COMPETITION AT THE GRID EDGE: INNOVATION AND ANTITRUST LAW IN THE ELECTRICITY SECTOR

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INTRODUCTION

In response to the rapid growth of distributed solar power, many electric utilities have taken steps in recent years to change how solar panel owners pay for their electricity. This has made solar power less financially attractive relative to energy supplied from utilities. It has also been justified by the need to insure that all users of the grid pay their fair share of the costs to support it. However, as described below, these actions may open utilities to antitrust liability for anticompetitive practices against solar power

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companies. To avoid antitrust liability, I argue that utilities and their regulators should explicitly examine the effects of changes in rates on the growing competition between utilities and distributed energy resources like solar power and battery electric storage. This would also have the benefit of making the rate-setting process more transparent and open to stakeholder input as the increasingly competitive electricity market is transformed.

The electricity industry in the United States is at a critical juncture in its evolution. From the 1890s until the dramatic fall of installed solar power prices that occurred from 2009 to 2014, innovation in the electricity industry was largely linear and involved steadily increasing scale.[1] As such, it was also highly capital intensive,[2] and because of its scale economies, was characterized and regulated as a natural monopoly from the time of Samuel Insull[3] to the 1980s. At that point, economists recognized that the market for electricity generation could be both competitive and subdivided from the network of wires that delivers energy to end customers. Competition, via functional or full unbundling, was introduced in some places and to differing degrees in the U.S. wholesale electricity market.[4] Outside of generation and transmission, however, the electricity sector remained a regulated monopoly in most other respects and in most U.S. jurisdictions.[5]

1 For a discussion of scale economies in the early electricity industry, see HAROLD L. PLATT, THE ELECTRIC CITY: ENERGY AND THE GROWTH OF THE CHICAGO AREA, 1880–1930, at 95–138 (1991). For a history of solar PV costs, see GALEN L. BARBOSE ET AL., TRACKING THE SUN VIII: THE INSTALLED PRICE OF RESIDENTIAL AND NON-RESIDENTIAL PHOTOVOLTAIC SYSTEMS IN THE UNITED STATES 17 fig. 9 (2015), https://emp.lbl.gov/sites/default/files/lbnl-188238.pdf.

2 For example, the new nuclear power plants being constructed in Georgia by Southern Company, Vogtle Units 3 and 4, are currently expected to cost $7.5 billion. *See Plant Vogtle Nuclear Reactors Expected to Cost $7.5bn*, POWER ENGINEERING (Mar. 2, 2015), http://www.power-eng.com/articles/2015/03/plant-vogtle-nuclear-reactors-expected-to-cost-7-5bn.html.

3 Indeed, the most important members of the utility industry actively sought regulation as a monopoly in order to reduce risk and so lower capital costs. *See* Samuel Insull, Address to the National Electric Light Association: Public Control and Private Operation (June 7, 1898) (transcript available at https://www.masterresource.org/edison-electric-institute/the-insull-speech-of-1898/).

4 *See* Morgan Stanley Capital Grp. v. Pub. Util. Dist. No. 1, 554 U.S. 527, 535–36 (2008).

5 A limited exception is a group of 17 states and the District of Columbia where firms are allowed to compete for some customer sales at the retail level while purchasing access to the local grid from the incumbent provider; however, most retail choice programs are focused on large commercial and industrial customers. *See State Electric Retail Choice Programs Are Popular with*

Most retail sales of electricity in the United States are made by monopoly service providers; where competition exists, it has until recently been limited to firms competing to sell energy over a utility-owned distribution system. Consumers have been mostly uninterested in a choice between Company A or Company B selling them energy over the same set of wires.

Today, the power sector is entering a new era. New technologies and business models have allowed a new set of competitive firms to enter the industry and to present a challenge to the incumbent cost-of-service regulated electric utilities. These incumbents, which own and operate the wires and sometimes the power stations that supply electricity to homes and businesses in the United States, have been closely supervised by public utility commissions since the turn of the last century. Public utility commissions (PUCs), state bodies of appointed or elected officials that oversee electric utilities and other network monopoly businesses, are charged with striking a fair balance between consumer and utility interests. PUCs oversee and approve rates that utilities charge to their customers, and review and approve major capital investments that utilities propose to provide service.

The most important form this new technological competition takes at present is distributed solar energy. Costs for small-scale solar photovoltaic (PV) installations have declined dramatically. Many state PUCs have long allowed for utility customers to obtain rates that allow residential customers to net any extra solar energy they produce against purchases from the regulated utility. Under these circumstances, firms that sell solar panels and the residential and commercial customers who install them at the edge of the grid have emerged as important competitors to the traditional model of electricity service.

The innovation and potential competitive entry occurring at the grid edge is not, however, limited solely to solar PV. Numerous other firms are selling energy services, demand response services, and, perhaps most importantly, battery storage. Distributed battery storage, because of falling costs brought about by intense R&D efforts as well as scale economies in the manufacture of lithium ion batteries, is already a cost-effective

Commercial and Industrial Customers, ENERGY INFO. ADMIN. (May 14, 2012), https://www.eia.gov/todayinenergy/detail.cfm?id=6250; *see also Map of Deregulated Energy States and Markets (Updated 2017)*, ELECTRICCHOICE.COM, https://www.electricchoice.com/map-deregulated-energy-markets/.

asset in certain settings in the United States. It is poised to become much more important if costs continue to fall as they have, and as they are predicted to over the next decade. All of these changes have the potential to transform the consumer relationship with electric utilities, the utility business model, and (not unimportantly in a time of low productivity growth and sluggish economic growth) the productivity of a major segment of the United States economy.

In addition, while distributed solar power and the other suite of distributed energy technologies are unlikely to have significant short term impacts on emissions of either traditional air pollutants or greenhouse gas emissions, they could prove to be significant drivers of change in the long run. A world in which all or at least most homes were equipped with solar power, combined with battery storage, would need far fewer fossil power plants and would use the power plants it did need significantly less. Responding to climate challenges is going to require producing and using energy in fundamentally different ways than what we have been doing for the past century. Distributed solar energy is at least part of the answer to that transformation.

As installed solar prices fell in the period after 2009, the utility industry maintained the view that these small installations posed no threat to its businesses. Then, in January 2013, the industry made an abrupt about face when the Edison Electric Institute, the industry association for investor owned electric utilities, released a briefing paper entitled *Disruptive Challenges* that focused on the key economic challenges facing the retail electricity sector. The paper outlined a dark future for the industry: flat electricity sales, the rapidly falling cost of distributed solar power, and rising rates necessary to replace existing grid infrastructure would create a unique set of challenges for the power sector.[6]

The paper articulated a possible scenario that has come to be termed the "utility death spiral." In it, rising electricity rates combined with falling costs for solar power and other technologies lead to increased adoption of renewable energy by retail customers—homeowners putting solar panels on their rooftops and

6 *See* PETER KIND, DISRUPTIVE CHALLENGES: FINANCIAL IMPLICATIONS AND STRATEGIC RESPONSES TO A CHANGING RETAIL ELECTRIC BUSINESS 1 (2013), http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf.

consuming less utility-supplied energy.[7] Such increased adoption further reduces sales from the grid, leading to the need for even higher rates; as with water, when the service is a heavily fixed cost, reduced volume leads to higher unit costs.[8] According to the paper, all of this might leave utilities in a very difficult situation, since they must cover the financing costs of long-lived infrastructure through the rates they charge.[9]

Further exacerbating the potential feedback loop highlighted by the paper is the fact that market perception of these increased risks for utilities may also lead to increases in the cost of both equity and debt capital, further driving up costs and undermining utility competitiveness relative to solar for electricity consumers.[10] As the markets begin to perceive that electric utilities are more risky than they used to be, debt and equity holders will expect a higher return on their money.

The "utility death spiral" has since been the subject of active discussion and analysis.[11] *Disruptive Challenges* was particularly striking for being sponsored by the National Business Association of Electric Utilities and for being publicly released[12]—in effect, announcing to the world that the electric utility industry viewed solar as a threat to their business of the same magnitude as cellular communications had been to wireline phone service.[13] As the survey of rate cases in this Article will show, it was also the opening shot in a campaign to secure protection from state regulators.

Since the publication of *Disruptive Challenges*, legal scholars have begun a debate as to the significance of distributed solar to electric utilities. One side has argued that if utilities are stuck with

7 *See id.* at 5–6.

8 *See id.*

9 *See id.*

10 *See id.* at 8–10.

11 *See, e.g.*, Jean-Marc Ollagnier, *Will Solar Cause a 'Death Spiral' for Utilities?*, FORBES (Jan. 30, 2015), https://www.forbes.com/sites/energysource/2015/01/30/will-solar-cause-a-death-spiral-for-utilities/; *see also* Jason Channell et al., *Energy Darwinism: The Evolution of the Energy Industry*, CITI GLOBAL PERSPS. & SOLUTIONS 73–75 (Oct. 2013), https://ir.citi.com/Jb89SJMmf%2BsAVK2AKa3QE5EJwb4fvI5UUplD0ICiGOOk0NV2CqNI%2FPDLJqxidz2VAXXAXFB6fOY%3D (projecting 50% demand reduction for electricity within the next two decades).

12 Most EEI publications are available to members only.

13 *See* KIND, *supra* note 6, at 14–16.

assets that are no longer technologically or economically useful, they should be allowed to fail. In particular, some have maintained that as and if demand for utility supplied power falls, regulators should and are legally authorized to refuse to allow utilities to recover grid investments rendered unnecessary or uneconomic by distributed solar.[14] These authors point to precedents in regulated industry law where loss-making regulated monopolies were allowed to go bankrupt when their technologies became obsolete or were outcompeted by new entrants.[15]

Others have argued that the history of utility regulation suggests that long before a true "death spiral" occurs, utilities will be awarded the stranded costs of their now useless investments in grid assets, consistent with long established legal precedents governing cost recovery in regulated industries and consistent with the theory of a "regulatory compact" between ratepayers and utilities.[16] These authors claim that without this expectation, finance of long-lived power system infrastructure at reasonable costs is very difficult.

They also stress that this is how losses were managed during both the crisis presented by nuclear power plant cancellations in the 1980s and the introduction of competition into the wholesale electricity system in the 1990s.[17] In both cases, technological,

14 These commentators primarily rely on a Supreme Court case dating to the 1940s involving a streetcar system in San Francisco that could not compete other with buses or with a municipally owned streetcar. *See* Elisabeth Graffy & Steven Kihm, *Does Disruptive Competition Mean a Death Spiral for Electric Utilities?*, 35 ENERGY L.J. 1, 2, 23–28 (2014); *see also* Mkt. St. Ry. Co. v. R.R. Comm'n, 324 U.S. 548, 555–57 (1945).

15 *See id.* Note that this is to some degree reminiscent of the debate that occurred over nuclear power plant disallowance in the aftermath of Three Mile Island. *See* Duquesne Light Co. v. Barasch, 488 U.S. 299 (1989).

16 These commentators point out that commissions making decisions about utility rates will focus on "the end results test" articulated in *FPC v. Hope Natural Gas*: that courts should not interfere in the rate setting process so long as the rates arrived at in the end adequately allow utilities to operate and attract investment capital on reasonable terms. *See* Fed. Power Comm'n v. Hope Nat. Gas Co., 320 U.S. 591 (1944); *Duquesne Light Co.*, 488 U.S. at 314–15, *discussed in* David Raskin, *Getting Distributed Generation Right: A Response to "Does Disruptive Competition Mean a Death Spiral for Electric Utilities?"*, 35 ENERGY L.J. 263, 279 [hereinafter Raskin, *Getting DG Right*]; *see also* David Raskin, *The Regulatory Challenge of Distributed Generation*, 4 HARV. BUS. L. REV. ONLINE 38, 48–50 (2013).

17 *See* Raskin, *Getting DG Right*, *supra* note 16, at 278; *see also* Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 61 Fed. Reg. 21,540 (codified at 18 C.F.R. pts. 35 &

economic, and regulatory circumstances evolved in ways that left utilities with numerous uneconomic investments—investments that had been approved by public utility commissions when they were made but were no longer needed to meet the needs of ratepayers. In general, the losses associated with these investments were shared between utility shareholders and their customers.[18] In any case, both sides of this debate would seem to agree that U.S. electric utilities are not yet in a situation where drastic measures due to the growth of distributed energy—including either imposition of losses on utility equity and debt holders or imposition of stranded costs on ratepayers—are imminent.

