Opportunity for Customer, Market, and Social Benefits," ESIG, May 2023. <https://www.esig.energy/treating-demand-equivalent-to-supply-in-wholesale-markets-an-opportunity-for-customer-market-and-social-benefits>.

126. Herman K. Trabish, "Exit fee: Deciding the fate of California's utilities and customer choice movement," *Utility Dive*, Aug. 14, 2018. <https://www.utilitydive.com/news/exit-fee-deciding-the-fate-of-californias-utilities-and-customer-choice-m/529894>.

Alternatively, partial restructuring can make all customer classes eligible for choice, but on a limited basis. This can allow for voluntary opt-in to test demand. For example, Michigan’s electric choice program sets a market cap up to 10 percent per utility, which is currently fully subscribed with thousands of customers waiting in the queue to participate if space becomes available.¹²⁷ This provides a market signal to policymakers that choice expansion is warranted. One concern with introducing limited-choice programs, however, is whether the market size is sufficient to attract enough REPs to facilitate a liquid marketplace, which places an emphasis on policy design to achieve minimum scale economy. Other concepts for expanding customer choice short of full market liberalization include the following:

- **Allow customers to shop for non-standard, value-added products.**



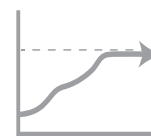
As noted above, competitive retail markets allow some customers to find niche product offerings suited to their unique preferences. A hybrid state could continue basic offerings for residential and small business customers but enable the competitive offering of value-added products. Options include clean energy or flexible-demand products.

- **Support the utility offering a menu of tariff choices.**



Rather than limit utility tariff offerings to a few “commodity-based” rate designs, expanded rate or product offerings provide customers with a much wider variety of choices, including renewable energy, stabilized bills, time-of-use rates and so on. Importantly, though, a complex menu of utility offerings does threaten to produce unduly complicated rate cases as efforts are made to ensure fairness and the cost-basis of each product. However, these issues become matters of private business strategy with full restructuring, so they do not require spending public resources on development.

- **Allow customer choice to be capped at the rate of load growth.**



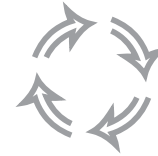
One challenging issue created by a transition to retail choice is the possibility of sunk costs becoming stranded assets—utility assets with insufficient market value to cover their “book value.” Limiting choice to the rate of load growth would allow motivated consumers to seek out alternatives, allow other customers to keep “business as usual” and allow regulated utilities to continue to recover revenues to meet regulatory revenue requirements for the life of existing assets.

Implementing the hybrid paradigm also requires better state regulation of utility planning and operations that serves captive load. Competitive forces can still be harnessed in this regard. It is increasingly important for state regulators to use RTO markets to inform economic reviews of utility expenditure prudence, as standard cost-of-service regulation dissuades utilities from basing asset

127. Michigan Public Service Commission. www.michigan.gov/-/media/Project/Websites/lara/Folder11/Status_of_Electric_Competition_Report_2020_-_Feb_1_2021.pdf?rev=33170c275f024a11b15249a381e9261f.

investment, retirement or operating decisions off market price signals. Reform options to best serve captive customers include the following:

- **Harmonize RTO and state regulatory planning structures.**



RTOs can construct approaches to resource adequacy criteria like capacity demand curves and resource accreditation to be easily translatable into utility IRP for state regulatory reviews.¹²⁸ Some RTO market design considerations may be unique to the hybrid model, such as defining capacity market zones by state boundaries. Better RTO and state coordination to define congruous product definitions for reliability services like balancing capabilities would align wholesale markets and IRP terms. Doing so with a concerted effort to reduce barriers to distributed energy resources like demand response can yield marked cost savings and reduce the likelihood of involuntary customer outages.¹²⁹ States should incorporate “market tests” in IRP to mitigate cost premiums and minimize reliability risk through better coordination of multi-utility planning, which has historically been fragmented.¹³⁰ Creating voluntary, multi-year, forward wholesale markets would help competitive forces compensate for utility planning deficiencies while giving states better grounds to market test utility proposals.¹³¹

