Unlocking the Energy Commons: Expanding Community Energy Generation


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Abstract

The battle over the future of net energy metering in the United States is alive and well. Utilities decry the benefits of compensating homeowners for rooftop solar generation, often relying on the argument that net energy metering programs harm low-income populations that lack opportunities to participate in the solar revolution. Thus, the argument goes, the status quo should remain to protect the most vulnerable. Solar advocates, on the other hand, push for a broader analysis of the true benefits of rooftop solar generation to overall grid stability and to reduce carbon emissions. They argue for expanding rooftop solar markets where such markets are available, and urge the modern utility structure to change to foster deeper resiliency.

This Chapter posits that energy justice lies at the heart of this debate, but it is missing from the discourse. Neither side of the debate advances a comprehensive solution that resolves the vulnerability question while also expanding opportunities for access. The Chapter argues that curtailing extensive net energy metering programs without creating authentic opportunities for participation in renewable energy generation by low-income communities deepens inequality and vulnerability. Although the existing community energy programs, as currently contemplated, hold some promise, positioning such initiatives within the current electric utility generation paradigm might actually decrease resiliency in low-income communities.

The energy justice frame illuminates several pathways to resolve these potentially contradictory outcomes. This Chapter suggests that community energy initiatives, while imperfect, offer an opportunity to locate renewable energy resources within a commons, thereby advancing energy justice and upending the current analytical frame that holds together the net energy metering debate. Community energy programs can address vulnerability by expanding market access to renewable energy generation for low-income communities, obviating the need to maintain the current generation monopoly held by modern utilities. Moreover, if crafted correctly, community energy programs could also address inequality by providing communities an opportunity to generate, own and distribute renewable energy. Finally, transformative community-based energy planning development offers an opportunity to increase resiliency, transform existing economic relationships, reconceptualize the nature of energy, and promote equality.

I. Introduction

In 2016, in at least fourteen states around the United States, legislators have provided viable pathways to community participation in “community solar” and “community energy” programs.¹

¹ The statutes of Maine, Vermont, New Hampshire, Massachusetts, Connecticut, New York, Delaware, Maryland, Minnesota, Colorado, Washington, Oregon, California, and Hawaii all feature some form of shared renewables which allow multiple utility customers to participate in the ownership of renewable energy. The state programs, in various stage design and regulatory stages,
Paradoxically, just as the market for energy generation expands to allow for broader community participation, the country is simultaneously witnessing the sweeping retreatment of net energy metering (NEM) programs, which allow ordinary consumers of electricity to receive economic benefits by generating their own electricity and providing electricity to other consumers connected to the electrical grid.\(^2\) To add further complexity to this emerging dynamic, utilities and regulators frequently cite the negative economic impacts of net energy metering programs on low-income communities to justify the curtailment, capping, or suspension of NEM programs. Such programs, according to utilities, harm low-income ratepayers because NEM removes customer-generators from the rate base and leaves the fixed cost of maintaining the grid to low-to-moderate income ratepayers.\(^3\) In response, states and utilities have offered a suite of community energy models to provide expanded opportunities for individuals to participate in renewable energy generation.\(^4\) Unfortunately, none of the proposed programs truly levels the energy playing field for low-income and vulnerable communities.

This Chapter evaluates the existing model of community energy development emerging around the United States. The aim is to provide lessons learned to reform the US market and inform the development of community solar programs in other countries. The analysis reveals that the predominant model relies on outdated understandings of the nature of energy that could actually undermine community resilience and energy independence. The Chapter suggests that, if equity really forms the heart of the debate concerning NEM, the law must provide more radical opportunities for community engagement in energy generation, distribution, and ownership. In essence, the theoretical underpinnings of energy development must fundamentally shift. Authentically equitable opportunities for community energy development only emerge, however, within the New Energy Commons.

The Chapter proceeds in three parts. First, it provides an overview of the current and emerging community energy development landscape, particularly in light of shifting rules surrounding NEM. This offers a glimpse into the U.S. Department of Energy’s (DOE’s) existing community energy model and its underlying theoretical assumptions, which states are currently deploying with varying degrees of success.