Thus, the academic literature, perhaps spurred by the *Disruptive Challenges* paper, has focused on how regulators might respond to such an energy crisis. One side would let the utilities fail, a Schumpeterian victim of technological innovation. The other would create a less steep, transitional glide path that would apportion losses between utility shareholders and their customers. But the best response to a future crisis that can be anticipated is to avoid it occurring at all. In fact, this was a key recommendation of *Disruptive Challenges* for EEI's membership. The paper concludes by recommending significant changes to the way that customers are charged for electric power—changes that will reduce the competitive threat posed by solar power and other distributed energy technologies.[19] And the electric utility industry appears to have gotten the message.

Following the release of *Disruptive Challenges*, utilities around the country, but especially in key solar markets, have responded in two significant ways to the challenge presented by distributed solar energy. First, they have sought to change rate structures to eliminate the incentives their customers may have to adopt the new technology, thereby suppressing the trigger of the death spiral.[20] Second, and to a lesser extent, they have entered into direct competition with the companies that seek to provide

385) (1996) (also known as FERC Order No. 888).

18 *See Duquesne Light Co.*, 488 U.S. at 314–15.

19 *See* KIND, *supra* note 6, at 18.

20 *See* Prepared Rebuttal Testimony of Ahmad Faruqui, Exhibit 3, *in* Application of Nevada Power Company d/b/a NV Energy for approval of a cost of service study and net metering tariffs, Docket No. 15-07041, at 267 (Nev. Pub. Utils. Comm'n July 31, 2015), https://www.nvenergy.com/renewables environment/solar/netmetering-filing.cfm.

distributed solar to electricity consumers, thereby positioning themselves to succeed in the new market environment to which the industry is transitioning.[21]

Electric utilities have shareholders whose interests they are legally obligated to protect. And utilities appear to be acting to head off the nascent threat to a business model that has served them well for more than a century. Depending on one's perspective, and on the details, these regulatory changes amount to either a more accurate allocation of grid costs or the erection of barriers to prevent entry of new, innovative competition. Utilities may be protecting their non-solar customers from the burden of subsidizing those who install solar, or they may be working to ensure that competition with their entrenched monopolies never occurs. Telling the difference has become a key unaddressed policy and legal question for public utility commissions.

Traditionally, utilities have billed their customers with rate structures based on energy sales. A customer's bill was a function of their total energy consumption, measured in kilowatt hours (kWh) over a billing period, usually a month. In the face of new competition, utilities and their regulators are rapidly reassessing this energy sales-based rate structure and moving to a more complex structure, sometimes for all customers, but more often only for those customers that choose to install distributed energy resources. The new rate structures involve either a large fixed charge, independent of usage; a demand charge, which is set based upon a customer's maximum rate of consumption during the billing period; or both, in addition to a charge for energy consumption. These rate structures are not novel—they have long been common for large customers such as large commercial or industrial customers, but they have never before been applied to the residential customers whose installation of solar PV poses a

21 *See, e.g.*, Herman K. Trabish, *Inside Georgia Power's Move into the Residential Solar Market*, UTILITYDIVE (June 11, 2015), http://www.utilitydive.com/news/inside-georgia-powers-move-into-the-residential-solar-market/400562/ (discussing Georgia Power entering the residential solar market); Herman K. Trabish, *Arizona's Utility-Owned Solar Programs: The New Business Models Utilities Are Looking For?*, UTILITYDIVE (Jan. 7, 2015), http://www.utilitydive.com/news/arizonas-utility-owned-solar-programs-the-new-business-models-utilities-a/348331/; Herman K. Trabish, *ConEd Will Enter NY Rooftop Solar Market Through Unregulated Subsidiary*, UTILITYDIVE (July 30, 2015), http://www.utilitydive.com/news/coned-will-enter-ny-rooftop-solar-market-through-unregulated-subsidiary/403145/.

competitive threat to utilities.

Normally, when firms with market power move to quash competition, antitrust liability under the Sherman Act, or at least the risk of it, is created. However, because investor owned electric utilities are state-chartered monopolies, they are generally exempt from federal regulation of their anticompetitive conduct. But this exemption from antitrust liability is not unlimited. Moreover, the contours of the exemption are relatively unclear given current U.S. Supreme Court jurisprudence, especially in the face of a radical change in the technological structure of the industry. Thus, moves by utilities to prevent entry or forestall competition create at least a risk of antitrust liability, even if approved by their PUCs.

The division of regulatory authority between the federal and state governments under the Federal Power Act allocates oversight of wholesale electricity sales to the Federal Energy Regulatory Commission and oversight of retail electricity sales to state PUCs. Because the technological and economic challenge to utilities is coming from the retail customers of utilities rather than from, for example, large power plants that wish to sell power across the utilities' transmission systems, state regulators will make the key decisions governing the competition between solar energy providers and regulated utilities. The Federal Power Act leaves to states the authority to regulate retail and intrastate energy transactions.[22] The heart of this jurisdiction is the authority of state public utility commissions to regulate the rates that utilities charge their retail customers for power sales. Thus, public utility commissions are in the position of having to manage a difficult transition from a highly stable monopoly structure to a much more dynamic and competitive one, although one in which grid-supplied electric energy will remain central for many years to come.

Attempts to ensure market competition, or to avoid the social costs that occur when markets are not sufficiently competitive, require taking account of industries' technological and economic structure. Traditionally, in the United States, competition has been

22 *See* 16 U.S.C. § 824(a), (b)(1) (2012). A recent decision by the Supreme Court involving demand response—payments to retail customers not to consume energy during periods of grid congestion—suggests that at least under circumstances where a retail practice directly affects wholesale rates, FERC has authority to regulate in what would normally be a state domain. *See* Elec. Power Supply Ass'n v. FERC, 136 S. Ct. 760, 784 (2016).

policed in structurally competitive markets using antitrust law.[23] However, in markets that are best characterized as natural monopolies, a grant of monopoly power has often been provided to a single firm that is then subject to an obligation to serve all customers and to price regulation via cost-of-service ratemaking.[24] While both systems are far from perfect,[25] many legal and economic scholars have argued that in their appropriate contexts—a structurally competitive market or a natural monopoly—these approaches fill a similar need.[26] The most challenging context in which to apply either, however, is when industries undergo transition, often because of technological change, between a stable, naturally monopolistic structure, and unstable, structurally competitive one.[27]

In this Article, I detail the utility industry response to the call to action in *Disruptive Challenges*. I present evidence for the widespread existence of potentially anticompetitive actions by utilities from a survey of rate cases. My survey shows that, from 2013 to 2015, utilities in at least 19 states sought to restructure rates to reduce competition from distributed energy resources. Some utilities are also going into direct competition with solar providers. I explore the legal implications of this response by today's utility industry to current and anticipated competition from distributed solar generation. I examine the ambiguities that exist in the current doctrine on utility antitrust immunity. I then suggest approaches for public utility commissions that may serve to reduce the anticompetitive aspects of new rate structures and so reduce the risk of antitrust liability for electric utilities as they respond to emerging competition from distributed energy resources. Finally, I argue that in managing responses to competition by electric utilities, public utility commissions must exercise oversight of the competitive impacts of rate cases.

In this Article, I outline the key dimensions of the nascent response by regulated electric utilities to competition and then

23 *See* STEPHEN BREYER, REGULATION AND ITS REFORM 156–57 (1982).

24 *See id.* at 15–16.

25 For example, antitrust law may both under- and over-police anticompetitive conduct, while cost-of-service regulation's focus on price will tend to ignore other aspects of service, especially quality. *See* 1 ALFRED KAHN, THE ECONOMICS OF REGULATION 21–25 (MIT Press 1988).

26 *See* BREYER, *supra* note 23; *see also* 1 KAHN, *supra* note 25, at 1–3.

27 *See* 2 KAHN, *supra* note 25, at 113–15.

apply an antitrust filter to these responses. In Part I, I describe and provide the first synthesis and analysis of utility response to solar generation since the publication of *Disruptive Challenges*. Utilities in many parts of the country are moving quickly to change rates in ways that reduce the competitive threat. In Part II, I explain the traditional shields from antitrust enforcement that have been applied to state-regulated industries such as electric utilities. The most important of these are the state action immunity doctrine and the filed rate doctrine. I then assess the extent to which current utility responses to competition are likely to be shielded from antitrust liability. I find that there is substantial risk that a reviewing court would not shield the activities outlined in Part I from antitrust liability. In Part III, I describe a set of strategies that utilities and their regulators might take to reduce these risks while also increasing the transparency of their decision making in ways that will allow for greater stakeholder participation and input, including direct examination within the rate-making process of the impacts of new rate structures on competition between utilities and distributed energy resource providers.

I. A TAXONOMY OF ELECTRIC INDUSTRY RESPONSE TO SOLAR COMPETITION

Solar power installed on rooftops is a potentially disruptive competitive force for electric utilities, first because it reduces sales, and secondly because of the interaction of the new technology with traditional rate structures. The problem is made more complicated by the fact that electricity cannot be stored in most circumstances. Without storage, increased customer-generated solar power reduces neither the need of homeowners with solar power for a well-functioning electricity grid nor the need to pay for the costs that utilities bear to maintain one. But most homeowners with solar power benefit from net-energy-metering rate structures that mostly, and often completely, avoid paying for the grid.

Net Energy Metering (NEM) rates allow a homeowner to sell and require the utility to buy the energy generated by a homeowner's solar panels beyond that needed to meet a homeowner's instantaneous demand for power. Excess energy is fed to the grid with homeowners typically receiving credit for this

power at the retail rate.[28] Because solar panels produce energy during the middle of the day, but peak demand for energy from households is typically in the late afternoon or evening, the peak demand from households with solar will generally not be much lower than from households without it.[29] And because cost-effective electricity storage has not, until very recently, been available, peak demand determines the investment in wires and power plants that must be made to serve customers; in effect, home-generated solar energy cannot fully substitute for traditionally produced energy in serving peak loads because peak occurs when the sun is setting.[30]

Thus, at least until electricity storage becomes widely available at reasonable cost, households with and without solar make equivalent or nearly equivalent demands upon the grid, and the capital investment necessary to support it.[31] Net metering rate designs under which the homeowner-produced excess solar power is netted against homeowner consumption of power at system peak allow those homeowners to pay far less to support grid investments than similarly situated homes that lack solar, even though they make equivalent demands on the grid. In effect, residential customers with solar use the grid as a battery that they charge during the day and discharge in the evening and at night, but do not have to pay for this benefit. As a result, many utilities have argued that residential customers with solar are cross-subsidized at the expense of customers without solar.[32]

28 Treatment of energy supplied to the utility grid by distributed energy resources and used by other consumers on a net basis rather than as a sale of power is necessary to avoid a wholesale exchange that might trigger federal jurisdiction under the Federal Power Act. *See* 16 U.S.C. § 824(b)(1) (2012). Utilities have also been required to offer net metering as an option since 2005. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, § 1263, 119 Stat. 594, 974.

29 *See* Matthew L. Wald, *Why More Solar Panels Should Be Facing West, Not South*, N.Y. TIMES (Dec. 1, 2014), https://www.nytimes.com/2014/12/02/upshot/why-more-solar-panels-should-be-pointing-west-not-south.html.

30 *See id.*

31 *See id.*; *see also* Barry Fisher, *9% of Solar Homes are Doing Something Utilities Love, Will Others Follow?*, ORACLE UTILITIES DATA INSIGHTS (Dec. 2, 2014).

32 *See, e.g.*, Lisa Wood, *Why net metering results in a subsidy: The elephant in the room*, BROOKINGS INSTITUTION (Jan. 13, 2016), https://www.brookings.edu/opinions/why-net-energy-metering-results-in-a-subsidy-the-elephant-in-the-room/ (a recent Op-Ed by the head of innovation at the Edison Electric Institute, the U.S. trade association for regulated utilities); *see also* Herman K. Trabish, *Why SRPs Controversial Demand Charge Unlocks a Huge Opportunity for Solar*

Finally, because of limitations in metering technology—traditional analog meters can only measure energy consumption (kilowatt hours) but not peak demand (kilowatts)—residential rates have long been structured in terms of energy consumption without adjustment for when the energy is consumed. As energy consumption, or net energy consumption as calculated under a NEM rate falls, a residential consumer's contribution to grid costs falls as well. The combination of these factors—falling solar costs, the need for utilities to size their system to meet peak demand, net energy metering reducing contributions to grid costs, and the limits of traditional meters—means that residential consumers with solar have long paid much lower costs (sometimes zeroing out their bills) and yet still make significant demands on the electricity grid.