- **Implement robust, all-resource competitive procurement.**



Utility planning needs should be put out for competitive bid as much as possible. Xcel Colorado puts half of its needs out for competitive bid, and the practice has gained steam in other states like Indiana, resulting in major cost reductions for new clean generation and the accelerated retirement of dirtier legacy plants.¹³² C&I consumers often advocate for this as the next-best policy after direct market access.¹³³ Many states employ forms of substandard competitive procurement. Whether a state seeks to enhance existing competitive procurement practices or instill a new one, best practices include having independent administration; well-defined, technology-neutral products; all-resource eligibility; and no utility participation (or safeguards to prevent utility affiliate abuses).¹³⁴

128. Hartman, “Strengthening Electric Reliability Through Markets in the Midwest.” <https://www.rstreet.org/commentary/strengthening-electric-reliability-through-markets-in-the-midwest>.

129. Hartman, “Differentiated Reliability.” www.rstreet.org/wp-content/uploads/2021/07/Hartman-FPMF-Differentiated-Reliability.pdf; Devin Hartman and Beth Garza, “Five Truths About Grid Reliability and Deregulation,” RealClear Energy, March 15, 2021. https://www.realclearenergy.org/articles/2021/03/15/five_truths_about_grid_reliability_and_deregulation_768172.html.

130. Spees et al. https://www.brattle.com/wp-content/uploads/2017/10/5886_enhancing_the_efficiency_of_resource_adequacy_planning_and_procurements_in_the_miso_footprint_newell_spees_1115.pdf.

131. Ibid.

132. Herman K. Trabish, “Xcel’s record-low-price procurement highlights benefits of all-source competitive solicitations,” *Utility Dive*, June 1, 2021. <https://www.utilitydive.com/news/xcels-record-low-price-procurement-highlights-benefits-of-all-source-compe/600240>.

133. “Comments of the Electricity Consumers Resource Council at the Federal Energy Regulatory Commission in New England Ratepayers Association,” Docket No. EL20-42-000, June 15, 2020. <https://elcon.org/wp-content/uploads/ELCON-Comments-NERA-Petition.pdf>.

134. See e.g., John Wilson et al., “Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement,” Energy Innovation, April 2020. <https://energyinnovation.org/wp-content/uploads/2020/04/All-Source-Utility-Electricity-Generation-Procurement-Best-Practices.pdf>; Fredrich Kahri, “All-Source Competitive Solicitations: State and Electric Utility Practices,” March 2021. https://eta-publications.lbl.gov/sites/default/files/all_source_competitive_solutions_20210217_gmlc_format.pdf.

- **Align utility asset management practices with RTO conditions.**

RTO markets enable states to detect uneconomic power plant operations. However, states have handcuffed their ability to do so by letting utilities pass RTO market revenues and power plant operating costs to customers in automatic adjustment clauses, or trackers, in lieu of the scrutiny that comes in rate cases. Trackers are the fastest growing part of consumer bills in some states; for example, they represent nearly two-thirds of electric bill increases in Virginia since 2007.¹³⁵ The simplest option is to reform trackers to incorporate cost sharing.¹³⁶ Another option is to reduce trackers and/or increase the scrutiny of utility operations using plant-specific RTO data in processes capable of disallowing utility cost recovery in cases of uneconomic plant operations.

The base hybrid paradigm, in which all load is served by monopoly utilities, is a major step up from the traditional paradigm given the benefits of RTOs. An enhanced hybrid paradigm can achieve far greater benefits by enabling partial consumer choice with residual captive load served by improved RTO-IRP-harmonized practices and competitive procurement. An enhanced hybrid paradigm may constitute the best achievable outcome in many contemporary state political economies. Nevertheless, restructuring remains the gold standard.

Restructured: Maximizing Consumer Benefit from Competition

The performance of electricity restructuring reflects of the quality of its implementation. Texas is the only state that followed the blueprint in the economics literature and benefited greatly.¹³⁷ As previously noted, failures of Winter Storm Uri were largely outside the scope of restructuring, and a closer analysis suggests that competitive forces benefited supply availability and could have provided greater demand flexibility had retail regulation better enabled market forces.

Restructuring quality and performance have been weaker outside of Texas. Other jurisdictions allowing retail competition have mostly adopted variations of the same basic approach focusing on default service options. In many of these states, policymakers have been concerned about consumer abuse and a seeming lack of customer benefits from retail competition. Momentum toward restructuring halted after the Western Energy Crisis in the early 2000s, but that served mostly as a warning about uniquely bad market design that has not resurfaced in two decades.



