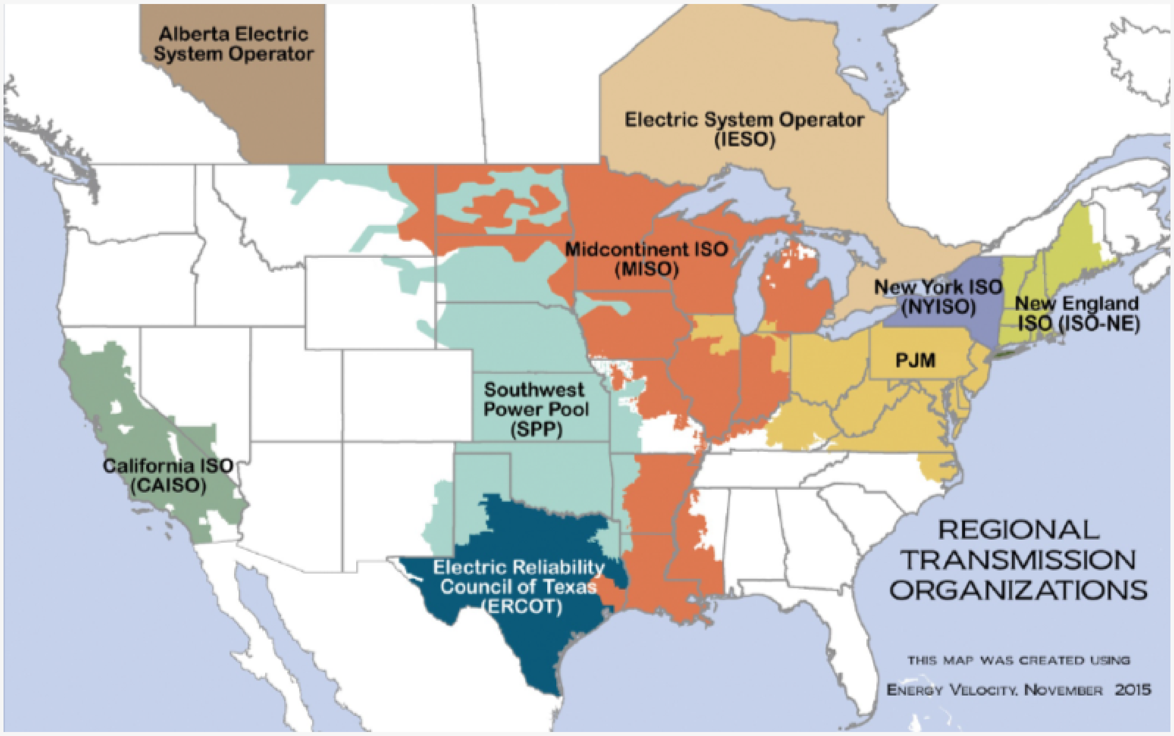
WILKINSON BARKER KNAUER, LLP

MARCH 2021

# AT THE PRECIPICE: THE PERILS OF UTILITY RESTRUCTURING

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## EXECUTIVE SUMMARY


Within the traditional utility regulatory model, utilities receive a franchise to provide electricity to an entire geographic area, planning for reliable power and relatively predictable prices for consumers. Two decades ago, a wave of utility restructuring swept parts of the country. With it came different “flavors” of utility regulation. Some states permitted their utilities to participate in wholesale power markets, with competition between electric generators administered by Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs).In some cases, states went even further and “deregulated” their utilities through full “unbundling,” which included a divestiture of generation assets to third party operators and enactment of electricity “retail choice.” Most prominent were Texas and several states in the Northeast and Midwest. Advocates of deregulation promised more competition, innovation, reliable service and lower consumer prices. Deregulation has not delivered on those promises.

- **The Vertically Integrated Model:** Traditionally regulated electric utilities own the generation, transmission and distribution systems that are used to serve their customers—they are regulated by states to plan for reliability and price predictability.
- **Restructured Models:** States that have **partially restructured** may still maintain many of the attributes of vertically integrated utilities, but wholesale power is traded and dispatched through **Regional Transmission Organizations (RTOs)** and **Independent System Operators (ISOs)**. In states that have **fully restructured**, vertically integrated utilities were unbundled into separate generation and wires businesses and competition was introduced at both the wholesale and retail level, with the distribution component remaining as the only traditionally regulated entity at the state level.

***Deregulation Creates Unnecessary Risks for Consumers***
- Although deregulation may have offered some initial appeal as a way to lower costs for residential consumers, the risks outweigh any theoretical benefits. Economic studies have consistently found that full restructuring yields no significant rate reductions; rather, it creates volatility in electricity prices. Unstable prices and unreliable power are not a sustainable solution.

***Electricity is a Necessity; We Shouldn’t Treat it as Just Another Commodity***
- Electricity is the lifeblood of the economy—and modern life more broadly.Restructured models like those in Texas and California serve as evidence that when the going gets tough, it’s better to be safe than sorry. Ensuring access to power during extreme weather events should not come at the expense of everyday citizens’ lives and wallets.

***Deregulation Helps Big Users Cut Costs at the Expense of Everyday Consumers***
- Deregulation may make power cheaper for some major electricity buyers like Big Tech, but it increases costs for the average consumer, all while sacrificing reliability. In fact, nine out of ten states in the continental United States with the highest utility costs have fully restructured markets with retail choice. Deregulation proponents also claim that the approach is clean and green. In reality, these restructured models offer little incentive for the kind of large scale investment in clean energy technology that we’ll need to meet the demands of a changing climate.

***The RTO/ISO Value Proposition Should be Carefully Assessed by States***
- When states restructure to an RTO/ISO, they give control of billions of dollars’ worth of power supply decisions to quasi-governmental bodies. Choosing whether to have the utilities join an RTO is a substantial decision for states and the benefits of membership should not be assumed, nor imposed by the federal government.

We must re-evaluate approaches to building a sustainable, cost-effective system that is equal and reliable for all.

# I. INTRODUCTION

In this white paper we review how utility deregulation has performed and whether this administrative scheme offers the most sensible regulatory path for states that have maintained vertical integration of their utilities. In doing so, we analyze the performance of RTOs and ISOs, which we refer to collectively as RTOs/ISOs, especially in the context of states that have fully restructured and unbundled their utilities. We start with the observation that the marginal cost pricing model used in restructured markets has not allowed merchant generators to recover their fixed costs (referred to as the "missing money" problem), leading to inefficient retirements and resource adequacy concerns. In RTOs/ISOs there are currently three different approaches employed to address the missing money problem. In broad strokes, the approaches are: (1) administrative constructs meant to compensate generators for providing available capacity (e.g., PJM Interconnection, ISO New England, and New York ISO); (2) energy-only markets with resource adequacy planning supplemented by state regulatory procurement processes (e.g., California ISO and Southwest Power Pool); and (3) very high spot price caps in energy-only markets with no generation resource adequacy requirements, and a reliance on scarcity pricing mechanisms (e.g., Electric Reliability Council Of Texas).

Then, we discuss other concerns that have been raised with restructuring. These shortcomings arise from dynamics of political economy, governance issues related to creating and managing quasi-regulatory bodies, and the relinquishment of state authority. These issues are relevant to any consideration of a change in regulatory structure because economic analyses have consistently found that full restructuring/deregulation does not lower end-user retail rates relative to the traditional model of regulation applied to vertically integrated utilities.

In the end, the nation's experience with more than two decades of restructuring does not compel the conclusion that it is necessarily superior to states employing the traditional model of utility regulation, such that the benefits of restructuring and utility participation in RTOs/ISOs should be assumed *a priori* in all areas of the country.

# II. THE "MISSING MONEY" PROBLEM IN RESTRUCTURED MARKETS

## A. THE MARGINAL COST PRICING MODEL DOES NOT SUPPORT LONG-TERM INVESTMENT DECISIONS IN THE POWER SECTOR

Before discussing how RTOs/ISOs attempt to address resource adequacy and reliability concerns, it is helpful to understand the conceptual foundation of price formation in restructured energy markets. The basic market design was intended to drive location-based wholesale generation prices to the marginal cost of production and prevent the exercise of market power, leading to outcomes that mirror the blackboard economics ideal of "competition" as much as possible. In a fully restructured environment, the market price signal supplants the Integrated Resource Plan (IRP) process that is used by a number of state regulators and vertically integrated utilities to guide entry and exit decisions by owners of generating plants, thereby (in theory) resulting in an optimal portfolio of generation resources that leads to lower costs and lower retail price levels over time. (1) By unleashing "market" forces, one commenter has observed that one of the primary goals of restructuring was to "get the interest group politics out of the regulated utility's entry, exit, and fuel supply decisions." (2)

1.. *See, e.g.*, Paul L. Joskow, *Challenges for Wholesale Electricity Markets with Intermittent Renewable Generation at Scale: The U.S. Experience*, at 17-18 (M.I.T. Ctr. for Energy & Envtl. Policy Research, Dec. 18, 2018), https://economics.mit.edu/files/16650.
2. *Id*. at 18.