At the same time, it is important to note that distributed energy resources (DERs), such as solar power on rooftops, reduce other system costs that may to some degree or even completely offset some of the costs that ratepayers taking advantage of NEM rates avoid. For example, solar generation in load pockets—areas of concentrated demand for electric power with limited generation resources—will tend to reduce the need to site and run power plants in these areas or to construct transmission lines from distant power plants to serve the load. These system benefits are challenging to quantify, however, as compared to the cost shift from customers with solar to customers without.[33] Nevertheless, in some places, these system costs are being incorporated into new rate designs that serve as alternatives to the traditional NEM structure.[34]

Plus Storage, UTILITYDIVE (Mar. 12, 2015), http://www.utilitydive.com/news/why-srps-controversial-demand-charge-unlocks-a-huge-opportunity-for-solar-/372548/. An important additional dynamic in this debate is the extent to which solar customers are wealthier than non-solar customers. This difference between customer classes occurs because solar customers need to have good credit in order to qualify for the low-cost zero-down payment financing that is typical in the industry. *See, e.g.*, STANDARD AND POOR'S RATING SERVICES, PRESALE: SOLARCITY LMC SERIES I LLC (SERIES 2013-1) 5–7 (2013), http://greenbankacademy.com/wp-content/uploads/SP-Rating-of-SolarCity-Solar-Back-Bonds.pdf.

33 It is relatively straightforward to calculate the difference between contributions to grid costs by solar and non-solar customers. It is far harder, and much more subject to judgment and complex, model-based estimation, to calculate the infrastructure investments that are avoided by distributed generation. *See* ELEC. INNOVATION LAB, ROCKY MOUNTAIN INST., A REVIEW OF SOLAR PV BENEFIT AND COST STUDIES 22 (2d ed. 2013), http://www.rmi.org/elab_empower.

34 These rate structures are known as "Value of Solar Tariffs" and have

A. *Changes to Retail Rate Structures*

To date, the most common response by utilities to the disruptive challenge presented by distributed solar has been to propose changes to retail rate structures that act to reduce solar power's cost advantage over grid-supplied energy. The new rate structures function in two ways: by reducing compensation for energy returned to the grid, or by increasing components of an electricity consumer's bill that are either fixed (i.e. independent of energy consumed) or vary as a function of the consumer's peak demand for energy.[35]

The impact of changing the rate at which solar is compensated for energy supplied to the grid is fairly straightforward. It lowers the DER compensation rate and so lowers the incentive to incur the high upfront costs of installing a system. The impact of increasing fixed bill components or imposing a demand charge is more subtle but no less important. By shifting from an energy-based rate—one that bills customers based on their total consumption of electricity—to a rate composed of multiple charges, some of which are independent of net energy consumption, the financial value of distributed solar with NEM is also reduced. Because a larger fraction of the bill is composed of non-energy related charges, there is less value to net against for DERs. These rate structure changes may be applied to all customers or they may be applied only to customers that choose to install DERs and apply for NEM rates. In either case, the impact on the competitiveness of DERs is the same: the incentive to install DERs is reduced.

A key enabler of the new rate structures is the increasingly widespread deployment over the past decade of advanced metering

recently been introduced as alternatives to NEM in Minnesota and Austin, Texas. *See In re* Establishing a Distributed Solar Value Methodology, No. E-999/M-14-65, at 1 (Minn. Pub. Utils. Comm'n Apr. 1, 2014) (order approving distributed solar value methodology); *New Value of Solar Rate Takes Effect in January*, AUSTIN ENERGY (Dec. 6, 2013), https://web.archive.org/web/20151214115425/http://powersaver.austinenergy.com/wps/portal/psp/about/press-releases/new-value-of-solar-rate-takes-effect-january/!ut/p/a0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOINjCyMPJwNjDwtHF2NDDz9DFyNfVwDDfw9zfQLsh0VAcATr-0!/.

35 Instantaneous demand is the level of energy needed to drive all of the electricity loads in a house in an instant. This is a measurement of flow. Energy consumed is the total energy consumed over a billing period. This is a measurement of volume. Analogous concepts for liquids are gallons per second and gallons.

infrastructure—smart meters and the wireless networks that allow them to communicate with each other and with the computer networks of electric utilities. These meters have replaced analog interval meters in many jurisdictions in the United States.[36] Smart meters allow residential customers to do what analog demand meters have long allowed large commercial and industrial customers to do—pay two-part rates composed of 1) a variable charge based upon energy consumed plus 2) a demand charge measured as their maximum rate of energy consumption during the billing interval.[37] Analog demand meters were developed at the advent of the electricity industry, and were a critical piece of the technological and financial models that allowed the industry to allocate the costs of network improvements to the customers that actually created the need for them.[38]

Traditional analog interval meters continuously tally the total energy in kWh that flows across the meter. A measurement from these meters requires visual inspection by a meter reader, typically done on a monthly basis. Thus, the maximum temporal resolution of data retrieved from these meters is monthly; differences in instantaneous demand over the month are not observable. By contrast, smart meters measure both the total flow, as well as the instantaneous demand, for power from a customer every few seconds. Smart meters then report this information to the utility via wireless networks on a sub-hourly basis.

This change in measurement technology allows for a revolution in residential rate structures for electricity. Of particular relevance to competition from solar energy, it allows utilities to charge their small customers separately for their contribution to utility capital expenditure versus operation and maintenance expenditure. A customer's contribution to utility capital expense is

36 Deployment was spurred by matching grant programs funded by the American Recovery and Reinvestment Act. *See* American Recovery and Reinvestment Act of 2009, § 405, Pub. L. No. 111-5, 123 Stat. 115, 143 (codified as amended in scattered sections of 42 U.S.C.); 42 U.S.C. §§ 17384(b)(3)(C), 17386(a); *Smart Grid Investment Program*, U.S. DEP'T OF ENERGY, https://www.smartgrid.gov/recovery_act/overview/smart_grid_investment_grant_program.html (last visited Oct. 23, 2016).

37 *See*, e.g., *Electric Rates: Industrial/General Service (E-20)*, PAC. GAS & ELEC., http://www.pge.com/tariffs/electric.shtml#INDUSTRIAL (last visited June 20, 2017) (click on link with text "Industrial (MAR 1, 2016–MAR 23, 2016)" for an example).

38 *See* PLATT, *supra* note 1, at 83–86.

roughly proportional to the customer's demand when the utility is experiencing peak demand for electricity.[39]

Electricity cannot be stored. In order to maintain reliability and avoid blackouts, utilities must build systems that are sufficiently large to meet demand at the moments in time when it is greatest, even if most of this capacity is idle the rest of the time. Likewise, a customer's contribution to utility operating expense is roughly proportional to their total consumption of energy—this is because the largest single contributor to utility operating expenses is fuel costs for generation.[40] The new measurement technologies allow both of these factors to be observed and to be reflected in rate structures for small customers, just as they long have been for large customers.

In addition, a utility might opt to charge customers for a third component of costs that is fixed and independent of usage—essentially a connection charge that covers metering, billing, and other administrative costs that do not vary with either maximum instantaneous demand for or total consumption of energy. Both demand and fixed charges reduce the attractiveness of consumer investment in distributed solar power, but not necessarily other DERs such as batteries.

Requests for rate restructuring may be a completely reasonable response to cross-subsidization of one customer class by another. Electricity access is a necessity for modern life. Solar power installed on homes allows certain customers—usually those with good credit ratings (that allow them to borrow and install the equipment) and higher income—to zero out their bills while still relying on grid-supplied energy at certain times of day. The impact of this is to either leave the utility with insufficient funds to maintain its system of wires or, more likely, to shift these costs onto other customers who have not installed DERs, perhaps because they cannot afford to.

The cross-subsidization effect is exacerbated when utilities use increasing block rate structures, which charge consumers more per unit of energy as they use more total energy. High income consumers tend to have bigger homes that use more energy, and

39 *See id.* at 83–87.

40 *See id.* Note that utilities that rely primarily on hydro, solar, or wind powered generation for energy will have lower fuel costs and consequently lower operating expenses.

thus are in higher tiers where they face a higher marginal cost for their last units of consumption. This allows high income consumers to benefit the most from installing solar to not only reduce their total consumption but to shift out of higher marginal rates for their energy. This sort of "cream skimming" of high value customers has been particularly acute in California, where tiered residential rate structures are particularly steep.[41] In sum, one way to interpret the rate proposals is as a rational attempt on the part of regulated utilities to more accurately charge their customers for the costs these customers create in the electricity system and to reduce the regressive cross-subsidization among consumers to the degree that it occurs.[42]

Of course, this cannot be the whole story. Regulated utilities recognize the competitive threat, exercise market power, and are likely to respond in anticompetitive ways if permitted to do so. One would expect that regulated utilities, seeking to protect their shareholders' value, would act to modify rates in ways that would forestall or eliminate new competitive entrants. Rates are just one method of creating barriers to entry for new technologies that may reduce returns for grid-supplied energy.

Other methods include rules that explicitly limit or forbid such competition or rules that erect non-price barriers to entry such as complicated, expensive, or time-consuming processes governing connection of DERs.[43] The evidence suggests that utilities can, and to some degree are, engaging in a number of non-price-related practices that would normally raise competition concerns. Utility permission is required to interconnect distributed energy resources

41 California's rate structure, which had four tiers, has recently been modified to reduce this incentive. *See* Jeff St. John, *Breaking: California Reaches Compromise on Utility Residential Rate Reform*, GREENTECH MEDIA (July 3, 2015), http://www.greentechmedia.com/articles/read/Breaking-California-Reaches-Compromise-on-Utility-Residential-Rate-Reform.

42 A lack of attention to cost causation is common when regulated utilities do not face competition. Many regulated industries use rate structure to accomplish other social or economic objectives in the absence of competition. Renewed attention to cost causation and rate structure is often the first response when new entrants appear. *See* Alfred E. Kahn & Charles A. Zielinski, *New Rate Structures in Communications*, PUB. UTIL. FORT., March 25, 1976, at 21–23; 1 KAHN, *supra* note 26, at 159–60.

43 This was one of AT&T's initial responses after MCI was allowed to enter the long distance telecommunications market. *See* MCI Commc'ns v. Am. Tel. & Tel. Co., 708 F.2d 1081, 1096 (7th Cir. 1983).

with the grid.[44] Getting interconnection permission often results in varying time delays.[45] Furthermore, it can result in substantial and unpredictable costs because utilities can require mitigation for new distributed energy resources in the form of distribution system investments.[46] Utilities also have important informational advantages regarding where on the grid distributed energy may be most valuable.[47]

Nevertheless, given that most utilities have to routinely submit rate cases to their commissions, attempts to modify rates to forestall or eliminate competition are to be expected given the business incentives facing the utilities. The traditional job of the commission in this context is to evaluate these rates and to protect ratepayers—presumably balancing the interests of customers both with and without DERs against the expectation of utilities for a fair return on their investment. Generally speaking, protecting the interests of other firms that might compete with the utility, or considering the impacts of a rate on innovation, are not part of the process.

Table 1 presents a national survey of rate cases filed since the publication of *Disruptive Challenges* that modify rates in ways likely to reduce incentives to install DERs. These changes take a number of forms. They include new or increased fixed monthly bill charges, new demand-based charges, changes to rates paid by the utilities to homeowners for solar power, and application of time-of-use rates to solar customers to charge them more for on-peak, late afternoon and evening power while paying them less for off-peak solar energy produced during the day. Results are coded according to whether a proposal has been made to make one or more of these changes but is still pending before the commission (P), and, if a decision has been reached by the PUC on a proposal, whether the proposal was approved (A) or if it was denied (D).

Many of the decisions to deny new rate structures for solar customers so far by public utility commissions have suggested that

44 For a discussion of current challenges with utility interconnection policies for distributed energy providers, see SOLARCITY GRID ENGINEERING, INTEGRATED DISTRIBUTION PLANNING (2015), http://www.solarcity.com/sites/default/files/SolarCity%20White%20Paper%20-%20Integrated%20Distribution%20Planning_final.pdf.

45 *See id.* at 2.

46 *See id.* at 4.

47 *See id.* at 10–11.

the utility resubmit the proposal as part of a general rate case so that it could be considered along with the entire structure of rates—thus, some of the decisions coded as (D) may in fact turn out to be more a deferral than an outright denial. Some of these proposals have been made in states that have vibrant distributed solar markets, such as Arizona, California, Nevada, and Hawaii. But many proposals have been submitted by utilities in states with little or no installed solar power, such as Idaho, Kansas, Kentucky, and Oklahoma, perhaps in an attempt to head off market entry by the large distributed solar power firms.