RESTRUCTURED RECOMMENDATIONS

To ensure fair competition, regulators should enforce a full and proper allocation of costs to default services, enabling customers to accurately compare different market options.

135. Charlie Paullin, "What this year's big electric utility bill does," *Virginia Mercury*, March 15, 2023. <https://www.virginiamercury.com/2023/03/15/what-this-years-electric-utility-legislation-does>.

136. Kavulla. <https://www.rstreet.org/commentary/reviewed-work-the-billion-dollar-coal-bailout-nobody-is-talking-about-self-committing-in-power-markets>.

137. Devin Hartman, "An Electric Summer Update in Texas," *R Street Shorts* No. 62, September 2018. www.rstreet.org/wp-content/uploads/2018/09/Short-No.-62.pdf.

The key difference between Texas and almost every other restructured state is the degree to which Texas has “quarantined the monopoly.”¹³⁸ The transmission and distribution part of the business remains a monopoly in all hybrid and restructured states. Texas has required full corporate separation between the regulated wires businesses and competitive generation and retailing businesses. Many other states merely required corporate reorganizations with competitive generation and retail services remaining as affiliated companies under the same corporate board. The arrangement leaves corporate overseers with strong incentives to use influence over the separated regulated and competitive wings of the business to boost the fortunes of both. For example, in an Ohio bribery scandal, lobbyists for the monopoly firm secured non-bypassable bill adders to increase revenues for affiliated competitive generating resources.¹³⁹

Outside of ERCOT, the regulated wires companies mostly have remained in the retail business, too. The incumbent monopoly typically became default service providers to customers who were not shopping for themselves and provided all billing services. As default services rates are set through regulator-managed processes, default service may be seen as a way for consumers to opt out of shopping in the competitive market. A difficulty that arises is that customers may imagine that regulators ensure that default service customers receive the best deal when default service may not be the best option for those customers.¹⁴⁰

A “too easy” default service rate makes it harder for competitive suppliers to become established. Of course, the goal of promoting competition is not to make every would-be competitor profitable, but certain foundational conditions can foster competition, whereas other conditions can discourage it.¹⁴¹ Often, policymakers have declared retail restructuring a failure when state policies have not provided an adequate foundation for competition to flourish.

Among the challenges to effective competition, default service rates often embed a hidden subsidy by shifting costs associated with running default service options into the regulated portion of the bill.¹⁴² If costs are not properly assigned to default services, existing policies and incumbent providers will continue to dominate residential and small commercial markets. To ensure fair competition, regulators should enforce a full and proper allocation of costs to default services, enabling customers to accurately compare different market options.



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138. Giberson and Kiesling. <https://www.cato.org/regulation/fall-2017/need-electricity-retail-market-reforms#quarantine-the-monopoly>.

139. Jessie Balmert and Laura A. Bischoff, “Ohio Statehouse Corruption: Who you need to know in the federal bribery case,” USA Today Network Ohio, July 21, 2021. <https://www.cincinnati.com/storytelling/news/ohio-corruption-project>.

140. Betty Lin-Fisher, “Here’s what to do about doubling electricity prices,” *Akron Beacon Journal*, April 9, 2023. <https://www.beaconjournal.com/story/news/2023/04/09/default-electricity-prices-doubling-june-what-to-do/70088310007>.

141. Lynne Kiesling and Michael Giberson, “Electric Competition in Texas: A Successful Model to Guide the Future,” CTEI Research Paper, July 2020. <https://www.conservativetexasforenergyinnovation.org/research>.

142. Frank Lacey, “Default service pricing – The flaw and the fix: Current pricing practices allow utilities to maintain market dominance in deregulated markets,” *The Electricity Journal* 32:3 (April 2019), pp. 4-10. <https://doi.org/10.1016/j.tej.2019.02.002>.