The energy balancing and congestion management market operated by RTOs/ISOs is an auction-based, security-constrained economic dispatch model with voluntary participation by generators. Under the uniform clearing-price auction used by RTOs/ISOs, the market-clearing price is set by stacking resource bids in order from lowest to highest bid (i.e., along the "merit order") until the aggregate supply of bids meets demand. This single market-clearing price mechanism incentivizes market participants to bid their marginal costs or risk not being dispatched (assuming individual generators do not have the ability and motivation to exercise market power). (3) A fundamental problem associated with using the short-term marginal cost of electric generation for determining the price of wholesale electric power is that an individual generation unit's total costs are by definition greater than its marginal costs. (4) This is especially true in markets for electricity because the facilities required to generate electricity are highly capital-intensive and often require investments in the hundreds of millions of dollars, if not more. (5) As a result, restructured markets have been challenged in their ability to provide the revenues necessary to ensure that generation resources are available to meet reliability requirements.

To be sure, not all generators are the marginal generators in the merit order at any given time. (6) Thus, because energy markets in the United States pay a uniform clearing price, generators whose bids are accepted and are not at the margin of the merit order will receive payment at the market price of electricity and above their marginal cost. (7) This difference, which is referred to as an "inframarginal rent," can be used to cover some of the generator's fixed costs. (8) Although energy markets may in theory produce enough inframarginal rents to recover fixed costs, there are several reasons they have not done so.

First, natural gas prices have fallen significantly since the early 2000s due to the shale gas revolution, and flexible natural gas generation units typically set wholesale clearing prices in the auctions. (9)

Second, RTOs/ISOs have adopted wholesale price caps in an effort to control the exercise of market power in the aftermath of the California energy crisis, but the unintended consequence of this has been to reduce generators' cost recovery. (10)

Finally, the growth of renewable generation bids has further eroded market-clearing prices because solar and wind resources do not use fuel and therefore have zero variable costs. (11) Because wind generation receives a production tax credit, moreover, wind generators may at times submit negative bids into wholesale markets because they must dispatch to receive the credit. (12) Thus, as the power system shifts to a more renewable-heavy resource portfolio, wholesale prices will continue being depressed, leaving no clear pathway for incentivizing and compensating more investment, and in theory leading to a scenario where prices oscillate between zero and an administratively-set price cap. (13) That is not only a problem for the generating units with

3. Collin Cain & Jonathan Lesser, *A Common Sense Guide to Wholesale Electric Markets* at 13-14, BATES WHITE ECON CONSULTING (Apr. 2007), https://www.bateswhite.com/media/publication/55_media.741.pdf.
4. Joskow, *supra* note 1, at 20; U.S. Dep't of Energy, *Staff Report on Electricity Markets and Reliability*, at 110-12 (2017), https://www.energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability_0.pdf (explaining that a peaking unit paid only its marginal production cost cannot recover any of its investment costs).
5. Michael Hogan, *Follow the missing money: Ensuring reliability at least cost to consumers in the transition to a low-carbon power system*, 30 ELEC. J. 55, 56 (2017).
6. William Boyd, *Ways of Price Making and the Challenge of Market Governance in U.S. Energy Law*, 105 U. MINN.L.REV. 740, 790 (2020).
7. *Id.*
8. *Id*. at 805.
9. *See id.*
10. Joskow, *supra* note 1, at 20-21.
11. *See id.*; U.S. Dep't of Energy, supra note 4, at 112 fig.5.5 (graphs showing changing merit-order in Texas between 2005 and 2015).
12. *See* Frank Huntowski, Aaron Patterson & Michael Schnitzer, *Negative Electricity Prices and the Production Tax Credit: Why Wind Producers Can Pay Us to Take Their Power – and Why That Is a Bad Thing* at 2, 5-8 (Sept. 14, 2012), http://northbridgegroup.com/publications/Negative_Electricity_Prices_and_the_Production_Tax_Credit.pdf.
13. Joskow, *supra* note 1, at 37. In a world with proliferating zero-cost resources, it is also uncertain what role there is for a wholesale auction market because there would be little differentiation in the merit order of resources. *See* Philip Thompson, *What Do We Do When Energy Is Free?*, IAEE Energy Forum, at 32 (2019), https://www.iaee.org/en/publications/newsletterdl.aspx?id=806.

positive marginal costs—it is also a problem for the renewable energy generators that are not parties to long-term contracts. (14) Without an auction price sufficient to recover those costs, the only way to continue renewables investment is through bilateral contracting or some other mechanism that does not rely on the market price, which has proved to be the predominant financial structure used to develop such resources. (15)

Collectively, these dynamics have led to early retirements of coal and nuclear baseload generation and natural gas plants, (16) which in turn have raised questions about whether restructured markets offer the right model moving into the future as intermittent and zero-cost renewable generation penetrations increase. (17) To counter this "missing money" problem in restructured electricity markets, RTOs/ISOs have engaged in a continuous process of interventions to design and modify fixes, patches, and acronym-laden approaches to the pricing system. (18) These measures include (but are not limited to) the use of Reliability-Must-Run (RMR) designations, (19) capacity payments, or other resource adequacy requirements imposed on load-serving entities. RMR designations are used across regions with restructured markets, (20) and they are meant to address the situation described above where a generation plant owner wishes to retire a generating unit that is necessary for reliability but does not earn enough revenue under the auction approach to cover its costs. (21) A RMR designation typically allows the generating unit to recover revenues based on the plant's total cost of service, including capital costs, which essentially reverts the revenue recovery available to that generator to the cost-of-service approach used in jurisdictions that never restructured in the first place. (22)

14. Joskow, *supra* note 1, at 37 (explaining that an energy-only market would not reach a long-run equilibrium unless "the capital costs of intermittent generation are subsidized heavily outside the market").
15. *See 2018 Wind Technologies Market Report*, U.S. Dep't of Energy, at 22 (2018), https://www.energy.gov/sites/prod/files/2019/08/f65/2018%20Wind%20Technologies%20Market%20Report%20FINAL.pdf (noting that projects tied to short-term contracts and/or wholesale spot market prices accounted for only 23% of all new 2018 capacity).
16. *See, e.g.*, Jeff St. John, *Exelon May Split its Utilities From Nuclear, Generation Business*, GREEN TECH MEDIA (Nov. 4, 2020), https://www.greentechmedia.com/articles/read/exelon-confirms-its-exploring-splitting-utilities-from-nuclear-generation-business.
17. See Joskow, *supra* note 1, at 36-37 ("[T]he policy of incentivizing large scale entry of intermittent solar and wind without making necessary changes in wholesale market designs to provide better incentives for entry and exit of dispatchable generation (and storage) that is well adapted to the attributes of a system with intermittent generation at scale has been made relatively easy so far by free riding on the declining existing stock of dispatchable generating capacity. It is not at all clear that with intermittent generation at scale, the 'standard' RTO/ISO market design can support a long run equilibrium with the optimal quantities of intermittent and dispatchable generation."); Carl Pechman, *Rethinking FERC*, at 4 (Dec. 2020), https://pubs.naruc.org/pub/AD5E9A90-155D-0A36-3112-7C54DE40AE98 https://pubs.naruc.org/pub/AD5E9A90-155D-0A36-3112-7C54DE40AE98 ("It is evident that the changes in electric generation and the new smart but disruptive role of consumers pose an existential threat to the magic pricing formula and, perhaps, to FERC's future role in regulating electric markets."); Amelia Keyes, Dallas Burtraw & Karen Palmer, *The Future of Power Markets in a Low Marginal Cost World*, at 1 (2017), https://media.rff.org/documents/RFF20Rpt20Power20Markets20Workshop.pdf (discussing how workshop participants discussed whether re-regulation is a potential pathway for addressing the increase in low marginal cost resources).
18. *See, e.g.*, Joskow, *supra* note 1, at 35 (2019) ("The existing RTOs/ISOs are almost constantly redesigning their capacity markets to respond to accommodate intermittent generation, subsidized generation, pay-for-performance criteria, and other issues."); Jaqueline Lang Weaver, *Can Energy Markets Be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets*, 4 HOUS. BUS. & TAX L.J. 1, 143 (2004) ("To date, restructuring in all the implementing states is a gerry-rigged, managed system of prices to beat, price caps, must-run orders, market monitors, and regulatory investigations—all designed to assure fairness while still allowing 'efficient markets.'"); Boyd, *supra* note 6, at 808 ("As the electric generation mix continues to shift under the influence of cheap natural gas and higher penetration of renewables, there will inevitably be additional efforts to create new in-market products and rules to deal with various problems and 'fix' the markets.").
19. *See, e.g.*, Adenike Adeyeye, *California Energy: One Grid Under Too Many Assumptions*, Union of Concerned Scientists Blog Post (Feb. 4, 2021), https://blog.ucsusa.org/adenike-adeyeye/california-energy-one-grid-under-too-many-assumptions (criticizing CAISO for unilaterally approving an RMR designation for the Midway Sunset Cogen power plant); Jason Fordney, *CAISO Approves RMR Contracts for Gas Plants, 2019-2020 Transmission Plan*, California Energy Markets (Mar. 27, 2020), https://www.newsdata.com/california_energy_markets/regulation_status/caiso-approves-rmr-contracts-for-gas-plants-2019-2020-transmission-plan/article_1ac6f39c-7055-11ea-ad23-3f6b58bc12e2.html.
20. *See* Michael Giberson, *Integrating Reliability-Must-Run Practices Into Wholesale Electricity Markets*, R Street (Oct. 2017), https://www.rstreet.org/wp-content/uploads/2018/04/114-1.pdf.
21. *Id*.
22. Market Surveillance Comm. of the Cal. ISO, *Opinion on Reliability Must Run and Capacity Procurement Mechanism Enhancements* at 9 (Mar. 18, 2019), http://www.caiso.com/Documents/MSC-Opiniononreliabilitymustrunandcapacityprocurementmechanismenhancements-Mar20_2019.pdf

