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Abstract: As the effects of climate change increasingly become a reality, policymakers have recognized the need for more renewable energy, such as wind and solar power, and the benefits of distributed generation. One important way that both renewable energy and distributed generation are being addressed is through the use of electrical net metering policies. Net metering allows property owners to generate their own electricity and to receive credit from their utility company for any excess. State net metering policies are pervasive—forty-three states and the District of Columbia have adopted some form of net metering—and yet uncertainty remains about their jurisdictional limits. Further, FERC's guidelines on net metering are unclear and are preventing state policies from reaching their full potential. This Note reviews the net metering rules of three different states and analyzes the useful aspects of each. It then argues that FERC should provide clearer guidelines that allow states to expand their net metering policies and more effectively foster distributed renewable energy generation.

INTRODUCTION

Americans installed photovoltaic ("PV") solar energy systems at a record pace in 2013, increasing the total amount of energy produced by PV solar energy systems in the United States to over 12,000 megawatts.[1] In fact, more solar energy systems have been installed in the United States during the past eighteen months than in the prior thirty years.[2] And yet, even though the cost of installing solar energy systems is decreasing, they remain beyond the reach of many electricity consumers, unless they come with financial incentives.[3]

One such incentive is net metering, a utility billing mechanism that allows customers with on-site generation systems to store excess electricity on the

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[1] Mike Munsell, *U.S. Solar Market Grew 41%, Had Record Year in 2013*, GREENTECH MEDIA (Oct. 15, 2014), http://www.greentechmedia.com/articles/read/u.s.-solar-market-grows-41-has-record-year-in-2013, *archived at* http://perma.cc/5XGU-A43Z.

[2] *Id.*

[3] *Id.*; *see* Shannon Baker-Branstetter, *Distributed Renewable Generation: The Trifecta of Energy Solutions to Curb Carbon Emissions, Reduce Pollutants, and Empower Ratepayers*, 22 VILL. ENVTL. L.J. 1, 7 (2011).

grid.[4] Those customers can then use the value of that stored electricity later to offset their consumption if their on-site generation system does not meet their demands.[5] Net metering is the most common incentive for solar installations and other forms of distributed renewable energy generation such as wind and geothermal.[6] It is so common that as of July, 2013, forty-three states and the District of Columbia had net metering policies in place.[7]

The federal government has exclusive jurisdiction over the interstate transmission of electricity as well as the interstate sale of wholesale[8] electricity.[9] Retail energy sales[10] and intrastate transmission and distribution, on the other hand, fall within state jurisdictions.[11] Given the complex system of power distribution in the United States and the ephemeral nature of energy, certain transfers of electricity within the federal system can raise jurisdictional problems.[12] To avoid these issues, states have attempted to shape net metering laws that maximize the efficacy of their renewable energy policies without overstepping their jurisdictional boundaries.[13]

The Federal Energy Regulatory Commission (FERC) has resolved jurisdictional disputes regarding state net metering policies in two significant deci-

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[4] SOLAR ELEC. POWER ASS'N, RATEMAKING, SOLAR VALUE AND SOLAR NET ENERGY METERING—A PRIMER 1 (2013), *available at* https://www.solarelectricpower.org/media/51299/sepa-nem-report-0713-print.pdf, *archived at* http://perma.cc/6LMH-5FQ9. The "grid" refers to the vast network of high voltage transmission lines that move electricity from power plants to substations throughout the United States. *Electricity Explained*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energyexplained/index.cfm?page=electricity_delivery (last updated July 9, 2012), *archived at* http://perma.cc/7FEB-HRP2. Electricity then moves from the substations to consumers along lower voltage distribution lines. *Id.*

[5] SOLAR ELEC. POWER ASS'N, *supra* note 4, at 1.

[6] LORI BIRD ET AL., NAT'L RENEWABLE ENERGY LAB., REGULATORY CONSIDERATIONS ASSOCIATED WITH THE EXPANDED ADOPTION OF DISTRIBUTED SOLAR 33 (2013), *available at* http://www.nrel.gov/docs/fy14osti/60613.pdf, *archived at* http://perma.cc/Q6SD-A8RG (follow the archival link and open the "PDF" tab to access the document); Steven Ferrey, *Virtual "Nets" and Law: Power Navigates the Supremacy Clause*, 24 GEO. INT'L ENVTL. L. REV. 267, 268 (2012)[hereinafter Ferrey, *Virtual "Nets" and Law*]; *see Renewable Energy*, ENERGY.GOV, http://www.energy.gov/science-innovation/energy-sources/renewable-energy (last visited Oct. 15, 2014) *archived at* http://perma.cc/U2GV-PZXF. Distributed renewable energy generation refers to electricity produced from systems distributed throughout the grid rather than from a single, centralized power plant. *See infra* notes 24–45 and accompanying text.

[7] *Net Metering*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (Sept. 2014), http://www.dsireusa.org/documents/summarymaps/net_metering_map.pdf, *archived at* http://perma.cc/UR6K-ZXYS.

[8] A wholesale sale is any transaction for electricity between two entities that are not the end users. FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 763 (2d ed. 2006).

[9] Federal Power Act, 16 U.S.C. § 824(a) (2012).

[10] A retail sale of electricity is a direct sale to the end user. BOSSELMAN ET AL., *supra* note 8, at 763; *see infra* notes 46–52 and accompanying text.

[11] *See* 16 U.S.C. § 824(b)(1).

[12] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 269, 321–22.

[13] *Id.* at 321; *see infra* notes 243–68 and accompanying text.

sions.[14] These decisions, however, were both adjudications rather than rulemakings and are thus limited to the specific facts of each case.[15] Due to the rapid growth in the use of on-site renewable energy and the corresponding development of state net metering policies, the specific facts that gave rise to those decisions are insufficient guideposts for states.[16] Despite the lack of general policy guidance from the FERC decisions, states are continuing to design creative net metering policies to encourage the use of on-site renewable electricity.[17]

This Note argues that given the pervasive use and success of state net metering regulations, FERC should provide clearer guidelines through rule making that allow states to continue to be laboratories of net metering policies, but to do so within a more predictable and secure regulatory environment.[18] Part I begins by explaining the mechanics of net metering and its role in the electricity marketplace.[19] It then explores the federal policies related to net metering.[20] Part II reviews the two crucial FERC decisions, *MidAmerican Energy Co.* in 2001 and *Sun Edison, LLC* in 2009.[21] Part III then examines the net metering policies of Colorado, Massachusetts, and New Jersey, to demonstrate innovative state approaches to follow.[22] And finally, part IV analyzes and contrasts the three state policies and, based on that analysis, argues that current FERC regulatory guidance should be updated given the importance of net metering to renewable energy growth.[23]

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[14] *See* Sun Edison, LLC, 129 FERC ¶ 61146, 61618 (2009) (finding that net metering is lawful when there is no net transfer of electricity from a customer to a utility at the end of a billing period); MidAmerican Energy Co., 94 FERC ¶ 61340, 62261 (2001) (finding that federal law governs when an electricity-producing customer has sold more power to the utility than the customer has purchased from the utility over the course of the billing period).

[15] Sun Edison, LLC, 129 FERC ¶ 61618; MidAmerican, 94 FERC ¶ 62261; Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 307, 309.

[16] *See, e.g.*, MASS. GEN. LAWS ch. 164, § 140 (2012) (providing an example of an innovative state policy that allocates net metering credits to multiple customers from a single renewable energy source); Eric Wesoff, *Updated: Capital Keeps Pouring into Booming US Residential Solar Market*, GREENTECH MEDIA (Apr. 8, 2014), http://www.greentechmedia.com/articles/read/Capital-Keeps-Pouring-into-Booming-US-Residential-Solar-Market, *archived at* http://perma.cc/LW2P-RTJB.

[17] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 280–88.

[18] *See infra* notes 269–85.

[19] *See infra* notes 24–70 and accompanying text.

[20] *See infra* notes 71–109 and accompanying text.

[21] *See infra* notes 110–33 and accompanying text.

[22] *See infra* notes 134–202 and accompanying text.

[23] *See infra* notes 203–85 and accompanying text.

I. A History of Net Metering Policy and Regulation

A. Net Metering in Context

1. The Basics—Distributed Generation and Net Metering

Net metering is a utility billing mechanism that allows customers who generate their own power to send excess electricity back onto the grid.[24] This essentially permits these customers to run their electricity usage meters backwards when they produce more electricity than they need, offsetting their electricity bills with the power generated on-site.[25] The excess power produced by the customer's on-site generation system, such as rooftop solar panels, is sent back to the grid and is then consumed by other customers.[26] Different state policies grant the customer credits for that excess electricity, and some state policies permit the customer to allocate credits to other consumers.[27]

Net metering policies incentivize building owners to generate the electricity that is consumed at that site on a daily basis; a power generation practice known as distributed generation.[28] It is known as distributed generation because the systems used to produce the power, such as rooftop solar panels, geothermal sources, or wind turbines, are distributed throughout the grid.[29] Although this contrasts with the centralized model of power production in the United States that dominated the twentieth century, on-site power generation is not a novel concept.[30] Before the advent of large-scale steam turbines, energy requirements were met through on-site generation.[31] Even as the power generation system became increasingly centralized, electricity consumers that required reliable power, such as hospitals and telecommunications centers, rec-

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[24] Solar Elec. Power Ass'n, *supra* note 4, at 1.

[25] Ker Than, *As Solar Power Grows, Dispute Flares Over U.S. Utility Bills*, Nat'l Geographic (Dec. 24, 2013), http://news.nationalgeographic.com/news/energy/2013/12/131226-utilities-dispute-net-metering-for-solar/, *archived at* http://perma.cc/E5LJ-RP7U. Electricity generated on-site is produced at the place of consumption, such as on a residential rooftop. *See* Bird et al., *supra* note 6, at 33.

[26] Non-Discriminatory Open Access Transmission Tariff, 18 C.F.R. § 35.28(2012). Another way net metering is commonly conceptualized is as an energy banking system, whereby the customer sends excess power to the grid for storage, and then may draw from that energy stock at a later time at no additional cost. Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 271.

[27] *See infra* notes 134–202 and accompanying text (reviewing state net metering policies and the various choices those policies give consumers).