Table 1: Proposed, Approved, and Denied Changes in Rate Structure that Reduce Returns to Distributed Solar Energy by U.S. Electric Utilities from 2013 to 2016.

Shown are regulated utilities that have proposed rate changes that reduce the competitiveness of distributed energy resources, the amount of distributed solar in the utility's service territory (nameplate capacity), and whether the rate change involved adding or increasing a fixed charge, adding a demand or capacity charge, reducing the credit paid to customers for solar energy, or adding mandatory time-of-use pricing for solar customers.

P = Proposed by the Utility in a filing to the Public Utility Commission but still pending,

A = Approved by the Public Utility Commission, and

D = Denied by the Public Utility Commission.

State	Utility	2014 DER Nameplate Capacity (MW)[48]	Fixed Charge (or increase)	Demand or Capacity Charge	Reduced credit for solar energy	Time of Use Rate
Arizona	Arizona Public Service[49]	315.4	P	A		

48 *See Form EIA-826 Detailed Data*, ENERGY INFO. ADMIN., http://www.eia.gov/electricity/data/eia826/(last visited Oct. 23, 2016).

49 The Arizona Corporation Commission approved an interim measure (until the next full rate case) allowing for a fixed charge scaled to the size of PV systems for all distributed generation customers; after the rate case was deferred, APS proposed and the Commission is currently considering increasing the charge from $0.70/kW to $3/kW. *See In re* Arizona Public Service Company's Application for Approval of Net Metering Cost Shift Solution, Docket No. E-01345A-13-0248, Decision No. 74202, at 23 (Ariz. Corp. Comm'n Dec. 3, 2013); *In re* Arizona Public Service Company's Application for Approval of Net

Arizona	Salt River Project[50]	60.9	A	A		A
Arizona	Tucson Electric Power[51]	56.8	P	P	P	P
California	Sacramento Municipal Utility District[52]	49.8	A			A
California	Pacific Gas & Electric[53]	980.4		P	P	P
California	Southern California Edison[54]	627.4		P	P	
California	San Diego Gas & Electric[55]	237.4	P	P	P	P

Metering Cost Shift Solution, Docket No. E-01345A-13-0248, Decision No. 75251, at 10, 33 (Ariz. Corp. Comm'n Aug. 31, 2015).

50 The Salt River Project changed the distributed generation rate by adding a fixed charge and a demand charge effective in mid-2015 that, for a typical home (200 amp connection/4kW peak demand) amounts to $57.34 per month. *See* Salt River Project Agricultural Improvement and Power District, Proposed Adjustments to SRP's Standard Electric Price Plans Effective with the April 2015 Billing Cycle, 66–67 (Dec. 12, 2014); SRP Management, Memorandum to SRP Board of Directors, Summary of Management Recommendations (Feb. 25, 2014).

51 *See In re* Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates, Docket No. E-019933A-15-0322, at 4–5 (Ariz. Corp. Comm'n Sep. 4, 2015); *In re* Tucson Electric Power Company, Inc. for (1) Approval of a Net Metering Tariff and (2) Partial Waiver of the New Metering Rules, Docket No. E-019933A-15-0100, Decision No. 75224, at 9 (Ariz. Corp. Comm'n Aug. 26, 2015). *See also Unisource Energy Services Seeks Approval of New Electric Rates to Better Reflect Customers' Use of Upgraded Utility System*, BUSINESSWIRE (May 5, 2012), http://www.businesswire.com/news/home/20150505007003/en/UniSource-Energy-Services-Seeks-Approval-Electric-Rates.

52 *See* Board of Directors of the Sacramento Municipal Utility District, Resolution No. 15-07-06, at 9 (July 16, 2015).

53 *See* Pacific Gas and Electric Company's Proposal for Net Energy Metering Successor Tariff, Rulemaking 14-07-002, at 13, 22 (Cal. Pub. Utils. Comm'n Aug. 3, 2015).

54 *See* Southern California Edison Company's Response to the Administrative Law Judge's Ruling Seeking Party Proposals for the Successor Tariff or Contract, Rulemaking 14-07-002, at 25–26 (Cal. Pub. Utils. Comm'n Aug. 3, 2015).

55 *See* San Diego Gas & Electric Company Proposal for Successor Net Energy Metering Tariff, Rulemaking 14-07-002, at 5 (Aug. 3, 2015).

Colorado	Public Service Co. of Colorado[56]	176.2	D		D	D
Connecticut	Connecticut Light & Power[57]	57.8	A			
Georgia	Georgia Power Company[58]	2.35	A	D	A	
Hawaii	Hawaiian Electric Company[59]	151.5			A	
Idaho	Avista[60]	0.3	A			
Idaho	Idaho Power Company[61]	2.0	D	D	D	
Kansas	Westar Energy[62]	0.7	A			

56 *Compare* Decision Closing Proceeding, Decision No. C15-0990, Proceeding No. 14M-0235E, at 4 (Colo. Pub. Utils. Comm'n Aug. 26, 2015), *with* Trial Staff's Reply Comments, Proceeding No. 14M-0235E, at 3–8 (Colo. Pub. Utils. Comm'n Jun. 5, 2015).

57 Application of the Connecticut Light and Power Company to Amend Rate Schedules, Docket No. 14-05-06, at 187–88 (Conn. Pub. Utils. Regulatory Auth. Dec. 17, 2014).

58 Order Adopting Settlement Agreement, Docket No. 36989, at 15 (Ga. Pub. Serv. Comm'n Dec. 17, 2013); GEORGIA POWER, RESIDENTIAL SERVICE SCHEDULE: "R-20," at 1 (2014), https://www.georgiapower.com/docs/rates-schedules/residential-rates/2.10_R-20.pdf; GEORGIA POWER, RENEWABLE AND NONRENEWABLE RESOURCES SCHEDULE: "RNR-8," at 2 (2014), http://www.georgiapower.com/docs/rates-schedules/renewable-nonrenewable/11.10_RNR.pdf.

59 Decision and Order Resolving Phase 1 Issues, Docket No. 2014-192, Order No. 33258, at 127–28, 133–34 (Haw. Pub. Utils. Comm'n Oct. 12, 2015).

60 *See In re* Application of Avista Corporation for the Authority to Increase its Rates and Charges for Electric and Natural Gas Service, Case Nos. AVU-E-15-05, AVU-G-15-01, at app. A, 26–28 (Idaho Pub. Utils. Comm'n June 1, 2015).

61 *In re* Idaho Power Company's Application for Authority to Modify Its Net Metering Service and to Increase the Generation Capacity Limit, Case No. IPC-E-12-27, Order No. 32846, at 2, 19 (Idaho Pub. Utils. Comm'n July 3, 2013).

62 Westar proposed both a high fixed charge and a demand charge for distributed energy customers. After settlement talks with solar industry intervenors, a compromise was reached whereby existing Westar customers were grandfathered in current rate structures while new customers will continue at current rates while the Kansas Corporation Commission conducts a proceeding to determine a new rate structure. Westar also proposed that the monthly fixed

Kentucky	Kentucky Power[63]	0.0	A			
Louisiana	Statewide[64]	56.6			D	
Minnesota	Xcel Energy[65]	8.1	P			
Missouri	Ameren[66]	21.0	D			
Missouri	Empire District Electric Company[67]	0.1	D			
Missouri	Kansas City Power & Light[68]	23.6	A			

service charge be increased from $12 to $15; the settlement allowed an increase to $14.50. *See* Order Approving Stipulation and Agreement, Docket No. 15-WSEE-115-RTS, at 21–22 (Kan. Corp. Comm'n Sep. 24, 2015). *Compare id. with In re* Application of Westar Energy, Inc. and Kansas Gas and Electric Company to Make Certain Changes in Their Charges for Electric Service, Volume II Minimum Filing Requirements (Section 17 – Public Version), Docket No. 15-WSEE-115-RTS, at 214 (Kan. Corp. Comm'n Mar. 2, 2015).

63 Kentucky Power asked to double its fixed charge for residential customers from $8 to $16. A settlement in the rate case allowed for an increase to $14. The Kentucky PSC reduced this to $11. *See* Order, *In re* Application of Kentucky Power Company, Case No. 2014-00396, at 57–58 (Ky. Pub. Serv. Comm'n Jun. 22, 2015).

64 *See In re* Re-examination of the Commission's Net Energy Metering Rules, General Order No. R-31417, at 4–5 (La. Pub. Serv. Comm'n June 26, 2013).

65 Xcel Energy proposed increasing its fixed customer charge from $8 to $9.25 in its 2014 rate case. This proposal was denied by the Minnesota PUC. *See* Findings of Fact, Conclusions, and Order, Docket No. E-002/GR-13-868, at 86–88 (Minn. Pub. Utils. Comm'n May 8, 2015). In its pending rate case, Xcel has again proposed raising its fixed customer charge, this time from $8 to $10. *See* Application for a Proposed Increase in Electric Rates of Northern States Power Company d/b/a Xcel Energy, Docket No. E-002/GR-15-826, at Vol. 1, 51 (Minn. Pub. Utils. Comm'n Nov. 2, 2015).

66 *See In re* Union Electric Company, d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service, Report and Order, File No. ER-2014-0258, Tariff No. YE-2015-0003, at 77 (Mo. Pub. Serv. Comm'n Apr. 29, 2014).

67 *See In re* Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service, Report and Order, File No. ER-2014-0351, Tracking No. YE-2015-0074, at 14–16 (Mo. Pub. Serv. Comm'n June 24, 2015); Filing Letter and Proposed Tariff Revision, Proposed Tariffs, File No ER-2014-0351, at 2 (Mo. Pub. Serv. Comm'n Aug. 29, 2014).

68 Kansas City Power and Light asked for an increase from $9 to $25 and received an increase to $11.88. *See In re* Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service, Report and Order, File No. ER-2014-0370 *et al.*, at 88–90 (Mo. Pub. Serv.

Nevada	Sierra Pacific Power[69]	22.3	P	P	P	P
Nevada	Nevada Power[70]	24.5	P	P	P	P
New York	PSEG Long Island[71]	58.0	P			
Oklahoma	Oklahoma Gas and Electric[72]	0.6	P	P		
Oklahoma	Public Service Company of Oklahoma[73]	0.3	P	P		
Pennsylvania	PECO Energy Company	53.2	P			
Pennsylvania	PPL Electric Utilities Corp	70.0	P			
Utah	Rocky Mountain Power[74]	16.0	A			

Comm'n Sep. 2, 2015).

69 *See* Application of Sierra Pacific Power d/b/a NV Energy for Approval of a Cost of Service Study and Net Metering Tariffs, Docket No. 15-07042, Document ID No. 4402, at 2 (Nev. Pub. Util. Comm'n July 31, 2015).

70 *See* Application of Nevada Power Company d/b/a NV Energy for Approval of a Cost of Service Study and Net Metering Tariffs, Docket No. 15-07041, Document ID No. 4399, at 11, 18, 227 (Nev. Pub. Util. Comm'n July 31, 2015).

71 PSEG Proposed increasing fixed charges for Residential Service from $0.36/day to $0.50/day. *See* Direct Pre-Filed Testimony of Joseph Trainor on Cost of Service, Rate Design, and Tariff Issues, Exhibit 34 (JTT-5), Schedule 1, 2016 LIPA Proposed Tariff Sheets, Matter No. 15-00262, at 184 (N.Y. Dept. of Pub. Serv. Jan. 30., 2015).

72 2014 Okla. Sess. Laws 290 (providing for fixed charges); Paul Monies, *OGE Energy: Utilities Eye Tariffs for Solar, Wind Users*, THE OKLAHOMAN (June 16, 2015), http://newsok.com/article/5428042.

73 *See* Monies, *supra* note 72.

74 *See In re* Application of Rocky Mountain Power, Report and Order, Docket No. 13-035-184, at i, 71 (Utah Pub. Serv. Comm'n Aug. 29, 2014). In this rate case, although the Commission did not approve a connection charge for net energy metering customers, citing the need for further study, it did approve increases in both the customer charge and minimum bill for all residential customers, accomplishing similar objectives. *See id.* at 66–67.