## B. RESOURCE ADEQUACY APPROACHES BY RTO/ISO

As noted, three general approaches have been used to incentivize sufficient generation resources in RTOs/ISOs. The first approach uses forward capacity markets. PJM Interconnection (PJM), ISO New England (ISO-NE), New York ISO (NYISO), and, to a much lesser degree, Midcontinent ISO (MISO), all employ capacity markets. (23) Under the capacity market construct, a generator is paid for having its capacity available over a set period of time even if the generation unit does not dispatch and sell energy into the system if, for example, load is particularly low. Although the idea of a capacity market is simple enough in theory, the administration of capacity markets is extremely complex in practice because the "market" demand for capacity and reliability can be challenging to assess. As a result, the demand curve in capacity markets is set administratively and set to intercept with bids for providing capacity. (24) More specifically, in this arrangement there is a large incentive for generation-side interests to set the level of demand that supports higher prices and for load-side stakeholders to set a lower demand curve. (25)

The second approach is to require load-serving entities to contract for sufficient resources or self-supply. The California ISO (CAISO) and Southwest Power Pool (SPP) use this approach, as do most of the MISO market participants (as a practical matter). Through this approach, each load-serving entity is responsible for meeting a resource adequacy target established by the market administrator, which is often a threshold of additional capacity required over peak demand.

Finally, the Electric Reliability Council of Texas (ERCOT) takes a uniquely different third approach. ERCOT does not support resource adequacy through either a separate capacity market or through bilateral contracting or self-supply. Instead, ERCOT uses an energy-only approach that relies on scarcity pricing to encourage investment in generation resources and ensure adequate reserves. That is, ERCOT attempts to incentivize generation capacity investment by allowing for and even designing real-time energy prices to spike to extremely high levels when the market is tight. It does so in two ways. First, the offer cap that generators may bid into the energy market has increased significantly over the past decade and is much higher than any other RTO/ISO in the country. ERCOT permits generators to bid up to $9,000/MWh, whereas other RTOs/ISOs generally only permit a level up to $1,000/MWh (and sometimes $2,000 if a generator demonstrates that it is cost-justified). (26) Second, ERCOT has implemented what it calls an "Operating Reserve Demand Curve" (ORDC), which automatically increases real-time energy prices as operating reserves decrease. (27) This approach allows and even dictates higher real-time prices that can go as high as the bid cap of $9,000/MWh even if no generator has bid that high.

23. MISO's capacity construct is limited in size, allowing load-serving entities to procure capacity through the market or through bilateral contracting and self-supply. Given that the overwhelming number of load-serving entities in MISO are vertically integrated utilities which procure capacity via traditional state cost of service regulation, MISO's capacity construct is not a major driver of capacity acquisition in the region.
24. *See, e.g.*, Joseph Bowring, Capacity Markets in PJM, 2 ECON, ENERGY & ENVIL POL'Y 47, 51-52 (2013) (describing demand curve and operation of capacity price setting through PJM's Reliability Pricing Model); Pechman, *supra* note 17, at 3 (2020) ("Capacity markets are an administratively set pricing mechanism, and an almost incomprehensibly complicated one at that. It is hard to imagine that any cost-of-service method could be more complex and opaque than the capacity markets.").
25. *See* Daniel J. Breslau, *Designing a Market-Like Entity: Economics in the Politics of Market Formation*, 43 SOC. STUD. SCI. 829, 845-46 (2013).
26. *See* ERCOT, *Scarcity Pricing in ERCOT* at 4 (2016), https://cms.ferc.gov/sites/default/files/2020-05/20160629114652-3%2520-%2520FERC2016_Scarcity%2520Pricing_ERCOT_Resmi%2520Surendran.pdf; *Wholesale Electricity Markets and Regional Transmission Organizations*, AM. PUB. POWER ASSOC., https://www.publicpower.org/policy/wholesale-electricity-markets-and-regional-transmission-organizations.
27. ERCOT, *About the Operating Reserve Demand Curve and Wholesale Electric Prices* (2014).

## C. POTENTIAL PROBLEMS WITH THE THREE APPROACHES

### 1. CAPACITY MARKETS

The mandatory capacity market construct has been unravelling in recent years. (28) Capacity markets suffer from several problems. First, and as discussed more thoroughly in the next section, (29) states surrender significant control over their energy policy choices when the determination of what generation resources will be built in a state is left to the results of the administrative market mechanism that capacity markets represent. As a result, some states have tried to bypass capacity markets by offering a variety of around-market incentives like Zero-Emissions Credits (ZECs) and Renewable Energy Credits (RECs) to support their favored generation resources. (30) These types of around-market support mechanisms have been called into question by the FERC's expanded Minimum Offer Price Rule (MOPR), which counteracts the around-market incentives states have tried to offer. (31) This tug-of-war between states and FERC is unsustainable; either FERC must be more solicitous of state energy goals or states will be forced to either accept the results of the capacity market or leave them altogether. (32) In the case of restructured states that leave resource adequacy is maintained. It becomes a Catch-22. Stay in the capacity markets as currently designed, and states don't end up with the resource mix they desire. Bolt the capacity markets (or weaken them by going around them) and resource adequacy standards aren't met, to the detriment of grid reliability.

Second, given the amount of revenues at stake in the capacity markets, the administrative process at each RTO/ISO and at FERC is subject to heavy lobbying pressure. (33) In this way, the capacity market constructs conducted by RTOs/ISOs bear little resemblance to the idealized markets that economists envisioned at the dawn of restructuring. (34) Rather, by influencing the inputs to the market algorithms, stakeholders can directly affect what the market clearing price will be and, in turn, their total revenues. (35)