[28] Melissa Powers, *Small Is (Still) Beautiful: Designing U.S. Energy Policies to Increase Localized Renewable Energy Generation*, 30 Wis. Int'l L.J. 595, 599–600, 635–36 (2012).

[29] Frederick R. Fucci, *Distributed Generation*, *in* The Law of Clean Energy: Efficiency and Renewables 345, 345–47 (Michael B. Gerrard ed., 2011).

[30] U.S. Dep't of Energy, The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion, at i (2007), *available at* http://www.ferc.gov/legal/fed-sta/exp-study.pdf, *archived at* http://perma.cc/R4TY-XTEY; Fucci, *supra* note 29, at 345.

[31] U.S. Dep't of Energy, *supra* note 30, at i.

ognized the benefits of having their own generation capabilities in emergency situations.[32]

Distributed generation differs from conventional power production and transmission in a variety of ways.[33] First, the central station model of power generation wastes a tremendous amount of energy: approximately two-thirds of all fuel used to generate electricity in the United States is lost as heat during the generation process.[34] Second, centralized power sources require the electricity to be transported long distances to reach end-users, and during transit, another 7% to 10% of the electricity is lost.[35] In contrast, a distributed generation system has less transmission loss because the electricity travels a short distance before being used.[36]

Distributed generation also produces environmental benefits.[37] In 2012, electricity generation accounted for approximately thirty-nine percent of the carbon dioxide (CO_2) emitted by the United States.[38] Net metering policies incentivize the development of distributed renewable power.[39] Distributed generation from renewable energy sources such as solar in turn, benefits the environment by reducing CO_2 emissions.[40] Distributed generation systems, particularly those placed on rooftops, also require less land than centralized power plants and their accompanying transmission infrastructure.[41]

Distributed generation also provides reliability to electricity consumers in a way that traditional centralized generation often fails to do.[42] They do so

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[32] *Id.*

[33] *See* Fucci, *supra* note 29, at 345–47.

[34] *Id.* at 346.

[35] *Id.* at 345–46. (resulting in approximately 73% to 76% usable electricity losses due to generation an transmission).

[36] *See* Baker-Branstetter, *supra* note 3, at 3. One study found that distributed generation systems can reduce transmission losses by thirty percent. DEP'T OF ENERGY, *supra* note 30, at 3-18.

[37] DEP'T OF ENERGY, *supra* note 30, at 8.

[38] *Frequently Asked Questions*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/tools/faqs/faq.cfm?id=77&t=11 (last updated Aug. 23, 2013), *archived at* http://perma.cc/J95T-QVKX.

[39] Baker-Branstetter, *supra* note 3, at 8. Approximately three quarters of CO_2 emissions from electricity generation come from coal power stations, whereas the other quarter comes from natural gas power stations. *Id.*

[40] *Id.*

[41] U.S. DEP'T OF ENERGY, *supra* note 30, at 6-1, 6-14.

[42] Fucci, *supra* note 29, at 347. Reliability is a measure of the grid's ability to meet consumers' demand for electricity. U.S. DEP'T OF ENERGY, *supra* note 30, at 2-1. In the wake of the devastation caused by Hurricane Sandy in October, 2012, President Obama created the Hurricane Sandy Rebuilding Task Force (the "Task Force") to identify and remove "obstacles to resilient rebuilding while taking into account existing and future risks and promoting the long-term sustainability of communities and ecosystems in the Sandy-affected region." HURRICANE SANDY REBUILDING TASK FORCE, HURRICANE SANDY REBUILDING STRATEGY 13 (2013), *available at* http://portal.hud.gov/hudportal/documents/huddoc?id=HSRebuildingStrategy.pdf, *archived at* http://perma.cc/EKL2-5D36. Among the Task Force's recommendations was to improve electric grid operations by incorporating distributed generation. *Id.* at 68. The Task Force noted that increasing distributed generation would assist in

simply by diversifying the sources that supply electricity.[43] As such, disruptions like blackouts and brownouts can be prevented by distributing power sources throughout the grid.[44] Distributed generation systems can also provide supplemental or back-up power to critical consumers like hospitals.[45]

2. Electricity Ratemaking

Net metering encourages building owners to install on-site renewable power generators by guaranteeing that the local utility will compensate the customer for any excess electricity.[46] The value of the credit granted by the utility for the customer's self-produced power is key to determining whether the investment in an on-site generator is worth it, and if so, how quickly the investment will pay off.[47] More simply stated, how the price of electricity is set has significant impacts on the renewable energy generator's rate of return.[48]

The retail price of electricity is based on its reasonable cost of production.[49] The rate a utility may charge is typically set in a "ratemaking" proceeding, at which a utility considers what the reasonable cost of the various components of delivering electricity is likely to be.[50] The components of retail prices typically include transmission and distribution costs, such as the cost of power lines and facilities, as well as the cost of generation.[51] It also incorporates the fixed costs of serving customers, such as metering and billing.[52]

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minimizing problems to the grid and allow at least a minimum level of service to consumers in the event of another catastrophic storm. *Id.*

[43] U.S. DEP'T OF ENERGY, *supra* note 30, at 2-5.

[44] SOLAR ELEC. POWER ASS'N, *supra* note 4, at 28. Blackouts might be caused by equipment failure and overload or as a deliberate emergency technique implemented by system operators to avoid system overload. U.S. DEP'T OF ENERGY, *supra* note 30, at 2-2. Distributed generation systems can support local electricity demand and thus reduce the stress on primary generation systems. *Id.* at 2-5.

[45] U.S. DEP'T OF ENERGY, *supra* note 30, i. Distributed generation can also be incentivized through the use of feed-in tariffs ("FITs"). *See* Steven Ferrey, *Sale of Electricity*, *in* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 217, 228 (Michael B. Gerrard ed., 2011) [hereinafter Ferrey, *Sale of Electricity*]; Powers, *supra* note 28, at 641. FITs provide a guaranteed rate of return to renewable generation investors by setting a price for the power produced by renewables above market value. Ferrey, *Sale of Electricity*, *supra* at 228. This raised price thus appeals to investors otherwise concerned with the upfront costs of a renewable energy installation. *Id.*; Powers, *supra* note 28, at 641. FITs are the most popular form of renewable energy policy incentive in Europe. Ferrey, *Sale of Electricity*, *supra* at 228.

[46] Baker-Branstetter, *supra* note 3, at 7.

[47] *See* Powers, *supra* note 28, at 637.

[48] *See id.*

[49] Ferrey, *Sale of Electricity*, *supra* note 45, at 217. FERC regulates the pricing of wholesale electricity that is sold in interstate commerce, whereas state regulatory boards regulate retail rates. *Id.*

[50] U.S. DEP'T OF ENERGY, *supra* note 30, at 8-3 to -4. The state utility board, which may be elected or appointed depending on the jurisdiction, ultimately sets the utility's rates and other rules regulating service. *Id.* at 8-4.

[51] *Id.* at 8-3 to -4.

[52] *Id.* at 8-3.

Due to the many components and considerations that comprise the retail rate of electricity, the cost of the power itself is only part of the bundle.[53] In some jurisdictions, such as Massachusetts, regulators must also consider encouraging environmentally friendly technologies like solar generation.[54] The regulators must then account for these different priorities and also keep rates predictable and understandable to the public.[55]

There are many components and considerations that comprise the retail rate of electricity, with the cost of the actual electricity only accounting for part of the figure.[56] Jurisdictions differ as to whether net metering households should be compensated for the power they produce at the retail rate or, instead, for just the cash value of the power itself—known as the avoided cost rate.[57] Customers whose meters run backwards at the retail rate can receive up to four times the value of the electricity.[58] Meanwhile, the customer does not incur any of the other costs embedded within the retail rate such as transmission and distribution costs.[59]

Net metering customers who are paid at the retail rate for their excess electricity can thus cause the electricity utility company to lose revenue because only the utility incurs the distribution and transmission costs, but the customers are compensated as if they incurred them as well.[60] A utility might then attempt to recover these costs by assessing a surcharge across its entire customer base—both net metering customers and traditional customers.[61] This results in non-net metering customers effectively subsidizing net metering customers.[62] Various states where net metering occurs are attempting to resolve this issue.[63] In Arizona, for example, regulators are attempting to assess a small

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[53] SOLAR ELEC. POWER ASS'N, *supra* note 4, at 5.

[54] *Id.* at 6. For example, the Massachusetts Green Communities Act of 2008 required electricity distribution companies to provide retail access to sellers of renewable energy. Massachusetts Green Communities Act, Ch. 169, § 86, 2008 Mass. Acts 284.

[55] Massachusetts Green Communities Act, Ch. 169, § 86, 2008 Mass. Acts 284.

[56] Powers, *supra* note 28, at 637.

[57] *See* STEVEN FERREY, THE LAW OF INDEPENDENT POWER 4:1 (30th ed. 2013) [hereinafter FERREY, THE LAW OF INDEPENDENT POWER] (describing avoided cost as the price the utility would pay to generate the electricity itself or purchase it from a source other than the customer); Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 280–88 (comparing state policies and noting that some states give net metering customers the retail rate whereas others give the avoided cost rate).

[58] Ferrey, *Sale of Electricity*, *supra* note 45, at 232.

[59] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 303.

