Public Land & Resources Law Review

Volume 44 Article 4

June 2021

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Recommended Citation

Chandler, Lowell J. (2021) "Localizing Energy Independence: How PURPA and Community Power Legislation Can Drive Development of Resilient and Reliable Local Clean Energy Projects," *Public Land & Resources Law Review*: Vol. 44 , Article 4.
Available at: https://scholarship.law.umt.edu/plrlr/vol44/iss1/4

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LOCALIZING ENERGY INDEPENDENCE: HOW PURPA AND COMMUNITY POWER LEGISLATION CAN DRIVE DEVELOPMENT OF RESILIENT AND RELIABLE LOCAL CLEAN ENERGY PROJECTS

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I. INTRODUCTION

As interest in clean energy continues to grow throughout communities in the United States and energy reliability issues consistently plague the power grid, localizing the energy needs of communities through development of local distributed generation systems is key to improving the reliability, sustainability, and independence of community electricity needs. By utilizing existing incentives through the proper implementation of the Public Utility Regulatory Policies Act ("PURPA") and simultaneously enacting community power legislation, communities can begin to move towards localized energy independence[1] that is reliable, resilient, and clean.

State public service commissions[2] ("PSCs"), the state agencies that oversee implementation of PURPA and the Federal Energy Regulatory Commission's ("FERC") applicable regulations, play a critical role in promoting localized energy independence because they have significant authority over how PURPA's incentives for local clean energy projects are carried out within a state. While proper state PSC implementation of PURPA and FERC regulations plays a major role in local clean energy development, state legislatures also have a critical role in enabling and incentivizing the development of local clean energy projects via the enactment of community power legislation. Taken together, positive action by state PSCs and state legislatures towards

1. Localized energy independence relates to the goal of communities increasing their reliance on locally-sourced and, ideally, locally-owned power.
2. PSCs oversee the rates and services provided by utilities, including electricity, natural gas, water, waste management, telecommunications, and transportation. The naming of PSCs vary by state and are also known as "public utility commissions" or "utility regulatory commissions," among others.

enabling development of distributed generation power projects can help communities initiate development of localized energy independence leading to a cleaner, more resilient, and reliable electricity grid.

There are three main parts to this article: background on PURPA; discussion of PURPA's role in boosting local clean energy projects; and review of existing community power legislation in Colorado and Oregon. The first part of this paper provides a foundational understanding of PURPA and how existing FERC regulations, as well as decisions from the United States Supreme Court and various state Supreme Courts, have shaped state PSCs' implementation of PURPA's benefits. The second part discusses PURPA's potential for boosting local clean energy projects by ensuring that all of the benefits that local clean energy projects provide utilities and the public are fully accounted for, including a review of recent steps taken by the Michigan PSC regarding PURPA implementation. In the final part, this article focuses on community power legislation and how, through structuring community power legislation to encompass PURPA's incentives, such legislation can better help communities realize local energy independence.

II. PURPA BACKGROUND

On November 9, 1978, to combat the Nation's excessive dependence on centralized fossil fuel energy, PURPA was signed into law.[3] In passing PURPA, Congress sought to protect Americans against the price volatility of fossil fuels and decrease the Nation's electricity dependence on fossil fuels by decentralizing and diversifying the Nation's energy sources.[4] A major goal of PURPA is to encourage the development

3. Public Utilities Regulatory Policies Act of 1978, PUB. L. NO. 95-617, 92 STAT. 3117 (1978) [hereinafter PURPA]; 16 U.S.C. § 824a-3 (2005).

4 . FERC v. Mississippi, 456 U.S. 742, 750 (1982) (noting, "Congress believed that increased use of these [renewable] sources of energy would reduce the demand for traditional fossil fuels."); Am. Paper Inst., Inc. v. Am. Elec. Power Serv. Corp, 461 U.S. 402, 417 (1983) (concluding, "The basic purpose of § 210 of PURPA was to increase the utilization of cogeneration and small power production facilities and to reduce reliance on fossil fuels."); S. Cal. Edison Co. San Diego Gas & Electric Co., 71 FERC ¶ 61269, 62079 (FERC June 2, 1995) (finding "Congress was seeking to diversify the Nation's generation fuel mix and promote more efficient use of fossil fuels when they were used for generation by encouraging renewable technologies and cogeneration, in order to cushion against further price shock and reduce dependence on fossil fuels.").

of cogeneration and small power production facilities.[5] Small power production facilities, the focus of this paper, are facilities that use biomass, waste, or renewable resources (such as wind, water, or solar energy) to produce electric power.[6] Small power production facilities qualify for PURPA benefits if they are 80 megawatts ("MWs") or less, these facilities are known as qualifying facilities ("QFs").[7]

Overall, to accomplish its purpose and goals, PURPA aims to remove major barriers to market competition for QFs and encourage their development by simulating a free and open market and allowing independent power producers access to tightly guarded electricity markets of monopoly utilities.[8] As appropriately summarized by the Supreme Court of Pennsylvania, PURPA's purpose is to "compel regulated electric utilities to purchase needed power from [QF] sources instead of building additional capacity or acquiring power from other regulated utilities."[9] In other words, every action under PURPA must be viewed through the lens of whether the action taken "encourage[s]" QF development, as required under 16 U.S.C. § 824a-3(a), since encouraging QF development is the primary purpose of PURPA.

Prior to PURPA, three major barriers blocked the sale of electricity to utilities by small power production facilities. The first barrier was reluctance by traditional monopoly electric utilities to purchase power from small power production facilities at appropriate rates that would cover the cost of production and allow for sustainable economic returns for small power production facility owners—this is the primary barrier and is *still* a major barrier affecting small-scale clean energy development today.[10] The second barrier PURPA seeks to breakdown involves utilities discriminatorily charging excessive rates to small power production facilities for back-up service, which is energy made available to a facility in the event of an unscheduled outage.[11] The third barrier discouraging

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5. 18 C.F.R. § 292.204(a); *Am. Paper Inst.*, 461 U.S. at 405 (noting Congress' belief that demand for fossil fuel energy would be reduced by requiring purchases from qualifying cogeneration and small power production facilities).

6. 16 U.S.C. § 796(17)(A) (2005).

7. *Am. Paper Inst.*, 461 U.S. at 405; 18 C.F.R. § 292.204(a).

8. *Mississippi*, 456 U.S. at 750–51.

9. Pa. Elec. Co. v. Pa. Puc, 544 Pa. 475, 477, 677 A.2d 831, 832 (1996).

10. Small Power Production and Cogeneration Facilities; Regulations Implementing § 210 of the Public Utility Regulatory Policies Act of 1978, 45 Fed. Reg. 12,214-02, 12,215 (Feb. 25, 1980) (hereinafter "FERC Order No. 69"); *Mississippi*, 456 U.S. at 750–51; *see e.g.* Vote Solar v. Mont. Dep't Pub. Serv. Reg., 473 P.3d 963 (Mont. 2020); MTSUN v. Mont. Dep't Pub. Serv. Reg., 472 P.3d 1154 (Mont. 2020).

11. FERC Order No. 69, 45 Fed. Reg. 12,214-02, 12,215.

small power production development included financial burdens imposed by state and federal regulations, such as certain provisions in the Federal Power Act ("FPA"), the Public Utility Holding Company Act ("PUHCA"), and state laws regulating electric utility rates and financial organization.[12]

PURPA introduced three primary mechanisms to overcome these barriers.[13] To defeat the first barrier, § 210 of PURPA imposes a mandatory purchase obligation on utilities and requires that utility purchase rates of electricity generated by QFs be "just and reasonable to the electric consumers... and in the public interest" and that the rates do not "discriminate against [QFs]."[14] Further, § 210 directs FERC to prescribe and, when needed, revise legally enforceable rules as needed to "*encourage* cogeneration and small power production."[15]

Using that authority and aiming to overcome the first barrier, FERC promulgated regulations outlining that utilities are obligated to purchase energy and capacity from QFs at the utility's full "avoided cost," which is further explained in part I(B) below, or at a negotiated avoided cost rate for certain QFs.[16] To defeat the second barrier, FERC promulgated a regulation that provides QFs with the right to purchase certain services from utilities (back-up and maintenance power) at rates which are just and reasonable.[17] FERC's regulations also provides QFs with the right to interconnect with the utility's transmission and distribution lines at a nondiscriminatory interconnection fee.[18]

As for defeating the third barrier, § 210(e) of PURPA directs FERC to issue rules that exempt QFs from burdensome federal and state laws relating to electricity utilities.[19]

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12. *Id.*; *Mississippi*, 456 U.S. at 750–51.

13 . Federal Energy Regulatory Commission, *What Are the Benefits of QF Status?*, FERC, https://www.ferc.gov/qf (last updated Dec. 29, 2017).

14. 16 U.S.C. § 824a-3(a), (b), (f), (h) (2005).

15. *Id.* (emphasis added).

16. 18 C.F.R. §§ 292.303–304 (Under 18 C.F.R. §§ 292.309–311, certain utilities are relieved from § 292.304 requirements by showing nondiscriminatory market access exists.).

17. 18 C.F.R. §§ 292.305–306.

18. *Id.*

19. 16 U.S.C. § 824a-3(e) (2005) (To date, FERC has exempted QFs of 30 MWs or smaller to the PUHCA, most sections of the FPA (except section 205, 206, and 207 which exemptions only apply to QFs with 20 MWs or less), and state laws and regulations governing rates, finances, and organizational aspects of utilities. *See* 18 C.F.R. §§ 292.601–602.).

A. PURPA Implementation: A Balancing Act Between FERC and State PSCs

Though PURPA provides FERC with the authority to prescribe rules that set the boundaries for PURPA implementation throughout the nation, FERC's actual implementation power is limited since PURPA reserves discretion to PSCs to determine how FERC's regulations should be implemented in its respective state.[20] This reservation of authority is particularly important because it essentially results in PSCs having the discretion to define what is reasonable and nondiscriminatory in the context of developing avoided cost rates and interconnection fees, allowing its actions don't implicate PURPA's baseline requirements and that they are "reasonably designed to give effect to FERC's rules."[21] Therefore, while FERC may issue regulations that aim to encourage development of QFs, PSCs have the authority over actual binding implementation of PURPA and how FERC's regulations are carried out within their respective state. Throughout the U.S., this delegated authority means the difference between some PSCs implementing PURPA and FERC's rules to actually expand and encourage development of QFs, and some PSCs implementing PURPA on a bare minimum level that arguably have the end result of discouraging QF development, contrary to PURPA's most basic purpose of "encouraging" QF development.

While FERC has generally issued regulations to fulfill PURPA's goal of encouraging QF development, its landmark regulation being Order No. 69 in 1982, FERC recently finalized a new rulemaking, Order No. 872, in July 2020.[22] Although Order No. 872 was dubbed by the majority Republican commissioners as "modernizing PURPA,"[23] its more accurate moniker is a "gutting of PURPA." As FERC Commissioner Richard Glick appropriately summarized in his dissent:

> I dissent in part from today's final rule because it effectively guts the Commission's implementation of the Public Utility Regulatory Policies Act (PURPA). The Commission's basic responsibilities under PURPA are

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20. *Mississippi*, 456 U.S. at 751 (1982).
21. *Id.*
22. Federal Energy Reg. Comm'n, *Final Order No. 872*, FERC (July 16, 2020), https://www.ferc.gov/sites/default/files/2020-07/07-2020-E-1.pdf.
23. Federal Energy Reg. Comm'n, *FERC Modernizes PURPA Rules to Ensure Compliance, Reflect Today's Markets*, FERC (July 16, 2020), https://www.ferc.gov/news-events/news/ferc-modernizes-purpa-rules-ensure-compliance-reflect-todays-markets.

