Throwing Shade: The Case Against Judicial Interference With Solar Net Metering Policies

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Summary

Electric utilities are increasingly invoking the takings clause, general notions of fairness, and fears of a "death spiral" in their attempts to erode the efficacy of net metering policies. This Article considers each of these arguments and concludes they are best addressed through the political process, as courts applying the takings clause are ill-equipped to address the minutiae of the ratemaking process. Threats of takings litigation only serve to push risk-averse regulators to create inefficient outcomes. Moreover, threats of heightened scrutiny under a deregulatory takings theory or the U.S. Supreme Court's recent *Horne* decision are unlikely to be successful as a matter of law. Moreover, they are ill-advised and inappropriate as a matter of policy.

Across the country, there is a growing interest in using rooftop solar panels and other small-scale, on-site renewable power sources known as distributed generation (DG). To encourage investment in DG, 43 states, the District of Columbia, and four U.S. territories have adopted net metering policies.[1] Net metering policies have positive environmental impacts, increase grid security, reduce peak energy loads, and lessen stress on the electric grid.[2]

However, utilities around the country are balking at net metering policies and lobbying ratemakers to impose special fees and limitations on these policies to slow the pace of distributed solar growth. Arizona Public Service Company (APS) asked Arizona regulators to allow the utility to impose fees of up to $100 per month on DG customers.[3] Utilities have also lobbied for similar fees in Georgia, Idaho, Utah, Vermont, Virginia, and Wisconsin.[4] Utilities have found some traction with ratemakers in several of these states. A 2014 assessment by the North Carolina Clean Energy Technology Center found that 16 states with net metering policies were considering or enacting changes to DG rates.[5]

In Arizona, the Public Utility Commission (PUC) recently approved a $0.70 per-kilowatt charge on DG service customers.[6] The Commission also specified that such fees could increase at any time, creating uncertainty for people considering investing in rooftop solar panels.[7] These new policies have already been shown to chill investment in DG. The number of rooftop solar installations in the affected territory in the first quarter of 2015 decreased 40% from 2014.[8] Meanwhile, utilities in the state continue to push the PUC to increase the fixed charge from $0.70 to $3.00.[9]

1. Joel B. Eisen et al., Energy, Economics, and the Environment: Cases and Materials 842 (5th ed. forthcoming). Net metering is a billing mechanism that credits a customer-generator for excess electricity exported onto the electricity grid, making DG economically viable for a lot more customers.
2. *See generally* U.S. Dep't of Energy, The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion (2007), *available at* https://www.ferc.gov/legal/fed-sta/exp-study.pdf.
3. Troy A. Rule, *Solar Energy, Utilities, and Fairness*, 6 San Diego J. Climate Change & Energy L. 115, 121 (2015).
4. *Id.* at 121-22.
5. *Id.*
6. *Id.* at 122.
7. *Id.*
8. Press Release, Sierra Club, Solar Installations Drop After APS Assesses Charge to Solar Customers (Apr. 14, 2014), *available at* http://content.sierraclub.org/press-releases/2014/04/solar-installations-drop-after-aps-assesses-charge-solar-customers.
9. Harman K. Trabish, *What's Solar Worth? Inside Arizona Utilities' Push to Reform Net Metering Rates*, UtilityDive (June 1, 2015), http://www.utilitydive.com/news/whats-solar-worth-inside-arizona-utilities-push-to-reform-net-metering-r/399706/.

Even more alarming, the Hawaii Public Utilities Commission closed Hawaiian Electric Companies' net metering program to new participants in 2015.[10] This decision marked the end of a successful 30-year program that resulted in between 12 and 16 percent customer adoption of solar DG.[11] Rather than incentivizing adoption of renewable energy and helping the state reach its goal of 100% renewable by 2050, the new adopted price for DG solar is less than avoided cost and allows the utility to impose a minimum bill of $25 per month, which forces DG customers to pay for energy that they are not using on top of the large up-front costs of solar installation.[12]

Where ratemakers are resisting requests to weaken net metering policies, utilities are threatening to challenge these policies in court. Utilities are invoking the Takings Clause, general notions of fairness, and fears of a death spiral in their attempts to erode the efficacy of net metering policies. This Article considers each of these arguments in turn and concludes that they are best addressed through the political process, as the Takings Clause is ill-equipped to address the minutiae of the ratemaking process. Part I provides an overview of net metering policies and their associated costs and benefits. Part II provides an overview of the takings doctrine. Part III argues that net metering is not a taking in either the traditional or the ratemaking sense. Part IV considers, and ultimately rejects, the policy arguments put forth by utilities. Part V concludes.

I. Impacts of Net Metering Policies

Net metering programs are among the most effective policies when it comes to promoting distributed solar energy growth in the United States.[13] Net metering is a billing mechanism that credits a customer-generator for electricity exported onto the electricity grid.[14] This simple billing arrangement can have a significant impact on the economic viability of a DG system and enables consumers with DG systems to offset conventional electricity with clean, on-site energy.[15] Under net metering policies, when a customer generates more electricity than he or she needs, the customer can sell the excess back to the grid, typically in exchange for the full retail electric rate or as credit toward future energy use.[16] As a result, customers do not have to accept the loss of energy generated at night or while they are at work during the day. This is often cited as one of the key financial underpinnings of successful distributed, renewable generation systems because it makes solar panels cost-effective for a lot more customers. It has been critical to the proliferation of DG.[17]

Net metering policies are important because the electric grid realizes significant benefits from renewable DG systems. DG systems are primarily renewable solar panels, which have positive environmental impacts such as decreasing dependence on fossil fuels and reducing peak loads.[18] These environmental benefits help utilities comply with regulatory requirements, like renewable portfolio standards (RPS) and forthcoming state implementation plans under the Clean Power Plan.[19] DG systems have also been shown to have beneficial effects on land use because they reduce the need for rights-of-way for electric transmission and distribution.[20]

Additionally, DG is primarily generated and consumed on the same property, which reduces congestion of transmission and distribution lines.[21] According to a Federal Energy Regulatory Commission study, this creates numerous benefits at the local level.[22] It allows utilities to avoid making capital investments in transmission and distribution, creates opportunities to provide reactive power and voltage support, and improves power quality and reliability.[23] DG can also be used to decrease the vulnerability of the electric system to threats from terrorist attacks and other forms of potentially catastrophic disruptions.[24] Thus, by promoting the adoption of DG systems, net metering has positive impacts on our environment and our energy grid.