[60] *Id.*

[61] *Id.*

[62] *Id.*

[63] *See, e.g.*, Ryan Randazzo, *Commission Votes to Raise APS Solar Customers' Bills*, AZCENTRAL (Nov. 14, 2013), http://www.azcentral.com/business/arizonaeconomy/articles/20131114aps-solar-customer-bills-higher.html, *archived at* http://perma.cc/84TA-MZZW.

fee on net metering customers to offset utility revenue losses caused by customer-generated electricity payouts at the retail rate.[64]

B. Federal Underpinnings of Net Metering

1. The Federal Power Act

The Federal Power Act (FPA) grants FERC jurisdiction over the transmission of electricity in interstate commerce, the sale of wholesale electricity in interstate commerce, and any facilities used for those purposes.[65] The FPA defines the sale of electricity at wholesale as the sale of electricity to any person for resale.[66] It limits federal jurisdiction to the three aforementioned areas by specifying that FERC has no authority "over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce."[67]

FERC's jurisdiction over interstate transmission and wholesale electricity sales includes the authority to regulate rates and schedules.[68] Furthermore, the FPA gives FERC the power to change a rate or a rule it finds unreasonable.[69] In furtherance of this authority, the FPA prohibits terms of service that are unreasonable or unduly preferential as between different classes of customers.[70]

2. The Public Utility Regulatory Policies Act of 1978

Following the oil crisis of the 1970s, Congress passed the Public Utility Regulatory Policies Act of 1978 ("PURPA") with the goal of encouraging cogeneration and small-scale power production.[71] With PURPA, Congress sought energy efficiency through conservation, streamlined use of utility facilities and resources, and fair electric rates for consumers.[72] Congress further aimed to diversify the country's energy portfolio by encouraging the development of

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[64] *Id.*

[65] Federal Power Act, 16 U.S.C. § 824(a)–(b) (2012). The FPA defines electric energy in interstate commerce as electricity transmitted from a state and consumed anywhere outside that state but within the United States. *Id.* § 824(c).

[66] *See id.* § 824(d).

[67] *See id.* § 824(b)(1).

[68] *See id.* § 824d(a)–(e). A schedule in the electric utility context refers to a listing of all rates and charges that are included in any transmission or sale of electricity. *See id.* § 824d(c). Rates that a utility may charge for electricity are based on the cost to the utility of providing the service, plus allowing the utility to earn a fair rate of return to remain in business. BOSSELMAN ET AL., *supra* note 8, at 78.

[69] *See* 16 U.S.C. § 824e(a).

[70] *Id.* § 824d(b) (2012).

[71] *Id.* § 824a-3(a); Joshua Fershee, *Renewable Mandates and Goals*, *in* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 77, 77 (Michael B. Gerrard ed., 2011).

[72] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1; *see* 16 U.S.C. § 824a-3(b) to -3(c) (requiring utilities to buy electricity from, and sell electricity to, small power producers at just and reasonable rates).

alternative power.[73] It recognized that two underlying problems with the energy industry were the reluctance of the utilities to deal with alternative power producers and alternative producers' fear of regulation.[74]

PURPA attempted to address those problems and to achieve Congress's goals by creating a class of facilities that would receive special regulatory treatment and financial incentives.[75] Pursuant to PURPA, FERC defined the characteristics necessary for a facility to be deemed a "qualifying facility" ("QF") and receive the attendant benefits.[76] FERC rules focus on the size and fuel use of a facility to determine whether it is a QF.[77] A small power production facility is a QF if it generates eighty megawatts ("MW") or less and its primary energy source is biomass, waste, renewable resources, or geothermal resources.[78] Along with small renewable power generators, cogeneration facilities may also obtain QF status.[79]

QFs receive three benefits under PURPA: (1) the right to sell energy to a utility, (2) the right to purchase certain services from utilities, and (3) exemption from different regulatory burdens.[80] Further, utilities are required to purchase electricity from a QF at the avoided cost rate.[81] The first two benefits impose obligations directly upon utilities to physically connect with and purchase power from QFs.[82] PURPA thus breaks up the monopoly on generation of power that utilities would otherwise hold.[83]

The exemption of QFs from a variety of federal and state regulations is another important benefit provided by PURPA.[84] QFs are exempt from parts of both the FPA and the Public Utility Holding Company Act ("PUHCA").[85] As a general rule, however, QFs are not exempt from Sections 205 and 206 of the

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[73] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1; *see* 16 U.S.C. § 824a-3(a) (requiring FERC to make rules encouraging the development of small-scale electricity generation).

[74] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1.

[75] Craig M. Kline, *Solar*, *in* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 391, 402 (Michael B. Gerrard ed., 2011).

[76] Fucci, *supra* note 29, at 349.

[77] 18 C.F.R. § 292.203 (2013). FERC initially included certain ownership criteria for QFs, prohibiting facilities in which electric utility companies had greater than fifty percent stake. Fucci, *supra* note 29, at 349. The utility ownership restriction has been repealed. *Id.*

[78] 18 C.F.R. § 292.204(a)–(b). A primary energy source is one that comprises at least seventy-five percent of the input at the facility. *Id.* § 292.204(b).

[79] *Id.* § 292.203(b). The production of electricity produces a tremendous amount of wasted energy, often in the form of heat. Fucci, *supra* note 29, at 346. A cogeneration facility is one that captures this thermal energy and puts it to use. *Id.*

[80] Kline, *supra* note 75, at 402; *see* 16 U.S.C. § 824a-3(a), 824a-3(e) (2012) (requiring utilities to purchase electricity from, and sell electricity to, QFs and exempting QFs from several federal and state regulations).

[81] 18 C.F.R. § 292.304(a)(2).

[82] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1.

[83] *Id.*

[84] *Id.* at 4:6.

[85] 16 U.S.C. § 824a-3(e).

FPA, which provide for FERC jurisdiction over interstate sales of wholesale electricity and interstate transmission.[86] QFs that generate less than twenty MW, however, are an exception to that general rule—they are exempt from FERC scrutiny under Sections 205 and 206 of the FPA.[87]

Furthermore, QFs' corporate and financial structures are not subject to federal review, and FERC cannot scrutinize their sales of power or their profit margins.[88] PURPA also exempts QFs from most state regulations.[89] Specifically, QFs are exempted from state regulations regarding rates as well as financial and organizational structures.[90]

3. Energy Policy Act of 2005

The Energy Policy Act of 2005 ("EPACT") encouraged the widespread adoption of net metering policies at the state level.[91] Under EPACT, state regulatory commissions and electric utilities are required to make net metering services available upon request.[92] Although some states had net metering policies in place prior to EPACT's passage in 2005, the statute encouraged a jump in the number of state net metering programs, and today forty-three states and the District of Columbia have some form of net metering policy.[93]

EPACT also limited the application of PURPA by narrowing the obligations of utilities to purchase power from QFs.[94] Utilities are no longer required to purchase power from a QF that has access to wholesale electricity markets.[95] Utilities also need not provide transmission services to a QF that is already receiving

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[86] 18 C.F.R. § 292.601(c)(1) (2013); *see* 16 U.S.C. § 824(a)–824(b) (2012) (granting FERC jurisdiction over the transmission of electricity in interstate commerce, the sale of wholesale electricity in interstate commerce, and any facilities used for those purposes).

[87] 18 C.F.R. § 292.601(c)(1).

[88] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1; Fucci, *supra* note 29, at 349.

[89] Fucci, *supra* note 29, at 349.

[90] 18 C.F.R. § 292.602(c). FERC will consider limiting these exemptions upon the request of a state regulatory board. *Id.* § 292.602(c)(3).

[91] Energy Policy Act of 2005, 16 U.S.C. § 2621(d)(11); SOLAR ELEC. POWER ASS'N, *supra* note 4, at 1.

[92] 16 U.S.C. § 2621(d)(11) (2012)

[93] SOLAR ELEC. POWER ASS'N, *supra* note 4, at 2; Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 273. In 1983, Minnesota was the first state to enact a net metering policy. SOLAR ELEC. POWER ASS'N, *supra* note 4, at 1. Today, Alabama, Idaho, Mississippi, South Carolina, South Dakota, Tennessee and Texas are the only states without a statewide policy. *Id.*

[94] *See* 16 U.S.C. § 824a-3(m)(1) (2012). Investor-owned utilities fought to reduce the application of PURPA and took particular issue with PURPA's requirement that they purchase power from QFs at a set rate. Fucci, *supra* note 29, at 350. PURPA's requirements did lead to abuses such as cogeneration facilities using a small fraction of captured thermal energy to warm a greenhouse in order to gain QF status, while selling the majority of their energy to utilities, which were required to buy from them. *Id.*

[95] 16 U.S.C. § 824a-3(m)(1).

those services from another transmission provider.[96] Furthermore, if a competitive marketplace exists for the QF's electricity—such that the local utility is not the only potential buyer—the local utility can be exempted from PURPA purchase obligations.[97] The practical effect of the EPACT amendments is that many utilities are or can become exempt from purchasing electricity from QFs.[98] Other than decreased obligations to deal with QFs however, most of the original substantive requirements of PURPA still apply to QFs after EPACT.[99]

4. The Supremacy Clause in Electricity Markets: The Filed Rate Doctrine

The Supremacy Clause of the United States Constitution establishes that the Constitution and all federal laws made pursuant to it are the "supreme law of the land."[100] State constitutions, laws and regulations are thus deferential to lawful exercises of power by the federal government when the two intersect.[101]

In 1935, Congress, using its right to delegate its authority, vested in the Federal Power Commission—now FERC—jurisdiction over the interstate transmission and interstate wholesale sale of electricity.[102] Further, courts have confirmed that FERC's power over the interstate sale of electricity is plenary.[103] Thus, any state law attempting to regulate interstate transmission or wholesale electricity sales is *de facto* preempted by federal law.[104]

The filed rate doctrine (the "FRD") is the application of the Supremacy Clause to the regulation of electricity.[105] A utility that transmits or sells power in interstate commerce is regulated by FERC.[106] The utility must file the terms of its rates and services with FERC and receive approval from the agency.[107] The FRD provides that once the federally regulated utility has satisfied the filing requirement, and FERC approves its rates or terms of service, any state action differing from FERC's findings is federally preempted.[108] Furthermore, the FRD bars all claims, state or federal, that attempt to change FERC-approved rates or terms of service.[109]

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[96] *Id.*
[97] *Id.*
[98] Fucci, *supra* note 29, at 350.
[99] FERREY, THE LAW OF INDEPENDENT POWER, *supra* note 57, at 4:1.
[100] U.S. CONST. art. VI, § 2.
[101] *Id.*
[102] 16 U.S.C. § 824(a) (2012).
[103] Fed. Power Comm'n v. S. Cal. Edison, 376 U.S. 205, 215–16 (1964) (holding that Congress intended to create a bright line rule in granting FERC exclusive authority over interstate sale of electricity); N. States Power Co. v. Minn. Pub. Util. Comm'n, 344 N.W.2d 374, 378 (Minn. 1984).
[104] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 315.
[105] *Id.*
[106] 16 U.S.C. § 824(a).
[107] *Id.* § 824d(c).
[108] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 315.
[109] *Id.* at 315–16.