> three-fold: (1) to encourage the development of qualifying facilities (QFs); (2) to prevent discrimination against QFs by incumbent utilities; and (3) to ensure that the resulting rates paid by electricity customers remain just and reasonable, in the public interest, and do not exceed the incremental costs to the utility of alternative energy. I do not believe that today's Final Rule satisfies those responsibilities. Instead, the Final Rule raises as many questions as it answers, not least of which is the long-term legal viability of an approach that does so little to encourage QF development.[24]

Indeed, Commissioner Glick's full dissent summarized each aspect of where Order No. 872 violated PURPA by effectively dismantling rules that have acted to encourage QF development for decades in favor of rules that will undoubtedly discourage their development. Perhaps the most egregious action by FERC in Order No. 872 was the elimination of the requirement under 18 C.F.R. § 292.304(d)(2) that states allow QFs to choose between an available or variable rate calculated at the time of delivery or a contract option that provides for fixed avoided cost payments over a term of years.[25] It is a general consensus among QF developers that a variable rate is not a financeable rate and most, if not all, QF developers choose the fixed rate over a term of years option for its avoided cost payments. The easiest way to compare this change is to a home mortgage. When presented with a choice of a 30-year or 15-year mortgage, most choose 30, and when presented with the option of choosing a variable interest rate, most choose a fixed interest rate on their loan due to the uncertainty of a variable rate.

In states where PSCs have been diligently working to kill QF development, undoubtedly, they are giddy over the prospects of stripping QFs of their ability to have a fixed rate over a term of years. However, doing so in certain states where the utility is vertically integrated is likely unlawful and contrary to PURPA's anti-discrimination provision at 16 U.S.C. § 824a-3(b)(2). As Commissioner Glick correctly noted, "fixed-price contracts have helped prevent discrimination against QFs by ensuring that they are not structurally disadvantaged relative to vertically

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24. Federal Energy Reg. Comm'n, *Commissioner Richard Glick Dissent in Part Regarding Qualifying Facility Rates and Requirements Implementation Issues Under the Public Utility Regulatory Policies Act of 1978*, FERC (July 16, 2020), https://www.ferc.gov/news-events/news/commissioner-richard-glick-dissent-part-regarding-qualifying-facility-rates-and/ [hereinafter, "Glick Order No. 872 Dissent"].

25. Final Order No. 872, 172 FERC ¶ 61,041, ¶ 253.

integrated utilities that are guaranteed to recover the costs of their prudently incurred investments through retail sales."[26] Vertically integrated utilities are those that own and control generation, transmission, and distribution components of electricity and are largely utilities operating in the southeastern and western United States.[27] In other words, a PSC's action of upending fixed price contracts for QFs in states where the utility is a vertically integrated utility that receives a guaranteed fixed rate of return or cost recovery from its ratepayers—like utilities operating in the southeastern and much of the western United States, including Montana's primary utility—would likely be found to be unlawful and contrary to PURPA's anti-discrimination provision on avoided cost rate calculations.[28] Accordingly, in states where the utility is a vertically integrated utility, the state PSCs may want to think twice before they jump on the Order No. 872 bandwagon and upending fixed-price contracts.[29]

B. The Importance of PURPA Today

Despite some recent calls to repeal or reform PURPA and FERC's Order No. 872 effective gutting of PURPA, PURPA's purpose to diversify the nation's energy sources and increase small power production is equally relevant today as it was in the 1970s because the need to diversify and

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26. Glick Order No. 872 Dissent, *supra* note 24.

27. Harvard Electricity Policy Group, *Vertically Integrated Utility*, (2020), https://hepg.hks.harvard.edu/faq/vertically-integrated-utility; Seth Blumsack, *Introduction to Electricity Markets: 1.3 Major Players in the Electric Power Sector*, Penn State University, https://www.e-education.psu.edu/ebf483/node/641.

28. *See* 16 U.S.C. § 824a-3(b)(2); *Vote Solar*, 473 P.3d at 969, 976, 982 (describing the guaranteed cost-recovery or rate of return of Montana's major utility that is vertically integrated).

29. Moreover, notwithstanding the likelihood that upending fixed contracts for QFs operating in vertically integrated utility territories would be found contrary to PURPA, several other factors dictate that jumping on the Order No. 872 bandwagon may be premature. First, there is ongoing litigation surrounding the lawfulness of FERC Order No. 872 itself that could result in setting aside the entirety of Order No. 872. *See* Montana Env. Info. Ctr. et. al v. FERC, Case No. 21-70083 (Filed Jan. 14, 2021, Ninth Cir.); SEIA v. FERC, Case No. 20-72788 (Filed Sept. 18, 2020, 9th Cir.). Second, it is possible that when the majority on FERC shifts from a 3–2 Republican majority to a 3–2 Democratic majority in June 2021, Order No. 872 could be either rescinded or effectively nullified. *See* Bracewell LLP, *Things Looking Up for Renewable Resources at Federal Energy Regulatory Commission* (Feb. 10, 2021), https://www.lexology.com/library/detail.aspx?g=6502f1f7-35fe-4745-b18b-41cd4c243589; Sidley Austin LLP, *What a Biden Administration Means for the Energy Sector* (Nov. 11, 2020), https://www.lexology.com/library/detail.aspx?g=36838566-ce16-4ef9-bb64-7d9f169f4044.

decentralize the nation's power sources still exists. With the help of PURPA, production and consumption of clean energy has increased significantly in the last ten years in the United States, exceeding coal consumption.[30] While PURPA QF projects comprise a smaller annual percentage of overall renewable energy development across the United States (between ten to 40 percent, depending on the year), the cumulative gigawatt capacity of PURPA QF projects has more than doubled in the last decade.[31] Importantly, in certain states (it appears largely those states where the operating utility is vertically integrated), PURPA QF projects comprise a significant percentage of new wind and solar development, including North Carolina where 92 percent of all solar generation is QF certified[32] and Montana where close to 50 percent of wind and solar projects are QFs.[33]

In other words, clearly PURPA remains an important and relevant law today in the United States, particularly in states where the monopoly utility, sometimes with the help of the state utility commission, continues to impose excessive and unlawful barriers to renewable energy development by independent power producers resulting in QFs failing to have nondiscriminatory access to the market.[34] Even with PURPA's goal

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30. EIA, *U.S. renewable energy consumption surpasses first time in over 130 years*, (May 28, 2020), https://www.eia.gov/todayinenergy/detail.php?id=43895.

31. EIA, *North Carolina has more PURPA-qualifying solar facilities than any other state*, (Aug. 23, 2016), https://www.eia.gov/todayinenergy/detail.php?id=27632#:~:text=North%20Carolina%20has%20more%20PURPA%2Dqualifying%20solar%20facilities%20than%20any%20other%20state,-Source%3A%20U.S.%20Energy&text=Currently%2C%201%2C173%20MW%2C%20or%2092,both%20absolute%20and%20percentage%20terms.

32. *Id.*

33. As provided in the following citations, Montana has around 364 MWs of QF generation and a capacity of around 800 MWs, resulting in a QF percentage of about 46 percent of wind and solar resource generation in Montana. *See* National Regulatory Research Institute, *PURPA Tracker*, NARUC (2021), https://www.naruc.org/nrri/nrri-activities/purpa-tracker; s*ee also* EIA, *Montana: State Profile and Energy Estimates* (Jan. 16, 2020), https://www.eia.gov/state/analysis.php?sid=MT#117.

34. One reason for a decline in overall number of PURPA projects is that in 2005, Congress enacted an amendment to PURPA, 16 U.S.C. § 8241-3(m) that exempted electric utilities who operate in an independent market that is administered by an independent body (i.e. Independent System Operators or "ISOs") from PURPA's mandatory purchase obligations, meaning those utility's whose operations are not vertically integrated. Vertically integrated utilities have a monopoly on market access and via restrictive actions cane effectively limit independent power producers' access to the market in their territory, which emphasizes the continued relevance and

of breaking down barriers imposed by monopoly utilities so as to ensure an open market exists in the power generation sector, non-discriminatory access to the monopoly utility markets remains challenging.

Moreover, notwithstanding the progress of renewable energy generation with the help of PURPA, the Nation still continues to be heavily reliant on fossil fuels.[35] As of 2017, fossil fuels (namely coal and natural gas) comprise about sixty-three percent of the total share of United States electricity generation, nuclear makes up 20 percent, and renewables (including hydropower) total only around 17 percent.[36] Accordingly, overreliance on centralized power and fossil fuels still plagues the country as the overdependence on fossil fuels leads to increases in the risk of price volatility of electricity,[37] climate change impacts,[38] public health consequences,[39] expensive weather and climate disasters that disrupt centralized power,[40] in addition to national security implications.[41] Therefore, PURPA is still highly relevant today as it clearly continues to be needed to help decrease the nation's dependence on fossil fuels through

importance of PURPA today. *See* Advanced Energy Economy, *How Much Do You Know About Your Electric Utility* (Feb. 17, 2015), https://blog.aee.net/how-much-do-you-know-about-your-electric-utility#:~:text=The%20traditional%20definition%20of%20a,production%20and%20sale%20of%20power.

35. U.S. Energy Info. Admin., *Table 10: Renewable Energy Production and Consumption by Source*, EIA.GOV (Apr. 2018), https://www.eia.gov/totalenergy/data/monthly/ pdf/sec10_3.pdf.

36. U.S. Energy Info. Admin., *What is U.S. Electricity Generation by Source*, EIA, https://www.eia.gov/tools/faqs/faq.php?id=427&t=3 (last visited Nov. 17, 2020).

37. U.S. Energy Info. Admin., *Natural Gas: Henry Hub Natural Gas Spot Price*, EIA, https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm (last updated May 2, 2018); Jeff Deyette, et. al., *The Natural Gas Gamble: A Risky Bet on America's Clean Energy Future*, UNION OF CONCERNED SCIENTISTS, 12–15 (2015), https://www.ucsusa.org/sites/default/files/attach/2015/03/natural-gas-gamble-full-report.pdf; Elena M. Krieger, *Low fossil fuel prices embody their inherently risky volatility*, THE HILL (2015), https://thehill.com/blogs/congress-blog/energy-environment/233006-low-fossil-fuel-prices-embody-their-inherently-risky.

38. Nat'l Renewable Energy Lab, *Energy Analysis: Life Cycle Assessment Harmonization*, NREL, https://www.nrel.gov/analysis/life-cycle-assessment.html (last visited Nov. 7, 2020).

39. Deyette, *supra* note 37, at 17–18.

40. Daniel Shea, *State Efforts to Protect the Electric Grid*, NATIONAL CONFERENCE OF STATE LEGISLATURES, 2–3 (2016), https://www.ncsl.org/Portals/1/Documents/energy/ENERGY_SECURITY_REPORT_FINAL_April2016.pdf.

41. American Council on Renewable Energy, *The Role of Renewable Energy in National Security* (Oct. 2018), https://acore.org/wp-content/uploads/2018/10/ACORE_Issue-Brief-The-Role-of-Renewable-Energy-in-National-Security.pdf.

encouraging the development of diverse and decentralized small power production systems.

C. Avoided Costs Requirements of PURPA

To encourage development of QFs, PURPA requires that any costs paid to a QF for electricity generated are equitable, non-discriminatory, and are based on the utility's "full avoided cost."[42] Avoided costs and the contract terms locking in those costs for a period of years is similar to a utility's guaranteed rate of return or cost recovery.[43] There are two options for developing equitable and non-discriminatory rates: (1) negotiation between the utility and the QF, which is typically the route for larger sized QFs; or (2) standardized avoided costs set by PSCs.[44] FERC defines "avoided costs" as the "incremental cost to an electric utility of electric energy or capacity or both which, but for the purchase from the QF, such utility would generate itself or purchase from another source."[45] Energy avoided costs are the cost savings delivered to the utility by the QF as a result of the QF reducing the amount of energy needing to be generated at the utility's more expensive power plants.[46] Capacity avoided costs occur when a utility is reaching maximum load demand for its current energy supply throughout its territory and the utility needs additional power to meet demand, but building a new centralized power plant would be excessive; thus, the incremental energy that a QF can provide enables the utility to defer construction of a new power plant and/or minimize the need for spot-market purchases.[47]

Standardized avoided costs are set by the PSCs and are required for QFs 100 kilowatts (kWs) or less, but PSCs have discretion to apply a standardized avoided cost rate for QFs as large as 80 MWs.[48] The application of standard avoided cost rates vary by state, with some PSCs

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42. 16 U.S.C. § 824a-3(b) (2005); *Am. Paper Inst., Inc. v. Am. Elec. Power Serv. Corp.*, 461 U.S. 402, 402 (1983).

43. *Vote Solar*, 473 P.3d at 982.

44. 16 U.S.C. § 824a-3(a), (m)(6); 18 C.F.R. § 292.304(c), (d); *Am. Paper Inst., Inc*., 461 U.S. at 402 (holding that FERC's action requiring that the utility must purchase energy from a QF at the full avoided cost was lawful); *S. Cal. Edison*, 71 FERC at 62080.