\(^2\) See generally \textit{Issues and Policies: Net Metering}, \textit{SOLAR ENERGY INDUS.’S ASS’N}, \url{http://www.seia.org/policy/distributed-solar/net-metering} (last visited July 24, 2016) (citing \textit{DATABASE OF STATE INCENTIVES FOR RENEWABLES AND EFFICIENCY}, \url{http://www.dsireusa.org/} (last visited July 24, 2016)) (describing net metering as “a billing mechanism that credits solar energy system owners for the electricity they add to the grid” and noting that forty-three states, the District of Columbia, and four territories have adopted a net metering policy).


\(^4\) \textit{See} \textit{BENJAMIN INSKEEP ET AL., supra} note 3, at 5 (noting that as of “August 2014, there were 57 active or proposed utility-offered community solar programs in 22 states,” and that such “utility programs range significantly in design and size”).
Then the chapter introduces the emerging energy justice theoretical framework and subsequently uncovers the ways that the narratives surrounding the energy transition fail to advance energy justice. Utilizing the energy justice lens, it then evaluates the DOE-based community energy models to reveal that these approaches to community energy development fail to fully advance transformative energy justice.

Finally, the chapter offers a new set of practical and theoretical tools for community energy development, rooted in energy justice, which should guide the migration away from the existing utility model and foster increased low to moderate income community energy participation in energy development. This provides a normative development framework that borrows from the existing community energy models, but goes further by situating the renewable energy transition within the theoretical framing of the New Energy Commons.

II. Community energy development

A. Net energy metering wars

The discussion begins with a brief overview of the current energy landscape. Since 2010, the country has witnessed a dramatic increase in distributed energy generation, primarily through rooftop solar generation. As states adopted more aggressive renewable portfolio standards that required increased renewable energy generation on the electricity grid, they began to offer economic incentives to early adopters of rooftop solar photovoltaic (PV) units. Given the expense of solar PV units, most early adopters were homeowners with the means to purchase rooftop solar panels. In addition to the federal 30% investment tax credit, such adopters received a state tax benefit and a

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5 Solar Market Insight Report 2016 Q2, SOLAR ENERGY INDUS.'S ASS'N, http://www.seia.org/research-resources/solar-market-insight-report-2016-q2 (last visited July 24, 2016) (noting that at the end of the first quarter of 2016 there were over 1 million operating solar photovoltaic installations, and that 90% of the installations were brought online in the last decade).

6 BENJAMIN INSKEEP ET AL., supra note 3, at 5.


8 The federal tax code provides a one-time 30% tax credit to businesses for the installation of solar and small-scale wind developments. This tax credit has facilitated the rise of third party ownership of solar installations installed in residential homes. See Energy Credit, 26 U.S.C. § 48(a)(2)(a) (West 2015). The federal residential renewable energy tax credit provides a 30% tax credit for renewable energy systems installed on a home owned by a taxpayer and that is used as the taxpayer’s primary residence. Residential Energy Efficient Property, 26 U.S.C. § 25D (West 2015).
credit on their monthly electricity bill.\(^9\) This bill credit forms the crux of net energy metering (NEM).\(^{10}\)

As the bill credit was originally conceived, NEM allows an ordinary ratepayer to generate electricity through a rooftop solar panel, feed it into the electricity grid, and receive a credit for the net electricity the ratepayer generates in excess of the ratepayer’s energy use. NEM programs provided necessary financial incentives to increase renewable energy generation; however, they challenged the economics of the utility industry.\(^{11}\) In most states, the regulatory compact between the state and investor-owned utilities allows utilities to receive a guaranteed rate of reasonable return on investments, and pass along to ratepayers the cost of maintaining the grid.\(^{12}\) With increased “behind-the-meter” generation by solar PV unit owners, however, fewer ratepayers comprise the base for collecting payments, which means that these ratepayers, according to utilities, bear a disproportionate burden of sustaining the utility business model.\(^{13}\)

NEM policies sparked a solar revolution. According to the North Carolina Clean Energy Technology Center, by the end of 2014 over 600,000 homes and businesses around the country had installed some form of onsite solar generation, and between 2012 and 2014 the residential market for rooftop solar had increased by 50 percent annually.\(^{14}\) In the aggregate, these systems produce around a third of the country’s solar electricity.\(^{15}\)

Unfortunately, the revolution did not treat all ratepayers equally. According to a 2008 analysis by the National Renewable Energy Laboratory (NREL), only 22–27 percent of residential rooftops provide a viable location to host an on-site solar PV system.\(^{16}\) Those left out of NEM programs—renters, condominium dwellers, moderate and low-income residents—comprised the ratepayer base and, until very recently, were unable to participate in the renewable energy revolution.\(^{17}\)

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9 See generally Programs, DATABASE OF STATE INCENTIVES FOR RENEWABLES AND EFFICIENCY, http://programs.dsireusa.org/system/program (last visited July 24, 2015) (providing a comprehensive overview of the various incentives and programs available in each state).