However, many utilities oppose net metering programs on the grounds that they impose stranded costs on utilities.[25] Broadly speaking, stranded costs are prudent investments that are unrecoverable because of changes in regulatory policy, technology, or demand.[26] In the net metering context, utilities point to three main types of stranded costs: (1) obligations incurred to carry or abandon redundant or obsolete energy generation plants; (2) added transition expenditures not recoverable under net metering policies; and (3) contractual obligations to purchase electricity from DG customers at above market prices.[27]

When DG customers generate electricity, they avoid paying for the utility's power, which is fair because they did not use it. However, utilities have already invested in capacity in anticipation of meeting these consumers'

10. John Farrell, *Hawaii's Net Metering Alternative Comes Up (Way) Short*, CleanTechnica (Oct. 28, 2015), http://cleantechnica.com/2015/10/28/hawaiis-net-metering-alternative-comes-way-short/.
11. *Id.*
12. *Id.*
13. Rule, *supra* note 3, at 117.
14. Eisen et al., *supra* note 1, at 842. Net metering became an option for customers who also wanted to generate onsite electricity with the passage of the Federal Energy Policy Act of 2005, which mandated that "each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves," as well as install a bi-directional flow of electricity to measure net energy.
15. *Id.*
16. *Id.*
17. *Id.*
18. Joseph P. Tomain, *Traditionally-Structured Electric Utilities in a Distributed Generation World*, 38 Nova. L. Rev. 473, 501 (2014).
19. *Id.* Grid reliability can be improved by DG as it reduces congestion, reduces large-scale outages, and can provide backup power during outages.
20. U.S. Dep't of Energy, *supra* note 2, at 66.
21. *Id.* at 3-2.
22. *Id.* at iii.
23. *Id.* at 4-1.
24. *Id.* at 7-1.
25. Edison Electric Institute, *Straight Talk About Net Metering* (Jan. 2016), *available at* http://www.eei.org/issuesandpolicy/generation/NetMetering/Documents/Straight%20Talk%20About%20Net%20Metering.pdf.
26. Jim Rossi, *The Irony of Deregulatory Takings*, 77 Tex. L. Rev. 297, 301 (1998).
27. *See generally* Edison Electric Institute, *supra* note 25.

needs, expecting to be paid back over an extended period. However, net metering incentives have caused a shift in the market, negating the need for this excess capacity and preventing recovery on this investment. This has resulted in an unexpected shortfall for utilities.[28]

DG projects also impose unique transmission costs on the grid. As the use of rooftop solar and DG systems increase, so too does the two-way flow of power on the grid. At the same time, wind and solar DG systems create integration challenges due to their variable, fluctuating levels of power. As a result, electric companies are forced to invest in their distribution systems to avoid overloading circuits, causing voltage regulation or power quality problems, or jeopardizing the safety of the public or utility employees. Meanwhile, utilities argue that DG customers avoid paying for these grid upgrades under net metering policies.[29]

Utilities also balk at the idea of paying DG customers above-market rates for their energy when they can get cheaper wholesale energy from more traditional generators.[30] Net metering programs demand that utilities pay retail electricity rates for DG energy. Retail rates are based on all of the costs involved in generating, transporting, and delivering power. Wholesale electricity rates include only the cost of the fuel used to generate electricity and the cost of buying the power in the competitive wholesale market from any number of electricity providers. They do not include the cost of transporting and delivering the electricity through the electric grid to reach a consumer.[31] Thus, utilities argue that it is unfair to pay DG customers to transport and deliver energy to another consumer, while the utility is actually the one who has to transport and deliver the energy.[32]

Additionally, utilities cite concerns about a "death spiral."[33] When only a tiny fraction of a utility's customers have solar panels, utilities can absorb the impact of these DG systems on their finances and day-to-day operations. As participation in DG grows, however, utilities' net metering obligations will become increasingly costly while utilities sell less power and their revenue streams begin to dry up.[34] To compensate for this drop in revenue, utilities traditionally petition to increase the price per unit of the electricity they sell. But under net metering policies, these rate increases make the relative price of DG more attractive, causing more people to adopt DG and utilities to suffer further revenue declines.[35]

In the end, doomsayers predict utilities will be left with insufficient revenues to support already installed infrastructure investments with long useful lives.[36] Moreover, this vicious cycle of declining utility revenues, rising electricity rates, and shrinking demand for grid-supplied power could theoretically spiral on until nearly every customer has rooftop solar panels or some other DG system.[37] At that point, electric utilities would devolve into mere suppliers of high-priced, temporary backup electricity. Insolvent and devoid of customers, conventional utilities caught in such a world would quickly fade into extinction.[38]

When utilities have faced similar threats to their business model in the past, they have traditionally petitioned state regulators to increase rates in a way that allows recovery of their stranded costs. When they fail to get the changes they want, they invoke the threat of judicial intervention. True to form, as utilities around the country have begun to feel the effects of solar incentives like net metering policies, they are once again wielding the threat of takings litigation.

II. Takings in the Utility Context: An Overview

Under the Fifth Amendment, the state is required to pay just compensation when it "takes" private property for public use.[39] Justice Oliver Wendell Holmes Jr. famously explained that "while property may be regulated to a certain extent, if regulation goes too far, it will be recognized as a taking."[40] How far is too far has been a question of much debate.