II. FERC Orders Define Net Metering

A. MidAmerican

In a 2001 order, the Federal Energy Regulatory Commission (FERC) addressed MidAmerican Energy Company's ("MidAmerican") concerns with net metering.[110] MidAmerican objected to the Iowa Utilities Board's ("Iowa Board") implementation of orders requiring MidAmerican to offer net metering service to three small wind facilities.[111] The company filed a petition with FERC seeking a declaratory order that the Iowa Board's requirements were preempted by the Federal Power Act (FPA) and the Public Utility Regulatory Policies Act ("PURPA").[112] MidAmerican specifically argued that the state orders essentially required it to pay retail rates in violation of PURPA, which stipulates that qualifying facilities ("QFs") such as the wind turbines at issue, were only entitled to avoided cost rates.[113] Further, rather than netting the total amount of power at the end of each billing cycle, MidAmerican argued that every flow of power, in either direction, constituted a sale.[114]

FERC denied MidAmerican's request for a declaratory order and found that the Iowa Board had the authority to implement its net metering requirements.[115] FERC did not view the Iowa board's net metering requirements as dealing with the sale of electricity, but rather as a method of accounting for the transactions between the utility and the net metering customers.[116] It held that "no sale occurs when an individual homeowner or farmer (or similar entity such as a business) installs generation and accounts for its dealings with the utility through the practice of net metering."[117]

Because according to FERC, federal law applies when a sale occurs, the *MidAmerican* decision was quite significant.[118] In the context of net metering, a sale occurs when the customer has sold more power to the utility than the customer has purchased from the utility over the course of the billing period.[119]

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[110] MidAmerican Energy Co., 94 FERC ¶ 61340, 62261 (2001).

[111] *Id.* Two of the wind turbines were twenty kilowatts in size, whereas the third was forty-five kilowatts. *Id.* ¶ 62261 n.3.

[112] *Id.*

[113] *Id.*; *see supra* notes 56–59 and accompanying text (defining the avoided cost rate).

[114] *MidAmerican*, 94 FERC ¶ 62263.

[115] *Id.* ¶ 62262.

[116] *Id.* ¶ 62263.

[117] *Id.*

[118] *Id.*

[119] *Id.* In its order, FERC also held that one month is an allowable time interval during which the net metering process may take place. *Id.* Previously, FERC had only permitted net metering to be measured over a one-hour interval, though it stated that it was open to considering other time periods. *Id.* Because the determination as to whether federal law applies focuses on whether the customer has made a net sale at the end of the billing cycle, the allowable length of the billing cycle is crucial. *See id.*

It is only when a net sale to the utility has occurred that the inquiry then shifts to the status of the net metering facility under PURPA.[120]

Although the *MidAmerican* decision was significant, it was nonetheless an adjudication and not a binding rulemaking.[121] Its precedential value is thus limited to the facts of the case.[122] Despite its limited scope, *MidAmerican* is viewed by scholars as representing FERC's approval of state net metering policies.[123]

B. Sun Edison

In 2009, in *Sun Edison, LLC*, Sun Edison, a company that finances, installs, operates, and maintains solar energy facilities, petitioned FERC to clarify whether the company's sales to end-use customers constituted a wholesale sale of electricity that would subject it to the FPA.[124] Sun Edison's business model is to install, connect, and maintain solar facilities on the customer's property.[125] The customer pays little of the upfront costs of solar installation, but agrees to purchase the electricity directly from Sun Edison.[126] In states with net metering policies, customers are then able to send their excess power to the grid.[127] Sun Edison sought FERC's assurance that its electricity was not considered wholesale even though it was occasionally resold to utilities in net metering states.[128]

In keeping with its decision in *MidAmerican*, FERC found that no sale occurs as long as the end-use customer that purchases Sun Edison's solar energy does not make a net sale to the utility over the given billing period.[129] When no sale occurs from the customer to the utility, no resale has taken place and

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[120] *Id.* If a QF makes a net sale to the utility, then the QF is only entitled to be compensated at the avoided cost rate pursuant to PURPA. *Id.* If a non-QF makes a net sale at the end of the billing cycle, then the facility would be subject to the FPA. *Id.*

[121] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 305.

[122] *Id.*

[123] *See id.* at 307; Powers, *supra* note 28, at 637. Transferring credits among customers was not at issue in *MidAmerican*, and thus FERC did not contemplate the "virtual" net metering scenario that Massachusetts, for example, has adopted. *See infra* notes 142–55 and accompanying text (explaining Massachusetts' virtual net metering policy that allows a customer generating her own electricity to allocate credits to other customers).

[124] Sun Edison, LLC, 129 FERC ¶ 61146, 61618 (2009).

[125] *Id.* Since Sun Edison's founding in 2003, other solar leasing companies have formed using a similar business model. *See* William Pentland, *Another Day, Another $1 Billion for Distributed Solar*, FORBES (June 26, 2013, 11:05 AM), http://www.forbes.com/sites/williampentland/2013/06/26/another-day-another-1-billion-for-distributed-solar/, *archived at* http://perma.cc/YK7H-6Z7J.

[126] *Sun Edison*,129 FERC ¶ 61618.

[127] *Id.* ¶ 61619.

[128] *Id.*

[129] *Id.* ¶ 61621.

Sun Edison is not viewed to be selling at wholesale.[130] FERC thus held that Sun Edison's sales were beyond the purview of the FPA.[131]

FERC's *Sun Edison* order further clarified that a customer's net consumption of electricity is determinative of a sale when it stated, "[a] participant in a net metering program must be a net consumer of electricity—but for portions of the day or portions of the billing cycle, it may produce more electricity than it can use itself."[132] After this decision, net metering is considered permissible when there is no net transfer to a utility at the end of a billing period.[133]

III. STATE NET METERING POLICIES

A. Overview of State Variations

Forty-three states and Washington, D.C. had net metering policies in place by the end of 2013.[134] These policies vary in the sources of renewable energy covered, the eligible size and capacity of the generator, and how the customer is compensated.[135] Many states have an aggregate cap that limits how much electricity net metering customers can contribute to the grid overall.[136] States with aggregate caps require customers hoping to take advantage of net metering to reserve spots before capacity is filled.[137]

The states with the most liberal net metering policies allow multiple customers to benefit from a single renewable energy facility without being physically connected to the renewable source.[138] These policies, known as "community" or "virtual" net metering, allow neighbors to offset their utility bills as if

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[130] *Id.*

[131] *Id.*

[132] *Id.* ¶ 61620. Like *MidAmerican Energy Co.*, the *Sun Edison, LLC* order was an adjudication and thus limited to the particular facts of the case. Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 309. A rule promulgated by an administrative agency such as FERC is a "statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy." 5 U.S.C. § 551(4) (2012). A declaratory order, such as *Sun Edison* or *MidAmerican*, is simply meant to "terminate a controversy or remove uncertainty." *See id.* § 554(e); *Sun Edison*, 129 FERC ¶ 61621; *MidAmerican*, 94 FERC ¶ 61340. A party must file a petition with FERC to request a declaratory order to terminate a controversy or remove uncertainty. 18 C.F.R. § 385.207 (2014).

[133] *Sun Edison*, 129 FERC ¶ 61621.

[134] *Net Metering*, *supra* note 7.

[135] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 280–88 (giving an overview of the forty-three state policies currently in place).

[136] *See, e.g.*, MASS. GEN. LAWS ch. 164, § 139(f) (2012) (capping the contribution by net metering customers to the state's peak electricity demand at three percent); N.J. STAT. ANN. § 48:3-87(e)(1) (West 2013) (providing that a utility may stop offering net metering services when the total capacity of net metering customers equals two and a half percent of the state's peak electricity demand).

[137] *See* MASS. DEP'T OF PUB. UTIL., FACTSHEET: RULES ON NET METERING 1 (July 2013), *available at* http://www.mass.gov/eea/docs/dpu/electric/net-metering/2013-7-2-net-metering-fact-sheet.pdf, *archived at* http://perma.cc/86PK-635U.

[138] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 292.

they each had a generator system on their homes.[139] Because neighbors are not actually connected to the renewable source, the utility grid is used to distribute the power amongst participants in the community.[140] The utility incurs the distribution cost, but the net metering participants are compensated at the full retail rate, as if they had incurred those costs.[141]

B. Massachusetts Net Metering Policy

Massachusetts first authorized net metering by renewable energy systems in 1982.[142] Since then, the state's net metering policies have been expanded and amended several times, and most significantly in 2008 with the passage of the Green Communities Act.[143]

In its current form, Massachusetts' net metering policy groups its eligible net metering facilities into three classes.[144] Class I facilities, the smallest, must have a capacity of sixty kilowatts (kW) or less but have no restrictions on the source of the electricity.[145] Class II and Class III facilities must generate electricity from solar, wind, anaerobic digestion, or an agricultural facility and may produce between sixty kW to one megawatt (MW) and one MW to two MW, respectively.[146]

A net metering customer's excess electricity is compensated differently depending on the customer's class.[147] Class I and II facilities receive nearly the full retail rate for excess generation, whereas Class III facilities receive closer to the avoided cost rate.[148] Class III facilities are the largest allowed by the statute and most closely resemble a wholesale power producer.[149] This is likely

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[139] *Net Metering: How Net Energy Works for Consumers*, INTERSTATE RENEWABLE ENERGY COUNCIL, http://www.irecusa.org/regulatory-reform/net-metering/ (last visited Oct. 15, 2014), *archived at* http://perma.cc/J9BY-6BXC. The policies vary from state to state, and are sometimes called aggregate or virtual net metering. *Id.*

[140] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 293.

[141] *Id.*

[142] *Massachusetts Incentives/Policies for Renewables & Efficiency*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MA01R&re=0&ee=0 (last updated Aug. 6, 2014), *archived at* http://perma.cc/LA9Q-LTWD.

[143] *Id.*

[144] *See* 220 MASS. CODE REGS. 18.02 (2013) (defining Class I, Class II, and Class III net metering facilities).