10 See, e.g., JASON COUGHLIN ET AL., NAT’L RENEWABLE ENERGY LAB., A GUIDE TO COMMUNITY SHARED SOLAR: UTILITY, PRIVATE, AND NONPROFIT PROJECT DEVELOPMENT 4 (2012), http://www.nrel.gov/docs/fy12osti/54570.pdf (describing the heart of net metering: “w]henever the customer’s system is producing more energy than the customer is consuming, the excess energy flows to the grid and the customer’s meter ‘runs backwards.’”).


13 PETER KIND, supra note 3, at 5.

14 BENJAMIN INSKEEP ET AL., supra note 3, at 5.

15 Id.


17 JASON COUGHLIN ET AL., supra note 10, at 3.
This imperfect system led to two dynamics. First, the proliferation of rooftop PV threatens and undermines the utility business model. As more and more customers generate their own electricity, the utility’s ability to recover costs and its return on investment decreases. Second, based on the potential for this so-called “utility death spiral” and the looming economic threat created by distributed energy resources, utilities began to advocate, vociferously, for retrenchment of NEM policies, increase of fixed charges on utility bills, and reduce compensation for NEM customers.

Throughout this rocky time, utilities deftly used the poor as scapegoats in the broader electricity transition landscape. Utilities argued that the poor and low-income ratepayers were left to subsidize more affluent rooftop solar adopters. These retrenchment tactics are ongoing, but seem to have met some success. Indeed, in 2015 alone, “regulators, lawmakers, or utilities in at least 46 states studied, proposed or enacted policy changes pertaining to net metering, valuation of distributed solar, fixed or solar charges, third-party or utility-led solar ownership, or community solar.” These efforts include the initiation of studies to understand the “true value” of rooftop solar, tinkering with fixed rate charges, and enacting aggregate caps on NEM programs.

Community energy programs emerged within this complex renewable energy policy soup as an answer to the equity issues embedded within the renewable energy transition. Community energy programs offered states a way to expand opportunities for participation in renewable energy projects, and were initially seen as a way to increase generation opportunities for vulnerable populations, including low and moderate-income ratepayers. Community generation also offered a way for utilities to continue to control the narrative for electricity generation.

B. Community energy models

In the United States, the DOE, through its SunShot Initiative and the National Renewable Energy Laboratory (NREL), has taken the lead in developing a community energy framework. The DOE launched the SunShot Initiative in 2011 as a part of a collaborative effort within the DOE Solar Energy Technologies Office to create grid parity between solar and other grid resources, and ultimately, to drive the cost of solar down. The myriad aggressive technology and regulatory efforts of SunShot reflect this goal.

At the outset, the SunShot Initiative concerned itself with the technological aspects of solar energy and integrating solar energy within a traditional, utility-operated electrical grid. For example, the DOE marked the initiative’s formation in 2011 with three grants totaling $112.5 million to

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18 Peter Kind, supra note 3, at 13 (noting that although utilities are granted a return on investment, with fewer customers in the rate base it will become more difficult, from a political standpoint, for utility shareholders to receive a return).


20 BENJAMIN INSKEEP ET AL., supra note 3, at 11.


support solar photovoltaic developments within SunShot Advanced Manufacturing Partnerships. Moreover, the stated goal of the program is to reduce the costs of solar PV systems by 75% within ten years of the program’s formation to make solar more cost-competitive when viewed alongside other potential grid resources. Implicit in these goals and initial projects is a commitment to large-scale development largely reliant on the incumbent utility system. A review of the key community energy program advanced by the initiative through its partner, the NREL, bears this out.

According to NREL, community “shared solar projects allow customers that do not have sufficient solar resource, that rent their homes, or that are otherwise unable or unwilling to install solar on their residences, to buy or lease a part of a shared solar system.” In addition, the “participant’s share of the electricity generated is credited to their electricity bill, as if the solar system were located at their home.” Although NREL lauds this business model as helping to “expand the distributed solar market,” this model is essentially designed to promote centralized, utility-scale generation.