28. *See, e.g.*, Jay Morrison, *Capacity Markets: A Path Back to Resource Adequacy*, 37 ENERGY L.J. 1 (2016) (stating that capacity markets "have proven themselves incapable of: meeting load-serving entities' needs for diverse resource portfolios; enabling states' efforts to pursue policy goals; satisfying generators' need for stable revenues; or ensuring resource adequacy."); Raymond L. Gifford and Matthew S. Larson, *'Around Market,' 'In Market,' and FERC at a Crossroads*, at 20 (2018), https://www.wbklaw.com/uploads/file/Articles-%20News/2018%20articles%20publications/White%20Paper%20-%20Market%20Design%20Issues%20(May%202018)%20(3).pdf, (arguing that continuous push-and-pull between in-market and around-market actions will break capacity markets); Tony Clark, *'Restructured' by any other name would smell as sweet*, Util. Dive (June 21, 2018), https://www.utilitydive.com/news/restructured-by-any-other-name-would-smell-as-sweet/526172/, (noting tension between state actions supporting some generation sources with the idea of a neutral market).
29. *See* Section III, *infra*.
30. Gifford and Larson, *supra* note 28, at 20.
31. *See* Catherine Morehouse, *State-federal tension 'at an all time high' between MOPR, net metering attack, says head Maryland regulator*, UTIL. DIVE (May 22, 2020), https://www.utilitydive.com/news/state-federal-tension-at-an-all-time-high-between-mopr-net-metering-atta/578471/. The voluntary capacity auctions in MISO have also faced problems in the relevant geographical subset of that market *(i.e.*, southern Illinois and a portion of Michigan). For instance, MISO's 2015-2016 capacity auction yielded results that sent inconsistent investment signals to generators. In all but one of the zones MISO designates for separate resource adequacy auctions, the market-determined price for capacity was low at just $3.48/MW-day. In contrast, Zone 4 reached a price of $150/MW-day, which was almost ten times higher than the auction price from the 2014-2015 auction in the same0 zone. *See generally* Himanshu Pande & Rachel Green, *MISO's Capacity Auction: Uncertainty Going Forward*, ICF Int'l (2015). More recently, the 2020-2021 auction yielded wildly varying capacity prices once again. In most zones capacity prices were around $5/MW-day, but the price in Zone 7 was $257.53/MW-day, which is an administratively set price based on the "Cost of New Entry" for a new generator. Press Release, Sufficient generation capacity and other types of resources to meet 2020-2021 planning reserve margin requirement, MISO (Apr. 14, 2020), https://www.misoenergy.org/about/media-center/miso-closes-eighth-annual-planning-resource-auction/. Having such wildly varying capacity prices is no way to send proper price signals to debt and equity investors that a project will be viable over a 30-year investment life.
32. *See* David Boyd, *Can FERC's Markets and State Clean Energy Policies Work Together?*, at 8-9 (2020) (discussing how states may withdraw from capacity markets by instead allowing companies to use self-supplied resources), https://www.law.northwestern.edu/research-faculty/clbe/events/electricity/documents/can_ferc_markets_and-state_clean_energy_policies_work_together.pdf.
33. *See, e.g.*, Breslau, *supra* note 25, at 845-46.
34. *See* Boyd, *supra* note 6, at 812 ("Indeed, when one pulls back the curtain on price making within these markets, there is no lack of rent-seeking behavior to go around.").
35. One of the comparative strengths of restructured markets was supposed to be the substitution of "markets" for political economy-driven decisions coming out of state administrative regulation. Unfortunately, administratively-set demand curves at an RTO are no less political economy-driven decisions than state IRP load forecasts.

Although state regulatory processes are not insulated from rent-seeking behavior, the time-tested approach of open and adversarial proceedings may result in more accountability and transparency than the RTO/ISO processes that are steered by intensely interested "stakeholders." (36)

Third, and relatedly, the capacity markets add "Frankenstein like constructions of administrative procedures" to the already opaque and byzantine RTO/ISO processes involving thousand-page tariff books. (37) These complexities favor the large players with resources and incentives to engage deeply and slows the decision making process. (38) This impedes some stakeholders from having more input on which types of generation resources will be able to clear capacity markets and get built.

## 2. RESOURCE ADEQUACY REQUIREMENTS

Turning to the use of resource adequacy requirements, regions that have maintained state-level resource adequacy authority generally have more direct line-of-sight into maintaining capacity needed to ensure reliable energy delivery. Nonetheless, challenges can exist. The rolling blackouts that occurred in California during the summer of 2020 stand out as the starkest example of that approach failing to deliver on grid reliability. (39) As the North American Electric Reliability Corporation (NERC) observed in its 2020 Long-Term Reliability Assessment, "[i]nsufficient flexible resources was a contributing cause to the load shed event in California during the wide-area heat wave in August 2020." (40) In retrospect, the California blackouts were likely a manifestation of what can happen in states where the incumbent utilities are split into separate generation and distribution businesses, which leaves a large share of responsibility for reliability to the independent power producers and the CAISO market in which they operate. (41) These independent power producers must, in turn, rely on the revenue they generate through the energy-only market in California and on the contracts for reliability they enter with the state's large utilities.(42) As California has shifted to an increased share of renewables, which depresses wholesale energy market prices, it is increasingly difficult to ensure that adequate generation capacity is online on hot summer evenings when air conditioners are still running but the sun is going down. (43) Additionally, when resource adequacy is split among multiple entities (in California's case, between load-serving entities, merchant generators, and CAISO), rather than one vertically integrated entity, it increases the chance that reliability suffers—since no one entity may be sufficiently empowered with ultimate responsibility to provide resilient power supplies. The California experience also points to the importance of accurately accounting for regional resource adequacy, since a contributing factor to the California blackouts was the incorrect assumption that energy from outside the state would be available for importation. (44)

36. *See* Pechman, *supra* note 17, at 5 (2020) ("The capacity markets in ISO-NE, the NYISO, and PJM Interconnection are all very different. How can a regime in which these three ISOs have such different markets designed to meet the same objectives all be economically efficient? Geographic differences do not provide the answer to how and why these markets are different. The differences are based on the stakeholder processes within the ISOs.").
37. John P. Hughes, President & CEO, Elec. Consumers Res. Council (ELCON), *Statement at FERC Technical Conference: State Policies and Wholesale Markets Operated by ISO-New England, Inc., New York Independent System Operator, Inc. and PJM Interconnection, L.L.C.*, at 325 (May 2, 2017).
38. *See* Shelley Welton, *Grasping for Energy Democracy*, 116 MICH. LAW REV. 581, 624 & n.250 (2018) ("I myself have participated in what I can only describe as a stultifying and unproductive mass of conference calls aimed at carrying out one RTO's stakeholder processes on a single topic.").
39. *See, e.g.,* Paul Joskow, *California's Rolling Blackouts and Near Blackouts in August and September 2020*, MIT CEEPR Lunch Presentation (Dec. 2, 2020), https://economics.mit.edu/files/20898 (noting it could be a warning for "market-based systems which are heavily reliant on intermittent generation" and that wholesale market revenues do not provide adequate incentives to keep necessary generators online).
40. NERC, 2020 Long-Term Reliability Assessment, at 7 (Dec. 2020), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2020_Errata.pdf. *See also* Jeff St. John, *Behind California's Rolling Blackouts: Planning and Market Failures*, GREEN TECH MEDIA (Oct. 7, 2020), https://www.greentechmedia.com/articles/read/report-cites-planning-market-failures-at-root-of-californias-rolling-blackouts; Hudson Sangree, *CAISO to Focus on Resource Adequacy in 2021*, RTO Insider (Jan. 3, 2021), https://rtoinsider.com/rto/caiso-resource-adequacy-2021-183022/.
41. Tony Clark, *Learning from California's Blackouts*, REAL CLEAR ENERGY (Sept. 1, 2020), https://www.realclearenergy.org/articles/2020/09/01/learning_from_californias_blackouts_576023.html.
42. *Id.*
43. *Id.*
44. Rob Nikolewski, *A lesson from the blackouts: California may be too reliant on out-of-state energy imports*, SAN DIEGO TRIB. (Aug. 25, 2020), https://www.sandiegouniontribune.com/business/energy-green/story/2020-08-25/a-lesson-from-the-blackouts-california-is-too-reliant-on-out-of-state-energy-imports-and-the-problem-will-get-worse.

## 3. ENERGY-ONLY MARKETS WITH HIGH VOLATILITY

The recent blackouts and subsequent crisis in Texas demonstrate the problems with the energy-only approach of treating electricity as just a commodity rather than a necessity. Stepping back from the recent crisis, the energy-only approach in ERCOT had already been criticized for being unable to maintain the reserve margins that are typically needed for adequate reliability. (45) In addition to the challenge of maintaining sufficient reserve margin levels, real-time prices in ERCOT are allowed to (and are even designed to) spike to extreme levels, meaning customers and retail energy suppliers can be on the hook for significant price fluctuations. Nevertheless, ERCOT had for some time avoided the need to confront whether to implement a capacity market or other resource adequacy incentive. (46) All of that changed in February 2021.

We could easily devote an entire white paper to analyzing the causes of the Texas electricity crisis, but for now it is important to mention the role the deregulated wholesale market played in tandem with the deregulated retail market. In short, the wholesale market failed to provide incentives for electric generators to invest in resilience measures to allow them to produce power during cold weather. Indeed, in 2011 Texas experienced a similar cold snap, leading to the loss or failure to start of 210 individual generation units. (47) The loss of those generation units in turn led to rolling blackouts of approximately 4,000 MW. In response, FERC and NERC issued a report finding that the most common cause of electric generator outages was "the cold weather, most commonly when sensing lines froze and caused automatic or manual unit trips." (48) FERC and NERC additionally concluded that ERCOT's reserve margins going into the winter period were inadequate. (49) In turn, they presented 26 separate recommendations for generators to harden their infrastructure against the cold and prevent future shutoffs. (50)

But those suggestions went largely unheeded because Texas's energy-only market does not adequately support such measures. (51) If generators sink extra capital into hardening their plants and extreme weather does not materialize, then they will lose profits or fail to recover their fixed costs. On the other hand, if all generators invested in resiliency measures, then real-time prices would be less likely to rise to a level that would support the underlying fixed-cost investments.