Because utilities traditionally have monopoly power in the markets where they operate, public regulation is a condition for such firms to operate at all. As a result, rate-based takings challenges have produced a line of opinions that is distinct from traditional regulatory takings cases.

A. Takings in the Traditional Land Use Context

Under traditional land use takings jurisprudence, what constitutes a regulation going "too far" has typically been decided using the multi-factored ad hoc balancing test the U.S. Supreme Court set out in *Pennsylvania Central Transportation Co. v. New York City*.[41] There, a new historic preservation law in New York City resulted in the denial of a permit to build a skyscraper atop Grand Central Terminal, causing the developer to sue alleging a taking of air rights.[42] The Court identified three factors to determine whether the regulation amounted to a taking: (1) the character of the governmental action; (2) the extent of the law's interference with distinct investment-backed expectations; and (3) the diminution in value of the property resulting from the regulation.[43]

28. *Id.* at 2.
29. *Id.* at 3.
30. *Id.* at 2.
31. *Id.* at 3.
32. *Id.*
33. Tomain, *supra* note 18, at 499.
34. *Id.*
35. *Id.*
36. *Id.*
37. Rule, *supra* note 3, at 120.
38. *Id.*
39. U.S. Const. amend. V ("nor shall private property be taken for public use, without just compensation").
40. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).
41. 438 U.S. 104, 8 ELR 20528 (1978).
42. *Id.* at 115.
43. *Id.* at 124.

In the cases following *Penn Central*, this test has been clarified and refined. Today, the conventional understanding is that the character prong simply refers to whether the government regulation creates a physical occupation.[44] Under the expectations prong, a regulation that interferes with an existing use of property is going to look more like a taking than a regulation restricting or prohibiting a future use.[45] In *Kaiser Aetna v. United States*, the Supreme Court changed the language of the expectations prong from "distinct investment-backed expectations" to "reasonable investment-backed expectations."[46] Accordingly, it is no longer enough for a property owner to demonstrate interference with an investment-backed expectation. Now, that expectation also must be reasonable.[47] Finally, the diminution prong gets to the question of how far is too far by applying its analysis against the "parcel as a whole." According to one commentator, the diminution in value must "substantially exceed 50%, and should be closer to 90%" of the parcel as a whole before it is likely to result in a taking.[48]

The Court has also established a series of defenses to takings liability. Governments may assert an "average reciprocity of advantage" defense if they can show that the legislature is simply "adjusting the benefits and burdens of economic life, in a matter that secures an average reciprocity of advantage to everyone concerned."[49] For example, typical zoning restrictions are not considered takings because even though they limit prospective uses of property that diminish their value in the abstract, this decrease in value will be at least partially offset by an increase in value that flows from similar restrictions on the use of neighboring properties, creating an average reciprocity of advantage.[50]

This ad hoc balancing test is inherently an ex post, fact-based inquiry, making it difficult for both property owners and government regulators to know whether a particular government action amounts to a taking.[51]

B. Ratemaking and the Utility Industry

In the case of utility regulation, takings law challenges have produced a line of opinions that is largely distinct, in terms of both precedential value and reasoning, from other regulatory and land use takings. Courts treat these cases uniquely because most utilities are subject to government regulation of prices. Takings cases addressing utility price regulation have been much more clear-cut and much more deferential to regulators than the ad hoc line of opinions addressing takings in the land use regulation context.[52]

During the *Lochner* era, the Supreme Court took an activist approach when it came to rate regulation. In *Smyth v. Ames*, the Court adopted a searching "fair value" test and instructed courts to determine "whether rates are so low as to deprive a carrier of its property without such compensation as the [U.S.] Constitution secures."[53] To ascertain the "fair value," courts weighed the original cost of construction, the amount expended on permanent improvements, the amount and market value of bonds and stock, the present as compared with the original cost of construction, the earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses.[54] However, this searching review proved difficult to implement in practice.

The Court adopted a more deferential approach beginning in the 1940s, replacing the fair value test with an "end results" test. In *Federal Power Commission v. Hope Natural Gas Co.*, the Court made clear that under this test, rates that enable a company to operate successfully, maintain its financial integrity, attract capital, and compensate its investors cannot be condemned as invalid.[55] Under the "end results" test, courts were no longer expected to examine the subsidiary aspect of ratemaking methodology piecemeal.[56] Instead, courts were just expected to focus on the big picture and how a rate affected the utility as a whole.[57]

This test acknowledges that courts are not experts in ratemaking and that "errors to the detriment of one party may well be cancelled out by countervailing errors . . . in another part of the rate proceeding."[58] In deference to ratemakers' expertise, the Court gave ratemakers a presumption of validity and gave challengers the burden of making a convincing showing that a rate is unjust or unreasonable.[59] The Court also made it clear that the Fifth Amendment does not ensure a regulated business make a profit, and clarified that a rate or regulation may reduce the value of property without being invalid.[60]

In *Market Street Railway Co. v. R.R. Comm'n of Cal.*, the Court went one step further and refused to require compensation where the government did not authorize recovery for the costs of obsolete technology.[61] There, San Francisco street cars and bus lines were valued by regulators at less than one-third the amount at which the rate base would have been valued using historical or reproduction costs.[62] The Court explained that in the absence of rate regulation, the streetcar company would be "a particularly ailing unit

44. Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982); Christopher Serkin, The Law of Property 258 (2013).
45. Christopher Serkin, *Existing Uses and the Limits of Land Use Regulations*, 84 N.Y.U. L. Rev. 1222 (2009).
46. 444 U.S. 164, 175, 10 ELR 20042 (1979).
47. Serkin, *supra* note 45, at 258-59.
48. Mark W. Cordes, *Takings Jurisprudence as Three-Tiered Review*, 20 J. Nat. Resources & Envtl. L. 1, 39 (2005); Serkin, *supra* note 45, at 259.
49. Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1017, 22 ELR 21104 (1992).
50. *Pa. Cent. Transp. Co.*, 438 U.S. at 139-40.
51. Susan Rose-Ackerman & Jim Rossi, *Disentangling Deregulatory Takings*, 86 Va. L. Rev. 1435, 1450 (2000).
52. *Id.* at 1453.
53. 169 U.S. 466, 527 (1898).
54. *Id.* at 546-47.
55. 320 U.S. 591, 605 (1944).
56. Duquesne Light Co. v. Barasch, 488 U.S. 299, 313 (1989).
57. *Id.* at 312.
58. *Id.* at 314.
59. *Hope Nat. Gas Co.*, 320 U.S. at 602, 615.
60. *Id.* at 602, 605-06; Mkt. St. Ry. Co. v. R.R. Comm'n of Cal., 324 U.S. 548, 566 (1945).
61. *Id.* at 569.
62. *Id.* at 554; *see also* Rose-Ackerman & Rossi, *supra* note 51, at 1454.

of a generally sick industry."[63] Since *Market Street Railway*, courts have consistently forced utilities to bear the risks of changing technological and economic circumstances.[64]

Hope Natural Gas was reaffirmed by the Supreme Court in *Duquesne Light Co. v. Barasch* in 1989.[65] There, the Court upheld a Pennsylvania law that prohibited consideration of utilities' stranded costs, which consisted of expenditures for nuclear generating facilities that were planned but never built.[66] The Court held that the legislature's failure to allow a utility to recover its $35 million investment in a cancelled nuclear project was not a taking, even though state regulators deemed the investment to be a prudent one.[67] The Court looked to the total effect of the rate order on the utility as a whole and found the "overall impact of the rate orders [was] not constitutionally objectionable." The Court found that the lost $35 million amounted to less than 2% of the utility's base and the denial of recovery through its inclusion in the rate base only reduced the utility's annual allowance by 0.4%.[68] The Court then went on to say:

> No argument has been made that these slightly reduced rates jeopardize the financial integrity of the companies, either by leaving them insufficient operating capital or by impeding their ability to raise future capital. Nor has it been demonstrated that these rates are inadequate to compensate current equity holders from the risk associated with their investments under a modified prudent investment scheme.[69]

Thus, the court implies that such an effect might indicate that a regulator had indeed "gone too far."

In sum, under current doctrine, the Constitution only protects utilities from rates that are so unjust as to be confiscatory.[70] The Constitution leaves regulators broad discretion to decide what rate-setting methodology best meets their needs in balancing the interests of the utility and the public.[71] As ratemakers try to replicate market prices and conditions, there is no reasonable expectation the government will ensure against typical market risks such as changing technology, public preferences, or economic demand. These risks are properly borne by investors.

III. Square Peg in a Round Hole: Net Metering Policies and the Takings Clause

Utilities and property rights advocates argue that the stranded costs that result from net metering policies amount to a constitutional taking of property. However, post-*Lochner*, courts have traditionally been very deferential to regulators when it comes to economic regulation. The Court has made clear that these types of legislation are best left to the political process. Thus, utilities will have to fight an uphill battle just to bring a successful takings claim against a net metering policy.

Under the "end results" test traditionally applied in ratemaking cases, net metering rates carry a presumption of validity.[72] Courts will not examine ratemaking methodology piecemeal[73]; they will not consider whether a utility is being compensated for a specific grid upgrade, its recovery of past investment in capacity that exceeds demand associated with specific legislative or regulatory policies, or higher costs for some forms of energy. Moreover, the Supreme Court has made it clear that just and reasonable rates are not required to account for stranded costs, unless the rates seriously jeopardize the financial integrity of a utility as a whole.[74]

As a result, utilities are advocating for a return to a more searching *Smyth* review, or an application of the ad hoc balancing test based on the recent Supreme Court case *Horne v. Department of Agriculture*,[75] or a deregulatory takings theory. This Article argues that such a move would be inappropriate as a matter of both law and policy and that this type of searching review is best left to the regulatory process.

A. *Ratemaking After* Horne

Net metering opponents are looking to a recent Supreme Court case to cast doubt on whether ratemakers are entitled to the same level of deference to which they have become accustomed under the end results test. *Horne* has been hailed a major victory for property rights advocates and a warning to overzealous government regulators.[76] It is significant because it indicates the Court's willingness to apply traditional land use jurisprudence to market regulations and regulations traditionally afforded a great deal of deference.

Utilities have suggested that under *Horne*, net metering policies should be challenged under the traditional ad hoc takings doctrine.[77] In *Horne*, however, the Court applied traditional land use takings law to a heavily regulated industry. The Court clarified that the Fifth Amendment requires that the government pay just compensation when it takes personal property, just as when it takes real property.[78]

In *Horne*, raisin growers challenged a Raisin Marketing Order that required a percentage of a grower's crop to

63. *Mkt. St. Ry. Co.*, 324 U.S. at 554.
64. Rossi, *supra* note 26, at 307.
65. 488 U.S. 299 (1989).
66. *Id.* at 301.
67. *Id.* at 312.
68. *Id.*
69. *Id.*
70. *Id.* at 307.
71. *Id.* at 316.
72. Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 602 (1944).
73. *Id.* at 313.
74. *Duquesne*, 488 U.S. at 312.
75. 135 S. Ct. 2419, 45 ELR 20120 (2015).
76. Carrie Severino, Horne v. Department of Agriculture: *Victory for Property Rights*, Nat'l Rev. (June 22, 2015), http://www.nationalreview.com/bench-memos/420117/horne-v-department-agriculture-victory-property-rights-carrie-severino.
77. *Id.*
78. *Horne*, 135 S. Ct. at 2426.