Three types of ownership models comprise the community shared solar approach to community energy development: utility or third-party owned projects; special purpose entity-owned projects; and non-profit owned projects. In all three models, a solar generation facility is constructed; a promoter, or sponsor, solicits subscriptions for the project; and once the project is fully subscribed, the promoter receives any relevant tax or renewable energy credits and the electricity generated is credited to subscribers. A cottage industry of sorts has emerged to capitalize on new models of customer-owned generation; however, NREL emphasizes that utilities should take the lead in developing such projects.

In many ways, the community shared solar model is more of the same approach to development, but by a different name. The predominant models advanced by NREL remove the locus of control for generation away from the consumer, focus on utility-scale generation and economies of scale, and do little to foster more distributed models of generation.

The following Part introduces energy justice into the discourse concerning the global renewable energy transition. The Part then utilizes the energy justice frame to evaluate the proposed community energy model, exposing several shortcomings.

III. The energy justice frame

Stakeholders, scholars, and industry observers frequently frame the global renewable energy transition as a technical and technological transition that merely invites the opportunity to develop a

26 Id.
27 Id. at 5.
28 JASON COUGHLIN ET AL., supra note 10, at 7.
29 Id.
30 Id. at 53 (providing a short list of toolkits).
31 Id. at 8–12.
“smarter,” faster, grid. This technology focus obscures the true opportunities for structural transformation that lie at the heart of the transition. The integration of more renewable energy resources onto the electrical grid; the proliferation of smarter technologies that allow for enhanced distributed energy resources; and the opportunities for storage all implicate energy justice. Energy justice is an umbrella term that captures three core concepts embedded in related discourses: climate justice, environmental justice, and energy democracy. Subsection B addresses the energy transition dialectic, and illustrates how the current renewable energy transition underway provides an opportunity for a more transformative transition of energy systems and models than currently contemplated by energy policymakers and stakeholders. The last subsection returns to the default community energy development model promoted by states and the U.S. DOE and explains how it falls short of the larger opportunity to structurally transform power.

A. What is energy justice?

Although energy justice is an emerging field of study, two distinct strands emerge from the existing literature. As a model for understanding global energy issues concerning the most vulnerable populations, Professor Lakshman Guruswamy has argued that energy justice primarily addresses access to energy for “the Other Third,” the 2.8 billion people around the world who lack access to energy. Professors Michael Dworkin and Benjamin Sovacool have staked out considerably broader territory, arguing that energy justice includes procedural and substantive justice. In their book, Global Energy Justice, Sovacool and Dworkin begin with the philosophical underpinnings of justice to posit that justice requires opportunities for participation in energy decisions, as well as beneficial outcomes.

While these scholars provide useful tools to grapple with the moral and philosophical bases on which to argue for energy justice, they do not expressly acknowledge that energy justice, as a set of principles, builds upon, encompasses and expands the existing justice discourses surrounding climate change and the environment. Thus, as we move into the renewable energy transition, we must acknowledge that the energy transition is not ahistorical. It is taking place within a broader socio-economic and historical context. Energy justice thus must encapsulate existing principles and areas of study, so that these justice lessons are not forgotten or relegated to separate academic silos. For these reasons, energy justice must allow space for the theoretical and practical tools of environmental justice and climate justice within its analytical umbrella. In addition, energy justice introduces the concept of energy democracy into the energy development lexicon.

33 Lakshman Guruswamy, Global Energy Justice: Law and Policy 87 (2016) (noting that around the world, “around 2.8 billion people . . . have little or no access to beneficial energy to meet their needs for cooking, heating, water, sanitation, illumination, transportation, or basic mechanical power”).
34 Benjamin K. Sovacool & Michael H. Dworkin, Global Energy Justice: Problems, Principles, and Practices 13 (2014) (defining energy justice as “a global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making”)
35 Id. at 5, 191-222, 223-55 (discussing energy and due process concerns, as well as energy poverty, access and welfare).
36 Id. at 13 (discussing imperative for “impartial energy decision-making”).
As discussed in Purdy’s chapter, environmental justice provides for the remediation of harm within communities that have historically borne the brunt of polluting activities and have lacked access to environmental amenities, such as parks and wilderness. Environmental justice communities experience vulnerabilities at multiple axes. Such communities exhibit larger amounts of environmental-related illnesses, such as asthma and lead poisoning. They also tend to be members of historically disenfranchised groups, including the poor, indigenous communities, and communities of color. Scholars advancing environmental justice have traditionally focused on procedural remedies that remediate vulnerability and, more recently, the identification of “hot spots” prior to engaging in development activities.