Even though the prospect of $9,000 per MWh apparently wasn't enough to incentivize enough electric generators to take the steps necessary to keep the lights on every hour of the year, those prices are now enough to break the bank for the customers who didn't lose power during the blackouts. Texas has a fully deregulated market, meaning customers can choose their retail electric provider, and some of these retail power companies directly exposed their customers to real-time prices. (52) Consequently, customers of those retailers received bills in the thousands of dollars for only a week of energy use. (53) And it's not just customers on variable-rate plans who were harmed. Even customers on fixed price plans will likely have their bills go up as their providers recover costs over a longer period. (54) Texas policymakers have paused disconnections for

45. Robert Walton, *ERCOT reserves drop below 2,300 MW, forcing Texas grid to call for energy emergency*, UTIL. DIVE (Aug. 14, 2019), https://www.utilitydive.com/news/ercot-reserves-drop-below-2300-mw-forcing-texas-grid-to-call-for-energy-e/560833/.
46. ERCOT News Release, "Extreme heat across the state results in high usage, need for conservation" (Aug. 13, 2019), http://www.ercot.com/news/releases/show/187793.
47. FERC & NERC, *Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011* at 1 (2011).
48. *See id.* at 139.
49. *Id*. at 197.
50. *See id*. at 197-212.
51. *See* Tony Clark, *Five Myths of the Texas Power Crisis*, REAL CLEAR ENERGY (Mar. 5, 2021), https://www.realclearenergy.org/articles/2021/03/05/five_myths_of_the_texas_power_crisis_766812.html.
52. Bill Chappell, *Texas Attorney General Sues Griddy, Saying Electricity Provider Misled Customers*, NAT'L PUB RADIO (Mar. 1, 2021), https://www.npr.org/2021/03/01/972515561/texas-attorney-general-sues-griddy-saying-electricity-provider-misled-customers.
53. *See id.*
54. *See* Camila Domonoske, *The Power Is Back On In Texas. Now Comes The Recovery, And It Won't Be Cheap*, NAT'L PUB. RADIO (Feb. 27, 2021), https://www.npr.org/2021/02/27/970877890/the-power-is-back-on-in-texas-now-comes-the-recovery-and-it-wont-be-cheap.

nonpayment and are discussing how to provide relief for customers, but they are still in the early innings of the decision-making process on how to better protect customers or provide acceptable resource adequacy and resiliency. (55) In our view, Texas should seriously consider returning to traditional utility model principles with a robust resource planning process to achieve both goals; a market alone should not be relied upon to make sure the lifeblood of our economy is available when it is needed most.

Finally, we note that the fragmented nature of how the Texas market is structured has led to a barrage of finger pointing about who should be held accountable for the Texas crisis—be it ERCOT, the Public Utilities Commission of Texas, the Railroad Commission of Texas, generators, or some combination of the above. In traditionally regulated states the answer is clear: the utilities are responsible for providing reliable power, and the state commissions (by providing them with the financial wherewithal to make necessary investments) must ensure that the utilities execute that duty successfully.

# III. CHALLENGES FOR RESTRUCTURED STATES

## A. DELIVERING DEMONSTRABLE CONSUMER BENEFITS

State policymakers considering the merits of restructuring (either partial or full) and participating in an RTO/ISO structure should evaluate whether the model actually drives consumer benefits. (56) After all, a primary selling point for restructuring is that consumers will benefit through lower retail prices that correlate with lower-priced power made available through wholesale markets. (57) Given the ongoing controversies over price formation in RTOs/ISOs and the questions surrounding the viability of these "markets," a departure from the vertically integrated utility model can only be justified if these consumer benefits are concrete and easily identifiable.

At the outset, we acknowledge that, depending on the circumstances, RTOs/ISOs hold the possibility of delivering cost savings for individual states and utilities via scale and dispatch efficiencies that can exist over a geographically larger, coordinated power pool (particularly with regard to intermittent variable energy resources like wind and solar). However, all states may be able to avail themselves of these benefits without necessarily adopting one preordained market model. In fact, security constrained economic dispatch paired with the stability of rate-based assets, which allow utilities to cover costs over the assets' useful life, has historically demonstrated its value. The ultimate question is whether there is a comparative advantage to the solutions represented by restructuring over bottom-up, emergent markets (58) that may be capable of capturing many of these efficiency gains.

We start by reviewing descriptive data. The United States Energy Information Administration (EIA) publishes data on average retail electricity prices in every state and D.C. EIA's most recent data shows that, in 2019, the ten most expensive states in the continental U.S. participate in restructured markets, with nine of those ten states offering retail choice. (59) Although states with higher retail rates were more likely to restructure in the first place, the data demonstrates that restructuring has not reversed this trend after more than two decades of experience. Notably, the American Public Power Association has analyzed this same data from EIA and found that restructured states have consistently stayed more expensive than states with traditional utility regulation. (60)

55. Cassandra Pollock, *Texas officials block electricity providers from sending bills, disconnecting utilities for nonpayment*, TEX. TRIB. (Feb. 21, 2021), https://www.texastribune.org/2021/02/21/texas-electric-bill-greg-abbott/.
56. It should be noted that not all states that are in RTOs/ISOs are restructured, with competitive retail suppliers. However, all states that are restructured participate in RTOs/ISOs.
57. *See, e.g.*, Paul L. Joskow, *The Difficult Transition to Competitive Electricity Markets in the U.S.*, at 8 (May 2003), https://economics.mit.edu/files/1160.
58. By "emergent markets" we mean the types of markets that arise organically and through voluntary participation like the Western Energy Imbalance Market, the Western Energy Imbalance Service, and the Southeast Energy Exchange Market.
59. *See State Electricity Profiles*, U.S. ENERGY INFO. ADMIN.(Nov. 2, 2020), https://www.eia.gov/electricity/state/. We only look at the continental United States because Alaska and Hawaii's unique geography is more likely responsible for their prices than market structure.
60. *See Retail Electric Rates in Deregulated and Regulated States: 2019 Update*, AM.PUB. POWER ASSOC. (Apr. 2020), https://www.publicpower.org/system/files/documents/Retail-Electric-Rates-in-Regulated-Deregulated-States-2019-update.pdf.

Several, more granular economic studies that have analyzed broad-based measures of customer costs also determined that restructuring has not delivered lower prices, even when controlling for other variables.For example, in 2015 Severin Borenstein and James Bushnell studied the performance of electricity restructuring and concluded that exogenous factors such as natural gas prices and new technologies "had a far larger impact" on consumer welfare than the incremental benefits from more efficient power plant operations and coordination of operations. (61) They state, "[w]hile the restructuring era dawned with great hope that regulatory innovations, and the incentives provided by competition, would dramatically improve efficiency and greatly lower consumer costs, that hope was largely illusory. (62) "The two economists also found that restructuring did nothing to lower prices on average; rather, it simply increased customers' exposure to natural gas price variation. (63) While such exposure may result in benefits when gas prices decrease, it has the downside of subjecting consumers to additional price volatility. These effects were on full display in the recent Texas electricity crisis.

More recently, economists from several universities evaluated the price impacts of restructuring and concluded that "state-level electricity market restructuring has not been effective at reducing electricity rates for final customers." (64) To the contrary, when they did not control for natural gas prices, they found that retail rates actually increased in restructured states relative to plausible counterfactual scenarios. (65)

Finally, in another study conducted in 2019 economists found that even though electricity prices are more responsive to natural gas prices in restructured markets, the states with traditional utility regulation had more substitution of natural gas generation for coal generation. (66) This greater substitution, in turn, caused larger reductions in carbon and other emissions. (67) The authors of this study hypothesize that the differences are most likely caused by traditionally regulated jurisdictions having greater investment in combined cycle gas plants, more efficient natural gas generation units, and less potential market power than restructured states (although this potential cause was difficult to evaluate because it would require additional data). (68)

These findings do not support the proposition that restructuring will improve economic outcomes for the vast majority of consumers. For this reason, assuming the risks associated with restructuring makes little sense when this model may not meet consumer expectations regarding affordability in the first place.