[145] *Id.* Generation is the amount of electricity the system generates over a particular period of time. *Frequently Asked Questions*: *What Is the Difference Between Electricity Generation Capacity and Electricity Generation?*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/tools/faqs/faq.cfm?id=101&t=3 (last updated Apr. 30, 2014), *archived at* http://perma.cc/39LJ-BAT4. The capacity of an electric generation system refers to the maximum output the system can produce under certain conditions. *Id.*

[146] 220 MASS. CODE REGS. 18.02.

[147] *Id.* at 18.04(1)–.04(3).

[148] *Id.*; Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 283.

[149] 220 MASS. CODE REGS. 18.02; Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 300.

why utilities are not required to compensate Class III facilities' excess power at the retail rate.[150]

One way that Massachusetts net metering regulations differ from other states is in their use of "virtual" credits.[151] Any customer who owns a renewable energy generator—referred to as a "host customer" by the Massachusetts Department of Public Utilities—may allocate credits to any other customer of the same utility.[152] The credits are then used by the non-host customers to offset their electric bills.[153]

In Massachusetts, the non-host customer need only be within the same utility service area as the host, but does not need to be related legally or otherwise in order to benefit from the host's net metering credits.[154] The utility is required to carry over from billing period to billing period any remaining net metering credits.[155]

C. New Jersey Net Metering Policy

New Jersey offers net metering to industrial, commercial, and residential customers that generate a "Class I" renewable resource.[156] Class I renewable resources include solar, wind, geothermal, and tidal energy.[157] The state used to limit the size of a customer's on-site generation system to two MW, but in

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[150] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 300. Class III facilities owned by municipalities or another government entity receive the same compensation for excess generation as Class I and II facilities. 220 MASS. CODE REGS. 18.04(1), .04(3) (2013).

[151] Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 297.

[152] 220 MASS. CODE REGS. 18.05.

[153] *See id.*

[154] *Id.* at 18.05(1); Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 301. If the renewable generator is a Class III facility, then the utility has the option of giving the host customer the cash value of the excess electricity rather than allocating the credits to others. 220 MASS. CODE REGS. 18.05(4). If the host customer transfers net metering credits to a large pool of customers, the utility is more likely to write a check rather than face the administrative costs of many virtual net metering customers. Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 306.

[155] 220 MASS. CODE REGS. 18.05(3) (2013). Massachusetts' net metering regulations also allow for third-party power producers to participate in the program. *Id.* at 18.09(5). Furthermore, a host customer is not required to consume a certain amount of the energy it produces. *See id.* at 18.05 (lacking a requirement that a host customer use a minimum amount of the electricity produced on-site before allocating credits to other customers). In Massachusetts, excess generation from net metering facilities may contribute up to three percent of capacity during the utilities' periods of peak demand. MASS. GEN. LAWS ch. 164, § 139(f) (2012). In January 2014, a bill was introduced in the Massachusetts legislature to allow all qualifying net metering projects to be built, regardless of the three percent cap, until December 31, 2016. Matt Murphy, *Solar Backers Push to Lift Subsidy Cap*, COMMONWEALTH MAG. (Mar. 12, 2014), http://www.commonwealthmagazine.org/News-and-Features/Online-exclusives/2014/Winter/029-Solar-backers-push-to-lift-subsidy-cap.aspx#.U1bHU1FdVps, *archived at* http://perma.cc/7K2B-PCPS.

[156] N.J. STAT. ANN. § 48:3-87(e)(1) (West 2013).

[157] N.J. ADMIN. CODE § 14:8-1.2 (2014).

2010, removed the size limit.[158] Despite the removal of a specific size limit, on-site generation capacity is limited by the requirement that the capacity not exceed the amount of electricity used by the customer over a prior twelve-month period.[159] Furthermore, a utility may, upon authorization from the New Jersey Board of Public Utilities, stop offering net metering services when net metering customers' combined capacity equals two and a half percent of the state's peak electricity demand.[160]

If a customer generates excess power in a given month, the customer receives a credit—at the retail rate—for the next month's bill.[161] The customer may accumulate credits over the course of a year, but if there are credits remaining at the end of an annualized period, the utility compensates the customer for the avoided cost value of the excess power.[162] New Jersey net metering customers are further allowed to choose the month in which their annual billing cycle begins.[163] The utility is also expressly prohibited from assessing a fee or surcharge to net metering customers, unless that fee applies to non-net metering customers as well.[164]

Unlike Massachusetts, New Jersey does not permit virtual net metering for private customers.[165] Pursuant to New Jersey's narrower allowance, an eligibility requirement for net metering is that the energy generation system be located either on the property of the customer or on a contiguous property.[166] Furthermore, one energy generation system may only serve one customer.[167] This arrangement does, however, allow for "meter aggregation," where a customer uses a single renewable energy generation system to offset the utility costs at several buildings, provided the customer owns each building and the buildings are located on the same or contiguous property.[168] New Jersey net metering regulations also allow third-party power producers to participate.[169]

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[158] N.J. STAT. ANN. § 48:3-87(e)(1); *New Jersey Incentives/Policies for Renewables & Efficiency*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NJ03R&re=0&ee=0 (last updated Oct. 10, 2014), *archived at* http://perma.cc/4NLE-XREA.

[159] N.J. ADMIN. CODE § 14:8-4.3(a).

[160] N.J. STAT. ANN. § 48:3-87(e)(1).

[161] N.J. ADMIN. CODE § 14:8-4.3(c); Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 285.

[162] N.J. ADMIN. CODE § 14:8-4.3(e).

[163] N.J. ADMIN. CODE § 14:8-4.3(f) (2014). The utility is only required to offer the customer one opportunity to select when the billing period starts. *Id.*

[164] *Id.* § 14:8-4.3(m).

[165] *See* N.J. STAT. ANN. § 48:3-87(e)(4) (2012) (providing that only state entities may allocate net metering credits to multiple buildings or facilities); N.J. ADMIN. CODE § 14:8-4.1(b)(3) (stipulating that a renewable energy generation system may only serve a single net metering customer).

[166] N.J. ADMIN. CODE § 14:8-4.1(b)(1)(i)–(ii).

[167] *Id.* § 14:8-4.1(b)(3).

[168] ARIZ. STATE UNIV. ENERGY POLICY INNOVATION COUNCIL, COMMUNITY, VIRTUAL AND AGGREGATE NET METERING, OH MY! 1 (2014), *available at* http://energypolicy.asu.edu/wp-content/

In 2012, New Jersey passed legislation requiring utilities to allow public entities to engage in aggregate net metering.[170] The statute allows for state, county, and municipal entities, as well as school districts, to share credits amongst their facilities from a single generation system.[171] To qualify for community net metering in New Jersey, the energy must come from solar technology.[172] In order to participate, the buildings or facilities whose bills will be offset must be owned by the same public entity, and must be on property owned by that entity.[173] The facilities need not be on the same or contiguous property, but are still subject to several geographic limitations.[174] All county, state, or municipal buildings seeking to aggregate their meters must be located within the service territory of a single utility and must be served by the same basic generation provider.[175] Furthermore, state entities in particular must be located within five miles of each other to aggregate their meters.[176]

Similar to private net metering customers, public entities are not required to limit the size of the solar generation system to a specific capacity.[177] Public entities are, however, required to limit the size of their generation capacity to the combined annual energy usage of the facilities sharing the net metering credits.[178] If the aggregating entity has excess credits at the end of the annual period, the utility will compensate the entity at the avoided cost rate.[179]

D. Colorado Net Metering Policy

Colorado originally enacted renewable energy standards in 2004 and has updated those policies several times in the past decade.[180] The state's net metering policies vary depending on the type of utility they apply to.[181] The three

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uploads/2014/01/Community-Virtual-and-Aggregate-net-metering-brief-sheet.pdf, *archived at* http://perma.cc/7LAB-GAJS; *see* N.J. ADMIN. CODE § 14:8-4.1(b)(1)–(3).

[169] *See* N.J. ADMIN. CODE § 14:8-4.2 (2014) (defining a net metering customer as one who owns the meter, but who may or may not be the same entity as the owner of the generator).

[170] N.J. STAT. ANN. § 48:3-87(e)(4); *New Jersey Incentives/Policies for Renewables & Efficiency*, *supra* note 158.

[171] N.J. STAT. ANN. § 48:3-87(e)(4) (2012).

[172] *Id.*

[173] *Id.*; N.J. ADMIN. CODE § 14:8-7.3(a).

[174] *See* N.J. ADMIN. CODE §§ 14:8-7.2–.3(b).

[175] *Id.* § 14:8-7.3(b)(1)–(2).

[176] N.J. ADMIN. CODE § 14:8-7.2 (2014).

[177] *See id.* § 14:8-7.3(a)(2) (lacking a specific capacity limit).

[178] *Id.*

[179] *Id.* § 14:8-7.3(f). Like private net metering customers, public entities participating in aggregate net metering receive credits on a month-to-month basis, at the retail rate. *Id.* § 14:8-7.3(d).

[180] COLO. CODE REGS. § 723-3:3651 (2014).

[181] *Id.* § 723-3:3650(a) to -3:3650(c).

types of utilities included in the statute are investor-owned utilities ("IOUs"), municipal utilities, and cooperative utilities.[182]

All three types of utilities in Colorado offer net metering to customers who produce renewable energy and consume the energy on-site.[183] The customer's site may include buildings on contiguous property owned or leased by the customer.[184] Colorado deems renewable energy resources to be solar, wind, geothermal, biomass, and hydroelectric energy.[185]

Customers in an IOU's territory are required to limit the capacity of their generation system to no more than 120 percent of the customer's average annual electricity usage.[186] In contrast, customers served by a cooperative or municipal utility are subject to more specific limitations.[187] Residential customers may only install generation systems up to ten kWs, whereas commercial and industrial customers are limited to up to twenty-five kW systems.[188]

Each type of utility compensates a customer's monthly excess generation by crediting the customer at the retail rate on the next monthly bill.[189] The utilities vary, however, in how they must settle a customer's excess credits at the end of a given year.[190] IOU customers can choose to be compensated at the avoided cost rate for unused credits at the end of the year, or, instead, make a one-time choice to have the credits roll over month-to-month indefinitely.[191] Cooperative and municipal utilities are given discretion to compensate customers for annual excess generation in a manner the utility deems appropriate.[192]

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[182] *Id.* An IOU is a private business enterprise owned by shareholder investors. JIM LAZAR, REGULATORY ASSISTANCE PROJECT, ELECTRICITY REGULATION IN THE US: A GUIDE 9 (2011), *available at* http://www.raponline.org/document/download/id/645, *archived at* http://perma.cc/G4AC-DUBW. IOUs are the dominant electricity providers in the country, serving about seventy-percent of the U.S. population. *Id.* Municipally owned utilities are run by local city councils or elected commissions. *Id.* Cooperative utilities are private non-profit entities comprised of customers of the utility. *Id.* at 10. Cooperative utilities are typically found in rural areas and were predominantly created in the wake of the Great Depression to provide electricity to customers not served by IOUs. *Id.*

[183] COLO. CODE REGS. § 723-3:3664(a)(I).