Climate justice expressly builds on the important work of environmental justice scholars, and uses vulnerability as a key starting point for the analysis. Climate justice suggests that climate change mitigation and adaptation policies should begin in those communities that will face the most devastating impacts of climate change. Developing countries, as well as low-income communities, fit within this framework. Scholars have also argued for reparations to communities who will not only face the harshest impacts of climate change, but who did very little to contribute to the problem of climate change.

Energy democracy, like energy justice, is a newly developing field of scholarship. As Sovacool and Dworkin suggest, energy justice requires that communities have a say in shaping their energy systems. Energy democracy provides avenues for adequate processes to affect meaningful change regarding energy development, as well as opportunities to substantively shape the outcomes associated with energy planning. In addition to these procedural components, energy democracy incorporates the important substantive outcome of economic justice. Economic justice provides that communities may derive economic benefits from energy development projects. Energy democracy, though still gaining legibility within the broader energy discourse, provides a crucial component of the energy justice intellectual and theoretical framework.

As a unifying framework that ties together all three components—environmental justice, climate justice, and energy democracy—energy justice provides a powerful analytical tool with which to evaluate the justness renewable energy transition. Indeed, with energy justice as a guiding

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41 Id.
44 Owen Zinaman et al., The Power Systems of the Future, Electricity J. 113, 123–24 (discussing “bundled community energy planning” to allow communities to develop new grid resources in a context-specific way and to scale according to community needs).
framework, energy development must enhance community resiliency rather than exacerbate existing vulnerability. Energy development should also remediate vulnerability to climate change and, where possible, contribute to a community’s ability to adapt to climate change. Finally, communities should be engaged in determining their energy future and have access to participatory economic rights, which requires that they engage in energy democracy. The next section animates this tool by focusing on the aspect of the renewable energy transition that has received the most regulatory and popular attention—distributed energy generation.

B. Failed opportunities for structural transformation

Along with efficiency, distributed energy generation provides low-hanging fruit for the renewable energy transition. Distributed energy generation, in the form of rooftop PV, once existed outside of reach to most Americans. As discussed, between 2010 and 2014, rooftop solar technology vastly improved to allow more individuals to participate in the generation of their own electricity. States, for their part, assisted with the distributed generation boom by creating policy and tax incentives for participation. For example, many states provided investment tax credits on top of the existing federal tax credit, which effectively reduced the real cost of solar panels for residential homeowners. In addition, legislatures and public utilities commissions around the U.S. enacted policies to incentivize residents to generate electricity on their rooftops and sell such energy back into the grid. In exchange, solar adopters earned NEM credits, effectively turning back the electricity meter for owners of rooftop PV. The solar industry also played a role, eventually offering a suite of attractive financing packages for homeowners unwilling or unable to front the initial capital for rooftop solar panels. Indeed, according to NREL, approximately 72% of rooftop solar systems are managed via third-party agreements.

All of the foregoing led to the widespread adoption of distributed energy generation. Beginning in 2015, however, the economic boon for solar companies and early adopters of solar energy began to slow down. Hawai‘i, then Nevada, effectively ended their NEM policies. The curtailment of NEM was in large part due to strong (and effective) advocacy on the part of utility companies who claimed that NEM harmed low-income ratepayers. Utilities argued that the fixed

46See Summary Tables, DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://programs.dsireusa.org/system/program/tables (last visited July 24, 2016) (provides a summary of the various incentives and policies enacted throughout the United States with respect to renewable energy and energy efficiency).
costs of maintaining the grid, which included an embedded guarantee for a reasonable return on utility investments in infrastructure, would be borne by those least able to afford rooftop solar panels, namely, low to moderate-income ratepayers. Solar companies responded with their own counterattacks. They argued that policymakers should take a broader view of the value of rooftop solar programs, and that any costs borne by non-participating ratepayers should effectively come out in the wash, since rooftop solar allowed states to reach aggressive renewable energy goals and cut down on greenhouse gas emissions.\footnote{See, e.g., Nevada Public Utilities Commission Order; See also Snuller Price et al., Energy and Environmental Economics, Inc., Nevada Net Energy Metering Impacts Evaluation, (2014), http://puc.nv.gov/uploadedFiles/pucnvgov/Content/About/Media_Outreach/Announcements/Announcements/E3%20PUCN%20NEM%20Report%202014.pdf?pdf=Net-Metering-Study.}