45. 18 C.F.R. § 292.101(b)(6).

46 Indep. Energy Producers Ass'n, *Avoided Cost*, IEPA, https://www.iepa.com/glossary-of-energy-terms/ (last visited Nov. 17, 2020).

47. *Id.*

48. 18 C.F.R. §§ 292.204(a), 304(c); FERC Order No. 69, 45 Fed. Reg. 12,214-02, 12,223.

applying standardized avoided cost rates to ten MWs, such as in Oregon,[49] and others only the minimum of 100 kW.[50] Standardized avoided cost rates are important to smaller QFs (i.e. 20 MWs or less) because the transactional costs of negotiating rates with the utility could alone render the small QF uneconomical.[51] In calculating standardized avoided costs, FERC has ordered that avoided cost rates should be set at the utilities *full avoided cost*—nothing less, nothing more—an order that has been upheld by the United States Supreme Court.[52] Overall, the standardized avoided cost component of § 210 of PURPA is critical to diversifying and decentralizing the Nation's energy sources, but its impact varies by state according to the QF size that the standardized rate applies to and the avoided cost calculation methodology chosen by the PSC.

In calculating avoided costs, FERC provides mandatory and discretionary guidance to PSCs. According to FERC, there are several factors that must be taken into account in determining a QF's avoided cost rates, including, but not limited to: (1) the usefulness of the QF's energy during a system emergency, including its ability to separate its load and generation; (2) the "individual and aggregate value of energy and capacity from QFs" to the utility's system; (3) the QF's smaller capacity increments and shorter lead times, which is the time it takes to make, produce, or deliver energy; (4) the QF's ability to enable the utility to defer capacity additions and decrease reliance on fossil fuels; and (5) the utility cost savings resulting from decreased line losses of energy during transmission from the QF.[53]

In addition to these mandatory factors, in 1995 FERC ruled that environmental costs of fuels should be accounted for in determining the utilities avoided cost if the costs are real costs that would be incurred by the utility since those costs are an aspect of the utility's full avoided

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49. OR. PUB. UTIL. COMM'N, In the Matter of Public Utility Commission Of Oregon Staff's Investigation Relating to Electric Utility Purchases from Qualifying Facilities, Order No. 05-584, 1 (May 13, 2005), http://apps.puc.state.or.us/orders/2005ords/05-584.pdf (Oregon established a 10 MW threshold for standardized avoided costs).

50. Utility Dive, *Michigan regulators set new avoided cost rate for PURPA contracts*, (Nov. 27, 2017), https://www.utilitydive.com/news/Michigan-regulators-set-new-avoided-cost-rate-for-purpa-contracts/511639/ (Standardized avoided cost rates in Michigan used to only apply to 100 kW projects prior to a November 2017 Michigan Public Service Commission order.).

51. FERC Order No. 69, 45 Fed. Reg. at 12,223.

52. *Id.*; *Am. Paper Inst., Inc.*, 461 U.S. at 402 (holding that FERC's order requiring utilities to purchase energy from QFs at their full avoided cost was lawful under PURPA).

53. 18 C.F.R. § 292.304(e) (2020).

costs.[54] Further, in 2010, FERC held that states may set resource specific avoided cost rates, meaning the rate may be based on the resource being proposed by the QF (wind, solar, etc.), rather than other energy sources (coal, gas, etc.) within the utility's energy mix.[55]

1. Types of Avoided Cost Methodologies

In calculating avoided costs, PSCs rely on various methods that typically always elicit significant debate and argument among regulated parties. Those methodologies primarily include:

(a) *Proxy Method:* Bases avoided costs on the projected costs that the utility would incur from building a hypothetical power plant, and the amount depends on the cost of the chosen proxy plant. The avoided cost is based on the fixed and variable costs of the proxy unit's generation that the QF allows the utility to avoid;

(b) *Peaker Unit Method:* Similar to the proxy method but assumes that the QF is allowing the utility to avoid paying for a "marginal generating unit on its system," meaning a unit that is able to ramp up and down quickly and only operates during times that the utility's load is above its baseload power production. This methodology is known to generally undercompensate QFs since while its variable costs are high (i.e. each time the facility has to ramp up in response to load spikes), its capital costs are low (i.e. the costs of running the facility itself, paying for fuel, maintenance, etc., which is lower since the facility is only operational on an inconsistent basis);

54. S. Cal. Edison Co. San Diego Gas & Electric Co., 71 FERC ¶ 61,269, 62,080 (F.E.R.C. June 2, 1995); *see also* Cal. Pub. Util. Comm'n.; S. Cal. Edison Co. P. Gas and Electric Co. San Diego Gas & Electric Co., 133 FERC ¶ 61,059, 61,268 (FERC Oct. 21, 2010).

55. *CPUC*, 71 FERC at 61,267–68; Carolyn Elefant, *Reviving PURPA's Purpose: The Limits of Existing State Avoided Cost Ratemaking Methodologies In Supporting Alternative Energy Development and A Proposed Path for Reform*, 2 (2011), http://www.recycled-energy.com/images/uploads/Reviving-PURPA.pdf.

(c) *Differential Revenue Requirement:* Calculates the difference in the utility's revenue requirements[56] with and without the QF and bases the avoided cost on that calculation. The avoided energy and capacity costs are estimated together rather than separately as is done in the proxy methodology;

(d) *Integrated Resource Planning-Based Methodology:* Combined with one of the above methodologies, utilities base generation mix goals on an IRP;

(e) *Competitive Bidding:* Open bidding process where the winning bid is regarded as the avoided cost;

(f) *Market-Based Pricing:* Applies to QFs with access to organized competitive markets (i.e. markets ran by Regional Transmission Organizations and Independent System Operators, not a monopoly utility) and the QF receives the avoided cost payments at market rates.[57]

2. Contract Terms of QF Power Purchase Agreements

In addition to delegating significant authority to PSCs to develop avoided cost calculations, PURPA also delegates to PSCs the determination of terms and conditions of the power purchase agreements ("PPAs") between the QF and the utility. However, PURPA and FERC

56. Revenue requirements are the total costs of the utility of meeting its specified demand/load plus a rate of return or profit. *See* National Regulatory Research Institute, *The Appropriateness and Feasibility of Various methods of Calculating Avoided Costs*, 95 n.17 (1982), https://ipu.msu.edu/wp-content/uploads/2016/12/NRRI-Appropriatness-Feasibility-June-82-1.pdf.

57. Carolyn Elefant, *Reviving PURPA's Purpose: The Limits of Existing State Avoided Cost Ratemaking Methodologies In Supporting Alternative Energy Development and A Proposed Path for Reform*, 26–27 (2011), http://www.recycled-energy.com/images/uploads/Reviving-PURPA.pdf; Victor B. Flatt, et al., *Federal Parameters on the Definition of Avoided Cost Under PURPA and Legal Methods Currently Used and Acceptable Under PURPA Application for States to Encourage or Discourage Distributed Generation*, UNC CENTER FOR CLIMATE, ENERGY, ENVIRONMENT AND ECONOMICS, UNIVERSITY OF HOUSTON ENVIRONMENT, ENERGY & NATURAL RESOURCES CENTER, 17–23 (July 1, 2017), https://www.law.uh.edu/eenrcenter/resources/whitepapers/Federal%20Parameters%20on%20State%20Distri buted %20Generation.pdf.

regulations provide necessary sideboards.[58] While PSCs have authority over contract lengths, PURPA's plain language, FERC regulations, and orders by various PSCs provide some guidance on necessary lengths of contracts that are needed to encourage QF development so as to allow for return on investment. First, PURPA requires that PSCs enact rules that are necessary to encourage production from QFs.[59] Arguably, short contract lengths fail to encourage QF power production and result in projects not being built since short-term contracts are largely unfinanceable.[60] Moreover, PURPA's anti-discrimination provision, 16 U.S.C. § 824a-3(b)(2), arguably provides a sideboard on contract lengths ordered by PSCs since many utility owned resources, such as the major utility operating in Montana, "enjoy a guaranteed cost-recovery or rate of return, which is functionally equivalent to a contract, for at least 25 years."[61] Treating QF projects different than utility owned resources raises the issue of discriminatory treatment against QFs and preferential treatment for utility-owned resources by PSCs.[62]

In reviewing the issue of contract lengths, the Michigan Public Service Commission recently concluded contract lengths should extend to a minimum of 20 years to be consistent with PURPA, as this allows the QF improved access to finances and investment.[63] Pre-Order No. 872,

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58. 18 C.F.R. § 292.304(e)(2)(iii); Indep. Energy Producers v. Cal. Pub. Utils. Comm'n, 36 F.3d 848, 856 (9th Cir. 1994) (noting that the state may consider contract lengths and terms in calculating avoided cost rates).

59. 16 U.S.C. § 824a-3.

60. Dr. Jurgen Weiss and Dr. Mark Sarro, *The Importance of Long-term Contracting for Facilitating Renewable Energy Project Development*, THE BRATTLE GROUP, 18–19 (May 7, 2013), http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B530BEAA7-6E02-4256-BBA3-04AB7EB7831B%7D; Robert Walton, *BNEF: Shorter contracts could put PURPA solar projects at financial risk*, UTILITY DIVE (Nov. 29, 2016) https://www.utilitydive.com/news/bnef-shorter-contracts-could-put-purpa-solar-projects-at-financial-risk/431232/.

61. *Vote Solar*, 473 P.3d at 982.

62. Indeed, at the time of drafting this article, amendments to PURPA were under consideration in Congress, including an amendment to 16 U.S.C. § 824a-3 that explicitly provides: "The Commission [FERC] shall require that qualifying facilities have the option to enter a fixed price contract whose term is at least as long as the term on which the incumbent utility recovers invests in new generation[.]" CLEAN Future Act, H.R. ____, 117th Cong. § 224 (2021). Such an amendment would not only put an end to the debate on exactly how long a long-term contract is, but would also effectively put the nullify FERC Order No. 872's action of gutting fixed contracts.

63. MICH. PUB. SERV. COMM'N, In the matter on the Commission's own motion establishing the method and avoided cost calculation for Consumers Energy

FERC also agreed that long-term contracts are necessary to encourage QF production, as FERC found that they provide for certainty in regard to return on investment and they allow for any overestimations or underestimations of avoided costs to "balance out" over time.[64] By ensuring avoided cost payments over a long-term contract, QFs are provided with a "certainty of an arrangement" that provides stability to the contract and attracts investors since the QF's rate of return does not undergo variations due to changed circumstances,[65] such as short-term fluctuations in the market cost of electricity. Further, long-term contracts may also benefit the utility should avoided costs turn out to be higher than those decided on in the contract.[66]

Overall, the length of the PPA contract between the QF and the electric utility is an important factor in encouraging development of QFs and is critical to securing financing for project development. The longer the contract,[67] the greater benefits to QF development prospects via improved return on investment certainty and increased capital investor

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Company to fully comply with the Public Utility Regulatory Policies Act of 1978, 16 U.S.C. §§ 2601 *et seq.*, Case No. U-18090, 21–22 (May 31, 2017), http://www.michigan.gov/documents/mpsc/u-18090_5_31_2017_579172_7.pdf.

64. FERC Order No. 69, 45 Fed. Reg. 12,214-02, 12,224 (Feb. 25, 1980).

65. *Id.*

66. *Id.*; *see also* Conn. Valley Elec. Co., Inc. v. Wheelabrator Claremont Co., L.P., 82 FERC ¶ 61,116, 61,419–20 (1998), *denying reconsideration and reh'g and granting clarification*, 83 FERC ¶ 61,136, *aff'd sub nom*; Conn. Valley Elec. Co. v. FERC, 208 F.3d 1037 (2000) (ruling that modification of contracts between QFs and utilities in the event a party claims the economic assumptions changed is unacceptable).