be physically set aside for the federal government free of charge in order to stabilize market prices.[79] The government argued that a market regulation may infringe a company's property rights when it confers a "valuable government benefit" in exchange, like stabilizing market prices or allowing parties to participate in the interstate raisin market.[80] It pointed to cases like *Ruckelshaus v. Monsanto Co.*, where the Court held that the U.S. Environmental Protection Agency could require companies manufacturing pesticides, fungicides, and rodenticides to disclose health, safety, and environmental information about their products as a condition of receiving a permit to sell those products.[81] Similarly, it looked to *Leonard & Leonard v. Earle,* where the Court upheld a regulation that required oyster packers to turn over 10% of their oyster catch for the privilege of harvesting oysters.[82]

The Court in *Horne*, however, narrowly cabined what it means for the government to confer a "valuable government benefit." The Court made clear that the right to participate in regulated interstate markets in itself no longer amounts to a "valuable government benefit."[83] The benefit conferred in *Ruckelshaus* was a license to sell dangerous chemicals, which the court considered more valuable, or more in need of regulation, than the right to sell nutritious produce.[84] Similarly, the Court found *Leonard* distinguishable on the grounds that oysters are *ferae naturae* and thus "public things subject to the absolute control of the state."[85] Thus, the Court appears to have raised the bar for what it means for the government to convey a valuable benefit sufficient to justify restricting property rights.

Nonetheless, *Horne* is unlikely to explicitly affect the regulation of utility markets. Electrons will likely be treated more like dangerous chemicals and *ferae naturae* than like nutritious produce. Utilities enjoy regulated monopoly status, which is surely a "valuable government benefit" on par with a license to sell dangerous pesticides or *ferae naturae*. Moreover, *Horne* involved a physical appropriation of property, which is a per se taking.[86] With ratemaking cases, it is less clear that tangible property rights are being infringed and thus courts are willing to give regulators a little more flexibility.

Perhaps most importantly, in *Horne* the plaintiffs challenged a regulatory scheme as a whole. Here, utilities are only challenging one aspect of a well-established ratemaking process that has been repeatedly upheld by the Court. Courts are much more likely to question a regulation as a whole than to interfere with the minutiae of an established ratemaking process.

B. Deregulatory Takings Revisited

Today, utilities and academics alike are arguing that net metering policies are lowering barriers to entry in violation of the regulatory contract.[87] Thus, under the deregulatory takings theory, the government should not be entitled to the deference of the end results test and courts should instead apply the more rigorous review of land use decisions.[88]

In many states, the utility market was deregulated in the late 1990s and early 2000s.[89] Many utilities reacted to the loss of their guaranteed returns on investment by bringing takings claims against the government.[90] Utilities asserted that deregulation produced stranded costs, reflecting the fact that previously prudent investments could not earn a fair rate of return in the deregulated market and characterizing investors as the victims of misadventure brought about by government action.

In arguing for the recovery of these stranded costs, utilities and their advocates created a new set of takings claims. J. Gregory Sidak and Daniel F. Spulber advanced the idea of a "regulatory compact," under which utilities assume obligations to serve customers at rates set by the government in exchange for a grant of a monopoly franchise.[91] Because ratemakers have allowed utilities to recover a return on prudently incurred capital costs in rates, utilities have been encouraged to build capacity to meet customer demand. Thus, they were effectively induced by the government to invest their capital to meet these obligations.[92]

Under this theory, Sidak and Spulber argue that the government can be sued for breach of contract or sued under the Takings Clause, as breach of the regulatory contract generates a decline in a utility's investment-backed

79. *Id.* at 2424.
80. *Id.* at 2430.
81. *Id.*
82. *Id.* at 2431.
83. *Id.* at 2430-31. The Court clarified that the right to sell hazardous chemicals to the public and the right to sell oysters, which the court characterized as *ferae naturae* and thus property of the state, were valuable government benefits. However, the right to sell healthy produce in interstate commerce did not amount to a valuable government benefit, presumably because the raisin farmers already had the right to sell their property.
84. *Id.* at 2430.
85. *Id.* at 2431.
86. *Id.* at 2427.
87. David Raskin, *Getting Distributed Generation Right: A Response to "Does Disruptive Competition Mean a Death Spiral for Electric Utilities?"*, 35 Energy L.J. 263 (2014).
88. Rose-Ackerman & Rossi, *supra* note 51, at 1459-60.
89. Traditional electric utilities provide three distinct but interrelated services to their customers. They generate electricity, transfer electricity through the transmission grid, and distribute electricity to customers. For over one century, utilities were closely regulated by both state and federal agencies. The relationship between utilities and regulators was based on the utilities' assumption of an obligation for universal service at a fixed rate of return in exchange for a state-provided monopoly franchise protected by entry regulation and the opportunity to earn a sufficient rate on the utility's investment. The utilities' retail rates are set by a state public utility commission based upon a demonstration of the prudence of the utilities' expenditures. David G. Pettinari, *You Can't Always Get What You Want—Will Two Recent State Court Decisions Tarnish the Political Promise of Electricity Industry Deregulation?*, 76 U. Det. Mercy L. Rev. 501, 504 (1999). Deregulation requires utilities to "unbundle," or commercially separate their production, transportation, and distribution services. By unbundling through elimination of the corporate ties to their service-related assets, the utilities are compelled to end any monopolistic economy of scale advantage that they might retain in a deregulated market. Utilities unbundle through divestiture of their assets or by separating control of their assets among spin-off companies. *Id.* at 506.
90. Rose-Ackerman & Rossi, *supra* note 51, at 1467.
91. J. Gregory Sidak & Daniel F. Spulber, Deregulatory Takings and the Regulatory Contract: The Competitive Transformation of Network Industries in the United States (1997).
92. Rose-Ackerman & Rossi, *supra* note 51, at 1459-60; Tomain, *supra* note 18, at 504.