Lost within this debate were actual low to moderate-income ratepayers, for whom the integration of distributed renewable energy generation within their communities could provide an opportunity for unprecedented structural transformation of existing environmental and social relationships, leading to a lasting environmental, climate, and economic justice. With the exception of voices like the National Association for the Advancement of Colored People (NAACP),\footnote{Nat’l Ass’n for the Advancement of Colored People, Promoting Equitable Access to Clean Energy Alternatives (2015), http://action.naacp.org/page//RESOLUTION--Promoting%20Equitable%20Access%20to%20Clean%20Energy%20Alternatives%20FINAL%20February%202015.pdf (discussing the nexus between the failure to transition to energy efficiency and clean energy and the impact on communities of color and low-income communities, and resolving to support clean energy development).} low-income communities and communities of color largely accepted the narrative offered by both the utility and solar companies.\footnote{See, e.g., Michael T. Burr, Reverse Robin Hood Declaring War on Non-Utility PV, FORTNIGHTLY (July 2013), http://mag.fortnightly.com/display_article.php?id=1440995&width= (discussing the “robbing the poor to pay for rich people’s fancy solar systems” narrative adopted in some communities of color).}

What if the adoption of distributed energy resources is not, as the polarization of this debate would suggest, zero sum? Rather, the operative question is: How might low-income communities also participate in renewable energy generation, ownership, and distribution? Neither side appears fully willing to embrace this query, as incumbent utilities struggle mightily to hang on to market share and increasingly regressive solar companies fight to maintain their bread and butter business: providing solar panels to relatively affluent and middle-class homeowners.

As the battle lines have deepened, these constituent groups have become ever more wedded to their business models and program designs. It is no surprise that the community energy model developed to serve communities bears no real resemblance to energy justice.

C. Community energy limitations

Community shared solar, the community energy model advanced by NREL and the majority of the states that have adopted community energy programs, leaves “community” out of the equation. By design, the community solar model essentially allows individuals to buy into a larger
project or enterprise located away from the end user. While this flexible structure has some merit, it can be implemented in a way that undermines the resiliency and democratic aspects of community-controlled development. Community shared solar programs that involve utility-scale generation (over one MW), located away from project subscribers, replicate an approach to scale and siting that maintains the paradigm of utility-oriented energy development. This approach does very little to advance to core tenets of energy justice.

Some exceptions to this can be found, for instance, in the state of Washington, whose Community Renewables Enabling Act requires projects to be sited on community-owned property, such as schools, parks or government buildings and caps community owned solar projects at seventy-five kilowatts. Further, as described in Jones and James’s chapter, well-designed community solar projects may avoid many of the concerns that accompany traditional, utility-scale energy development. For example, the Boardman Hill Solar Farm involves key features that sketch a new model for community solar: appropriate land use and siting, community ownership of solar array and solar energy, affordable cost with growing member equity in the project, and member managed organizational structure. These features, however, are not commonplace.

Despite an auspicious origin story, forged in the crucible of the NEM wars, community energy programs tend to fail low-income communities because they marginalize or render “additive” low-income participants. Community solar advocates often point to efforts in Colorado, New York, and California to illustrate how community energy development models can include low-income residents. These jurisdictions, however, also fall short of achieving energy justice.

In Colorado, for example, developers are required to ensure that 5 percent of subscribers to Solar Garden projects are low-income ratepayers. However, the state’s Public Utilities Commission set this notable threshold through a rulemaking, given the broad and discretionary language provided in the statute itself. New York’s community solar program, created in connection with the state’s Reforming the Energy Vision regulatory reform efforts, carves out 20 percent for low-income participation; however, the 20 percent requirement only endures for Phase 1 of the reform, slated to last approximately six months.

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54 In order to remedy potential scale concerns with community scale solar projects, the Interstate Renewable Energy Council Model Rules for Community Solar place a two-megawatt cap on the size of community shared solar projects. JASON COUGHLIN ET AL., supra note 10, at 68.