### B. FORFEITURE OF STATE CONTROL AND SELF DETERMINATION IN ORGANIZED MARKETS

Under the Federal Power Act and the regulatory structure that evolved during the 20th century in the United States, the states had the primary regulatory authority over electricity investments and retail prices paid by end-use customers. (69) Today, a bundled, state regulated, vertically integrated utility—even one operating within a FERC jurisdictional market—continues to retain significant authority (or is subject to the relevant state regulatory commission's oversight) to oversee resource adequacy and ensure that state policy objectives are met. As Professor William Boyd has observed, state regulatory commissions "have used a range of tools to

61. Severin Borenstein & James Bushnell, *The U.S. Electricity Industry After 20 Years of Restructuring*, at 1-2 (Nat'l Bureau of Econ. Research, Working Paper No. 21113, 2015).
62. *Id*. at 2.
63. *Id*. at 13-18. *See also* Elise Caplan and Stephen Brobeck, Have Restructured Wholesale Electricity Markets Benefitted Consumers? At 15 (2012), https://consumerfed.org/pdfs/Comments.BenefitsofRestructuredElectricityMarkets12.12.12.pdf ("Declines in prices that have continued since 2009 have muddied the debate as supporters of RTO markets have pointed to these decreases as evidence of the 'competitiveness' of the markets. But the greatest factors contributing to these price drops were the economic downturn and sharp declines in the price of natural gas, both of which are external to RTO operations. These declines neither affirm nor negate the success of the markets in providing benefits for consumers.").
64. Kenneth Rose, Brittany Tarufelli & Gregory B. Upton Jr., *Electricity Market Restructuring and Retail Rates*, at 22-23 (July 2020).
65. *Id*. at 1, 22.
66. Christopher Knittel, Konstantinos Metaxoglou & André Trindade, *Environmental implications of market structure: Shale gas and electricity markets*, 63 INT'L J. INDUS. ORG 511, 514, 533 (2019).
67. *Id*. at 515-16, 545-47.
68. *Id*. at 515, 534-41, 544-45.
69. Paul L. Joskow, *Deregulation and Regulatory Reform in the U.S. Electric Power Sector*, at 9 (Discussion Draft 2000).

channel investments across a portfolio of generation resources, including low-carbon alternatives; have adjusted tariff structures to facilitate conservation, efficiency, demand response, and distributed generation; and have experimented with efforts to modernize local distribution systems." (70) The evolution of robust state IRP processes in particular have proven to be an especially valuable tool for attracting and guiding needed grid investments. (71) This is a strength rather than a weakness of the vertical utility model.

By contrast, state policymakers have much less influence over the resources that serve the state's citizens and energy policy choices in states that have restructured their markets. While the lines between FERC wholesale jurisdiction and state retail jurisdiction have blurred over time, at the very least it can be said that once either an RTO or full restructuring is embraced by a state, and the more fully a state restructures its utilities (via retail choice and utility generation divestiture), the weaker its jurisdictional prerogatives relative to FERC. Technically, states are still left with a voice in the RTO/ISO decision-making process, but rather than having a singular role in determining generation choices, they are relegated to only having a seat at the table among other RTO/ISO stakeholders or intervenors at FERC.

Two developments from recent years underscore this point. In the Supreme Court case *Hughes v. Talen Energy Marketing*, the Court held that the state of Maryland was preempted from incentivizing in-state generation by guaranteeing a fixed price through a contract for differences for capacity over and above the price set through the capacity market in PJM. (72) The Supreme Court's decision thus prevented Maryland from using its choice of mechanism to support in-state generation.

More recently, FERC's order expanding the MOPR at the end of 2019 forced new generation sources to offer into the PJM capacity market at an administratively set price floor if they receive a state subsidy. (73) One impact of this order was to render less effective state support for renewable and carbon-free power, and in this way, it supplanted state prerogatives over generation resources and self-determination in choosing their approach to reducing emissions, ensuring reliability, fuel diversity, using energy generation choices as an engine for economic development and job growth, or any other potential policy goal. FERC's efforts to shore-up prices in the capacity markets have been the subject of widespread controversy. (74)

These examples offer a cautionary tale for states that are experiencing a renewed push for restructuring. Indeed, to quote a timeworn aphorism, "sometimes you don't know what you have until it's gone." Analyzing these dynamics, a recent Columbia Law Review article observes that "[o]nce a state cedes policy objectives to its regional electricity market, the state may suffer limits on its ability to craft supplementary policies or to reclaim the objectives if it does not like the results the market produces." (75) Given the current shortcomings in the restructured model, state policymakers might ultimately find they yearn for the days when they could directly ensure long-term supply reliability through more open and transparent resource planning proceedings at state regulatory commissions.

70. William Boyd, *Public Utility and the Low-Carbon Future*, 61 UCLA L. REV. 1614, 1632 (2014).
71. *Id.* at 1695.
72. 136 S. Ct. 1288, 1298-99 (2016).
73. *See* Order Establishing Just and Reasonable Rate, 136 FERC ¶ 61,239, at ¶¶ 37-39 (Dec. 19, 2019).
74. *See* Gifford and Larson, *supra* note 28, at 20; Boyd, *supra* note 6, at 805-10 (arguing that capacity markets suffer from an "inside/outside problem" resulting from the tensions between state and federal control on generation resources and concluding that capacity markets "can never be made pure" as a result); Shelley Welton, *Electricity Markets and the Social Project of Decarbonization*, 118 COLUM.. L. REV. 1067, 1131 n.32 (2018) (arguing the organized markets' attempts to accommodate state policy preferences is "clearly inadequate"); Danny Cullenward & Shelley Welton, *The Quiet Undoing: How Regional Electricity Market Reforms Threaten State Clean Energy Goals*, YALE J. REG. BULL. (Nov. 8, 2019), https://www.yalejreg.com/bulletin/the-quiet-undoing-how-regional-electricity-market-reforms-threaten-state-clean-energy-goals/ (arguing "reforms underway in regional electricity markets threaten state climate change objectives and the durability of FERC's regional market constructs").
75. Welton, *supra* note 74, at 1118.

## C. SPECIAL RULES FOR SPECIAL CUSTOMERS

The most recent pushes for restructuring in the western and southeastern United States being led by Big Tech firms and others, (76) although cloaked in a veneer of environmentalism, represent an attempt to gain "direct access" to wholesale markets so that large customers can cut special deals for themselves with merchant generators at marginal-cost-based rates. In this way, renewed calls for restructuring in these regions are a manifestation of the same incentives present in the heyday of restructuring from the late 1990s—that is, large customers are seeking opportunities to lower their power costs. (77)

Take Google, for instance. Google's energy usage is truly astounding. In 2019, Google used over 12 terawatt-hours of electricity globally. (78) This is approximately the same amount of power that the entire state of Maine —with a population of 1.3 million people—consumes annually. (79) Moreover, between 2015 and 2018, Google's power consumption grew at an annualized rate of 23 percent per year, (80) and there is no sign of that growth slowing in future years. Even if Google only spent $0.02/kWh (81) on its electricity in 2019, its annual spending would still be $248 million. Thus, Google and other Big Tech companies have significant incentives to lobby for the cheapest available power. Given these strong incentives, it is worth scrutinizing some of the claims that Google has made.

Google claims it needs restructured wholesale markets to better access renewable power resources. (82) But it is not clear why Google needs restructuring, nor why it needs to have its electricity powered by renewables at all hours of the day if the goal is only to reduce global greenhouse gas emissions. In fact, Google has in the past used an approach where it contracted with a renewable developer for both the Renewable Energy Credits (RECs) and energy, and then sold the energy back into the grid while retaining the RECs, which it apparently considered sufficient. (83) In regions with vertically integrated utilities, Google could still contract through the utility for renewable power. (84) Additionally, Google's actions belie its rhetoric; it has located its data centers in a number of jurisdictions without restructured markets, including Alabama, Georgia, Nevada, Oregon, South Carolina, and Tennessee. (85) The same is true for Facebook, which has data centers located in the traditionally