[184] *Id.*

[185] COLO. REV. STAT. § 40-2-124(1)(a)(VII) (2014).

[186] COLO. CODE REGS. § 723-3:3664(a)(I) (2014).

[187] COLO. REV. STAT. § 40-9.5-118(e)(I)(A)–(B) (setting size limits for on-site generation systems in a cooperative utility's territory); *id.* § 40-2-124(7)(b)(V)(A)–(B) (setting size limits for on-site generation systems in a municipally owned utility's territory).

[188] *Id.* §§ 40-9.5-118(e)(I)(A)–(B), 40-2-124(7)(b)(V)(A)–(B).

[189] *Id.* §§ 40-9.5-118(b)(2)(a), 40-2-124(7)(b)(I); COLO. CODE REGS. § 723-3:3664(b).

[190] COLO. REV. STAT. §§ 40-9.5-118(b), 40-2-124 (cooperatives, IOUs, and municipal specifications).

[191] COLO. CODE REGS. § 723-3:3664(b). If a customer chooses not to receive year-end compensation but instead requests that the credits roll over month-to-month indefinitely, the customer will receive monthly credits until terminating service with the IOU. *Id.* Upon terminating service, the IOU claims the excess credits at no charge. *Id.*

[192] COLO. REV. STAT. §§ 40-9.5-118(b), 40-2-124 (2014).

In 2010, in an effort to encourage broader use of solar energy, the Colorado legislature authorized the creation of community solar gardens ("CSGs"), a form of community net metering.[193] A CSG is a solar array shared by subscribers who pay to own a subscription in the CSG.[194] In return, subscribers receive credits to offset their monthly utility bill in proportion to their paid interest in the CSG.[195] CSG subscriptions are only available to residential, commercial, and industrial customers served by IOUs.[196] A minimum of ten subscribers must participate in a CSG for one to function.[197]

Subscribers to a CSG need only live within the same municipality or county as the solar array; there is no requirement that the solar generation facility be on the same or contiguous property as the consumer.[198] Further, third parties are permitted to own and operate CSGs.[199] Similar to on-site net metering customers in Colorado, CSG subscribers receive a credit on their next monthly bill in the event the CSG produces more electricity than the subscribers used during the month.[200] If a CSG produces excess electricity over the course of the year, the IOU is not required to compensate the CSG's subscribers.[201] Instead, the credits for each subscriber roll over month-to-month indefinitely.[202]

IV. Optimizing Net Metering Policies

Net metering is an important incentive for utility customers hoping to install on-site renewable energy generation systems.[203] By helping energy consumers recover the large upfront costs associated with small-scale renewable energy generation systems, net metering policies have led to a striking growth

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[193] *Id.* § 40-2-127. One aim of community solar gardens is to offer renters and low-income customers the opportunity to participate in solar energy net metering. *Id.*

[194] *Id.* § 40-2-127(2)(b)(II); *Welcome*, Solar Gardens Cmty. Power, http://www.solargardens.org/ (last visited Oct. 15, 2014), *archived at* http://perma.cc/4QE7-3F7V.

[195] Colo. Rev. Stat. § 40-2-127(2)(b)(II) to -127(2)(b)(III). A single CSG subscriber may not own more than a forty percent interest in the usable electricity of a CSG. Colo. Code Regs. § 723-3:3665(a)(I)(A) (2014).

[196] *See* Colo. Rev. Stat. § 40-2-127(7) (providing that the CSG program does not apply to cooperative or municipally-owned utilities).

[197] *Id.* § 40-2-127(2)(b)(I).

[198] Colo. Rev. Stat. § 40-2-127(2)(b)(II) (2014). The geographical limits are relaxed if a subscriber lives in a rural area; a subscriber who lives in a county with a population of less than 20,000 can subscribe to a CSG in another county. *Id.*

[199] *Id.* § 40-2-127(2)(b)(I). The IOU itself may be the owner of the CSG. *Id.* The statute also allows subscribers to organize an ownership group amongst themselves. *Id.*

[200] Colo. Code Regs. § 723-3:3665(c)(III) (2014).

[201] *Id.*

[202] *Id.*

[203] Baker-Branstetter, *supra* note 3, at 7.

in the installation of such systems.[204] In 2003, the Energy Information Administration ("EIA") reported a total of approximately 7000 net metering customers in the United States.[205] By 2010, the number of net metering customers had multiplied by more than twenty times, to over 150,000.[206] These customers and their utilities are realizing the many recognized benefits of net metering and distributed renewable generation.[207]

Despite the growing participation in net metering programs, net metering customers still comprise a small fraction of one percent of energy consumers in the United States.[208] States can and should do more to promote and incentivize net metering, and they would do well to follow the examples set by Colorado, Massachusetts, and New Jersey.[209] Each state is a leader among the net metering states, and yet, there are wide discrepancies in their policies.[210] These discrepancies exemplify how legislatures can tailor net metering policies to promote specific state energy and environmental goals while also navigating federal law and Federal Energy Regulation Commission (FERC) guidelines.[211]

A. Comparing Colorado, Massachusetts, and New Jersey Policies

1. Comparing Size Limits, Credit Systems, and Customer Choice

How a state limits the size of electricity generation systems eligible for net metering is important because it affects how much of a customer's electricity need can be met with on-site generation and how quickly a customer will realize a return on investment.[212] Due to the upfront costs of installing a renewable generation system on a customer's property, smaller systems are more expensive than larger systems, on a per-watt basis.[213] Therefore, state policies

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[204] *Today in Energy*, ENERGY INFO. ADMIN. (May 15, 2012), http://www.eia.gov/todayinenergy/detail.cfm?id=6270, *archived at* http://perma.cc/L9CC-TG5C.

[205] *Id.*

[206] *Id.*

[207] *See* Baker-Branstetter, *supra* note 3, at 8 (listing the primary benefits of distributed renewable generation, including lower electric bills, decreased transmission and distribution costs, and decreased greenhouse gas emissions); *Today in Energy*, *supra* note 204 (listing benefits to utilities, including decreased costs of transmission and distribution infrastructure investment).

[208] *Today in Energy*, *supra* note 204. As of 2010, net metering customers represented only one-tenth of a percent of all energy customers in the United States. *Id.*

[209] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 268, 292 (showing that some states have no net metering statutes and among states that do, fewer than half allow for community net metering).

[210] *See Best Practices in State Net Metering Policies and Interconnection Procedures*, FREEING THE GRID 2014, http://freeingthegrid.org/#state-grades/ (last visited Oct. 15, 2014), *archived at* http://perma.cc/6VME-T36Z (giving Colorado, Massachusetts and New Jersey an "A" for their net metering policies); *supra* notes 142–202 and accompanying text.

[211] *See infra* notes 269–85 and accompanying text.

[212] *See* BIRD ET AL., *supra* note 6, at 13 (showing that the smaller the system, the slower the return on investment).

[213] *Id.*

that allow customers to scale systems to meet their needs provide the best incentive for net metering.[214]

Colorado, Massachusetts, and New Jersey have each amended their net metering statutes to expand the allowable size of renewable energy generation systems.[215] For example, Massachusetts has set specific kilowatt (kW) or megawatt (MW) capacities based on the class of customer.[216] Colorado and New Jersey, meanwhile, have shifted the metric of allowable size from a specific MW capacity to a capacity based on the customer's average electricity consumption.[217] This approach better incentivizes new net metering customers because it gives them the flexibility to meet their energy needs regardless of the size of the building or facility.[218]

The way in which net metering customers are credited for their excess generation by the utility is another key policy component of any state policy, because it directly affects a customer's energy bill savings.[219] Customers who receive credit for the power they generate on-site at the full retail rate earn approximately four times the wholesale value of the electricity.[220] Thus, giving customers the retail rate represents a straightforward financial incentive to install a renewable energy generation system on-site.[221]

Massachusetts credits Class I and II facilities (facilities anywhere from zero to one MW in size) at roughly the retail rate for excess electricity in a given month.[222] Colorado and New Jersey both incentivize net metering by crediting monthly excess generation at the full retail value.[223] In New Jersey, excess credits at the end of the year are purchased by the utility at the avoided cost rate.[224] In contrast, Colorado and Massachusetts allow customers to roll over

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[214] *See id.*; Powers, *supra* note 28, at 662.

[215] *Colorado Incentives/Policies for Renewables & Efficiency*, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CO26R&re=0&ee=0d (last updated Aug. 20, 2014), *archived at* http://perma.cc/U55J-TTMR; *Massachusetts Incentives/Policies for Renewables & Efficiency*, *supra* note 139; *New Jersey Incentives/Policies for Renewables & Efficiency*, *supra* note 158.

[216] 220 MASS. CODE REGS. 18.02 (2013).

[217] *Colorado Incentives/Policies for Renewables & Efficiency*, *supra* note 215; *New Jersey Incentives/Policies for Renewables & Efficiency*, *supra* note 158. Colorado allows for systems up to 120% of the customer's annual average. COLO. CODE REGS. § 723-3:3664(a)(I) (2014). New Jersey requires system capacity to be no larger than the customer's annual needs. N.J. ADMIN. CODE § 14:8-4.3(a) (2014).

[218] *See* COLO. CODE REGS. § 723-3:3664(a)(I); N.J. ADMIN. CODE § 14:8-4.3(a).