67. Long-term contracts are typically defined as those PPAs that are 15–30 years long , with an apparent general agreement among the renewable energy community that 20-years or greater (depending on financial and developmental circumstances) is typically required for renewable energy projects to achieve adequate return on investment so as to provide for sufficient certainty for capital investors and allow for actual project development.. *See* David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, NREL, 2 (July 2020), https://www.nrel.gov/docs/fy20osti/76881.pdf; M. Bolinger and J. Steel, *Utility-Scale Solar, Empirical Trends in Project Technology, Cost, Performance, and PPA pricing in the United States – 2018 Edition*, LAWRENCE BERKELEY NATIONAL LABORATORY, 31 n.39 (Sept. 2018), https://escholarship.org/content/qt5rc3j8cj/qt5rc3j8cj.pdf; U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, *2018 Wind Technologies Market Report*, 58 n.64 (Aug. 2019), https://www.energy.gov/sites/prod/files/2019/08/f65/2018%20Wind%20Technologies%20Market%20Report%20FINAL.pdf.

interest.[68] Indeed, long-term PPAs (i.e. 20-years or longer depending on development circumstances) are critical to the encouragement of QF development since a "significant portion of current financial risk to renewable energy generation plants is mitigated by long-term, fixed contracts."[69] Long-term contracts have been identified as "the *most important factor* that can provide [investor] confidence" and allow for project development.[70] Importantly, while the price volatility of fossil fuel-based generation puts ratepayers at risk in long-term PPAs, renewable energy projects "have little to no fuel risks," as opposed to fossil fuel-based resources, "and are able to contract electricity for much longer periods—typically 10-30 years" with minimal risk to ratepayers since the costs of renewable energy generation generally remain stable throughout the life of the contract.[71]

Contrary to long-term contracts, shorter contract lengths[72] provide less price certainty for renewable energy projects and increase risk for a given project's lenders and investors, ultimately increasing the cost of capital for a given project and discouraging QF development.[73] Indeed, since renewable energy projects have high upfront costs, short-term contracts present many financing challenges. Specifically, short-term

68. Weiss, *supra* note 60; *see also* David Feldman and Paul Schwabe, *Terms, Trends, and Insights: PV Project Finance in the United States 2017*, NREL, 5 (Sept. 2017), https://www.nrel.gov/docs/fy18osti/70157.pdf; *see also* Chris Groobey, et. al., *Project Finance Primer for Renewable Energy and Clean Tech Projects*, WILSON, SONSINI, GOODRICH & ROSATI, 2 (Aug. 2010), https://www.wsgr.com/PDFSearch/ctp_guide.pdf.

69. David Feldman, Mark Bolinger, and Paul Schwabe, *Current and Future Costs of Renewable Energy Project Finance Across Technologies*, NREL, 30 (July 2020), https://www.nrel.gov/docs/fy20osti/76881.pdf; *see also Developers can cut costs of renewable energy 'if offered longer contracts and long-term visibility,'* RECHARGE NEWS (Dec. 1, 2020), https://www.rechargenews.com/wind/developers-can-cut-cost-of-renewable-energy-if-offered-longer-contracts-and-long-term-visibility/2-1-922568 (indicating that a minimum of a 20-year PPA, rather than 15-year, is necessary to minimize risk and costs related to renewable energy development).

70. Weiss, *supra* note 60, at 18–19 (emphasis added).

71. Feldman et. al, *supra* note 69, at 8.

72. Short-term PPA lengths depend on the ultimate avoided cost amount paid to the developer but appear to generally be viewed as contract lengths less than 15 years. *See* U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, *2018 Wind Technologies Market Report*, 58 n.64 (Aug. 2019), https://www.energy.gov/sites/prod/files/2019/08/f65/2018%20Wind%20Technologies%20Market%20Report%20FINAL.pdf (finding that 89% of contracts in the empirical analysis were for terms ranging from 15 to 25 years).

73. Weiss, *supra* note 60, at 3, 9, 11–12.

contracts result in increasing the "degree of uncertainty surrounding the revenue stream" and "impacts the amount of debt financing it can attract and the cost of attracting debt financing."[74] Accordingly, without "obtaining a long-term PPA with some level of revenue assurance based on power production, a renewable energy project (all else equal) will attract less and more costly debt and more costly equity than traditional power project operating in the same wholesale power market" resulting in a riskier investment and, ultimately, a decreased probability that the project will be built.[75]

While the debate over what exactly is a "long-term" contract continues in PSC proceedings around the nation, empirical analyses indicate—consistent with the Michigan PSC's finding discussed above—that generally a minimum of 20 years, depending on the avoided cost price and other developmental circumstances, is an appropriate length to allow for development. An empirical analysis of PPAs in the United States for utility-scale solar projects found that the mean PPA term is 22.5 years.[76] Likewise, an empirical analysis in 2018 for utility-scale wind projects found that contract terms range from five to 35 years, with 89% of sampled contracts having terms ranging from 15 to 25 years, a majority of the sampled projects having a PPA length of at least 20 years, and an average length for wind projects in the Interior U.S. region being 23.5 years.[77] In other words, actual data from empirical analyses appear to support the notion that a contract term of at least 20 years is generally required for wind and solar QFs to be able to achieve a return on investment and encourage project development consistent with PURPA's mandate at 16 U.S.C. § 824a-3(a) require QF development be encouraged.

3. The Legally Enforceable Obligation

Among the regulations adopted by FERC in implementing PURPA is 18 C.F.R. § 292.304(d), which gives QFs the right to choose

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74. *Id.*

75. *Id.*

76. M. Bolinger and J. Steel, *Utility-Scale Solar, Empirical Trends in Project Technology, Cost, Performance, and PPA pricing in the United States – 2018 Edition*, Lawrence Berkeley National Laboratory, at 31 n.39 (Sept. 2018), https://escholarship.org/content/qt5rc3j8cj/qt5rc3j8cj.pdf; *see also* Weiss, *supra* note 60, at 17 n.39 (assuming 20 years to be a long-term contract).

77. U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, *2018 Wind Technologies Market Report*, 58 n.64, 60 (Aug. 2019), https://www.energy.gov/sites/prod/files/2019/08/f65/2018%20Wind%20Technologies%20Market%20Report%20FINAL.pdf.

whether to sell their power on an "as available" basis with rates calculated at the time of delivery or pursuant to a legally enforceable obligation ("LEO"). A LEO is a "non-contractual, but binding commitment from a QF to sell power to a utility."[78] The LEO concept was developed to overcome the barrier of utility reluctance to purchase power from QFs as it is "used to prevent an electric utility from avoiding its PURPA obligations by refusing to sign a contract, or "from delaying the signing of a contract, so that a later and lower avoided cost is applicable."[79]

Acknowledging the power imbalance between utilities and small power producers, FERC has made it clear that a LEO is different from a contract and the "phrase is used to prevent an electric utility from avoiding its PURPA obligations by refusing to sign a contract, or 'from delaying the signing of a contract, so that a later and lower avoided cost is applicable.'"[80] As held by FERC in a 2006 decision, "[t]hat Congress used the term 'contract or obligation' in drafting section 210(m)(6) suggests that Congress intended that the Commission continue to protect both contracts and obligations that had not yet ripened into contracts but were 'in effect or pending approval.'"[81]

This concept has been a common thread in FERC declaratory orders regarding different state commissions' LEO rules. As a general rule, FERC has rejected tests that create barriers to entry for QFs and that place the control of LEO formation in the control of the utilities.[82] Importantly, "'the establishment of a LEO turns on 'the QF's commitment, and <u>not</u> the utility's actions,' and when a QF commits itself to sell to an electric utility, it 'also commits the electric utility to buy from the QF.'"[83]

While this concept can be a bit murky, particular given a lawyer's legal training in contracts (i.e. offer, acceptance, consideration), at bottom the LEO concept is meant to aid QFs in their development path by allowing the QF to move forward with reasonable certainty as to its return on investment since the formation of a LEO results in locking in place the various factors relevant to total avoided cost calculations based on the date of the LEO regardless of a monopoly utility's refusal to negotiate or

78. *Id.* at ¶ 6 (citing Cedar Creek Wind, LLC, 137 FERC ¶ 61,006, 61,023 (Oct. 4, 2011).

79. *Id.* (citing *Cedar Creek Wind*, 137 FERC at 61,024).

80. *MTSUN*, ¶ 6 (citing Cedar Creek Wind, LLC, 137 FERC ¶ 61,006, 61,024 (Oct. 4, 2011)).

81. Midwest Renewable Energy Projects, LLC, 116 FERC ¶ 61,017, 61,073 (2006).

82. *MTSUN*, ¶ 66.

83. *Id.* at ¶ 6 (emphasis in original) (citing *FLS Energy, Inc*., 157 FERC ¶ 61,211, 61,730–31 (2016)).

stonewalling of the QF.[84] While the LEO concept is important for larger QFs, the concept is generally not applicable to smaller QFs that are entitled to a standardized avoided cost since the purpose of having a standardized avoided cost rate is to negate the need of small QFs to negotiate with the utility and minimize transactional costs.[85]

4. Consideration of the Public Interest in Setting Avoided Cost Rates

PURPA specifically states that avoided cost rates "shall be just and reasonable to the electric consumers of the electric utility and *in the public interest*."[86] In accounting for the public interest in setting avoided cost rates, the definition of public interest must be read in the context of PURPA's purpose.[87] PURPA declares that "the business of transmitting and selling electric energy for the ultimate distribution to the public is affected with a public interest."[88] Where statutes use the words "public interest," the Supreme Court has ruled that the meaning of public interest in the statute is directly related to the purpose of the legislation.[89] In considering the public interest in PURPA, PURPA's purpose encompasses not only economic interests, such as the cost of electricity to the ratepayer, but also electricity grid reliability and environmental interests associated with the financial and public health impacts related to overreliance on fossil fuel based electricity sources.

Precedent in the Supreme Court, D.C. Circuit, and FERC orders dictates that the words "public interest" in PURPA allow for consideration beyond simply economic interests and that they also encompass environmental and public health and welfare interests in setting avoided

84. While FERC Order No. 872, as discussed above effectively guts PURPA, one positive aspect of the Order was that it provided further clarification on when a QF establishes a LEO. Specifically, it provided that a QF establishes a LEO when it demonstrates its commercial viability and financial commitment to developing the project. *See* FERC Order No. 872, 172 FERC ¶ 61,041, ¶ 684. FERC left states with the flexibility to determine the criteria for demonstrating commercial viability and financial commitment (as long as the criteria is "objective and reasonable"), but provided examples of objective and reasonable criteria, including that the QF has: (1) taken meaningful steps to obtain site control of the project; (2) filed an interconnection application with the utility; and (3) has applied for required permitting. *See* FERC Order No. 872, ¶ 685. FERC reiterated that "the factors that the state requires must be factors that are within the control of the QF." FERC Order No. 872, ¶ 685.

85. FERC Order No. 69, 45 Fed. Reg. at 12,223.

86. 16 U.S.C. § 824a-3(b)(1) (emphasis added).

87. Natl. Ass'n for Advancement of Colored People v. Fed. Power Comm'n., 425 U.S. 662, 669 (1976).

88. 16 U.S.C. § 824(a) (2005).

89. *Fed. Power Comm'n.*, 425 U.S. at 669.

costs. In *FERC v. Mississippi*, the Supreme Court noted that part of PURPA's purpose was to protect the "public health, safety, and welfare" and "preserve national security."[90] Additionally, in *American Paper Institute, Inc. v. American Elec. Power Service Corp.*, the Supreme Court held that it was in the public's interest to increase electricity production from QFs, regardless of the fact it didn't provide ratepayer cost savings, because "the entire country will ultimately benefit" from QF energy and the resulting decreased reliance on fossil fuels.[91] Arguably in ensuring that rates for QFs are set in the "public interest," it is incumbent on PSCs to not merely consider economic costs that QFs avoid, but also broader societal costs that are related to fossil fuel-based electricity.[92]

III. PURPA'S ROLE IN BOOSTING LOCAL CLEAN ENERGY PROJECTS

As demand for clean energy increases, providing avenues for development of local community-scale projects, and not only large-scale rural projects, is an important step towards achieving localized energy independence. PURPA already plays a critical role in boosting clean energy projects, however, and through proper implementation of PURPA, the full benefits of local clean energy projects can result in higher avoided costs that represent a given utility's true full avoided cost. Local clean energy projects, also known as distributed generation ("DG") systems, include technologies such as solar panels and wind turbines that generate electricity on-site or near where the energy is consumed, and range from less than 100 kWs to ten MWs.[93] DG systems can serve residential,

90. 456 U.S. 742, 755 (1982).

91. 461 U.S. 402, 417 (1983).