76. *See, e.g.,* Emma Penrod, *Google, GM, other REBA members push to expand organized wholesale markets to spur renewables*, Util. Dive (Nov. 2, 2020), https://www.utilitydive.com/news/google-gm-other-reba-members-push-to-expand-organized-wholesale-markets-t/588172/.
77. *See, e.g.,* Tony Clark, *Everything old is new again: Why Big Tech is wrong about utility restructuring*, Util. Dive (Nov. 17, 2020), https://www.utilitydive.com/news/everything-old-is-new-again-why-big-tech-is-wrong-about-utility-restructur/589169/; Paul L. Joskow, *The Difficult Transition to Competitive Electricity Markets in the U.S.*, at 8 (2003) ("Initial interest in electricity sector reform started in the states with the highest retail electricity prices and where the apparent gaps between wholesale and retail prices were the largest.... The political pressures for reforms in these states, and in particular for retail competition, came from lobbying activities by industrial customers, independent power producers, and would-be electricity marketers with experience in the natural gas industry."); Severin Borenstein and James Bushnell, *The U.S. Electricity Industry After 20 Years of Restructuring*, at 7 (2015) ("The industry during the late 1990s was therefore experiencing very high reserve margins, leading to unusually low marginal costs and unusually high average costs. This is the fundamental source of the pressure for restructuring. While [] much of the rhetoric at the time focused on retail deregulation, this needs to be seen from the perspective of customers (often large industrial customers) who saw great opportunity in being able to gain 'direct access' to the wholesale market.").
78. Robert Bryce, *How Google Powers Its 'Monopoly' With Enough Electricity For Entire Countries*, FORBES (Oct. 21, 2020), https://www.forbes.com/sites/robertbryce/2020/10/21/googles-dominance-is-fueled-by-zambia-size-amounts-of-electricity/?sh=2318249268c9.
79. *Id*.
80. *Id*.
81. This is considerably less than the average of $0.0672/kWh paid by industrial customers in October of 2020 across the United States. *See* U.S. ENERGY INFO. ADMIN., *Electric Power Monthly Table 5.6.A*, https://www.eia.gov/elect ricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.
82. Google, *The Internet is 24x7—carbon-free energy should be too* (Sept. 2019), https://sustainability.google/progress/projects/24x7/.
83. Google, *Google's Green PPAs: What, How, and Why*, at 3-5 (Sept. 17, 2013), https://static.googleusercontent.com/media/www.google.com/en/us/green/pdfs/renewable-energy.pdf; Google, *Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond* (Dec. 2016), https://static.googleusercontent.com/media/www.google.com/en//green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf.
84. *See Expanding Renewable Energy Options for Companies Through Utility-Offered "Renewable Energy Tariffs"*, Google (Apr. 19, 2013), http://static.googleusercontent.com/media/www.google.com/en/us/green/pdf/renewable-energy-options.pdf
85. *See Google Data Centers*, Google, https://www.google.com/about/datacenters/locations/ (last visited Feb. 8, 2021).

regulated states Georgia, New Mexico, North Carolina, and Utah. (86) And it's not just the case that Google and Facebook happen to have some data centers in traditionally regulated states; between their collective 22 data centers, 11 are in traditionally regulated states. (87) In the traditionally regulated states where they operate data centers, moreover, Google and Facebook procure renewable power through a green tariff or through a power purchase agreement. (88)

Google also cites Finland as an example of a region where it has been able to match its consumption with carbon-free energy from either its renewables purchases or from the grid at large, but Google notes that part of what made this possible was the availability of other carbon-free resources on the grid including nuclear, hydropower, and biomass. (89) Given the difficulty of sustaining merchant nuclear power plants in organized markets and the resource constraints for both hydropower and biomass, merchant generation operating in wholesale power markets (90) is not the way to expand access to these resources. Therefore, the distinction between "market" and "non-market" structures is not a critical difference in Google's ability to supply itself with renewable power. It is much more likely that Google simply wants to cut one of its most significant input costs, and its purported goals are merely a politically convenient pretense for achieving that end.

In the final analysis, it is unsurprising that Big Tech and other large energy purchasers are promoting a full restructuring model. Under the traditional regulatory compact, utilities are granted a franchise to provide energy to an entire geographic area. In return, utilities are required to serve all customers at "just and reasonable rates." As several economists have observed:

> Average cost is the basis for price-setting under traditional regulation, whereas marginal cost is the basis for pricing in restructured markets. While economic theory suggests that these will be approximately the same in the long run, during periods in which these two costs diverge, political sentiment might tilt towards whichever regime (vertically integrated or competitive markets) offers the lowest price at that time. (91)

If larger customers perceive that they can get a better deal elsewhere and are permitted to flee retail regulated markets, this raises the possibility that average residential and small commercial customers would be left holding the bag for a greater share of the fixed costs of the electric grid. Because championing a residential rate increase amounts to political endangerment for state policymakers, states that restructured in the late 1990s struck a political compromise that resulted in retail choice for all customer classes. (92) Although "[t]he primary political selling point for competition in the states that were early adopters was that it would lead to lower costs and lower prices for all consumers in both the short- and long run," (93) this experiment has not lived up to the hype for residential and commercial customers in most areas of the country. (94)

86. *See Sustainable data centers*, Facebook, https://sustainability.fb.com/innovation-for-our-world/sustainable-data-centers/ (last visited Feb. 8, 2021).
87. *See id*; *Google Data Centers*, *supra* note 85.
88. *See Advancing Renewable Energy Through Green Tariffs*, Facebook, https://sustainability.fb.com/wp-content/uploads/2020/12/FB_Green-Tariffs.pdf (last visited Feb. 8, 2021).
89. *The Internet is 24x7—carbon-free energy should be too*, Google (Sept. 2017), https://sustainability.google/progress/projects/24x7/.
90. *Roughly 1.7 GW of US nuclear power capacity set to retire in 2020*, S&P GLOBAL PLATTS (Dec. 20, 2019) (noting that nuclear power is much more viable in regulated markets), https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/122019-feature-roughly-17-gw-of-us-nuclear-power-capacity-set-to-retire-in-2020. *See also* Lucas Davis & Catherine Hausman, *Market Impacts of a Nuclear Power Plant Closure*, 8 Am. ECON J. APPLIED ECON 92 (2016) (discussing how costs of electricity in California increased after closure of nuclear power plant).
91. Kenneth Rose et al., *Electricity Market Restructuring and Retail Rates*, at 11 (2020).
92. *See* David Spence, *The Politics of Electricity Restructuring: Theory vs. Practice*, 40 WAKE FOREST L. REV. 417, 446-47 (2005) ("Restructuring legislation was not billed as a redistribution of costs from industrial to residential and commercial customers, but rather as a money-saver for all customers.").
93. Paul L. Joskow, *Markets for Power in the United States: An Interim Assessment*, at 2 (2006), https://economics.mit.edu/files/1758
94. *See, e.g.*, Matthew J. Morey and Laurence D. Kirsch, *Retail Choice in Electricity: What Have We Learned in 20 Years?*, CHRISTENSEN ASSOCS. ENERGY CONSULTING LLC (2016), at v, https://hepg.hks.harvard.edu/files/hepg/files/retail_choice_in_electricity_for_emrf_final.pdf ("there is little evidence that retail choice has yielded any significant benefits"); Severin Borenstein and James Bushnell, *The U.S. Electricity Industry After 20 Years of Restructuring*, at 1 (2015) ("While electricity restructuring has brought significant efficiency improvements in generation, it has generally been viewed as a disappointment because the price-reduction promises made by some advocates were based on politically-unsustainable rent transfers.").It is also noteworthy that in states that fully restructured and required investor-owned utilities to divest their existing generation assets in the late 1990s, utilities were authorized to recover more than $40 billion through non-bypassable, distribution "transition charges." *See* Concentric Energy Advisors, *Retail Competition in Electricity, What Have We Learned in 20 Years?*, at 53 (2019), https://ceadvisors.com/retail-competition-in-electricity-what-have-we-learned-in-20-years/.

## D. GOVERNANCE—WHO REGULATES THE REGULATOR?

In addition to the practical considerations already noted, individual market mechanisms are directly designed, monitored, and administered by the RTOs/ISOs and their respective boards and market monitors. Although FERC regulates RTOs/ISOs as public utilities, these markets are so complex that FERC has delegated a tremendous amount of authority to the RTOs/ISOs to make design choices and conduct their day-to-day operations. (95) This means that power supply decisions affecting billions of dollars annually are largely left in the hands of quasi-governmental bodies. Moreover, RTO/ISO decision-making has been described by one legal commentator as "operat[ing] through opaque, technical, deeply bureaucratic, and meeting-dense processes" (96) and "a political exercise" by another legal commentator, (97) processes that invariably involve rent-seeking and lead to inefficient economic outcomes. (98) In contrast to state regulatory commission procedures, there is not the same level of transparency and robust representation of the broader public interest in RTOs/ISOs, and public accountability is rendered even more difficult because RTOs/ISOs fill different roles for different stakeholders. (99) Furthermore, it has been estimated that the cost to stand up a new RTO/ISO can range from $100 to $500 million and full implementation could take up to ten years, (100) and the total annual revenue requirements for the seven RTOs/ISOs for 2019 and 2020 (displayed in Table 1 below) demonstrates that these bodies collectively require billions of dollars to operate.  Thus, when evaluating whether to form an RTO or ISO, it is important to factor these administrative costs and timing considerations in to any consideration of the net benefits that might be produced and whether there are effective mechanisms to ensure these costs are necessary and reasonable. Indeed, "[y]ears spent arguing and litigating over restructuring could result in a lost decade of needed grid investments that might otherwise result from the traditional integrated resource planning process." (101)