Washington	Avista[75]	0.8	P			
Washington	PacificCorp[76]	1.0	D			
Wisconsin	WE Energies[77]	3.3	A	A		A
Wisconsin	Wisconsin Public Service[78]	2.3	A			
Wisconsin	Madison Gas & Electric[79]	1.1	A			

Although many changes have been proposed, the dominant rate structure change is a move toward much higher fixed charges. Table 1 illustrates that proposals to increase the fixed charge component of rates have become increasingly common. These new fixed charges are designed to recover not just costs that are constant across customers, like meter reading and billing, but also grid costs that vary based upon peak demand. Where advanced metering infrastructure that allows for the imposition of demand charges has been deployed, a move toward charging for peak demand or time of use pricing is also common. In addition, many utilities have proposed to lower the remuneration provided via

75 Avista initially proposed higher fixed charges in its 2013 rate case and received a small increase. In its 2015 rate case, it has proposed raising its fixed charge from $8.50/month to $14/month. Final Order Rejecting Tariff Filing, Accepting with Conditions Full Settlement Stipulation, Authorizing Tariff Filing, and Requiring Compliance Filing, Docket UE-140188, at 15 (Wash. Utils. & Transp. Comm'n Nov. 25, 2014); Proposed Electric Tariff Sheets, Docket UE-150204, at 3 (Wash. Utils. & Transp. Comm'n Feb. 9, 2015).

76 *See* Final Order Rejecting Tariff Sheets, Resolving Contested Issues, Authorizing and Requiring Compliance Filings, Docket UE-140762, at 86, 91 (Wash. Utils. & Transp. Comm'n Mar. 25, 2015).

77 *See In re* Joint Application of Wisconsin Electric Power Company and Wisconsin Gas LLC both d/b/a We Energies, for Authority to Adjust Electric, Natural Gas, and Steam Rates, Final Decision, Docket No. 5-UR-107, PSC Ref. No. 226564, at 77–82 (Wis. Pub. Serv. Comm'n Dec. 23, 2014).

78 *See In re* Application of Wisconsin Public Service Commission for Authority to Adjust Electric and Natural Gas Rates, Final Decision, Docket No. 6690-UR-123, PSC Ref. No. 226374, at app. B, 2 (Wis. Pub. Serv. Comm'n Dec. 18, 2014).

79 *See In re* Application of Madison Gas and Electric Company for Authority to Change Electric and Natural Gas Rates, Final Decision, Docket No. 3270-UR-120, PSC Ref. No. 226563, at app. B, 2, 7 (Wis. Pub. Serv. Comm'n Dec. 23, 2014).

NEM rates to customer-produced generation.

This kind of "cost causation"-focused billing, which estimates and recovers capital and operating expenses separately, was a reality for industrial customers where more sophisticated measurement and billing was cost effective, but it was largely a theoretical construct for residential customers until the competitive threat posed by distributed solar. Of course, the basic idea of cost-causation has long been central to the theory and design of utility rate structures.[80] However, multi-part rates were seldom imposed on small customers so long as there was no way of separately measuring their contribution to capital and operating expenses, and no reason to do so since both were effectively recovered via an energy-only rate structure. Residential customers still generally do not even have the option of a multi-part rate in most parts of the United States, despite widespread deployment of smart meters, which solve the measurement problem.[81]

Although smart meters were deployed initially with the intention that "smart" rate structures would follow, most utilities were content to use the advanced meters as a way to reduce staffing costs (meter readers) and vehicle fleets. In fact, as of 2014, by which time the smart meter rollout funded by the stimulus was largely complete, only 19 utilities had implemented demand charges for residential customers, all were voluntary opt in programs, and only two had more than 1 percent participation rates.[82]

However, in the last three years, a large number of utilities, mostly located in the states with the most vibrant distributed solar markets, have proposed these rates for their customers with installed distributed solar energy. In particular, the two largest California utilities recently proposed three-part rates—including a fixed charge, a demand charge, and an energy charge—for solar customers.[83] Arizona Public Service (APS), the investor owned

80 *See* 1 KAHN, *supra* note 25, at 95.

81 As of May 2014, only 19 utilities offered the option of a demand charge rate. *See,* Ryan Hledik, *Rediscovering Residential Demand Charges*, 27(7) Electricity J. 82, 85 (Aug–Sept. 2014).

82 *See id.*

83 *See* Southern California Edison Company's Response to the Administrative Law Judge's Ruling, Rulemaking 14-07-002, at 2 (Cal. Pub. Utils. Comm'n July 10, 2014), http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=153939715; Pacific Gas and Electric Company's Proposal for Net Energy Metering Successor Tariff, Rulemaking 14-07-002 (Cal. Pub. Utils. Comm'n July 10,

utility serving most of Arizona, has proposed a similar rate, although the Arizona Public Service Commission instead allowed APS to impose a fixed charge on solar customers based upon the size of its system.[84] California is by far the state with the largest cumulative deployment of distributed solar energy: 39 percent of the national total as of January 1, 2015. Arizona ranks second for cumulative deployment with 9 percent of the national total.[85] These two states are crucial for distributed energy providers' business.

These proposed rate structure changes have met mixed reactions. Many PUCs have approved some or all of the proposed changes. Out of 63 proposed changes to rate structures in Table 1, PUCs have approved 19 and denied 12. Many PUCs have deferred making changes to rates for solar customers outside of a general rate case, which means that some of the 12 denials are in fact deferrals of a decision. Public Utility Commissions have yet to reach a final decision on the merits of just over half (32) of the proposals made to date.

In sum, the data presented in Table 1 show that electric utilities in the United States have, over the past three years, acted aggressively to slow down the growth of DERs in their service territories by raising the rates paid by consumers who own distributed solar power. While some of these changes are no doubt justified in order to more accurately allocate the costs of electricity grids, it would be surprising if utilities were not also acting in their own interest—proposing rates that preserve their monopoly when a fair allocation of costs would allow greater competition.

B. *Utility Ownership of Distributed Solar*

An alternative response of electric utilities to the challenge presented by distributed solar energy has been to take a page from the Verizon and AT&T playbook by becoming DER providers

2014), http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=154056951.

84 APS is one of the few utilities to offer an opt-in three-part rate to all customers. Its three-part rate with time-varying prices has been chosen by 10% of its customer base. So in making its three-part rate proposal for solar, APS was essentially asking to make an optional program for all customers mandatory for customers with solar. *See* Prepared Rebuttal Testimony, *supra* note 20, at 268–69.

85 *See* Form EIA-826 Detailed Data, ENERGY INFO. ADMIN., http://www.eia.gov/electricity/data/eia826/ (last visited Oct. 23, 2016).

themselves. Verizon and AT&T, currently the dominant wireless communications providers in the United States, both evolved from wireline local service providers, called Baby Bells, formed by the AT&T breakup.[86] These firms recognized the disruptive threat cellular telephony posed to their incumbent local telephone monopolies and transformed their business models from wireline to wireless telecommunications.[87]

Likewise, utilities could respond to the challenge distributed solar power presents to the retail electricity business without trying to increase the cost to residential solar producers; rather than fight the spread of distributed solar production, utilities could use the near-guaranteed cash flows created by regulated rates of return to transform themselves into DER providers. In other words, utilities could attempt to transform themselves into SolarCity. This is the conclusion at which some large electric utilities have arrived, most notably NRG.[88]

Today, some utility holding companies, like NRG, are moving into the distributed solar energy business using unregulated subsidiaries and attempting to build large, national distributed energy providers akin to SolarCity.[89] Others are proposing to their regulatory commissions that they be allowed to place distributed solar energy investments into their rate base—that is, to treat this

86 Verizon Communications formed from the merger of Bell Atlantic, one of the Baby Bells, and GTE. *See History and Timeline*, VERIZON COMMC'NS INC. http://www.verizon.com/about/our-company/history-and-timeline (last visited Oct. 16, 2016). The current AT&T formed from the merger of several Baby Bells, most notably Southwestern Bell Corp (SBC) and their former parent, AT&T. *See* Jose Pagliery, *How AT&T Got Busted Up and Pieced Back Together*, CNN MONEY (May 20, 2014), http://money.cnn.com/2014/05/20/technology/att-merger-history/.

87 *See* Pagliery, *supra* note 86.

88 In a letter to shareholders, NRG CEO David Crane stated that the goal of NRG was to profit from this transformation. *See* David Crane, *NRG's David Crane: Where Is the Amazon, Apple and Google of the Utility Sector?*, GREENTECH MEDIA (Mar. 27, 2014), http://www.greentechmedia.com/articles/read/nrgs-david-crane-where-is-the-amazon-apple-and-google-of-the-utility-sector. As of the first quarter of 2015, NRG was tied for 4th place in residential solar market share. *See* Mike Munsell & Nicole Litvak, *The Battle for Third Place in the US Residential Solar Installer Race*, GREENTECH MEDIA (July 8, 2015), http://www.greentechmedia.com/articles/read/The-Battle-for-Third-Place-in-the-US-Residential-Solar-Installer-Race.

89 *See* Crane, *supra* note 88; *see also* Munsell & Litvak, *supra* note 88 (noting that NRG is the 4th largest installer of residential solar in the United States as of Q1 2015).

type of investment just like any other infrastructure investment that they would make within their service territory.[90] There is a significant debate amongst the energy policy community regarding appropriate utility strategy with respect to distributed solar investments. But this debate has, to date, largely focused on the economic questions that inform the business strategy rather than on the structural implications for competition.[91]

To some degree, utility ownership programs may allow for increased access to distributed energy, especially for low-income customers. In order to qualify for a loan to either purchase or lease panels with an independent solar company, a homeowner or business must have good credit. Utilities, because of their ability to earn a guaranteed return on investments via retail rates, may be able to offer solar to customers who could not meet the standards set by solar firms and their bankers.

However, the ability of utilities to provide below-market financing for residential solar becomes less important as the installed cost of solar panels falls. Over the past five years, the installed cost has fallen from approximately $8.50 to approximately $4 per watt.[92] Given that this cost trend is expected

90 *See* Application of Tucson Electric Power Company for Approval of its 2015 Renewable Energy Standard Implementation Plan, Docket No. E-01933A-14-0248, Decision No. 74884, at 7 (Ariz. Corp. Comm'n Dec. 31, 2014); Arizona Public Service Company for the Approval of its 2014 Renewable Energy Standard Implementation Plan for Reset of Renewable Energy Adjustor, Docket No. E-01345A-14-0250, Decision No. 74883 (Ariz. Corp. Comm'n Dec. 31, 2014); Georgia Power Company's Advanced Solar Initiative: Order Approving Program with Modifications, Docket No. 36325, Document No. 145013 (Ga. Pub. Serv. Comm'n Nov. 29, 2012); Georgia Power Company's Advanced Solar Initiative: Order Approving Final Program Guidelines and Power Purchase Agreements for the 2015/2016 Distributed Generation Program Solicitations, Docket No. 36325, Document No. 159569 (Ga. Pub. Serv. Comm'n July 30, 2015).

91 *Compare* Christopher Raup, *Con Edison: Utility Ownership of Large-Scale Renewables Will Drive Down Costs*, GREENTECH MEDIA (July 17, 2015), http://www.greentechmedia.com/articles/read/rent-or-own-developing-large-scale-renewables-in-the-customers-best-interes (arguing that utilities should own solar assets rather than purchase their power), *with* Gavin Donohue, *Utility Ownership of Large-Scale Renewables Would Reverse a Decade's Worth of Ratepayer Savings*, GREENTECH MEDIA (July 27, 2015), http://www.greentechmedia.com/articles/read/utility-ownership-of-large-scale-renewables-reverses-a-decades-worth-of-rat (arguing utilities should purchase power from solar power plants rather than own them).

92 *See* BARBOSE ET AL., *supra* note 1.

to continue into the future,[93] third party solar installer access to these customers may only be a matter of time. Particularly on the timescale of utility planning processes—a decade or more—credit-related limitations on access to distributed energy are likely to become much less significant because the cost of solar panels will be much lower. If so, this will reduce the significance of any unique role that a regulated utility might play in the distributed energy space. Whatever the business merits of investor-owned utilities entering the distributed energy market, the move raises obvious anti-competitive concerns. Monopoly-financed distributed solar may add less capacity than that lost if third party providers are forced out of the market by the utility's entry.

Head to head competition between regulated utilities and DER providers is still a small piece of the response by utilities to the "disruptive challenges" they face.[94] It remains to be seen if it will emerge as a dominant response. Regulated electric utilities, particularly those that have grown in size via a recent spate of mergers after repeal of the rules governing the size of utility service territories a decade ago,[95] are well poised to transform themselves if they perceive it as in their interest to do so. None, perhaps other than NRG, has yet made a move in this direction.