92. In relation to electricity production and environmental costs, it is a well-known fact that the burning of fossil fuels endangers public health, safety, and welfare due to its contributions to climate change, as well as air pollution. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 FR 66496–501 (2009) (upheld in *Coalition for Responsible Reg., Inc. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012)). Moreover, climate change has severe impacts on national security. *See* Department of Defense, *Report on the Effects of a Changing Climate to the Department of Defense* (Jan. 2019), https://climateandsecurity.org/wp-content/uploads/2019/01/sec_335_ndaa-report_effects_of_a_changing_climate_to_dod.pdf; *see also* The White House, *The National Security Implications of A Changing Climate* (May 2015), https://obamawhitehouse.archives.gov/sites/default/files/docs/National_Security_Implications_of_Changing_Climate_Final_051915.pdf.

93. U.S. Envtl. Prot. Agency, *Distributed Generation of Electricity and its Environmental Impacts*, EPA, https://www.epa.gov/energy/distributed-generation

commercial, or industrial facilities on-site or can be off-site, as long as the DG system is still only connected to the grid on the distribution level and not the transmission level.[94] Through smart implementation of avoided cost methodologies by state utility commissions—coupled with long-term contracts of 20-years or longer depending on developmental circumstances, as discussed above—the development of local community-scale DG projects throughout the country can be further enhanced, helping communities realize localized energy independence along with its many benefits including increased grid reliability and resiliency.

A. Defining How PSCs Should Set Avoided Cost Ratemaking Methodologies to Encourage DG Projects

Using avoided cost ratemaking methodologies, PSCs have the power to enable wide-scale development of community-scale DG projects. While PURPA and FERC regulations allow for consideration of several factors that are relevant to encouraging DG projects, PSCs around the nation fail to consistently apply those factors in developing standardized avoided cost rates.[95] Overall, DG systems provide significant benefits to the electric grid, utilities, and the public, specifically through avoided line

-electricity-and-its-environmental-impacts (last visited Nov. 17, 2020); Nat'l Renewable Energy Lab., *Energy Analysis: Distributed Generation Renewable Energy Estimate of Costs*, NREL, https://www.nrel.gov/analysis/tech-lcoe-re-cost-est.html (last updated Feb. 2016); Mahesh Kumar et. al., *Optimal Placement and Sizing of Renewable Distributed Generations and Capacitor Banks into Radial Distribution Systems*, Energies, 16 (*see* Table 7) (June 14, 2017), http://www.mdpi.com/1996-1073/10/6/811/pdf-vor.

94. N.Y. State Energy Research and Dev. Auth., *Summary of Value of Distributed Energy Resources*, NYSERDA, https://www.nyserda.ny.gov/-/media/NYSun/files/VDER-Summary.pdf (last visited Nov. 7, 2020).

95. Many PSCs around the nation arguably purposefully use methodologies to discourage QF development, such as in Montana where a commissioner was overheard discussing tactics on how to derail QF development in the state. *See* Tom Lutey, *Hot Mic Records Troubling Conversation About Solar Regulations*, BILLINGS GAZETTE (June 27, 2017), http://billingsgazette.com/news/government-and-politics/hot-mic-records-troubling-conversation-about-solar-regulations/article_8499a49d-e281-5dd7-aae7-aecccfa0394e.html (Commissioner Lake was caught saying, in relation to a Montana Public Service Commission order dropping contract lengths and avoided cost for QF systems, that "the 10-year might do it, if the price doesn't. And at this low price I can't imagine anyone getting into it."). Indeed, in a rejection of the Montana PSC's attempts to circumvent PURPA, the Supreme Court of Montana, in an appeal of the Montana PSC's decision, held that "the PSC cannot adopt a new methodology simply to circumvent PURPA's objective to encourage alternative energy development of small power production facilities." *Vote Solar*, 473 P.3d at 981.

losses, decreased transmission and distribution costs, shorter lead times, increased reliability, avoidance of volatile price fluctuations inherent in fossil fuels, and environmental and public health interests.[96] Due to how some PSCs structure their avoided cost calculations, however, DG developers are not compensated for the benefits they provide to the utilities and are not receiving the full avoided cost they are entitled to under PURPA. All of the benefits that DG projects provide to utilities must be incorporated in avoided cost calculations and it is only just and reasonable that PSCs incorporate them in their calculations in order to comply with PURPA's mandate.

Methods for incorporating DG-specific benefits into avoided cost calculations have already been developed. For example, the National Renewable Energy Lab ("NREL") of the United States Department of Energy has already developed some methods for quantifying the benefits of DG systems.[97] Likewise, Michigan's Public Service Commission has developed methods to quantify DG benefits.[98] Below are some, but not all, of the factors that should be quantified and applied by PSCs in developing standardized avoided cost rates for DG projects.

1. Avoided Line Losses, Reduced Congestion, and Decreased Transmission and Distribution Costs

Since DG systems are located near where the power is used, avoided line losses, reduced transmission line congestion, and decreased transmission and distribution costs should be accounted for in avoided cost

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96. *See* Amory B. Lovins, et. al., *Small is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size*, Rocky Mountain Institute (2002), https://rmi.org/wp-content/uploads/2017/05/RMI_Document_Repository_Public-Reprts_U02-09_SmallIsProfitableBook.pdf; U.S. Dept. of Energy, *The Potential Benefits of Distributed Generation and Rate-Related Issues That May Impede Their Expansion*, FERC.GOV, 3–18 (Feb. 2007), https://www.energy.gov/sites/prod/files/oeprod/DocumentsandMedia/1817_Report_-final.pdf [hereinafter *Potential Benefits Report*].

97. *See* Paul Denholm, et. al., *Methods for Analyzing the Benefits and Costs of Distributed Photovoltaic Generation to the U.S. Electric Utility System*, NREL (Sept. 2014), https://www.nrel.gov/docs/fy14osti/62447.pdf.

98. *See* MICH. PUB. SERV. COMM'N, *Report on the MPSC Staff Study to Develop a Cost of Service-Based Distribution Generation Program Tariff* (Feb. 21, 2018), http://www.michigan.gov/documents/mpsc/MPSC_Staff_DG_Report_with_Appendices_614779_7.pdf.

calculations.[99] On average, utilities lose about five percent of their power due to line losses,[100] and FERC has already specified that avoided costs should be increased when the utility saves money through reduced line losses as a result of a QF being constructed close to consumption.[101] Avoidance of line losses could save utilities a substantial sum of money annually. For example, Montana, a state that primarily relies on centralized power, lost around 830,779 MW hours in 2019, which is equivalent to the annual energy used by about 78,000 homes.[102] Minnesota, another state heavily dependent on centralized power, lost the around 3.63 million MW hours in 2019, the equivalent energy of about 341,000 homes in 2016.[103]

Unfortunately for ratepayers, the utility shifts the costs of line losses onto its customers, meaning ratepayers are paying for power that they do not consume.[104] DG projects minimize line losses and ultimately deliver more power to consumers with less costs compared to centralized

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99. 18 C.F.R. § 292.304(e)(iv) (2020); 18 C.F.R. § 292.304(e)(2)(ii)(G) (2020); Keyes, Fox, & Wiedman LLP, *Unlocking DG Value: A PURPA-based Approach to Promoting DG Growth*, Interstate Renewable Energy Council, Inc., 5 (May 2013), https://irecusa.org/publications/unlocking-dg-value-a-purpa-based-approach-to-promoting-dg-growth/.

100. U.S. Energy Info. Admin., *Frequently Asked Questions: How much electricity is lost in transmission and distribution in the United States*, EIA, https://www.eia.gov/tools/faqs/faq.php?id=105&t=3 (last updated Jan. 29, 2018).

101. FERC Order No. 69, 45 Fed. Reg. 12,214, 12,227 (Feb. 25, 1980) (holding that "[i]f the load served by the [QF] is closer to the [QF] than it is to the utility, it is possible that there may be net savings resulting from reduced line losses. In such cases, the rates should be adjusted upwards."); 18 C.F.R. § 292.304(e)(4) (2018).

102. U.S. Energy Info. Admin., *State Electricity Profiles: Montana Electricity Profile 2019*, EIA, Table 10, https://www.eia.gov/electricity/state/montana/index.php (last updated Jan. 25, 2018). The calculation is based on using EIA data that the average home consumes 10,649 kWs annually. *See* U.S. Energy Info. Admin., *Frequently Asked Questions: How Much Electricity Does An American Home Use*, EIA, https://www.eia.gov/tools/faqs/faq.php?id=97&t=3 (last updated Oct. 9, 2020).

103. U.S. Energy Info. Admin., *State Electricity Profiles: Minnesota Electricity Profile 2019*, EIA, Table 10, https://www.eia.gov/electricity/state/minnesota/index.php (last updated Jan. 25, 2018) (Calculation is based on using EIA data that the average home consumes 10,649 kWs annually.). *See* U.S. Energy Info. Admin., *Frequently Asked Questions: How Much Electricity Does An American Home Use*, EIA, https://www.eia.gov/tools/faqs/faq.php?id=97&t=3 (last updated Oct. 9, 2020).

104. Constellation-An Edison Company, *Line Losses: Overlooked and Often Misunderstood* (June 30, 2020), https://blogs.constellation.com/energy-management/line-losses-overlooked-and-often-misunderstood/#:~:text=The%20quantity%20that%20is%20lost,and%20passed%20on%20to%20customers.

power.[105] Methodologies for incorporating avoided line losses have already been developed by NREL[106] and PSCs should utilize NREL's expertise in developing avoided cost calculations that include avoided line loss benefits of DG systems. Thus, PSCs can rely on the EIA for data regarding line losses by state[107] and use NREL's methodologies for calculating the benefits that a DG system provides to the utility and its consumers to properly account for and include these cost savings that DG systems provide to a utility.

Additionally, avoided cost rates should consider DG's savings in reduced congestion costs.[108] Congestion costs occur when there is an overload of energy on transmission lines.[109] Costs to consumers and utilities stemming from congestion vary by region and electricity jurisdiction and can be substantial. For example, congestion in the Midwest Independent System Operator territory cost consumers $1.24 billion in 2011.[110] Since power supplied by DG systems is produced close to load, there is a significant reduction in congestion costs because that power avoids transmission lines and instead is inputted directly into local distribution lines.[111] These benefits of DG systems must be considered in developing just and reasonable avoided cost rates.

As for transmission and distribution capacity, DG systems allow utilities to avoid additional infrastructure typically needed when energy is added to a utility's system. Transmission and distribution capacity is the cost to the utility for building new or expanding existing transmission lines, transformers that step up electric voltage for efficient transport, and substations that step the electric voltage down for distribution to customers.[112] There are also costs of necessary rights of way for transmission and distributions lines.[113] DG systems provide several benefits in terms of decreasing transmission and distribution costs,

105. *Potential Benefits Report*, *supra* note 96, at 3–18; Denholm, *supra* note 97, at 20.

106. Denholm, *supra* note 99, at 20–27.

107. U.S. Energy Info. Admin., *State Electricity Profiles*, EIA (Jan. 25, 2018), https://www.eia.gov/electricity/state/archive/2015/ (*see* Table 10).

108. *Potential Benefits Report*, *supra* note 96, at i, 1–11.

109. *Id.* at 3–8.

110. U.S. Dept. of Energy, *National Electric Transmission Congestion Study*, DOE, xviii (Sept. 2015), https://www.energy.gov/sites/prod/files/2015/09/f26/2015%20National%20Electric%20Transmission%20Congestion%20Study_0.pdf/.

111. *Potential Benefits Report*, *supra* note 96, at 3–8.

112. Envtl. Prot. Agency, *Distributed Generation of Electricity and its Environmental Impacts*, EPA, https://www.epa.gov/energy/distributed-generation-electricity-and-its-environmental-impacts (last visited Nov. 17, 2020).