[219] *See* Powers, *supra* note 28, at 661; Steven Ferrey, *Fire and Ice: World Renewable Energy and Carbon Control Mechanisms Confront Constitutional Barriers*, 20 DUKE ENVTL. L. & POL'Y F. 125, 186–87 (2010) [hereinafter Ferrey, *Fire and Ice*].

[220] Ferrey, *Fire and Ice*, *supra* note 219, at 186–87.

[221] BIRD ET AL., *supra* note 6, at 33.

[222] *See* 220 MASS. CODE REGS. 18.04 (2014).

[223] *See* COLO. REV. STAT. §§ 40-9.5-118(a), 40-2-124(7)(b)(I) (2014); N.J. ADMIN. CODE § 14:8-4.3(a) (2014).

[224] N.J. ADMIN. CODE § 14:8-4.3(e).

credits month to month on an indefinite basis.[225] Customers in Colorado and Massachusetts thus continuously receive the higher retail rate for their power from year to year, whereas New Jersey customers' credits expire and revert in value from the retail rate to the avoided cost rate.[226] To provide the best incentives to consumers, states should design policies like Colorado's and Massachusetts' regarding credit payments, as they give customers the largest possible value for their generation.[227]

Due to the variety of customer energy consumption patterns, states should also craft policies that give customers flexibility to meet their unique energy needs.[228] Allowing customers to scale their on-site generation systems based on average energy consumption is one example of customer flexibility adopted by Colorado and New Jersey.[229] Another example is New Jersey's policy of allowing customers to choose when their annual billing cycle begins.[230] Yet another is that Colorado gives customers the choice to have credits roll over indefinitely or to receive a year-end payment for excess credits.[231] Because of the flexibility provided to customers by these policies, there are expanded opportunities to take advantage of the benefits of net metering.[232]

2. Community and Virtual Net Metering

Community net metering policies are valuable incentives because they include customers who may otherwise be unable to reap the benefits of renewable power generation.[233] States that allow for community net metering facilitate broader participation in renewable generation, particularly among customers whose property is not suitable for a small-scale installation or for those to whom the upfront costs of renewable generation are too high.[234]

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[225] COLO. CODE REGS. § 723-3:3664(b) (2014); 220 MASS. CODE REGS. 18.04(5).

[226] *Compare* N.J. ADMIN. CODE § 14:8-4.3(e) (requiring utilities to compensate a customer-generator's annual excess generation at the avoided cost rate), *with* COLO. CODE REGS. § 723-3:3664(b) (providing customers the choice to request that credits be rolled over month-to-month indefinitely), *and* 220 MASS. CODE REGS. 18.04(5) (requiring the distribution company to roll over excess credits from billing period to billing period).

[227] *See* Powers, *supra* note 28, at 661 (arguing that net metering policies should make distributed generation more profitable for the customer).

[228] *See id.* at 662.

[229] *See supra* notes 215–21 and accompanying text (discussing the benefits of flexible standards for generation system sizes).

[230] *See* N.J. ADMIN. CODE § 14:8-4.3(f).

[231] COLO. CODE REGS. § 723-3:3664(b).

[232] *See* Baker-Branstetter, *supra* note 3, at 28 (noting that fair reimbursement for net excess generation is important to potential net metering customers); Powers, *supra* note 28, at 661 (arguing that expanding potential generation sites and opportunities helps promote distributed generation).

[233] Jenna Goodward, *The Bottom Line on Emerging Solar Metering Policies*, WORLD RES. INST., Jan. 2011, at 1, *available at* http://pdf.wri.org/bottom_line_emerging_solar_metering_policies.pdf, *archived at* http://perma.cc/3AAD-C8T9.

[234] *See id.* at 1–2.

Colorado and Massachusetts both permit net metering so that credits created by a renewable energy system may be allocated to meters of multiple customers, even those not physically on or next to the property of the generator.[235] New Jersey, alternatively, only allows public entities to share credits from a single renewable energy system.[236] New Jersey's policy helps government agencies reduce their energy costs by allocating credits across multiple buildings but, unlike the policies of Colorado and Massachusetts, it is not inclusive of private energy consumers, and in particular, of low-income and renting customers.[237]

States should aim to include all customers who would like to benefit from distributed renewable energy generation, not merely those customers who can afford the upfront costs of installation.[238] Community net metering policies such as Colorado's expand access to distributed renewable energy by providing customers the opportunity to benefit from net metering without bearing the entire cost of a distributed renewable energy installation.[239] Furthermore, community and virtual net metering programs improve access to the benefits of distributed renewable energy by streamlining the process of connecting a distributed generation system to the grid.[240] The owner of a distributed renewable energy system may have to engage in complex negotiations with the utility in order to interconnect to the grid—a process that can effectively be a barrier to installing a renewable energy system.[241] This barrier is decreased however, in community and virtual net metering programs in which a single connection to the grid can benefit many customers.[242]

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[235] COLO. REV. STAT. § 40-2-127 (2014); 220 MASS. CODE REGS. 18.05 (2014).

[236] N.J. ADMIN. CODE § 14:8-7.2 (2014).

[237] *Compare* COLO. REV. STAT. § 40-2-127(2)(b)(II) (allowing private customers to subscribe to a community solar garden), *and* 220 MASS. CODE REGS. 18.05 (allowing a private customer with an on-site generation system to designate credits to other customers), *with* N.J. ADMIN. CODE § 14:8-7.2–3 (limiting the customers eligible to aggregate net metering credits to public entities). Notably, the Colorado legislature expressly declares in its community solar garden legislation that "[i]t is in the public interest that broader participation in solar electric generation by Colorado residents and commercial entities be encouraged by the development and deployment of distributed solar electric generating facilities known as community solar gardens, in order to . . . allow renters, low-income utility customers, and agricultural producers to own interest in solar generation facilities." COLO. REV. STAT. § 40-2-127(1).

[238] *See* Goodward, *supra* note 233, at 2 (explaining the benefits of community net metering).

[239] *See* COLO. REV. STAT. § 40-2-127; Powers, *supra* note 28, at 639.

[240] *See* 220 MASS. CODE REGS. 18.05(1) (requiring a host customer to provide the utility with a written list of customers to whom credits will be designated); Powers, *supra* note 28, at 640.

[241] *See* Powers, *supra* note 28, at 640.

[242] *See* COLO. REV. STAT. § 40-2-127(2)(b)(I)(A) (2014); 220 MASS. CODE REGS. 18.05(1) (2014).

B. Addressing the Inadequacies of the FERC Decisions

1. *MidAmerican* and *Sun Edison*: Limited Guideposts

The FERC decisions *MidAmerican Energy Company* and *Sun Edison, LLC* were adjudications to resolve the specific issues raised by the particular facts of each case.[243] In neither decision did FERC contemplate the many policy variations employed by different states.[244] Nonetheless, these decisions comprise the primary framework within which states shape their net metering policies.[245] States attempt to heed the orders despite the limited scope of the decisions, and thus leave their respective policies on tenuous legal footing.[246]

An example of a limitation of the FERC decisions is the time interval that constitutes a billing cycle.[247] The length of the billing cycle is crucial to net metering policies because FERC has made clear that federal law applies when a customer makes a net sale of electricity to the utility at the end of the billing cycle.[248] Before *MidAmerican*, FERC had found that net metering was appropriate over a one-hour period but that other reasonable billing periods could be permitted.[249] In *MidAmerican*, FERC determined—based on the particular facts of that case—that net metering is allowed over a one-month billing cycle.[250] Thus, states looking to FERC for guidance after *MidAmerican* know that a net metering customer who sends excess electricity to the utility is not subject to federal jurisdiction as long as the excess electricity is measured between one hour and one month of time.[251]

States have followed the finding in *MidAmerican* that one month is an appropriate interval to allow customers to send excess electricity to the utility.[252] At the same time, without guidance from FERC, most states have adopted one year as the cutoff, after which time accumulated credits are reconciled: either taken over by the utility or bought from the customer at the avoided cost

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[243] Sun Edison, LLC, 129 FERC ¶ 61146, 61618 (2009); MidAmerican Energy Co., 94 FERC ¶ 61340, 62261 (2001).

[244] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 305, 309.

[245] *See id.* at 317, 321.

[246] *See* COLO. REV. STAT. § 40-2-124(1)(a)(VIII) (limiting on-site generation capacity to 120 percent of the customer's average annual consumption); N.J. ADMIN. CODE § 14:8-4.3(a) (2014) (requiring that customers generating electricity on-site avoid producing more power than they need); Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 321.

[247] *See MidAmerican*, 94 FERC ¶ 62264.

[248] *See Sun Edison*, 129 FERC ¶ 61621 (finding that when there is no net sale of electricity from the customer to the utility over the applicable billing period, FERC jurisdiction is not invoked).

[249] *MidAmerican*, 94 FERC ¶ 62263.

[250] *Id.* ¶ 62264.

[251] *See id.* In the *Sun Edison* decision eight years later, FERC acknowledged the finding in *MidAmerican* that one month was an appropriate time interval but did not address the issue further. *See Sun Edison*, 129 FERC ¶ 61620 n.10.

[252] *See* COLO. REV. STAT. § 40-2-124(1)(e)(I)(B) (2014); N.J. ADMIN. CODE § 14:8-4.3(c) (2014).

rate.[253] By requiring net metering customers to start over every year, states are essentially lowering the value of customer-generated electricity from the retail rate to the avoided cost rate.[254] The value of the electricity is diminished even further in states where the customer's accumulated electricity is simply forfeited to the utility at the end of the annual period.[255] Because the rate at which net metering customers are credited for their electricity is a key incentive, the efficacy of net metering policies is burdened by states' uncertain efforts to comply with the *MidAmerican* decision.[256]

Some states, such as Colorado and Massachusetts, allow accumulated credits to roll over month-to-month indefinitely.[257] This policy is a win-win: net metering customers in these states receive the optimal payback (the retail rate) and the states comply with FERC's finding in *MidAmerican* that one month is a permissible interval for customers to send excess electricity to utilities.[258] States like Colorado and Massachusetts have thus followed the limited guidance of FERC while also providing potential net metering customers with an attractive incentive to invest in small-scale renewable energy.[259]

The appropriate size and capacity of on-site renewable energy systems is another example of the inadequacy of FERC's net metering decisions.[260] After *Sun Edison*, state policymakers seeking to avoid federal preemption know only that the net flow of power must be from the utility to the customer.[261] States have cautiously phrased their net metering rules to account for this finding.[262] New Jersey and Colorado's regulations exemplify this caution by limiting the size of eligible renewable energy systems to only meet the needs of the customer.[263] Although New Jersey and Colorado's size limits are based on a per-

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[253] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 280–88. By paying customers the avoided cost rate at the end of a twelve-month period, utilities are complying with the Public Utility Regulatory Policies Act, which requires utilities to purchase Qualifying Facilities' ("QF") power at the avoided cost rate. *See* Federal Power Act, 16 U.S.C. § 824a-3(b) (2012).