C. *Anticompetitive Practices*

It seems likely that utilities are motivated to focus on cost-causation issues in redesigning rates for NEM customers both for legitimate reasons and because these changes will reduce threats to their current market position as monopolists. They may also be tempted to enter into direct competition with DER providers in ways that take advantage of their market power. It is at least possible, if not likely, that a utility might take advantage of its monopoly to attempt to drive providers of DERs out of its territory. But would either changing rate structures in ways that

93 *See, e.g.*, Bloomberg New Energy Finance, New Energy Outlook 2017, Finding 2 (June 15, 2017), https://about.bnef.com/new-energy-outlook/.

94 *See, e.g.*, Julia Pyper, *Georgia Power's Rooftop Solar Program Signs up Only 5 Customers*, GREENTECH MEDIA (June 17, 2016), https://www.greentechmedia.com/articles/read/georgia-powers-rooftop-solar-program-signs-up-only-five-customers.

95 *See* Jack Azagury et al., *The Race to Consolidate: Positioning to Win in the Contest for Scale*, FORT. MAG. (Sept. 2012), https://www.fortnightly.com/fortnightly/2012/09/race-consolidate; *see also* Energy Policy Act of 2005, Pub. L. No. 109-58, § 1263, 119 Stat. 594, 974.

disadvantage potential new competitors, or engaging in other, subtler forms of exclusion, pose legal risk for utilities under federal antitrust laws?

The assumption has generally been no. State-chartered monopolies, since the expansion of federal regulatory powers under the Commerce Clause in the 1930s, have generally been exempted from federal antitrust laws that limit anticompetitive practices aimed at establishing or maintaining monopolies. The U.S. Supreme Court articulated, in a series of cases beginning with *Parker v. Brown*[96] and reaching its modern form in *California Retail Liquor Dealers Association v. Midcal Aluminum*,[97] a doctrine exempting state regulation of private industry that restrains free-market competition in ways that would violate federal antitrust law if pursued by a non-regulated entity.

Given the reach of state regulation of industries and professions regarding entry, price, and quality that predated the federal antitrust framework, crafting such an exemption was necessary if many practices that were required by states were not to create liability for private actors carrying them out.[98] Electric and gas utilities are monopolies that, for example, are granted service territories by state regulators within which other firms are forbidden from providing similar services.

The basic rule applied by courts since *Midcal* for determining whether a practice conducted pursuant to state regulatory oversight is exempt from federal antitrust liability asks whether state action has authorized the practice in question and whether it is carried out subject to active supervision by appropriate state authorities. Put differently, active monitoring by a state regulatory body such as a public utility commission can substitute for the antitrust laws so long as there is a policy, clearly articulated by the state, to displace competition.

A related shield to antitrust claims for regulated utilities, the

96 *See* Parker v. Brown, 317 U.S. 341, 350–51 (1943) (finding that California raisin marketing program was a state authorized restraint on competition, not a private restraint, so did not violate federal antitrust laws).

97 *See* Cal. Retail Liquor Dealers Ass'n v. Midcal Aluminum, 445 U.S. 97, 105–06 (1980) (finding that wine price-filing regime violated antitrust law because state did not supervise the program adequately).

98 For example, the regulation of the price of grain storage in Chicago grain elevators at issue in *Munn v. Illinois* began 19 years prior to passage of the Sherman Antitrust Act. *See* Munn v. Illinois, 94 U.S. 113, 114 (1877); Sherman Antitrust Act, 26 Stat. 209 (1890) (codified at 15 U.S.C. §§ 1–7).

Noerr-Pennington doctrine, protects regulated monopolies from challenges associated with their efforts to influence executive or legislative branches of government even if such lobbying is animated by anticompetitive concerns.[99] The Supreme Court has consistently held that attempts to influence the government are not a violation of the antitrust laws even if they result in legislative or regulatory decisions that have anticompetitive effects. Because *Noerr-Pennington* doctrine concerns lobbying and speech, rather than the actual anticompetitive practices undertaken by firms possessing market power, it is beyond the scope of this article.

The next section examines the application of this doctrine to the conflict between electric utilities and the distributed solar industry. I then detail an additional but related shield to potential antitrust claims—the filed rate doctrine, which requires that a tariff, once approved by a state regulator, be enforced by a utility. The filed rate doctrine generally serves to ensure that once a rate is filed with a public utility commission, a utility is shielded from judicial challenges by customers objecting to the new rate.

II. EXEMPTIONS FOR REGULATED UTILITIES FROM ANTITRUST CLAIMS: STATE ACTION IMMUNITY AND FILED RATE DOCTRINES

Whether electric utilities whose prices, investments, and practices are subject to extensive state regulation should be exempt from federal antitrust doctrine seems to be an easy question. How could it be fair for one level of government to charter a monopoly and then for another to penalize it for being one? It would make little sense to allow a state PUC to exercise extensive control over a firm's activities, only to hold the firm liable for anticompetitive practices mandated by the state regulatory program. This is particularly true in contexts where the activity at issue, or at least substantial parts of it, may have characteristics that lead naturally towards monopolization. In contexts of "natural monopoly," state governments have stepped in to encourage the economies of scale enabled by monopolization in network industries but, through price and conduct regulation, limit the abuse of monopoly. It would seem odd in the extreme to then create risk of antitrust

99 E. R.R. Presidents Conference v. Noerr Motor Freight, Inc., 365 U.S. 127, 144–45 (1961); United Mine Workers of America v. Pennington, 381 U.S. 657, 670 (1965).

liability that arises out of the state's regulatory strategy.

But natural monopolies do not last forever. At one point in time, the U.S. telephone system was a natural monopoly owned and operated by one firm—AT&T. Until new technologies emerged that allowed for competition with AT&T, AT&T was a natural monopoly, at least for parts of its business.[100] Similarly, interstate trucking emerged as an important competitor to an earlier network industry—railroad freight—that had been operated as a regulated cost-of-service monopoly.[101] A key issue for regulated monopoly industries that become exposed to competition is the new role that regulators, either state or federal, must adopt in managing the industries' anticompetitive tendencies, in place of enforcing the antitrust statutes that serve to control the abuse of market power in most of the U.S. economy.

I argue in the introduction above that the electricity industry is in the midst of a period of intense but still partial competition between new entrants that seek to serve some electricity needs of consumers via DERs and traditional monopoly service providers of grid-based energy services. The logic of natural monopoly has been compromised, but not fully undermined. As illustrated above in Part I, the response from utilities over the past three years has been very active. Given the right of private parties to challenge actions by firms as violations of the antitrust laws, it would seem only a matter of time before major DER providers begin to utilize these tools to call into question the new rate structures or other practices with which utilities are responding to DER competition.

One recent case illustrates the possible use of defensive anticompetitive rate setting to preserve a monopoly. SolarCity, the largest distributed solar provider in the country as of this writing,[102] has brought an antitrust challenge to rate changes made by Salt River Project, an Arizona utility provider of water and electricity.[103] As discussed in the introduction, the new rates

100 *See* MCI Commc'ns Corp. v. Am. Tel. & Tel. Co., 708 F.2d 1081 (7th Cir. 1983).

101 *See* 2 KAHN, *supra* note 25, at 7–10.

102 SolarCity was by far the largest residential rooftop installer of solar panels in 2016. *See 2016 Top 500 North American Solar Contractors*, SOLAR POWER WORLD, July 2016, at 24, https://www.solarpowerworldonline.com/2016/07/july-2016-issue-5th-annual-2016-top-solar-contractors/.

103 *See* Amended Complaint for Antitrust Violations & Business Torts, SolarCity v. Salt River Project Agric. Improvement & Power Dist., No. 2:15-cv-0037-DLR (D. Ariz. May 20, 2015).

imposed large fixed charges and demand charges on customers installing solar (see Table 1), thereby reducing the attractiveness to retail customers of installing solar panels. After the rate change, applications for distributed solar panels allegedly fell by 96 percent in the Salt River Project's service territory.[104]

This case will not resolve the interplay between antitrust law and state regulation of energy utilities. Because Salt River Project is a special district rather than an investor-owned utility, it is not subject to the Arizona Corporation Commission's jurisdiction over its ratemaking.[105] As a result, the case is unlikely to reveal how courts may view the application of antitrust laws to regulated utility rate changes approved by public utility commissions that harm DER providers. Nevertheless, it is an early signal of the potential for utilities to ask for monopoly-protective rate changes that are approved by their public utility commissions. Utilities, whether publicly owned, as is Salt River Project, or privately owned, as is the case in most of the United States, are responding to the competitive threat posed by rooftop solar in a fashion that calls into question the scope and depth of their monopoly.

It is crucial to recognize that in cases like the dispute between SolarCity and the Salt River Project, the critical issue is not whether some change in rates was justified in order better to allocate the costs of service between different rate classes, nor whether the particular changes made discriminate unfairly against DER and consequently, the DER providers. Some increase in the Salt River Project's fixed charge or demand charge for DER customers might have been justified under the circumstances. The key issue in the case is whether any firm that is harmed by the anticompetitive nature of the rate change has any remedy against a state chartered monopolist.[106]

Looking forward, the threat posed by solar energy (and DERs more generally) to electric utilities will only grow more acute. Likewise, the response to DER providers in the form of rate changes by regulated utilities is likely to gain momentum. Decisions on these rate cases are likely to spur challenges to the

104 *See id.* at 2.

105 In essence, Salt River Project is an agency of the state government rather than a private utility, regulated by a Public Utility Commission. This means that Salt River Project can change its own rates by a vote of its Board of Directors. *See id.* at 9.

106 *See* Parker v. Brown, 317 U.S. 341, 350–51 (1943).

allegedly anticompetitive impact of PUC approval of monopoly protective activity by electric utilities. Whether or not these challenges gain traction, and influence the behavior of utilities and their PUCs, will depend on how courts apply the state action immunity doctrine in these cases and upon whether utilities can rely on the filed rate doctrine to shield them from challenges to PUC-approved changes to rate structures.

In what follows, I argue that there is substantial uncertainty concerning the application of these defenses. I then identify strategies that are available to both regulated utilities and public utility commissions that can minimize the risks associated with antitrust liability in this period of transition between a natural monopoly and a structurally competitive market. The key will be for the utilities, and especially the PUCs, to explicitly address the impacts of these changes in the competitive landscape for electricity services brought on by technological development. The PUCs would be best served by starting to act and think a bit like competition regulators.

A. *State Action Immunity Exemptions from Antitrust Liability*

The Sherman Antitrust Act was enacted at a time when the reach of the federal government into regulation of commerce was much narrower than today. In particular, there was no perceived conflict between regulation of interstate commerce via federal antitrust law and state regulation of intrastate network industries as monopolies. Challenges to the Roosevelt Administration's expansion of economic regulation later altered the courts' understanding of interstate commerce[107] to such a degree that the Supreme Court carved an exception to antitrust liability in order to take account of the traditional state role in regulating behavior in particular industries. One year after the landmark decision in *Wickard*, which expanded the reach of federal regulation to activities of a local character but substantially affecting interstate commerce, the court began the process of crafting a new exception to antitrust liability for firms subject to state regulation. In *Parker v. Brown*, the court found that an agricultural marketing program for raisins was not an illegal restraint on competition because a

107 *See* Wickard v. Filburn, 317 U.S. 111, 127–29 (1942) (holding that the Commerce Clause permits federal regulation of local activities that, in aggregate, have a substantial economic effect on interstate commerce).

state government, rather than private actors, authorized it.[108]

After Brown, uncertainty remained regarding when antitrust liability would attach to activity that was the result of state regulation. For example, in *Cantor*, the Supreme Court found that a regulated utility had violated the Sherman Act even thought the utility was acting pursuant to a tariff authorized by its PUC. The court held that a Michigan utility's light bulb distribution program impermissibly interfered with drug store sale of bulbs, even though the program was part of tariffs filed with the Michigan Public Service Commission.[109] In the court's view, Michigan's involvement in Detroit Edison's light bulb program was insufficient to create antitrust immunity even though Detroit Edison could not have ceased its program without filing a new tariff with the Public Service Commission.[110]

A few years later, in a case concerning price regulation of alcoholic beverages, the court articulated a two-part test for application of state action immunity that remains in place today.[111] In *Midcal Aluminum*, the court divided the analysis of whether state regulation could confer protection from antitrust liability into two prongs. First, the anticompetitive activity must be clearly authorized as state policy.[112] Second, the anticompetitive activity in question needs to be "actively supervised" by the state itself.[113] The *Midcal* decision significantly clarified the breadth of the antitrust exemption for state-regulated private activities. However, it still left several questions: how specifically must an activity be authorized in order to qualify for the exemption, and what sort of state supervision is sufficiently active to protect anticompetitive activity by regulated firms?