113. *Potential Benefits Report*, *supra* note 96, at 6–3 to 6–4.

including reducing and deferring the need for upstream capacity (centralized power systems).[114] This ultimately reduces the utility's transmission and distribution costs by avoiding the need for transformers, lines, substations, and new rights of way.[115]

Overall, to ensure that DG projects are being valued consistent with PURPA's requirement that rates be "just and reasonable" and be the utility's "full avoided cost,"[116] rate calculations by state utility commissions must incorporate the benefits of avoided line losses, reduced congestion costs, and decreased costs associated with transmission and distribution capacity that are avoided by DG systems. Failure to incorporate these benefits of DG systems in avoided costs results in DG systems being unjustly underpaid for the generation they provide to the utility and its ratepayers. This failure leads to DG developers subsidizing the utility, creating an unfair boon to the utility's profit, and fails to fulfill both PURPA's requirement to "encourage" QF development and the principle that ratepayers (as well as the utility) are left "indifferent" as to the power they consume.[117]

2. Shorter Lead Times

Significant financial risks are associated with long lead times of centralized power, making valuation of DG's short lead times an important aspect of avoided cost rate calculations.[118] Lead time is the time it takes to construct, generate, and distribute electricity from a given power plant, and longer lead times increase costs to the utility.[119] DG systems have shorter lead times comparatively, and the three main benefits include reducing: (1) the forecasting risks associated with uncertain future demand; (2) the financial risk of long construction periods of larger installations; and (3) the risk of "technological or regulatory obsolescence."[120] FERC has already recognized that reduced lead times may produce savings and provide utilities with the ability to adjust for demand fluctuations through greater flexibility.[121] Just and reasonable

114. *Id.* at 3–11.
115. *Id.*
116. 16 U.S.C. § 824a-3(b)(1); 18 C.F.R. § 292.304.
117. *S. Cal. Edison Co.*, 71 FERC at 62,080.
118. 18 C.F.R. § 292.304(e)(2)(vii); Lovins, *supra* note 96, at 117.
119. U.S. Energy Info. Admin., *Updated Capital Cost Estimates for Utility Scale Electricity Generating Plant*, EIA, https://www.eia.gov/outlooks/capitalcost/ (last updated April 12, 2013).
120. Lovins, *supra* note 96, at 117.
121. FERC Order No. 69, 45 Fed. Reg. 12,214, 12,227 (Feb. 25, 1980).

avoided cost rate calculations would incorporate the benefits of DGs shorter lead times.

3. Avoiding Volatility Risks of Fuel Prices

DG systems, such as wind and solar, do not rely on fossil fuels for electricity generation and avoid costly risks associated with market variations of fossil fuel costs. Natural gas and other fossil fuels carry with them substantial financial risks due to their inherent pricing volatility and the difficulty in forecasting prices, which results in month to month uncertainty for electricity prices.[122] Through a combination of supply issues, increasing demand, and other factors, such as extreme weather events shutting down production or supply chains, natural gas prices can have drastic swings.[123] Furthermore, future supply of natural gas is debatable, with some uncertainty in supply forecasts;[124] thus, if a utility is heavily reliant on natural gas for its power it's ratepayers bear the burden of increased economic risk and negative impacts related to price volatility of natural gas.

Conversely, clean energy provides a long-term stable fixed price for consumers.[125] By providing price stability to consumers, clean energy is essentially an insurance policy that reduces risks to consumers against increases in fossil fuel prices.[126] One potential method to account for DGs' risk reduction in avoided cost calculations would be to use the Capital Asset Pricing Model, which is a model that describes the relationship

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122. U.S. Energy Info. Admin., *Natural Gas Spot and Future Prices*, EIA, https://www.eia.gov/dnav/ng/ng_pri_fut_s1_a.htm (latest update May 5, 2018).

123. Comm'n of Envtl. Cooperation, *Renewable Energy as a Hedge Against Fuel Price Fluctuation: How to Capture the Benefits*, CEC, 6, 15 (2008), http://www.cec.org/islandora/en/item/2360-renewable-energy-hedge-against-fuel-price-fluctuation-en.pdf.

124. David Hughes, *Shale Reality Check: Drilling Into the U.S. Government's Rosy Projections for Shale Gas & Tight Oil Production Through 2050*, Post Carbon Institute, x, 34, 159 (Winter 2018), http://www.postcarbon.org/publications/shale-reality-check/; Richard Heinberg, *Why the New EIA Forecast Is Unrealistic*, EcoWatch (Feb. 5, 2018, 11:13 AM), https://www.ecowatch.com/eia-outlook-2018-2531592684.html.

125. Lori A. Bird, et. al., *Renewable Energy Price-Stability Benefits in Utility Green Power Programs*, NREL, 1 (Aug. 2008), https://www.nrel.gov/docs/fy08osti/43532.pdf.

126. *Id.*; *see also* Denholm, *supra* note 97, at 50 (concluding: "The addition of DGPV (or renewable energy more generally) to an electricity-generation portfolio could result in diversity-related benefits, which include providing a physical hedge against uncertain future fuel prices and insurance against the impact of higher future fuel prices or changes in emissions policy.").

between an energy source's risk and expected return.[127] Ultimately, it is in the utility and public's interest that the financial risks associated with fossil fuel systems and DG systems are incorporated in avoided cost rate calculations.

4. *The Public Interest, the Social Cost of Carbon Protocol Tool, and the Environmental Benefits of QFs*

As discussed above in part I(B)(3), the public's interest in decreasing the nation's reliance on fossil fuels is not only an economic interest, but also an environmental interest that can and should be considered in setting avoided costs. FERC has ruled that since they are a necessary aspect of the utility's full avoided costs, environmental costs related to fuel sources should be included in avoided costs calculations when those environmental costs are incurred by the utility.[128] Additionally, as discussed above in section I(B)(3), the Supreme Court's holdings arguably allow for avoided cost calculations to consider other interests beyond the economic interests of ratepayers related to merely carbon costs.[129] The social cost of carbon resulting from the climate and public health impacts of burning fossil fuels should be considered in setting avoided cost calculations.

Climate change—indisputably a result of fossil fuel combustion—is already causing major negative issues in the energy sector, such as increased power outages and supply chain disruptions that cost utilities and consumers substantial sums of money in the form of blackouts.[130] Increasing temperatures, decreasing water availability, more intense storms and extreme weather (including more frequent polar vortexes due to instability of jet streams caused by climate change),[131] wildfires, and sea

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127. Lovins, *supra* note 96, at 145–53.

128. So. Cal. Edison, 71 FERC ¶ 61,269, 62,080 (F.E.R.C. June 2, 1995); *see also* Cal. PUC, 133 F.E.R.C. ¶ 61,059, 61268 (FERC Oct. 21, 2010).

129. *Mississippi*, 456 U.S. at 755; *Am. Paper Inst.*, 461 U.S. at 417.

130. Carbon Disclosure Project, *Global Electric Utilities: Building business resilience to inevitable climate change*, Acclimatise and IBM, Appendix 2 (2009), https://www.ideiasustentavel.com.br/pdf/ibm_carbon_disclosure_project_2009_electric_utilities.pdf/; U.S. Dept. of Energy, *Climate Change: Effects on Our Energy*, ENERGY.GOV (July 11, 2013), https://www.energy.gov/articles/climate-change-effects-our-energy.

131. UC Davis, *Science & Climate: Polar Vortex*, https://climatechange.ucdavis.edu/climate-change-definitions/what-is-the-polar-vortex/ (last visited Apr. 28, 2021); *see also* Dana Nuccitelli, *Climate lessons from Texas' frozen power outages*, YALE CLIMATE CONNECTIONS (Feb. 23, 2021) https://yaleclimateconnections.org/2021/02/the-climate-lesson-from-texas-frozen-power-outages/.

level rise are all projected to continue to negatively affect the production and transmission of electricity in the United States with increasing severity.[132] Overall, shutdowns and disruptions related to weather have substantial financial impacts to the public and utilities with an estimated yearly cost ranging from $25 to $70 billion per year.[133] While accounting for carbon pricing in avoided costs, as discussed above, accounts for potential economic-based regulations surrounding carbon emissions, there are many other costly externalities associated with fossil fuel-based generation that should be accounted for in avoided cost calculations so that those calculations represent the utility's actual full avoided costs.

Unlike centralized generation, DG systems have substantial potential to reduce a utility's financial impacts and risk from climate-related extreme weather events. DG systems have been identified as a technology that is resilient to extreme weather events and can "maintain service and minimize system vulnerabilities" related to disruptions caused by extreme weather.[134] Thus, there is a significant economic value in the increased reliability that DG systems provide utilities. Therefore, if the law requires calculation of the utility's full avoided cost, the cost savings that DG systems provide by increasing resilience to extreme weather events must be incorporated.

In addition to including the climate change risk avoidance benefits of DG systems in avoided cost calculations, the public health and societal consequences of burning fossil fuels, also known as the social cost of carbon, should also be considered in avoided cost calculations. In order to truly set rates in the public interest, PSCs should utilize the Social Cost of Carbon Protocol Tool (SCC Tool) in evaluating utility resource planning documents and proposed new generation resources. The SCC Tool "is a measure, in dollars, of the long-term damage done by a ton of carbon

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132. U.S. Dept. of Energy, *U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather*, ENERGY.GOV, i (July 2013) https://www.energy.gov/sites/prod/files/2013/07/f2/20130716-Energy%20Sector%20Vulnerabilities%20Report.pdf; Carbon Disclosure Project, *Global Electric Utilities: Building business resilience to inevitable climate change*, Acclimatise and IBM, Appendix 2 (2009), https://www.2degreesnetwork.com/groups/2degrees-community/resources/carbon-disclosure-project-2008-global-electric-utilities-adaptation-challenge_2/attachments/8294/.

133. Executive Office of the President, *Economic Benefits Of Increasing Electric Grid Resilience To Weather Outages*, THE WHITE HOUSE, 17 (Aug. 2013) https://www.energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf.

134. *Id.* at 15; U.S. Dept. of Energy, *U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather*, ENERGY.gov, 43 (July 2013) https://www.energy.gov/sites/prod/files/2013/07/f2/20130716-Energy%20Sector%20Vulnerabilities%20Report.pdf.

dioxide (CO_2) emissions in a given year."[135] The SCC Tool focuses on quantifying the climate change damage of rulemakings on the federal level, including changes in the cost of energy.[136] By using the SCC Tool, PSCs can equate the amount of carbon dioxide that a clean energy DG system avoids compared to other sources in their energy mix and provide additional compensation to the DG system for helping to reduce climate-associated risks and costs for the utility.

Indeed, this is not an unprecedented idea. The Colorado PSC recently ordered that the SCC Tool must be used to place a price on fossil fuel resource planning proposals, including the Social Cost of Carbon of $43 per ton beginning in 2022, increasing to $69 per ton in 2050.[137] Other PSCs throughout the nation should also rely on the SCC Tool in quantifying the true costs of fossil fuel based resources and incorporate those avoided costs in avoided cost calculations for clean energy projects.

B. Case Study on Avoided Cost Methodologies

Implementation of avoided cost calculations varies across the country and from state-to-state. The rate paid to a QF must be equal to the utilities' full avoided costs, but due to varying methodologies used by PSCs throughout the country, the avoided costs that DG systems provide are not always incorporated in avoided cost calculations. While some states arguably appear to be actively pursuing ways to decrease the viability of qualifying DG projects,[138] others have incorporated a few of the above benefits in their standardized avoided cost rates. Michigan recently took positive steps at implementing PURPA's avoided cost rates to account for the full avoided costs of DG development.

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135. U.S. Envtl. Prot. Agency, *The Social Cost of Carbon*, EPA (Jan. 19, 2017) https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html.

136. *Id.*

137. In the Matter of Application of the Public Service Company of Colorado for Approval of Its 2016 Electric Resource Plan, Proceeding No. 16A-0396E, Decision No. C17-0316, ¶ 87 (Mar. 23, 2017).

138. Tom Lutey, *Hot Mic Records Troubling Conversation About Solar Regulations*, BILLINGS GAZETTE (June 27, 2017), http://billingsgazette.com/news/government-and-politics/hot-mic-records-troubling-conversation-about-solar-regulations/article_8499a49d-e281-5dd7-aae7-aecccfa0394e.html; Robert Walton, *Idaho Regulators Reduce PURPA Contracts from 20 to 2 Years*, UTILITY DIVE (Aug. 25, 2015), https://www.utilitydive.com/news/idaho-regulators-reduce-purpa-contracts-from-20-to-2-years/404518/.