The quality of restructuring implementation can also be improved to lesser extents in several ways, such as:

- **Adopting supplier consolidated billing.**

Customers in restructured retail markets can be billed in three ways: utility consolidated, supplier consolidated and split billing. Utility consolidated billing has utilities sending a single bill that includes both monopoly utility and competitive retail supplier charges. Supplier consolidated billing has the retail supplier billing for both utility and supplier charges. Some states allow dual billing (sometimes referred to as “split billing”), in which the utility and supplier bill customers separately. Most competitive states employ utility consolidated billing, but supplier consolidated billing promotes healthier competition.¹⁴³ Supplier consolidated building lets suppliers establish direct relationships with customers, offering them broader services like bundled products and flexible payments.¹⁴⁴ It also assigns suppliers the responsibility for billing and customer service, helping to filter out unreliable suppliers who focus on customer acquisition without offering substantial services.¹⁴⁵ Utility consolidated billing, on the other hand, often reduces the supplier presence on the bill to the fine print.



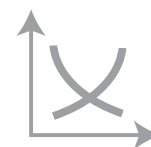
- **Enabling access to advanced metering infrastructure (AMI) data.**

Limited AMI infrastructure and access for REPs is a documented inhibitor of retail choice innovation.¹⁴⁶ Customers could save a quarter of a billion dollars annually by letting REPs leverage AMI data, which distribution utilities prevent.¹⁴⁷ State regulation should permit REPs to have access to revenue-grade customer usage data on a daily basis, at minimum, with customer permission.¹⁴⁸ Obviously, as a precursor, states lacking AMI infrastructure should explore options to roll out such devices as soon as is reasonably possible.



- **Setting the stage for an active demand side of the market.**

Competitive REPs are natural aggregators for distributed demand response with an inherent incentive to encourage their retail customers to reduce consumption when wholesale prices are high. State regulators can help unlock this by legitimizing reliability-differentiated retail products, which REPs are currently hesitant to develop, given liability risk.¹⁴⁹ With AMI



143. Josiah Neeley and Michael Haugh, “Supplier Consolidated Billing,” R Street Institute, February 2021. <https://www.rstreet.org/wp-content/uploads/2021/02/explainer21.pdf>.

144. Josiah Neeley and Mike Haugh, “Maryland’s experiment with supplier consolidated billing risks being one step forward and one step back,” R Street Institute, Feb. 16, 2021. <https://www.rstreet.org/commentary/marylands-experiment-with-supplier-consolidated-billing-risks-being-one-step-forward-and-one-step-back>.

145. Neeley and Haugh, “Supplier Consolidated Billing.” <https://www.rstreet.org/research/supplier-consolidated-billing>.

146. Bushnell et al., p. 43. https://arefiles.ucdavis.edu/uploads/filer_public/e0/ee/e0eefda6-9fe2-4f88-8ca6-a00f25379754/restructuring_review.pdf.

147. Michael Kagan, “Leveraging Competitive Markets to Unlock the True Value of AMI,” Concentric Energy Advisers, Oct. 27, 2020. <https://ceadvisors.com/leveraging-competitive-markets-to-unlock-the-true-value-of-ami>.

148. Ibid.

149. Devin Hartman, “Differentiated Reliability,” Future Power Markets Forum, July 22, 2021, p. 12. www.rstreet.org/wp-content/uploads/2021/07/Hartman-FPMF-Differentiated-Reliability.pdf.

infrastructure in place, an active demand side of the market requires at least two more steps to become effective: supplier consolidated billing, as mentioned above, and the billing of competitive suppliers on actual customer interval data. Some restructured states still bill retail suppliers using “load profiles,” a technique that averages customer use over a day, thereby greatly diminishing any ability for a retailer to benefit from encouraging responsive demand.

- **Improving retail market oversight and reforming REP licensing.**

Concern over unscrupulous REPs, which may resort to misleading sales tactics, can be addressed by a more informed customer base, better licensing of new REPs and improved oversight of existing REPs. Licensing standards can ensure that REPs have adequate financial, managerial and compliance capabilities without creating burdensome barriers to entry.¹⁵⁰ Consumer information deficiencies can be addressed through comprehensive plain language REP disclosure requirements as well as public platforms to compare in-kind retail products. State oversight can detect and address market power issues and should only compare the prices of retail products on comparable terms, which does not include comparing competitive REP products to subsidized default service.¹⁵¹



- **Exercising political discipline and adopting market-compatible environmental policies.**