After *Midcal*, numerous cases addressed the first of these questions. It became clear that only certain parts of state governments would count as "the state" for purposes of state action immunity doctrine.[114] In particular, state legislatures and state supreme courts could authorize anticompetitive activity. It

108 *See* Parker v. Brown, 317 U.S. 341, 350–51 (1943).

109 *See* Cantor v. Detroit Edison Co., 428 U.S. 579, 592–98 (1976).

110 *See id.* at 592–95.

111 *See* Cal. Liquor Dealers v. Midcal Aluminum, Inc., 445 U.S. 97, 105 (1980).

112 *See id.*

113 *See id.*

114 *See* Hoover v. Ronwin, 466 U.S. 558, 568 (1984).

also became clear that so long as authorization of the regulated business activity's anticompetitive practices by either of these agents was clear, the court would not examine whether specific anticompetitive practices had been authorized by "the state."[115]

Particularly for electric utilities and their PUC regulators, the authorization prong of state action immunity has not generally been difficult to satisfy. The PUCs' authority to regulate generation, transmission, distribution, and sale of electricity by electric utilities is generally authorized by state statute[116] or in some cases in state constitutions.[117] Thus public utility commissions have commonly been held by courts to be authorized by the state to enforce a policy that allows anticompetitive conduct by electric utilities that are monopolies in their service territories.[118] It is therefore likely that reviewing courts will conclude that the rate setting strategies proposed by electric utilities and approved by PUCs that serve to restrict competition from distributed solar meet the "authorization" element for state action immunity.[119]

On the other hand, at least some ambiguity may exist for regulated utilities in states that allow for retail competition. As of 2012, seventeen states allow for competition at the retail level between utilities and other providers of grid-supplied energy.[120] Where retail competition exists and is authorized by state statute, authorization by the state for a utility to displace all competition is arguably less clear.

115 *See* S. Motor Carriers Rate Conference, Inc. v. United States, 471 U.S. 48, 63–64 (1985).

116 *See, e.g.*, CAL. PUB. UTIL. CODE §§ 216, 701 (West 2016).

117 *See, e.g.*, ARIZ. CONST. art. XV, §§ 2–3.

118 *See, e.g.*, Trigen-Okla. Energy Corp. v. Okla. Gas & Elec., 244 F.3d 1220, 1225 (10th Cir. 2001) (finding authorization and supervision); N. Star Steel Co. v. Midamerican Energy Holdings Co., 184 F.3d 732, 738–39 (8th Cir. 1999) (finding authorization and supervision); TEC Cogeneration v. Fla. Power & Light Co., 76 F.3d 1560, 1568–69 (11th Cir. 1996) (finding authorization and supervision); Colum. Steel Casting Co. v. Portland Gen. Elec. Co., 111 F.3d 1427, 1437 n.8 (9th Cir. 1996) (finding authorization but lack of supervision and hence no state action immunity).

119 One possibility for challenging the authorization prong of state action immunity might exist where a utility proposes rate structure changes with anticompetitive effects on DERs and PUC regulation of distributed energy has not been explicitly authorized by statute. However, courts have generally been willing to construe authorization in broad terms.

120 *See* ENERGY INFO. ADMIN., *supra* note 5.

The second element of the state action immunity shield from antitrust liability as articulated in *Midcal*—a firm's anticompetitive conduct must be "actively supervised" by the state—has been left far more open to interpretation by reviewing courts. The cases concerning electric utilities decided by appellate courts during the implementation of the Public Utilities Regulatory Policy Act[121] generally indicated a significant degree of deference to claims by utilities that their actions were shielded by state action immunity doctrine.[122]

The U.S. Supreme Court, by contrast, in reviewing the supervision by state authorities of anticompetitive conduct, has indicated both that mere passive approval is inadequate[123] and that where market participants have control over the implementation of or supervision of conduct, state action immunity may not exist.[124] Most recently, the court, in deciding whether the "active supervision" requirement for state action immunity had been met in a case involving professional licensing, noted that "in general . . . the adequacy of supervision otherwise will depend on all the circumstances of a case."[125]

Thus, while U.S. Circuit Courts of Appeal have generally been highly deferential to PUCs in evaluating the supervision of regulated utilities anticompetitive conduct, the Supreme Court, when it has reached the issue, has been both more stringent in its evaluation and yet at the same time unclear about the substantive requirements of "active supervision."[126]

The few examples we have of Supreme Court review of regulated utility practices under antitrust law have produced surprising results. Either because the utility was interfering with

121 PURPA created a class of non-utility generators known as Qualifying Facilities that are allowed to site in utilities service territories and from which utilities must purchase power at "avoided cost" rates. *See generally* Public Utilities Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978). This mandatory purchase obligation was repealed for Qualifying Facilities with access to competitive wholesale power markets as part of the Energy Policy Act of 2005. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, § 1253, 119 Stat. 594, 967; 16 U.S.C. § 824a–3(m) (2012).

122 *See* Jim Rossi, *Antitrust Process and Vertical Deference: Judicial Review of State Regulatory Inaction*, 93 IOWA L. REV. 185, 204–07 (2007).

123 *See* FTC v. Ticor Title Ins. Co., 504 U.S. 621, 636 (1992).

124 *See* N.C. State Bd. of Dental Examiners v. FTC, 135 S. Ct. 1101 (2015).

125 *Id.* at 1107.

126 *See Ticor Title Ins.*, 504 U.S. at 636; *Dental Examiners*, 135 S. Ct. at 1101.

businesses outside of its monopoly such as light bulb sales,[127] or because the activities in question—interstate wholesale transactions of electricity—were regulated under the Federal Power Act and so antitrust statutes were not subject to the state action immunity shield,[128] utilities have been subject to antitrust liability despite supervision by state or federal utility regulators.

A key question in evaluating supervision by regulatory authorities, left largely unaddressed by the jurisprudence, is exactly what such supervision must consist of. Should the supervision consist of mere monitoring of potentially anticompetitive activity with the possibility of restricting it if it fails to meet unspecified standards? If so, then utilities have essentially no risk that the antitrust laws will be enforced against them. Should the supervision consist of ensuring that state policies, authorized by statute, are being fulfilled? This might make sense given the requirement that anticompetitive conduct be generally but not specifically authorized by the state before it receives immunity from antitrust enforcement. In the electricity context this might be a requirement that PUCs perform their core function: ensuring that regulated utilities provide service to customers at just and reasonable rates.[129]

However, if one views the state as taking responsibility for balancing antitrust concerns with other state policies, a court might look to see whether the state has supervised the anticompetitive aspects of private conduct in evaluating "active supervision." In that case, reviewing courts might assess whether or not a public utility commission supervising electric utility conduct with potentially anticompetitive impacts on rival firms has evaluated those impacts, perhaps acting to minimize them or at least consider them in a broader evaluation of rate impacts and other policy goals. This type of an evaluation would not dictate an outcome, for example on abuse of market power, but it would require consideration of antitrust concerns. At a minimum, a court might ask whether the state has considered competition questions at all in actively supervising the conduct of electric utilities when that conduct impacts unregulated businesses located outside of their monopoly grant.

127 *See* Cantor v. Detroit Edison Co., 428 U.S. 579, 592–98 (1976).

128 *See* Otter Tail Power Co. v. United States, 410 U.S. 366, 372–75 (1973).

129 *See* Fed. Power Comm'n v. Hope Nat. Gas, 320 U.S. 591, 602 (1944).

Unfortunately, especially in the utility context, there is a real lack of clarity beyond the cases from the late 1990s and early 2000s concerning wholesale competition under the Public Utility Regulatory Policy Act (PURPA).[130] PURPA allowed the first competition with regulated utilities by small cogeneration and renewable electric power plants. The relevance of these cases to DERs is, however, open to dispute. The small PURPA generators, called qualifying facilities,[131] could likely not have competed with utility-owned generation absent state decisions to allow compensation at remunerative rates. By contrast, at least in some states, DERs are (or will shortly be) cost-competitive with grid-supplied energy, particularly if traditional rate structures are maintained. The number of states where DERs can compete for at least a fraction of utility sales is likely to grow substantially over the next decade.[132]

Thus, the decision to allow anticompetitive conduct with respect to DER providers via rate structure changes is quite different than that of PURPA qualifying facilities. Qualifying facilities would never have existed without the access to utility systems provided by some states under PURPA. Widespread deployment of DERs will likely come to pass in the next decade unless utility rate structures change to prevent this outcome because homeowners and businesses will opt to purchase these systems and place them on their premises. The key distinction from the earlier PURPA related cases is that DERs are located on customer property, not within the utility's transmission system. The issue with PURPA generators was whether utilities could behave anticompetitively with respect to the grant of access to their transmission system. By contrast, the issue with DERs is whether utilities can behave anticompetitively with respect to actions that households and businesses take to install solar panels or other energy systems in their own homes. If "all the circumstances of the case"[133] matter in evaluation of active supervision, the PURPA cases may not serve as clear guidance because while defendants were similar, facts and economics were quite different than for likely challenges to rates impacting DERs.

130 *See generally* Public Utility Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978); *see also* note 121, *supra*.

131 *See* 16 U.S.C. §§ 796(17)–(18) (2012).

132 *See* KIND, *supra* note 6, at 13.

133 N.C. State Bd. of Dental Examiners v. FTC, 135 S. Ct. 1101, 1107 (2015).

Outside of the utility context, the Supreme Court, although considering the question of state action immunity on multiple occasions, has grounded its decision making on whether the anticompetitive activity was authorized by the state rather than on whether it was actively supervised.[134]

B. *Filed Rate Exemptions from Antitrust Immunity*

The filed rate doctrine has also been an important defense for utilities to antitrust claims. The Supreme Court, in *Keogh*, held that a private plaintiff may not recover antitrust damages from a regulated firm so long as the tariff or rate schedule of the firm has been filed with its public utility commission.[135] Later, the Supreme Court, in reaffirming the filed rate doctrine, admitted that it may have been "unwise as a matter of policy" but noted that since Congress had had numerous opportunities to overturn the doctrine and had failed to do so, the court would not upset settled precedent.[136] The filed rate doctrine has been extended from federal contexts to also cover regulated rates overseen by state agencies.[137]

The filed rate doctrine generally protects any rate or tariff filed with the appropriate public utility commission, whether or not it has been reviewed and found to be just and reasonable.[138] However, this protection extends only to suits brought by customers or purchasers of rate regulated goods from the regulated firm and not generally to suits brought by competitors.[139] In reaching this conclusion, courts have reasoned that a rule intended to ensure uniformity of rates between customers should not

134 *See id.*

135 *See* Keogh v. Chi. & Nw. Ry. Co., 260 U.S. 156, 161 (1922); *see also* Square D Co. v. Niagara Frontier Tariff Bureau, Inc., 476 U.S. 409, 417 (1986).

136 *Square D*, 476 U.S. at 420.

137 *See, e.g.*, Sun City Taxpayers' Ass'n. v. Citizens Util. Co., 45 F.3d 58, 62 (2d Cir. 1995); H.J. Inc. v. Nw. Bell Tel. Co., 954 F.2d 485, 494 (8th Cir. 1992); Taffet v. Southern Co., 967 F.2d 1483, 1494 (11th Cir. 1992).

138 *See Square D*, 476 U.S. at 417 n.19.

139 *See* Cost Mgmt. Servs. Inc. v. Wash. Nat. Gas Co., 99 F.3d 937, 944–45 (9th Cir. 1996); *In re* Lower Lake Erie Iron Ore Antitrust Litig., 998 F.2d 1144, 1161 (3d Cir. 1993); City of Kirkwood v. Union Elec. Co., 671 F.2d 1173, 1179 (8th Cir. 1982); City of Groton v. Conn. Light & Power Co., 662 F.2d 921, 929 (2d Cir. 1981) (noting that "an anticompetitive practice embodied in a tariff may violate the antitrust laws if it . . . impacts upon competitors as opposed to customers"); Essential Commc'ns Sys., Inc. v. Am. Tel. & Tel. Co., 610 F.2d 1114, 1121 (3d Cir. 1979).

provide an unfair advantage to a utility with respect to its competitors.[140] Thus, while the filed rate doctrine would almost certainly insulate utilities from antitrust claims brought by unhappy customers seeking lower rates, it will not serve the same purpose for claims for damages or injunctive relief brought by a competitor firm for harm to their business, even when such harm is caused by rates filed with a public utility commission

III. MANAGING ANTITRUST LIABILITY AT THE GRID EDGE

Recent rate changes proposed by electric utilities strongly suggest a trend toward practices that shift allocation of grid costs towards customers that own DERs. Such practices are justified to some degree by the cost shifts created by net energy metering. However, the degree of the shift in cost allocation currently underway raises anticompetitive concerns given the market power possessed by electric utilities in the retail context. Should utilities fear more challenges like the one brought by SolarCity in response to Salt River Project's rate restructuring? For a utility to be at risk, a court would have to find either that the utility's actions in restructuring rates were not authorized by the state legislature's delegation of authority to the public utility commission or that the commission had failed to adequately supervise the utility's activities.