95. *See* Michael H. Dworkin & Rachel Aslin Goldwasser, *Ensuring Consideration of the Public Interest in the Governance and Accountability of Regional Transmission Organizations*, 28 ENERGY L.J. 543, 588, (2007) ("While it is the FERC's job to make sure that the public interest is represented in each RTO's actions . . . this is a difficult job with hundreds of moving parts in any one RTO, much less the nation as a whole. The FERC is just not suited to hear locally-oriented issues or complaints about regional decisions; its size, skill-set, institutional knowledge, and jurisdictional roots leave the FERC with limited awareness of the impacts its actions have on end users."); *see also id.* at 594.
96. Shelley Welton, *Grasping for Energy Democracy*, 116 MICH. LAW REV. 581, 631 (2018).
97. Boyd, *supra* note 6, at 815.
98. *See* Boyd, *supra* note 70, at 1671 ("In all of these markets the process of market design has emerged as an intense object of interest for market participants. Rent-seeking behavior thus seems to have moved from the more open, public process of rate cases to the highly technical and possibly less transparent process of developing rules for how these markets will work.").
99. *See* Dworkin & Aslin Goldwasser, *supra* note 95, at 581-86.
100. Concentric Energy Advisors, *supra* note 94, at 29 (2019).
101. Tony Clark, *Springtime in the West: Electricity Regulatory Policy Reforms in Bloom?*, at 9 (2020), https://www.wbklaw.com/wp-content/uploads/2020/12/Western-Markets-White-Paper-12.01.20.pdf.

## TABLE 1: ANNUAL RTO/ISO SPENDING

| RTO/ISO | 2019 Budget | 2020 Budget |
|---|---|---|
| CAISO[102] | $193,500,000 | $187,000,000 |
| ERCOT[103] | $228,012,000 | $268,311,000 |
| ISO-NE | $196,160,800[104] | $201,736,700[105] |
| MISO | $381,716,000[106] | $367,900,000[107] |
| NYISO | $168,200,000[108] | $168,035,094[109] |
| PJM | $365,203,000[110] | $346,000,000[111] |
| SPP[112] | $196,400,000 | $209,100,000 |

102. CAISO, *2020 Budget and Grid Management Charge Rates*, at 4 (Dec. 19, 2019), http://www.caiso.com/Documents/2020Budget-GMCRatesBook-Final.pdf.
103. ERCOT, *2020-2021 Budget and Fee Board of Directors Resolution*, at Attachment A (June 11, 2019), http://www.ercot.com/content/wcm/key_documents_lists/161468/8.1_2020-2021_Budget_and_Fee.pdf.
104. ISO-NE, *Financial Results October 2019*, at 9 (Oct. 2019), https://www.iso-ne.com/static-assets/documents/2019/11/4_isone_financial_results.pdf.
105. ISO-NE, *Financial Results March 2020*, at 7 (Mar. 2020), https://www.iso-ne.com/static-assets/documents/2020/05/3_isone_financial_results.pdf.
106. MISO, Independent Auditor's Report, at 4 (Mar. 13, 2020), https://cdn.misoenergy.org/2019%20Annual%20Report%20Audited%20Financials442095.pdf.
107. MISO, 2020 Budget Proposal, at 7 (Dec. 12, 2019), https://cdn.misoenergy.org/2020%20Operating%20and%20Capital%20Budgets406850.pdf
108. NYISO, *Schedule 1 Rates for 2019*, at 1, https://www.nyiso.com/documents/20142/2959637/2019-Schedule-1.pdf/2ddcea0b-e611-1ada-9cef-b8d593b81ecc?version=1.0&download=true.
109. NYISO, *Schedule 1 Rates for 2020*, at 1, https://www.nyiso.com/documents/20142/7661617/2020-Rate-Schedule-1.pdf/6436863b-bf7c-4228-5be6-a78e7971023c.
110. PJM, *PJM 2019 Annual Report*, at 37, https://www.pjm.com/-/media/committees-groups/committees/fc/_postings/2019/2019-annual-financial-report.ashx?la=en.
111. PJM, *Quarterly Financial Statement Ended Sept. 30, 2020*, at 3, https://www.pjm.com/-/media/committees-groups/committees/fc/2020/20201124/20201124-item-03-3q-2020-financial-statements-unaudited.ashx (annualized based on nine-month spending).
112. SPP, *SPP 2020 Budget*, at 18, https://www.spp.org/documents/60644/2020%20budget%20document-09-17-2019%20stakeholder%20feedback-initial%20draft.pdf.

Finally, wholesale power markets must be monitored effectively to avoid exposing customers to economic hardship through the exercise of supply-side market power (113) and market manipulation by traders who take no net-position in the markets. (114)  For many of the same technological reasons that make it difficult to ensure electric reliability, (115) wholesale markets are especially susceptible to the exercise of market power among generators at certain times of day and days of the year when demand is especially high. This can lead to pricing well above marginal cost (116)  RTOs/ISOs are therefore tasked with identifying and mitigating such actions, but doing so requires teams of analysts and complex market monitoring procedures. (117) As Professor Boyd has observed, the challenges associated with market manipulation and gaming are sure to intensify "as the markets themselves (and the pricing algorithms that power them) are further adjusted to accommodate the transition to a low-carbon electricity system." (118) While the market monitoring and enforcement efforts of FERC and the market monitoring units within RTOs/ISOs have undoubtedly been a deterrent to bad actors set on engaging in illegal market manipulation, it is at least worth considering whether the traditional vertically integrated utility model offers a comparatively workable path with fewer risks and greater stability. (119) For state policymakers weighing decisions regarding restructuring, these are the sorts of factors that must be taken into account. While differently situated states and utilities may ultimately come to different conclusions on these matters based on a variety of considerations, it is clear restructuring should not be imposed as a one-size-fits-all solution to the utility industry.

113. Frank Wolak, *Managing Unilateral Market Power in Electricity* 4 (World Bank, Policy Working Paper No. 3691 Sept. 2005).

114. *See* Boyd, *supra* note 6, at 793, 804 (noting that market design and software flaws have been exploited by traders).

115. Namely, without affordable storage at scale, electricity must be generated at exactly the moment it is consumed, and it must be delivered to all locations it is consumed even if some are not well served by transmission.

116. *Id*.

117. *See* PJM, *supra* note 110, at 21 (describing how outside group performs market monitoring role for PJM); Suedeen G. Kelly, Maria F. Vouras & Jennifer S. Amerkhail, *The Subdelegation Doctrine and the Application of Reference Prices In Mitigating Market Power*, 26 ENERGY L.J. 297, 305-16 (discussing RTO/ISO market monitors' methods for performing market power mitigation).

118. Boyd, *supra* note 6, at 805.

119. *See generally* Tony Clark, Ray Gifford and Matt Larson, *The Vertically Integrated Utility: A Time-Tested Approach for Delivering Customer Benefits and Ensuring State Flexibility in Achieving Energy Policy Goals* (Oct. 2020), https://www.wbklaw.com/wp-content/uploads/2020/10/Vertically-Integrated-Utility-White-Paper-10.26.20.pdf.

## IV. CONCLUSION

After more than twenty years of experience with the experiment of restructured markets in this country, the lessons are clear. The deregulated utility model has not produced customer benefits commensurate with the downside risk that comes along with the model. Furthermore, restructured utilities—especially those that are fully unbundled—operating in organized wholesale markets continue to struggle to incentivize the sort of investment that maintains grid resilience and supports state public policy goals. The continued growth of zero-marginal-cost renewable generation sources only raises more questions about how to solve the investment problem. In addition to these market-design and market-performance issues, when states join RTOs/ISOs, especially those with capacity markets, they cede significant authority and self-determination in their energy supply choices.

Given the amount of power purchased by large users of electricity, it is perhaps unsurprising that they might press for utility deregulation to get special access to wholesale rates, but in other respects the press for restructuring is curious. For large buyers—especially tech firms with large data centers—reliable service is an essential input for their businesses. Even a short outage can be costly and consequential. One might think the missing money problem and the resulting difficulty in maintaining adequate generation capacity in deregulated markets would therefore have customers with large data centers calling for a return to vertically integrated utilities; indeed, when given the option, many of these firms already are voluntarily placing their data centers within the footprints of vertically integrated utilities. For now, however, it appears some large consumers believe that the existing generation in the Southeast and West will be enough to maintain reliability in the near term, and they are willing to roll the dice on long-term reliability if it means lower cost power in the short term.

Finally, any state considering restructuring will want to carefully assess and quantify the value proposition of existing models of deregulation against the costs of adopting various institutional superstructures. Because of the various historical and geographic contexts from which the utility industry has developed, what works for one state, may be less well suited for others. State commissions will need to weigh these issues given their own states' specific circumstances and may decide that less formulaic "emergent market" structures may more efficiently maximize overall consumer welfare.