[254] *See* Ferrey, *Sale of Electricity*, *supra* note 45, at 232 (showing that the retail rate of electricity can be up to four times more than the avoided cost rate).

[255] *See* VT. STAT. ANN. tit. 30, § 219(e)(3)(C) (2014) (providing that any credits not used within twelve months shall revert to the electric company without any compensation to the customer); WASH. REV. CODE § 80.60.030(5) (2014) (requiring that on the thirtieth day in April of each year, unused credits be forfeited to the utility with no compensation to the customer).

[256] *See* Baker-Branstetter, *supra* note 3, at 28 (arguing that granting credits to utilities without compensation discriminates against customer-generators); Powers, *supra* note 28, at 634 (arguing that net metering policies should include better financial incentives for homeowners who want to install on-site generation).

[257] COLO. REV. STAT. § 40-2-124(1)(e)(I)(B); 220 MASS. CODE REGS. 18.05(3) (2014).

[258] *See* 94 FERC ¶ 62264.

[259] *See* COLO. REV. STAT. § 40-2-124(1)(e)(I)(B) (2014); 220 MASS. CODE REGS. 18.05(3); *MidAmerican*, 94 FERC ¶ 62264.

[260] *See Sun Edison*, 129 FERC ¶ 61621.

[261] *See id.*

[262] *See* COLO. CODE REGS. 723-3:3664(a)(I) (2014); N.J. ADMIN. CODE § 14:8-4.3(a) (2014).

[263] *See* COLO. CODE REGS. 723-3:3664(a)(I); N.J. ADMIN. CODE § 14:8-4.3(a).

centage of the customer's annual energy needs and thus are more flexible than permitting only a fixed output of electricity, these limits nonetheless restrict the potential of distributed generation.[264]

Increasing the allowable size of net metering could spur larger investment and development in renewable energy.[265] For example, a commercial or industrial building owner may have the capacity to install enough renewable energy to produce 200 percent of the building's needs.[266] Instead, state policies discourage that level of excess generation in order to avoid FERC jurisdiction.[267] To foster development of distributed renewable energy sources, state net metering policies should be able to permit larger generation capacity without fear of federal preemption.[268]

2. States as Policy Laboratories

Community and virtual net metering policies such as those employed by Colorado and Massachusetts are indicative of the kind of state-level creativity that can be used to expand the use of renewable energy.[269] States have implemented virtual and community net metering policies to broaden access to the benefits of net metering, but also to maintain compliance with the FERC decisions.[270] Under Massachusetts' virtual net metering program, for example, a host customer who generates excess electricity may allocate those credits to another customer rather than forfeit the power to the utility.[271] In this virtual net metering scenario, multiple customers receive roughly the retail value for the electricity, rather than the host customer forfeiting the excess electricity or receiving only the avoided cost value at the end of the year.[272] Absent this creative policy, electricity left over at the end of the year could only be bought at

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[264] *See* COLO. CODE REGS. 723-3:3664(a)(I); N.J. ADMIN. CODE § 14:8-4.3(a). Distributed generation's potential for growth has been noticed by financial firms, such as the investment-research firm Morningstar, which predicts distributed generation could comprise one-third of energy capacity in the United States by 2017. *Distributed Generation: Devolving Power*, ECONOMIST, Mar. 8, 2014, at 69, 69–70.

[265] *See* Powers, *supra* note 28, at 634, 662 (arguing that current net metering policies provide inadequate incentives for homeowners and should be expanded to permit larger generation systems).

[266] *See id.* at 639–40.

[267] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 321.

[268] *See id.*

[269] *See* Goodward, *supra* note 233, at 1.

[270] *See* COLO. REV. STAT. § 40-2-127(1) (2014) (declaring it in the public interest to broaden participation in solar energy generation); Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 321.

[271] *See* 220 MASS. CODE REGS. 18.05(1) (2014).

[272] *Compare* 220 MASS. CODE REGS. 18.04–05 (calculating net metering credits at roughly the retail rate and allowing host customers to allocate credits to other customers), *with* N.J. ADMIN. CODE §§ 14:8-4.1(b)(3), 14:8-4.3(e) (2014) (stipulating that a renewable energy generation system may only serve a single net metering customer and providing that credits remaining after a twelve-month period will be compensated at the avoided cost rate).

the avoided cost rate in order to comply with federal law and the FERC decisions.[273]

States can better foster renewable energy development if larger generation capacities are permitted.[274] After the *MidAmerican* and *Sun Edison* decisions, customers are discouraged from investing in larger capacity on-site generators because doing so increases the likelihood that they will be net producers of electricity and thus face onerous federal regulation.[275] FERC regulations, however, specifically exempt small-scale qualifying facilities ("QFs") that generate fewer than twenty MW from federal scrutiny of wholesale sales.[276] FERC could thus operate within its existing regulations by permitting an on-site generation facility up to twenty MW to be a net seller of electricity, regardless of the facility's consumption-to-sale ratio.[277] Lifting the requirement that net metering customers be net consumers of electricity would free states to craft policies that allow customers to install larger generation systems that add more renewable power to the grid.[278]

States' efforts to comply with FERC's decisions in *MidAmerican* and *Sun Edison* have limited the potential of net metering policies.[279] Nonetheless, states are well situated to implement new net metering policies to attract investment in renewable energy.[280] States should thus be encouraged to be policy laboratories in order to continue developing inclusive programs like virtual and community net metering.[281]

Net metering is a popular policy incentive for renewable energy, and importantly, it is one that is successful.[282] In order to foster the proliferation of net metering in the various states, net metering policies require a more solid

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[273] *See* Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 320. One commentator has referred to virtual net metering as a potential "legal safe harbor" from the Federal Power Act and filed rate doctrine. *Id.* at 321.

[274] *See* Powers, *supra* note 28, at 662.

[275] *See MidAmerican*, 94 FERC ¶ 62263 (finding that federal law applies when there is a net sale from a customer to a utility); *Sun Edison*, 129 FERC ¶ 61621; Baker-Branstetter, *supra* note 3, at 24.

[276] *See* 18 C.F.R. § 292.601(c)(1) (2013) (exempting QFs from scrutiny under Sections 205 and 206 of the Federal Power Act if the QFs have a capacity of fewer than twenty MW).

[277] *See id.*

[278] *See* Powers, *supra* note 28, at 640 (arguing that current state policies limiting the size of eligible facilities discourages the spread of distributed generation).

[279] *See id.* at 640–41. One commentator argues that net metering policies in their current form can only have a limited impact on the development of distributed generation. *Id.*

[280] *See* Baker-Branstetter, *supra* note 3, at 26. One reason the states are taking the lead in renewable energy policy is the lack of federal legislation in this area. Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 317.

[281] *See* COLO. REV. STAT. § 40-2-127 (2014) (allowing for community net metering); 220 MASS. CODE REGS. 18.05(1) (2014) (allowing for a host customer to designate credits to another, physically unconnected customer).

[282] *See* BIRD ET AL., *supra* note 6, at 33; *Today in Energy*, U.S. ENERGY INFO. ADMIN. (May 15, 2012), http://www.eia.gov/todayinenergy/detail.cfm?id=6270, *archived at* http://perma.cc/8JU2-5WQC.

legal foundation than a FERC adjudication.[283] The Energy Policy Act of 2005 improved the policy landscape, but it did not do enough, and thus states have continued to be the drivers of net metering policies, and have crafted creative programs without federal legal clarity.[284] FERC can rectify this situation, and in so doing, allow states to continue in their roles as net metering policy laboratories that foster the growth of distributed renewable generation, by providing more clear and transparent federal guidelines for net metering policies.[285]

CONCLUSION

Generating electricity from renewable sources distributed throughout the power grid, or distributed generation, has environmental, financial, and reliability benefits. The primary policy tool used to incentivize distributed generation is net metering, a billing device that allows customers who produce their own power to offset their electricity bills with the electricity they generate. Forty-three states currently have net metering policies, and most states have crafted their policies with available incentives that vary greatly from one state to another. As states like Colorado, Massachusetts, and New Jersey have attempted to forge policies that provide the best incentives for distributed renewable energy development however, they are at risk of significant federal preemption issues that not only burden those states' continuing efforts, but shroud their current policies in damaging uncertainty.

Although the Federal Energy Regulatory Commission (FERC) has expressly allowed net metering, it did so in two adjudications that have very limited precedential value. FERC is thus limiting the potential of net metering policies by restricting key components such as the permissible size of a customer's generation system and the amount of compensation available. Because of the importance of net metering specifically, and environmentally safe, renewable energy more generally, FERC should recognize the important policy work being done at the state level and promote distributed generation by providing clearer net metering policy guidelines for the states to rely on.

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[283] *See Sun Edison*, 129 FERC ¶ 61621; Ferrey, *Virtual "Nets" and Law*, *supra* note 6, at 268 (showing that net metering is the most common state policy incentive for renewable power).

[284] *See* SOLAR ELEC. POWER ASS'N, *supra* note 4, at 1; Baker-Branstetter, *supra* note 3, at 26.

[285] *See* Baker-Branstetter, *supra* note 3, at 26 (arguing states are taking the lead and making strides in net metering policies); Powers, *supra* note 28, at 641 (finding that net metering policies in some states have had a significant impact on distributed generation, but could be improved with greater incentives).