As shown in Part I, the precise contours of the doctrine immunizing utilities from such a challenge are unclear and in any case, likely to be applied in a fact-specific manner by reviewing courts. Utilities and their commissions can take a number of practical steps to minimize the risk of a successful antitrust challenge to their attempts to reallocate costs. By doing so, they may also ensure that the reevaluation of NEM rate structures will be fair to utilities, consumers, and DER providers, thus confirming not only that the objectives of state utility law are met but also that federal antitrust law is respected to the degree possible. Here, I suggest a simple set of procedural and substantive approaches that will reduce risks for utilities seeking to reform their rate structures to more accurately allocate costs to customers.

140 *See City of Kirkwood*, 671 F.2d at 1179.

A. *Authorization Risk*

The electric utilities concerned about loss of customer sales to DER providers and newly focused on cost allocation issues have taken several approaches to rate restructuring. Some have proposed rate cases in response to legislation enacted by state legislatures requiring reevaluation of rates that may cross-subsidize DERs.[141] Some have proposed rate restructuring either of NEM rates or of all residential rates as part of general rate cases filed periodically with their commission.[142] Some have proposed DER tariff reforms without legislative authorization and separately from their general rate case.[143] By acting under specific legislative authorization rather than via a general rate case or a tariff modification outside of a general rate case, a utility can dramatically reduce the possibility that a court would find that rate restructuring is not "authorized by the state" for purposes of state action immunity. Direct authorization from the legislature for anticompetitive activities is the preferred method of authorization recognized by the Supreme Court.[144] Legislation authorizing or requiring utilities to consider modifications to NEM rates will also give DER providers an avenue to impact the trajectory of rate reform in state legislatures, a context where they may have more influence than the public utility commissions.

If utilities act to restructure rates in ways that are materially harmful to DER providers without specific state legislative authorization, they run the risk that a reviewing court would find the specific conduct had not been authorized by the very general language in most state public utility statutes. The question a court will ask is whether a state utility statute, enacted prior to the invention of DERs and the potential competition they create for utilities, could possibly authorize anticompetitive conduct by utilities aimed at harming DER providers. While there is no

141 *See, e.g.*, Application of Nevada Power Company, *supra* note 70, at 3–4; Pacific Gas and Electric Company's Proposal, *supra* note 53.

142 *See, e.g.*, *In re* Kansas City Power & Light Company's Request for Authority, *supra* note 68, at 76.

143 *See, e.g.*, *In re* Arizona Public Service Company's Application for Approval of Net Metering Cost Shift Solution, Docket No. E-01345A-13-0248, Decision No. 74202, at 23 (Ariz. Corp. Comm'n Dec. 3, 2013).

144 *See* S. Motor Carriers Rate Conference, Inc. v. United States, 471 U.S. 48, 62–64 (1985).

requirement for "a specific, detailed, legislative authorization,"[145] the state does have to intend to displace competition in the relevant market.[146]

Distributed solar is a novel technology. DER providers primarily serve as financers and installers of generation, not energy providers. DER firms arguably compete with utilities in a very different way than another supplier of electricity from the grid would. Thus, it is possible that a court might find a lack of authorization for rate cases harming DER providers. This risk may be particularly acute when a utility acts to restructure NEM rates outside of a general rate case. There, the appearance of singling out competition is most acute given that the utility is raising costs for one class of customers without decreasing costs for others.

The risk of a court finding no authorization of anticompetitive activity will be most acute in situations that do not involve rate cases, such as management of interconnection, charges for engineering or interconnection, and other administrative processes not closely overseen by the public utility commission. These concerns will grow more critical as utilities enter into direct competition by becoming DER providers in their service territories with unregulated subsidiaries. A court might reasonably conclude that a utility is using its interconnection processes to impede competition through its operation of either its grid-supplied energy business or, if applicable, its DER provider business. The solution from an antitrust risk management perspective is to specify in rate schedules, in as much detail as possible, any interconnection and non-rate policies that may impact DER providers or their customers.

This sort of specification in rate schedules will also allow an opportunity for DER providers to comment on and attempt to influence many practices that raise costs for their businesses. This approach should also, because of filed rate doctrine, insure more consistent application of whatever practices eventually become a part of approved rate structures. It will also create a more stable business climate for DER providers because they will have some certainty that such policies will not change prior to the next general rate case.

In sum, the risk that a reviewing court would find that the

145 City of Lafayette v. La. Power & Light Co., 435 U.S. 389, 415 (1978).

146 *See S. Motor Carriers*, 471 U.S. at 64.

state has not authorized changes either to rate structures or practices impacting DERs and DER providers is real. There are clear paths forward to managing this risk, and these steps are being taken in at least some states.[147] Finally, by taking these steps, a utility or PUC can provide meaningful opportunity for DER providers to participate in political processes shaping utility conduct.

B. *Supervision Risk*

While a court reviewing alleged anticompetitive conduct that harms DER providers might find that the state authorized the conduct, there is the also the risk that the court could conclude that state supervision of the conduct was insufficiently "active" to merit protection from antitrust liability. Such an outcome might occur if the court took the view that more than just review and the possibility of modification or rejection was required by a utility commission before approving conduct that would materially harm DER providers. As noted in Part II, while appellate courts have generally been deferential to public utility commissions in evaluating their supervision of anticompetitive conduct, the Supreme Court has been less deferential and at the same time less clear about what standards will insulate utilities from antitrust liability.[148] Furthermore, the Supreme Court has made clear that supervision is a fact- and context-specific inquiry, thus reducing the extent to which prior decisions involving other industries or other electricity sector contexts may serve as guides.[149]

In considering revisions to NEM rates or increases in demand or fixed charges for residential customers, public utility commissions can minimize their risk by making findings that adopt a stringent view of the "active supervision" requirement. Some public utility commissions have not examined detailed justifications for changes in rate structures, perhaps relying on the relative insulation they have from challenges to rate cases as unjust

147 For example, the California PUC opened a proceeding to consider the issue of cross-subsidy in rates and commissioned studies by independent economic experts on the issue before implementing a modified NEM rate. *See* California Public Utilities Commission, Decision Adopting a Successor to Net Energy Metering Tariff, Decision 16-01-044, at 6–10 (Jan. 28, 2016), http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M158/K181/158181678.pdf.

148 *See supra* notes 121–126 and accompanying text.

149 *See supra* note 125 and accompanying text.

or unreasonable under *Hope* and its progeny.[150] Rate structures under *Hope* are largely immune from challenge so long as they conform to a broad zone of reasonableness.[151] But a challenge based upon anticompetitive impacts on DER providers would not rest on a judicial finding that a new rate structure was unjust or unreasonable. It would depend on a court's determination that the regulated electric utility enacted anticompetitive rates and impermissibly used its market power to harm DER providers. The claim is not that utilities should not be allowed to recover costs; it is that they may not distort the cost allocation in ways that serve anticompetitive ends.

Such a result is avoidable if one takes the view that "active supervision" of electric utilities in a context where competition exists should include evaluation of the competitive impacts of utility actions, including changes in rates or other practices. To date, evaluation of the impacts of changes in NEM rates or fixed charges on broad classes of customers have focused on either the impacts to the electric utility (does it recover its costs) or impacts to ratepayers (is a cost shift eliminated).[152] While this tracks an analysis under traditional rate-making law and cost allocation principles, it fails to assess the damages to DER providers that compete with the utility to supply energy services to customers. It also fails to recognize the inherent ambiguity in allocation of joint costs in the electricity system. There is no clear way to allocate joint costs. In a context where utilities have incentives to allocate them in anticompetitive fashion, commissions should keep active watch. By contrast, the current best practice is entirely focused on avoiding loss of recovery of grid related costs by utilities, assessing impacts on ratepayers with NEM rates, and assessing impacts on other ratepayers that may have been cross-subsidizing customers with NEM rates.[153]

150 *See* Fed. Power Comm'n v. Hope Nat. Gas Co., 320 U.S. 591, 602 (1944); Duquesne Light Co. v. Barasch, 488 U.S. 299, 314–15 (1989).

151 *See In re* Permian Basin Area Rate Cases, 390 U.S. 747, 770 (1968).

152 *See, e.g.*, *In re* Arizona Public Service Company's Application for Approval of Net Metering Cost Shift Solution, Docket No. E-01345A-13-0248, Decision No. 74202, at 24–26 (Ariz. Corp. Comm'n Dec. 3, 2013) (discussion of lost fixed cost recovery and cost-shift between NEM and non-NEM customers); *In re* Application of Rocky Mountain Power, Report and Order, Docket No. 13-035-184, at i, 71 (Utah Pub. Serv. Comm'n Aug. 29, 2014) (costs and benefits to the utility and ratepayers considered).

153 *See id.*

Managing the new antitrust risk thus may mean taking into account not just the impacts of changes in rates on utilities and their customers, but also on those who would disrupt it. Given competition for utility customers by DER providers, utilities can act proactively to reduce antitrust risk. Public utility commissions may assist them by explicitly analyzing impacts on DER providers of material changes in rates or other practices. Note that this does not mean that antitrust concerns need dominate over other legitimate priorities in the ratemaking context, only that they be explicitly evaluated rather than ignored, as is occurring at present.[154] Commissions need to evaluate how antitrust issues might influence where within the "zone of reasonableness" they end up in allocating joint grid costs to various ratepayer classes. While utilities would likely prefer not to be put in the position of assessing the impacts of their rate cases on competitors, given the vagueness of the substantive requirements for "active supervision," this may well be the approach that minimizes the risk of court-ordered injunctive relief from an unduly anticompetitive rate design.

Evaluation of competitive impacts of changes in rate structure during rate cases that impact DERs might also reduce suspicion that utilities are seeking to use rate structure to erect or increase the height of barriers to entry. In particular, intervenors including solar advocacy groups and DER providers would have opportunity to review and comment both on the methodology for assessing impacts on competition in rate cases but also to provide input on the substance of the evaluation. This would increase the transparency of rate cases impacting DERs and might also increase their perceived fairness.

CONCLUSION

Rapid technological improvements in solar energy have, for the first time in nearly a century, created competition with electric utilities' grid-based business model.[155] Competition, whatever its risks to existing business models or firms, is cause for celebration

154 There is no discussion of competition issues—i.e., the implications of changes in rate structures for DER provider firms—in any of the rate case proposals or decisions cited in Table 1, *supra* notes 49–79.

155 For an account of competition between grid-supplied and distributed electricity in the early industry, see PLATT, *supra* note 1, at 22–39.

due to the positive impacts it can have on costs. More importantly, competition will likely have a positive impact on the quality and value of energy services and, because of the technologies involved, their environmental attributes.[156] Entry of firms that must compete for customers on a variety of measures other than cost in order to win business can only improve the value derived by society from the energy system. Evidence from other regulated industries suggests that competition spurs enhanced productivity growth on the part of both legacy and new entrant firms.[157]

This Article has shown how utilities are responding to the challenge presented by distributed energy to their traditional business model. Numerous utilities both in states with extensive distributed energy already deployed and in states with virtually none deployed are taking action to forestall competition. These firms have already modified or are attempting to modify rate structures in order to reallocate the costs of their infrastructure and forestall competitive entry by DER providers. All of this creates the potential for substantial antitrust claims against the utility industry by its new competitors. Utilities' anticompetitive actions may be shielded from antitrust liability, or they may not be, depending on courts' view of states' level of authorization of these activities and the degree to which public utility commissions are actually overseeing the electric utilities' responses to DERs. Utilities, the public utility commissions that regulate them, and state legislatures have ample opportunity, particularly at this early juncture, to tailor their actions in ways that might mitigate this antitrust risk and would increase the transparency and democratic accountability of the transition from regulated monopoly at the grid edge to competition.

156 For a discussion of quality versus cost in regulated industries, *see* 1 KAHN, *supra* note 25, at 21–25.

157 *See* Nicholas Crafts, *Regulation and Productivity*, 22(2) OXFORD REV. OF ECON. POL'Y 186 (2006); *see also*, Giuseppe Nicoletti & Stefano Scarpetta, Regulation, Productivity and Growth: OECD Evidence, OECD Economics Department Working Papers No. 347 (2003), at 2.