1. Michigan

On November 21, 2017 the Michigan Public Service Commission ("MI-PSC") promulgated avoided cost methodologies that account for the fair valuation of some, but not all, of the benefits of QF DG projects.[139] In its order, the MI-PSC set the design capacity of standardized QFs at two MW and set contract lengths for five, ten, fifteen, or twenty years, at the QF's option.[140] Additionally, the order dictated that the appropriate method for developing avoided cost rates is a "hybrid-proxy method."[141] This method splits avoided capacity and energy costs between two proxies, with the former being compared to a natural gas combustion turbine ("NGCT") and the latter a natural gas combined cycle unit ("NGCC").[142]

The hybrid-proxy method accounts for the true avoided costs of an electric utility by assuming that if the utility only needs capacity then it would build a NGCT "peaker" plant, whereas if it needed additional energy it would build a NGCC plant.[143] NGCT peaker plants cost the utility more than NGCC plants, and because QF systems generally provide incremental capacity increases, which over time result in energy increases, a hybrid-proxy method results in avoided cost rates that better encompass a utility's avoided costs than simply using an NGCC as the proxy for both energy and capacity.

Further, the MI-PSC required that avoided line losses and DG's value during on-peak times must be incorporated in setting avoided cost rates.[144] Overall, the total on-peak energy rate provided by the MI-PSC ranged from $48.31 to $56.46 per MW hour over a 20-year contract, pending on the option chosen by the QF.[145] While the MI-PSC did not go as far as to require inclusion of all of DG's benefits in avoided cost calculations, the MI-PSC made a step in the right direction and is continuing to develop methods of quantifying all of DG's benefits.[146]

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139. MICH. PUB. SERV. COMM'N, In re Consumers Energy Company, Case No. U-18090, 32 (Nov. 21, 2017), http://www.michigan.gov/documents/mpsc/U-18090_11_21_2017_606668_7.pdf.

140. *Id.*

141. *Id.* at 3.

142. *Id.*

143. *Id.* at 31.

144. *Id.* at 27–28, 33.

145. *Id.* at Attachment 1, 2–3.

146. *See* MICH. PUB. SERV. COMM'N, *Report on the MPSC Staff Study to Develop a Cost of Service-Based Distribution Generation Program Tariff* (Feb. 21, 2018), http://www.michigan.gov/documents/mpsc/MPSC_Staff_DG_Report_with_Appendices_614779_7.pdf.

Subsequent to the November 2017 order, the MI-PSC developed methodologies in a report to incorporate DG's benefits in avoided cost rate calculations.[147] The MI-PSC report found that PURPA allows for PSCs to consider more than just capacity, energy, and line loss values, including considerations of hedge value against volatile fossil fuel prices, reduction of air emissions, and other environmental compliance costs.[148] The MI-PSC report recommended that a fair valuation method for DG projects consists of two parts: "(1) an avoided capital and energy cost; and (2) all other avoided cost or benefit elements such as avoided distribution line losses, transmission and distribution costs, avoided air emission and environmental cost, the solar-fuel price hedge, and reactive supply and voltage control."[149] The report concluded that solar DG projects provide the following benefits: A general "value of solar" levelized capacity value of 4.7 cents per kWh and a 20-year energy value of 5.1 cents per kWh; a 2.37 percent transmission loss factor; and a distribution line loss factor ranging from 4.63 percent to 9.74 percent.[150]

Overall, with the report's recommendations applying to cases starting on June 1, 2018, and the MI-PSC's stated intentions to continue working to incorporate environmental benefits into avoided cost calculations, the MI-PSC continues to progress towards developing avoided cost rates that appropriately encompass DG's many benefits. With these developments, Michigan is poised for significant growth in DG projects.[151] Overall, the MI-PSC appears to be on the right track of incorporating all of DG's benefits and other PSCs around the nation should follow and expand on MI-PSC's lead in the effort to quantify the benefits of DG systems. Doing so leads to better compliance with PURPA's mandate that QF's be entitled to the utility's full avoided cost.

IV. BUILDING RESILIENCY VIA COMMUNITY POWER PROJECTS AND PURPA

While PSCs can and should use PURPA's avoided cost requirements to incentivize development of local DG projects, state legislatures also have a role in increasing local clean energy development

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147. *Id.*
148. *Id.* at Appendix E, 3.
149. *Id.* at 15.
150. *Id.* at Appendix E – 3.
151. Andy Balaskovitz, *Advocates Say Solar Poised For Growth Under Latest Regulatory Changes in Michigan*, MIDWEST ENERGY NEWS (Nov. 28, 2017), http://midwestenergynews.com/2017/11/28/advocates-say-solar-poised-for-growth-under-latest-regulatory-changes-in-michigan/.

by promulgating legislation that enables community power DG projects. Community power is the concept that community members own, develop, or share in the production and/or use of clean energy primarily through community-scale DG solar and wind projects.[152] Community power projects work by expanding access of DG power to community members who cannot install a solar or wind systems because they are renters, have shaded roofs or limited yard space, or are inhibited financially.[153] Community power in Europe has been established for decades. Seventy to eighty percent of wind energy projects in Denmark are owned under community ownership, and around 50 percent of clean energy projects in Germany under community ownership.[154]

The community power trend is also taking hold in the United States. As of 2018, sixteen states had laws enabling community power in place, and activity around community power projects is buzzing in nearly every state.[155] In addition to initiatives at the state level, action at the federal level was recently initiated via the CLEAN Future Act, which would explicitly amend PURPA to include language supporting the establishment of community solar programs.[156] Community power projects not only come with the many benefits of DG projects discussed above, including decreasing emissions, reducing consumer exposure to volatile prices of fuel, and increasing grid reliability, but they also produce other benefits including creation of local employment opportunities and a revenue base for community needs.[157] Overall, community power provides significant benefits to the public, and by combining the benefits of PURPA

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152. John Farrell, *Beyond Sharing: How Communities Can Take Ownership of Renewable Power*, INSTITUTE FOR LOCAL SELF-RELIANCE, 6 (April 2016) https://ilsr.org/wp-content/uploads/2016/04/Final-Beyond-Sharing-How-Communities-Can-Take-Ownership-of-Renewable-Power.pdf; J. Roberts, et. al, *Community Power: Model legal frameworks for citizen-owned renewable energy*, CLIENTEARTH, 4, (June 2014) https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/smodel_legal_frameworks_2014.pdf.

153. Jason Coughlin, et. al, *A Guide to Community Shared Solar: Utility, Private, and Nonprofit Project Development*, NREL, 3 (May 2012), https://www.nrel.gov/docs/fy12osti/54570.pdf.

154. J. Roberts, *supra* note 152, at 6–7.

155. Interstate Renewable Energy Council, *State Shared Renewable Energy Program Catalog*, IREC, https://irecusa.org/regulatory-reform/shared-renewables/state-shared-renewable-energy-program-catalog/ (last visited Nov. 17, 2020); Institute for Local Self-Reliance, *Community Power Map*, ILSR, https://ilsr.org/community-power-map/ (last visited Nov. 17, 2020).

156. *See* CLEAN Future Act, H.R. ____, 117th Cong. § 225 (2021).

157. John Farrell, *Advantage Local: Why Local Energy Ownership Matters*, INSTITUTE FOR LOCAL SELF-RELIANCE (Sept. 2014), https://ilsr.org/wp-content/uploads/2018/03/Advantage_Local-FINAL.pdf.

with other community power incentives in community power legislation, states can act to encourage development and help communities realize localized energy independence.

A. Community Power in the United States

Several states have unlocked the potential of community power projects. As of 2020, through enabling legislation and other incentives, total installed capacity of community solar projects was around 2,759 MWs in the United States spread around 40 different states. For comparison, the average United States home uses around 10.7 MWs per year.[158] Over the next five years, United States community solar is expected to increase by some 3.4 gigawatts, enough to power around 650,000 homes.[159] One factor that could further increase community power development is to allow community power developers to obtain PURPA's avoided cost incentives for any remaining energy that is unsubscribed to by community members. This could provide an important mechanism to increase independent development of community power projects by ensuring that developers of community power projects will receive a return on investment regardless of whether all of the power is subscribed to by community members. By combining PURPA and community power incentives, further growth in community solar and other clean energy projects could be realized.

Another important overlap between community power projects and PURPA is community electric cooperatives' obligation to purchase electricity from QFs that was recently clarified by FERC. Prior to 2015, electric cooperatives' purchase of QF energy was limited to the percent dictated in their electricity contract with the utility that they purchase electricity from, however, in 2015 FERC concluded that such contractual obligations violated PURPA's mandatory requirement for utilities to purchase energy and capacity from QFs.[160] The 2015 FERC order effectively held that community electric cooperatives are required to purchase energy and capacity from QFs where those projects are built, regardless of existing contractual obligations with a utility that places limits on the amount of power a community cooperative can generate or

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158. SEIA, *Community Solar*, SOLAR ENERGY INDUSTRIES ASSOCIATION (2021), https://www.seia.org/initiatives/community-solar; *see also* Smart Electric Power Alliance, *Community Solar Program Design Models*, 6, https://sepapower.org/resource/community-solar-program-designs-2018-version/ (last visited Apr. 28, 2021).

159. *Id.*

160. Delta-Montrose Electric Assn., 151 FERC ¶ 61,238, 62,584–85 (F.E.R.C. June 18, 2015).

purchase from independent producers.[161] In other words, PURPA's QF mandatory purchase requirements supersede other contractual obligations that community cooperatives and utilities have, and a utility cannot penalize an electric cooperative for fulfilling their mandate under PURPA when a QF is developed within their electric cooperative area.[162] In essence, FERC's order provides electric cooperatives with additional authority to purchase power from QFs, which unleashes potential for the development of community DG QF projects where electric cooperatives exist.

B. Case Studies on Community Power Legislation

The following case studies provide examples of two states that have enacted state laws enabling community power projects. While Minnesota, Massachusetts, and New York lead the way in total installed MW capacity of community solar programs,[163] this article focuses on two western states' community power programs: Oregon and Colorado. Oregon's community power legislation provides an example for linking PURPA's avoided cost and community power incentives together. While Colorado's community power legislation does not provide a mechanism linking PURPA's incentives, it does include important provisions that should be expanded by Oregon and other states. In addition to Oregon and Colorado, Minnesota also provides a good example of community solar legislation, but is not the focus of this paper.[164]

While the following examples apply to two and three MW projects, to further incentivize community power projects, the generating capacity for community power projects should be expanded to a minimum of ten MWs, as this size has been found to achieve the lowest installed cost for consumers based on economies of scale evaluations.[165] Additionally, community power legislation should consider expanding community power programs to other clean sources of energy rather than limiting the program to solely solar. Overall, while there is always room for

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161. *Id.*

162. *Id.*

163. Institute for Local Self-Reliance, *National Community Solar Programs Tracker* (Mar. 2, 2021), https://ilsr.org/national-community-solar-programs-tracker/.

164. MINN. STAT. § 216B.1641 (2013).

165. John Farrell, *Is Bigger Best in Renewable Energy?*, INSTITUTE FOR LOCAL SELF-RELIANCE, 19 (Sept. 2016), https://ilsr.org/wp-content/uploads/2016/12/Is-Bigger-Best-in-Renewable-Energy-Report-Final.pdf.

improvement, these two states provide good insight into how community power legislation can be structured.

1. Oregon

In March 2016, the Oregon Legislature passed Senate Bill 1547 (hereafter, "Community Solar Bill"), which enabled development of community solar projects.[166] The Community Solar Bill delegated rulemaking authority to the Oregon Public Utility Commission (OR-PUC) to establish rules for the "procurement of electricity from community solar projects."[167] The Community Solar Bill directs the OR-PUC to establish project capacity requirements, certify projects, prescribe application processes, and require electric utilities to enter into 20-year power purchase agreements with qualifying projects.[168] Additionally, the OR-PUC is required to adopt rules that protect the public interest, incentivize ownership or subscription of community power projects, minimize cost-shifting from program ratepayers to ratepayers not involved, and protect participants from undue hardship when an electric utility is the owner of the community power project.[169]

Further, the Community Solar Bill sets baseline parameters for project participation, including that the project must have a minimum capacity of 25 kWs and must be located in Oregon.[170] Similar to PURPA's avoided costs, the Bill benefits community participants by requiring utilities to provide bill credits according to the electricity generated by the participant at the resource value of solar at the time the PPA is entered into or through a rate adopted by the OR-PUC, if it has good cause to adopt a different rate.[171] These bill credits are similar to avoided costs, however, they take a resource specific approach in their credits as they provide credits based on the value of solar, not a different fuel source as a proxy, as is often done in avoided cost calculations.