expected revenues and takes investors' property without just compensation.[93] Sidak and Spulber argue that because the regulatory contract has been broken and the government lowered barriers to competition, the government should not be entitled to the deference of the "end results test"; and they instead argue for a return to the ad hoc takings approach or the more searching review of Smyth.[94]

However, no court has ever accepted a deregulatory takings argument. For example, in a case challenging Michigan's deregulation program that required utilities to allow third parties to transmit electricity on the utilities' transmission systems, thereby limiting the utilities' capacity to transmit their own energy, the Michigan Supreme Court held that the program was a reasonable interference and not a taking because public utilities are extensively regulated and their property is used for a public purpose.[95] Penn Central requires a showing of distinct and reasonable investment-backed expectations.[96] In the context of a regulatory contract, "there is no explicit contract guaranteeing the firm a rate of return on each specific investment."[97] Reliance on an implicit contract with the government for indefinite monopoly status can hardly be considered reasonable. Utilities should have internalized these risks in making their investment choices.[98]

Finally, the case for a regulatory contract is particularly weak in the context of net metering policies. While deregulation subjected utilities to direct competition in supplying energy to consumers, net metering policies can only be characterized as disrupting competition by curbing consumer demand for energy through the opportunity to generate energy at home.[99] Thus, if a regulatory contract did exist, it is unclear if the government has any obligation to ensure demand keeps rising.

C. *Heightened Scrutiny of Net Metering Policies Is Inappropriate as a Policy Matter*

The deferential end results test is better suited to utility regulation than either the more searching test articulated in Smyth or the ad hoc balancing test applied in the land use context. During the height of deregulation, Profs. Susan Rose-Ackerman and Jim Rossi laid out a strong case for deference to ratemaking.[100] Their arguments apply with equal force in the context of net metering today.

First, the ratemaking process is self-correcting, negating the need for judicial intervention save for exceptional cases. Regulators may underestimate the cost of capital in one year, but through modifications in a later year, they can correct any deficiency in utility earnings and revenues by adjusting cost of capital. Hence, judicial review does little to increase accuracy that regulators cannot do on their own.[101]

Second, judicial review of ratemaking "imposes high error costs and high judicial recourse costs."[102] Courts do not have nearly the same expertise or access to complex accounting and economic information as regulators. This creates high costs for courts as they attempt to understand complex technical matters, chills regulators' incentives to innovate or stray from what has been approved in the past, and injects uncertainty into the regulatory process.[103]

Third, the political process provides adequate protection for utilities and their investors. Utility ratemaking and other regulatory processes, which are transparent and predictable, provide a forum for regulators to balance the interests of investors, firms, consumers, and the state. Since legislators and regulators are more politically accountable than judges, judicial intervention in the specifics of ratemaking may thwart democratic values. As evidenced by the Lochner era, when it comes to economic regulations, courts are best left to review the quality of regulators' decisionmaking process, not the substance of their decisions.[104]

Fourth, the ad hoc nature of land use takings jurisprudence is inherently at odds with utility regulation. In the ratemaking context, takings law should be predictable so that private individuals can confidently commit resources to capital projects. This is especially important in the utility context where these projects are long-lived and serve a special purpose, whether they be power plant upgrades or DG installations. Searching ad hoc review injects an element of uncertainty into investors' choices unrelated to the underlying economics of an investment. Unpredictability of judicial review affects government regulators, too. The added uncertainty may act as a force for conservatism among public officials. Risk-averse officials facing the possibility of lawsuits may restrict their activities simply because they dislike uncertainty. The ad hoc nature of traditional land use taking jurisprudence produces inefficient choices for utilities, DG consumers, and regulators alike.[105]

Thus, the deferential end results test is better suited to resolving net metering controversies than the more activist approaches applied during the Lochner era or in the land use context.

D. *Stranded Costs and Stranded Benefits*

Finally, utilities likely cannot prevail under any takings theory because utilities also benefit from net metering programs. Net metering provides low-cost ways for utilities to meet renewable portfolio standard obliga-

93. Rose-Ackerman & Rossi, *supra* note 51, at 1460.
94. *Id.*
95. In re Retail Wheeling Tariffs, 575 N.W.2d 808, 815 (Mich. Ct. App. 1998). Similarly, a New York State court rejected several utilities' challenges to the New York Public Service Commission's restructuring plan, observing that the constitutional protection of "just and reasonable" rates "do not necessarily guarantee utilities net revenues nor do they immunize utilities from effects of competition." Rossi, *supra* note 26 at 311-14.
96. Kaiser Aetna v. United States, 444 U.S. 164, 175, 10 ELR 20042 (1979).
97. Rose-Ackerman & Rossi, *supra* note 51, at 1464.
98. *Id.* at 1465.
99. Tomain, *supra* note 18.
100. Rose-Ackerman & Rossi, *supra* note 51.
101. *Id.* at 1454.
102. *Id.* at 1455.
103. *Id.*
104. *Id.*
105. *Id.* at 1448-51.

tions and comply with the Clean Power Plan by giving utilities credit for a consumer's installation of renewable technology. Moreover, utilities benefit from increased grid security, air quality improvements, improved system reliability, load balancing, and improved forecasting and planning.[106] These advantages can be characterized as "stranded benefits."

These countervailing stranded benefits are enjoyed by both the utility and society at large, but they cannot be captured by the DG consumer. This goes to the heart of the end results analysis. According to the Supreme Court, the reason for deferential review is that "errors to the detriment of one party may well be cancelled out by countervailing errors in another part of the rate proceeding."[107] In the case of net metering policies, stranded costs borne by utilities are likely cancelled out by the stranded benefits they enjoy as a result of solar DG installations, underscoring the appropriateness of applying the end results test in the net metering and ratemaking process.