State laws often forbid certain types of development or force the retirement of resources that the market indicates are profitable.¹⁵² Even Texas seriously entertained new laws in 2023 that would have profoundly disrupted wholesale competition.¹⁵³ Prolific subsidies in the northeast often dictate generation investment.¹⁵⁴ This has led to extensive tension over FERC policy that has at times sought to make RTO rules mitigate the price-distorting effect of state subsidies, but FERC and state dialogues show that market-compatible state policy like emissions pricing is aligned with competition.¹⁵⁵



Conclusion

At one time, regulated monopolies dominated the electric power industry. A fundamental logic, built around substantial economies of scale and economies of scope, offered an intellectual justification for monopoly. As technology improved,

150. Hartman and Haugh, “Electric Competition: The Antidote for Bad Behavior.” <https://www.rstreet.org/wp-content/uploads/2020/09/Final-No-205-electric-competition-updated.pdf>.

151. Travis Kavulla, “Direct Testimony of Travis Kavulla On Behalf of Retail Energy Supply Association and NRG Energy Before the Pennsylvania Public Utility Commission,” Docket No. P-2021-3030012 (and others), Feb. 25, 2022, pp. 42-54. https://www.nrg.com/assets/documents/energy-policy/_2022/nrg-resa-direct-testimony-in-the-first-energy-default-service-plan-proceeding.pdf.

152. Jared Anderson, “NYISO receives power generator retirement notices to comply with ‘peaker rule,’” S&P Global Commodity Insights, April 6, 2022. <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/040622-nyiso-receives-power-generator-retirement-notices-to-comply-with-peaker-rule>.

153. Josiah Neeley and Beth Garza, “SB 6: Bill Analysis and Cost Estimate,” R Street Institute, March 29, 2023. <https://www.rstreet.org/commentary/sb-6-bill-analysis-and-cost-estimate>.

154. “Competitive Auctions with Subsidized Policy Resources,” ISO New England, April 2017. https://www.iso-ne.com/static-assets/documents/2017/04/caspr_discussion_paper_april_14_2017.pdf.

155. Devin Hartman and Jason Stanek, “FERC’s carbon pricing dialogue may be worth the price of admission,” *Utility Dive*, Sept. 24, 2020. <https://www.utilitydive.com/news/fercs-carbon-pricing-dialogue-may-be-worth-the-price-of-admission/585804>.

economic conditions evolved to support competition. For the past few decades, power generation and retail services have unequivocally not been natural monopolies.¹⁵⁶ The first cohort of states to recognize this and institute restructuring realized economic, reliability, governance and environmental benefits. Emerging technology makes the restructuring value proposition even richer.

Decades of experience and results support the expansion of high-quality, competitive reforms to the rest of the country, with only the distribution system remaining a regulated monopoly. States that remain traditionally regulated in the west and southeast have taken steps toward securing some of the benefits available from regional markets. Further benefits are available from participation in RTOs. Policymakers in the west should continue working toward full RTO adoption and, in the southeast, should rigorously study and take steps toward RTOs.

Several hybrid states allow large customers to buy their own energy supplies and pay the monopoly for delivery service only. Such programs provide immediate benefits to large energy customers and have the long-term benefit of fostering a competitive energy services market within the state. States can improve within the hybrid paradigm by expanding customer choice and ensuring that captive customers are served by improved utility planning and operations that incorporate competitive procurement. Expanded customer choice need not be pursued as a stepping stone toward full restructuring, but it could be used in that manner.

Full restructuring provides the most consumer benefit, but benefits are highly sensitive to implementation quality. The main implementation problems are allowing distribution monopolies to cross-subsidize competitive generation and retail markets, as well as failing to provide sufficient information and safeguards against manipulative suppliers. Furthermore, many restructured states suffer chronic state interventions like subsidies and bans that disrupt market performance. States should abstain from distorting interventions; isolate monopoly distribution utilities from competitive markets; adopt supplier-consolidated billing; enable better information for consumers and REPs; and enact bad actor safeguards like licensing reform. The real debate is how to best implement competitive reforms—not whether to pursue them.



The real debate is how to best implement competitive reforms—not whether to pursue them.

156. Electricity Consumers Resource Council, “ELCON Fact Sheet: Generation Policy Principles,” June 27, 2019. <https://elcon.org/elcon-fact-sheet-generation-policy-principles>.

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