As a result of the passage of the Community Solar Bill, in June of 2017, the OR-PUC promulgated a rulemaking outlining the framework of the program, which is briefly summarized below with a focus on how the OR-PUC's order connects PURPA's avoided cost incentives with the Bill. To obtain certification as a community solar project, the project must have

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166. 2016 OR. LAWS 1547 §§ 22 et. seq. (codified at OR. REV. STAT. § 757.386 (2016)).

167. *Id.* at § 22(2)(a).

168. *Id.* at § 22(2)(a)(A)–(D).

169. *Id.*

170. *Id.* at § 22(3)(a)–(c).

171. *Id.* at § 22(6)(a)–(b).

subscription to at least 50 percent of the project's stated capacity.[172] The OR-PUC adopted the 50 percent subscription and also removed a provision that limited the sale of unsold or unsubscribed generation to 10 percent. Importantly, the OR-PUC ordered that any unsold or unsubscribed to generation must be purchased by the utility at the PURPA avoided cost rate.[173] The OR-PUC also required a utility to enter into a 20-year PPA to purchase any unsold or unsubscribed generation.[174] This action by the OR-PUC has significant potential to increase development of community solar projects by independent developers because it provides independent developers with a financial incentive to develop projects, allowing that the project's generation is not entirely subscribed to.

In addition to providing PURPA's avoided cost incentives, the OR-PUC took several other actions in its order. The OR-PUC set the initial program capacity at 2.5 percent of each of Oregon's three investor-owned utilities system capacity, which adds up to a total of 160 MW, however, they reserved the right to adjust all aspects of the program.[175] On the project level, the OR-PUC limited development to three MWs or less per project and required that participants of the project be located in the utility's service territory.[176] Participant ownership or subscription may not exceed the customer's average annual electricity consumption in the service territory, nor may their interest or subscription exceed forty percent of the project's capacity.[177] Further, participants may not own or subscribe to more than two MWs across multiple projects or, when in combination with affiliates, a total of four MWs.[178]

Furthermore, the electric utilities that have a community project in its service territory are required to make payments in the form of net metering to the project participants.[179] As for siting requirements, the only requirement is that the project be located within the Oregon territory of a utility and be less than three MWs.[180] Additionally, the OR-PUC's order included a low-income requirement, providing that at least ten percent of the project's generating capacity be allocated to low-income residents and

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172. OR. PUB. UTIL. COMM'N, In the Matter of Rules Regarding Comm. Solar Projects, Order No. 17232, Appendix A 4–5 (June 29, 2017), http://apps.puc.state.or.us/orders/2017ords/17-232.pdf.

173. *Id.* at 7.

174. *Id.* at Appendix A 10.

175. *Id.* at Appendix A 5.

176. *Id.* at Appendix A 6.

177. *Id.* at Appendix A 7.

178. *Id.*

179. *Id.* at Appendix A 8–9.

180. *Id.* at Appendix A 6.

provided the authority of the OR-PUC to develop a funding mechanism for low-income residents to become involved in the program.[181]

Overall, Oregon's Community Solar Bill does a good job at blending PURPA's avoided cost incentives and community solar program incentives. The mechanism that allows for up to 50 percent of any unsold or unsubscribed to generation to be sold by the developer at the PURPA avoided cost rate could act to increase interest and investment in local community solar projects by independent developers, as it should provide a further economic incentive for independent developers to get involved in community solar programs by minimizing risk and increasing return on investment prospects. Further, requiring a 20-year contract allows better access to finances and investment for developers of community solar projects. In addition to the above OR-PSC's order that provides a general framework for how the Community Solar Bill will be ran, further details on the program have been developed by the OR-PUC in the Community Solar Program Implementation Manual.[182] As of February 2021, the OR-PUC had approved three community solar projects to begin operation.[183]

While Oregon's PURPA provision in its Community Solar Bill is a provision that should be included in community power legislation, the ultimate impact of such a provision, if incorporated in other states, is highly dependent on how avoided costs are calculated and whether they account for DG's many benefits.

2. Colorado

In 2010, Colorado enacted its Community Solar Gardens Act ("CSGA") and recently expanded the scope of the CSGA to include other forms of clean energy.[184] The CSGA has been very successful in incentivizing growth of community solar projects with 70 projects in operation, totaling more than 50 MWs.[185] The CSGA's purpose is to encourage investment and authorize the creation of community solar

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181. *Id.* at 11.

182. Oregon Community Solar Program, *Program Implementation Manual* (2019), https://orcsp.mendixcloud.com/p/ProgramImplementationManual/.

183. Oregon Community Solar Program, *OPUC Certifies First Oregon Community Solar Projects* (Feb. 12, 2021), https://orcsp.mendixcloud.com/p/home.

184. 2010 COLO. SESS. LAWS Ch. 344 (H.B. 10-1342), http://www.leg.state.co.us/clics/clics2010a/csl.nsf/fsbillcont/490C49EE6BEA3295872576A80026BC4B?Open&file=1342_01.pdf (codified at COLO. REV. STAT. § 40-2-127 (2015)); 2015 COLO. SESS. LAWS Ch. 142 (S.B. 15-046).

185. Colorado Energy Office, *Community Solar*, COLORADO.GOV, https://www.colorado.gov/pacific/energyoffice/community-solar (last visited Nov. 17, 2020).

projects.[186] The CSGA recognizes that local communities benefit from the development of local clean energy projects and that community participation in solar generation is in the public interest.[187]

The CSGA has some similarities and many differences when compared to Oregon's Community Solar Bill. The CSGA outlines that certified projects can only be two MWs or less (unlike Oregon's three MWs) and are owned by ten or more customers at a shared location.[188] Additionally, unlike Oregon's limitations on size of ownership/subscription to the participants' average annual electricity consumption or 40 percent of the total project generation, the CSGA allows participants to have ownership/subscription up to 120 percent of the participants' average annual electric consumption.[189] Similar to the Oregon Bill, the CSGA also provides that organizations and companies may participate in community solar gardens.[190] Further, like the Oregon Bill, the CSGA also directs the CO-PUC to encourage participation in the program by low income residents.[191]

As for providing incentives for independent developers to build community clean energy projects, the CSGA and the CO-PUC took a different strategy than Oregon. For unsubscribed generation at community projects, the CSGA requires the utility to purchase the unsubscribed generation and renewable energy credits at the utility's incremental hourly electricity cost during the preceding year.[192] In August 2011, the CO-PUC specifically ordered that the developer of the community solar garden may contract with the utility for the sale of any unsubscribed generation.[193] In other words, the rate appears to be effectively somewhat of an as-available rate based on the data on the hourly cost of energy during the preceding

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186. 2010 COLO. SESS. LAWS Ch. 344 (H.B. 10-1342), http://www.leg.state.co.us/clics/clics2010a/csl.nsf/fsbillcont/490C49EE6BEA3295872576A80026BC4B?Open&file=1342_01.pdf (codified at COLO. REV. STAT. § 40-2-127 (2015)).

187. *Id.* at Sec. 1.

188. *Id.* at Bill Summary.

189. *Id.* at Sec. 1.

190. *Id.*

191. COLO. REV. STAT. § 40-2-127(5)(a)(III)(A)–(D).

192. *Id.* at § 40-2-127(5)(d)–(e).

193. COLO. PUB. UTIL. COMM'N, In the Matter of Proposed Amendments to the Rules of the Colorado Public Utilities Commission Pursuant to (1) the Development Of Solar Gardens as Required By Hb10-1342, (2) Community-Based Projects that Qualify for Special Treatment Under HB10-1418, and (3) Use of Eligible Energy Resources to Offset Electrical Energy Consumption of the Division of Parks and Outdoor Recreation as per HB10-1349, Docket No. 10R-674E, Decision No. R11-0784, ¶¶ 189–96 (July 25, 2011), https://www.sos.state.co.us/CCR/Upload/AGORequest/BasisandPurposeAttachment2011-00029.PDF.

year, unlike the OR-PUC that simply required unsubscribed generation be sold at PURPA's standard avoided cost rate. For a community solar project that is two MWs or less, the as available rate based on one-year of data, rather than the avoided cost rate under PURPA, may present some barriers to the developer in obtaining a sufficient rate for the unsubscribed generation that allows for adequate assurances of return on investment.

In determining customer payments, the CSGA takes a different approach than the Oregon's Community Solar Program. The CSGA provides net-metering payments to customers by multiplying the subscriber's share of the electricity production by the retail rate per kW hour of the electric utility, minus a reasonable charge as determined by the CO-PUC to cover distribution, integration, and administration costs of the solar garden by the utility.[194] Additionally, the CSGA requires certain responsibilities for the owner of the solar garden, such as sharing real-time data with the electric utility and information on the percentage of shares that should be used for determining net metering credits.[195]

Overall, the CSGA program has been successful and provides another good example for developing community solar legislation. However, the CSGA and the CO-PUC could work to increase the connection to PURPA's avoided costs, which could provide further incentives for community solar projects in Colorado. Potentially, by requiring standardized avoided cost rates be applied to the sale of unsubscribed generation instead of being based on one-year of as-available hourly data of the applicable utility, the CSGA, depending on how CO-PUC calculates avoided cost rates, could further increase development of community solar projects in Colorado.

V. CONCLUSION

By accounting for the full benefits of local distributed generation clean energy projects in PURPA's avoided cost calculations and enacting community power legislation, states throughout the country can realize localized energy independence and increase grid resiliency and reliability. PSCs have a critical role in incentivizing development of DG projects by ensuring that they are implementing avoided cost methodologies that account for *all* of DGs benefits and allow for those projects to be compensated at the utility's *full* avoided cost rate as PURPA requires. PSCs should conduct studies, similar to that done by the Michigan PSC, and enact orders that require avoided cost calculations incorporate all of

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194. COLO. REV. STAT. § 40-2-127(5)(b)(II).
195. *Id.* at § 40-2-127(5)(d)–(e).

DG's benefits. State legislatures likewise have the opportunity to build upon efforts by PSCs through promulgating statutes that enable and incentivize development of community power projects. Specifically, state legislatures should enact legislation that incentivizes community power development by independent developers through making PURPA's avoided cost benefits available for community power projects where unsubscribed energy is present. Overall, together, PSCs and state legislatures, along with FERC, are the key to enabling further localized energy independence that would lead to a clean, reliable, and resilient energy grid.

While the conclusions and recommendations in this article remain important moving forward with broader integration and development of local DG clean energy projects, there are several unknowns that could positively or negatively impact the conclusions and recommendations of this paper. Areas of consideration moving forward related to PURPA and community power programs include Congress' consideration to amend PURPA,[196] whether FERC Order No. 872 survives the various legal challenges, as well as the potential rescinding of the rule as a result of changes to the make-up of the five-member panel of FERC upcoming in June 2021, and whether the CLEAN Future Act proposed in the United States Congress is passed. An additional variable that could serve to increase QF development throughout the United States is the increase in energy storage technologies and the coupling of QF energy with storage.[197] Moreover, an additional and significant hurdle to expanded QF development is continued negative actions by state PSCs including shortening contract lengths, relying on avoided cost methodologies that fail to account for a QF's full avoided costs, and including excessive deductions to avoided costs that all have the combined effect of killing the development prospects of QF projects.

Ultimately, time will tell whether regulatory bodies around the nation will take the necessary steps—and importantly, work cooperatively together—to further enable the development of clean, reliable, and resilient distributed generation projects so as to achieve local energy independence, or if those regulatory bodies will dig their heels in and force communities to remain stuck in the past with expensive centralized, fossil fuel-based energy along with its numerous economic, environmental, and

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196. Am. Pub. Power Ass'n, *House member introduces bill to reform PURPA*, PUBLIC POWER (Dec. 1, 2017), https://www.publicpower.org/periodical/article/house-member-introduces-bill-reform-purpa.

197. NC Clean Energy Technology Center, *Three Trends in State PURPA Implementation* (May 27, 2020), https://nccleantech.ncsu.edu/2020/05/27/three-trends-in-state-purpa-implementation/.

public health consequences. The next few years should provide significant insight into the future of electricity in communities throughout the United States, and ideally—for the good of our environment, public health, grid reliability and resiliency—that future contains an emphasis on localized energy independence.