For similar reasons, recovering stranded costs under a *Penn Central* framework would be difficult because these stranded benefits are best characterized as an average reciprocity of advantage from net metering programs. Thus, these net metering policies are merely "adjusting the benefits and burdens of economic life, in a matter that secures an average reciprocity of advantage to everyone concerned."[108]

The Takings Clause is ill-suited to address concerns about stranded costs generated by net metering policies. Courts have traditionally shown regulators a great deal of deference in this area, in acknowledgment of the fact that regulators are experts in this area and that this is a political issue best addressed by the political process. Net metering policies do not rise to the level of a taking because the actual stranded costs borne by utilities are insignificant when viewed as part of the ratemaking process as a whole. Moreover, these stranded costs are arguably balanced out by their associated stranded benefits.

IV. Policy Rationales: Fairness Arguments and Death Spiral Concerns

Utilities are increasingly appealing to fairness and fears of a death spiral to weaken net metering policies. In Arizona, APS made fairness a focal point of its successful bid for permission to impose targeted fees on solar-using customers. Throughout its public relations campaign, APS emphasized the need for greater fairness as its primary motivation for seeking reforms.[109] Utilities assert that net metering policies are unfair to three different groups: (1) traditional utility customers; (2) low-income utility customers; and (3) utilities themselves.[110]

A. *Unfairness Toward Traditional Utility Customers*

Utilities and their allies claim that net metering programs and existing rate structures allow DG customers to benefit from the electric grid without paying their fair share of the costs of building and maintaining it.[111]

Typically, a customer's utility bill is comprised of two components: a fixed charge and an energy or volumetric charge. The fixed charge represents costs, like billing and metering, of providing energy to each customer. It also includes a demand charge that represents the utility's capital investment in plants and equipment allocated to each consumer based on the consumer's maximum rate of usage. These charges remain flat relative to the amount of electricity a consumer uses, but the total cost varies based on the size of the customer base. The energy charge reflects the amount of electricity consumed by each user. However, residential customers normally do not pay a separate demand charge. Instead, their fixed costs are embedded in the volumetric portion of the bill.[112]

When utility customers install solar panels and enroll in net metering programs, the quantity of electricity they purchase from the grid shrinks dramatically, reducing significantly the volumetric portion of their utility bills. In response, utilities seek increases in overall electricity rates to enable them to maintain the same basic grid infrastructure while selling less power. As a result, monthly electric bills paid by traditional utility customers go up, but DG customers are only nominally affected by these rate increases because they purchase so little power.[113]

However, these increases in electricity rates attributable to net metering can be characterized as a cross-subsidy in favor of solar energy users.[114] Subsidies are valuable tools for promoting economic efficiency when used to address positive externality problems that left unregulated might lead to a sub-optimal quantity of socially valuable activity.[115] Cross-subsidies in electric rates are actually quite common and utilities have deliberately relied on them for decades. For example, many utilities offer discounted rates to commercial or industrial electricity users as a means of enticing them to relocate into their territories. Utilities also have cross-subsidies for low-income customers.[116]

In the case of solar DG, cross-subsidization can be justified by furthering important social goals. Net metering policies address a positive externality problem and encourage optimal levels of investment in solar energy. Solar

106. *See generally* U.S. Dep't of Energy, The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion (Feb. 2007), *available at* https://www.ferc.gov/legal/fed-sta/exp-study.pdf.
107. Duquesne Light Co. v. Barasch, 488 U.S. 299, 314 (1989).
108. Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1017, 22 ELR 21104 (1992).
109. Rule, *supra* note 3, at 125.
110. Rule, *supra* note 3, at 117.
111. Peter Kind, *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*, Edison Electric Institute (2013), *available at* http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf.
112. Tomain, *supra* note 18, at 498.
113. Rule, *supra* note 3, at 130.
114. *Id.* at 131.
115. *Id.*
116. *Id.*

energy generation creates societal benefits that are not easily captured by its producers. A recent study concluded that, in Arizona, the benefits of solar DG actually exceeded its costs by more than 50%.[117] As discussed in Section II, solar DG reduces peak demand, helps utilities meet RPS standards, displaces fossil fuel generation, and has positive environmental impacts. By encouraging the adoption of solar DG, cross subsidies that result from net metering help address this market failure.

Thus, while net metering may increase rates for traditional energy users, these increases are cancelled out by the positive externalities associated with solar DG that traditional energy users enjoy.

B. *Unfairness Toward Low-Income Utility Customers*

Utilities also argue that net metering policies are regressive, creating wealth transfers from low-income customers to high-income ones. In essence, utilities argue that the high upfront costs of solar prevent lower-income customers from enrolling in net metering programs, leaving them no choice but to pay the higher rates as wealthier customers switch to solar. Consequently, rate designs that apportion costs across all residential consumers exacerbate vertical equity concerns and unfairly burden low-income users by forcing them to bear the fixed costs of DG consumers.[118]

However, low-income utility customers receive rate discounts through cross-subsidies that continue to exceed any proposed cross-subsidy to solar. In APS territory in Arizona, low-income families can qualify for rate discounts between 26% and 65%.[119] In contrast, a recent study by Berkeley Labs determined that even if a hypothetical utility in the southwestern United States filled 10% of its electricity demand via solar energy, utility rates in that jurisdiction would only increase by 2.5 percent.[120] Such a modest rate increase would be more than offset by low-income cross-subsidies.[121]

Moreover, vertical equity concerns fail to justify diluting net metering programs because the income distribution effects can be easily offset without sacrificing solar-friendly utility policies. For example, utilities can increase the rate of their discounts to lower-income customers. Utilities can even help fund these discounts by adopting Oregon's policy of contributing unused net metering credits to low-income assistance programs.[122]

Finally, proposals to reform net metering policies and discourage solar DG could ultimately harm low-income customers. Reforms that weaken policy incentives for distributed solar perpetuate energy-related environmental injustices that disproportionately affect low-income populations. Low-income citizens are more likely to live near coal-fired power plants, nuclear power facilities, oil refineries, and are consequently adversely affected by conventional energy production.[123] Net metering incentives arguably help to limit these injustices.

In sum, low-income customers are not in fact disproportionately burdened by net metering policies and may actually benefit from robust solar incentives.

C. *Unfairness Toward DG Providers*

Third-party solar providers, such as SunCity or Sungevity, invest in states with robust net metering policies. Due to concerns about the impacts of stranded costs on utilities, many states are rolling back their net metering policies or eliminating them altogether. In fall of 2015, Hawaii Public Utilities Commission closed Hawaiian Electric Company's net metering program to new participants.[124] In doing so, it removed the primary incentive for customers to install solar panels with these third-party solar providers, devastating their demand and wreaking havoc on their investment-backed expectations. Due to changes in regulatory policy, these third-party providers lost the bulk of their future customer base in Hawaii and are left with stranded costs in the form of the investments they made in the state based on the existing regulatory climate. If utilities are going to be compensated for their stranded costs, why should third-party providers not be similarly compensated for the stranded costs that result from rolling back net metering programs?

D. *Unfairness Toward Utilities: Fear of a Death Spiral*

Finally, net metering can represent a growing threat to the comfortable business model under which utilities have been operating for decades. Utilities express concerns that net metering policies will force utilities into a death spiral.[125] Put simply, as alternatives to traditional utilities become increasingly viable for consumers, utilities worry that their consumer bases will shrink and stranded cost obligations will become increasingly costly. A death spiral is a situation that prompts more ratepayers to install solar on their rooftops to avoid rising utility rates as a result of the spreading out of those fixed costs to an ever-shrinking customer base. This vicious cycle could theoretically spiral on and on until nearly every customer has rooftop solar panels or some other DG system.[126] At that point, electric utilities would devolve into mere suppliers of high-priced, temporary backup electricity. Insolvent and devoid of customers, conventional utilities caught in such a world would quickly fade into extinction.[127]

117. R. Thomas Beach & Patrick G. McGuire, *The Benefits and Costs of Solar Distributed Generation for Arizona Public Service*, Crossborder Energy 2 (2013), *available at* https://assets.documentcloud.org/documents/725946/az-distributed-generation.pdf.
118. Rule, *supra* note 3, at 135.
119. *Id.* at 136.
120. *Id.*
121. *Id.* at 137.
122. *Id.*
123. *Id.*
124. Farrell, *supra* note 10.
125. Raskin, *supra* note 87.
126. Rule, *supra* note 3, at 120.
127. *Id.*

Today, only a tiny fraction of a utility's customer base have solar panels, so utilities can absorb these customers' impacts on their finances and their day-to-day operations.[128] Adoption rates are currently low and are expected to remain low, even in states like Arizona. With DG penetration remaining low, advocates on both sides of the debate agree that a death spiral scenario is a long way off.[129]

Moreover, no one is suggesting that net metering policies on their own are poised to wash away a century-old, well-established utility infrastructure and governance system. A death spiral is not attributable to net metering programs or even consumer adoption of DG. Predictors of a death spiral believe it will come about because of macro changes in the utility system, brought about by the advent of new technology, changing consumer preference, a shifting economic environment, and regulatory policy acting collectively against the existing utility model.[130] Net metering policies alone are just a small contributor to the changes currently facing utility markets. Scholars instead characterize the surge in solar DG as a leading indicator of broader dynamic changes in the energy sector that will likely catalyze unpredictable forms of disruptive competition for utilities.[131]

Our existing utility model was created in an era in which demand for energy was expected to increase indefinitely. The model was designed to maintain institutional stability in order to uphold social-welfare objectives, which at the time meant ensuring low-cost, reliable service. However, electricity demand has declined every year except two since 1996.[132] Meanwhile, there is increased attention to the vulnerabilities of a complex and aging grid, the availability and sustainability of fossil fuels, the security of centralized energy infrastructure, and the resilience of utility systems to extreme storms. These concerns are prompting innovation in the form of aggressive conservation and efficiency programs, transition to a smart grid, exploration of decentralized energy options, and a range of policies aimed at accelerating adoption of renewable energy.[133]

Indeed, utilities' refusal to adapt to these changing conditions may exacerbate the risks of a death spiral even more than net metering policies, by ignoring the vulnerabilities of the traditional utility model and squandering critical opportunities for adaption.[134] By relying so heavily on cost-recovery mechanisms, utilities may actually further destabilize utility markets. Cost recovery requires successive upward recalibration of customer rates, which drives away customer base. It encourages utilities to defer corporate adaption unless a deep crisis forces the issue and thereby slows innovation both in the technology and policy domain. As a result, customer backlash, loss of regulatory support, high opportunity costs, and institutional brittleness to external shocks are all foreseeable byproducts that put utilities at greater risk.[135]

V. Conclusion

While ratemakers may not be allocating the costs associated with net metering programs optimally or even fairly, the allocation of these costs is constitutional and is best addressed through the political process. Net metering policies were implemented because the people expressed a preference for affordable distributed solar generators over traditional forms of energy. That preference should not be overshadowed by the regulators' fears of baseless takings litigation.

Threats of takings litigation serve only to push risk-averse regulators to create inefficient outcomes. Moreover, these threats of heightened scrutiny under a deregulatory takings theory and *Horne* are ungrounded in reality and unlikely to be successful as a matter of law. Moreover, they are ill-advised and inappropriate as a matter of policy.

128. *Id.* at 119.
129. Raskin, *supra* note 87; Elisabeth Graffy & Steven Kihm, *Does Disruptive Competition Mean A Death Spiral for Electric Utilities?*, 35 Energy L.J. 1 (2014).
130. Electricity demand has declined every year except two since 1996. Tomain, *supra* note 18, at 479.
131. Graffy & Kihm, *supra* note 129, at 3.
132. Tomain, *supra* note 18, at 479.
133. Graffy & Kihm, *supra* note 129, at 16.
134. *Id.* at 4.
135. *Id.*