55 For example, in Hawaii, the community based renewable energy development model proposed by the state’s utility provides three tiers for community based energy development. In Tier 1 relates to projects less than 20 kW; Tier 2 concerns projects between 20 kW and 1 MW, and Tier 3 relates to projects over 1 MW. The utility’s proposal caps Tier 1 and Tier 2 projects for solar and wind at 8 MW, but caps Tier 3 solar and wind projects at 24 MW, effectively incentivizing the development of large-scale projects. Hawaiian Electric Company, Inc., 2016 WL 3480609 (Haw. Pub. Utils. Comm’n 2016).


57 WASH. REV. CODE ANN. § 82.16.110(2)(a)(i) (West 2016).


59 § 40-2-127(5)(IV)(B).

California is much further along in its efforts to incorporate low-income ratepayers into the renewable energy transition. The state’s promising Green Tariff Shared Renewables Programs provides ratepayers with the option to choose among several developer-led green energy projects.\(^{61}\) Unfortunately the program is expected to increase the cost for users by two to three cents per kilowatt-hour, which cuts against the inclusive intent of the program.\(^{62}\) California’s Multifamily Affordable Solar Housing program goes further than its shared renewables program, offering financial incentives to affordable housing customers to install onsite solar systems on residential dwellings.\(^{63}\) According to one analysis of the program, however, residents of the subsidized housing where such projects are located will never see financial benefits. Even if the overall building’s electricity bills are lowered, subsidized housing residents pay a combined utility and rent amount that is locked into a percentage of total income, which means that the proportion of rent may increase to cover the shortfall created by the onsite electricity generation.\(^{64}\)

In low-income communities who could benefit from the economic opportunities that accompany community-scale renewable energy generation, the reliance on utility scale energy generation continues the injury of fossil-fuel extraction and energy generation. Given its footprint, the siting of utility-scale renewable energy generation requires many of the same difficult land-use decisions that encumber dirtier energy development.\(^{65}\) Moreover, the additive nature of current policies that require low-income participation—Colorado and New York, for example—fail to transform the material conditions of entire communities due to narrow participatory requirements and, even with policies that require nominal low-income participation, the subscription requirements for community solar require initial capital investments largely unavailable in low-income households.\(^{66}\) Ultimately this approach to energy development, even if it is renewable, fails to promote the environmental justice and energy democracy aspects of energy justice.

Further, the design of the community shared solar model does little to advance distributed, behind-the-meter generation controlled by an on-site user, which misses an opportunity to increase climate change resiliency in low-income and vulnerable communities. As noted by many who witnessed the destruction of Hurricane Sandy, the storm left New York City’s low-income communities the most vulnerable within a city that boasts a sophisticated financial sector and diverse population.\(^{67}\) The lack of electricity in the weeks following the storm led to losses of food supplies, dangerous medical conditions and, in some cases, a lack of water.\(^{68}\) The reliance on incumbent utilities and utility infrastructure embedded in the current energy model exacerbates climate injustice and misses a critical opportunity to promote energy justice. What is needed are programs that focus

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61 See 28 CAL. PUB. UTIL. CODE § 2833 (West 2016).
63 CAL. PUB. UTIL. CODE § 2870 (West 2016).
64 INTERSTATE RENEWABLE ENERGY COUNCIL, supra note 62, at 4.
66 Indeed, low- to moderate-income ratepayers already pay a disproportionately high amount of income on energy. INTERSTATE RENEWABLE ENERGY COUNCIL, supra note 62, at 4.
specifically on community-sited generation and create genuine markets for participation by the most vulnerable communities. This will require the development of creative financing mechanisms, such as on-bill financing, as well as “green” banks created by states to provide cheap capital to residents seeking to develop community solar projects.

Finally, the inflexibility of community solar leaves little room for innovations that allow communities to take control of their energy production. The complexity of the program, including the regulatory and security issues the program invites, 69 locks the program into limited designs. Although behind-the-meter generation offers a suite of potential regulatory challenges, the locus of control is closer to the community, which means that communities can design energy systems that work with their usage patterns and capacity requirements. 70 The approach to community energy currently promoted does not offer space for true energy democracy, a key principle within the energy justice framework.

In many ways, the early design of community energy programs falls prey to the same limitations of early NEM programs, where only middle-class and affluent homeowners fit within the solar panel market. The programs do little to remediate vulnerability. In addition, the programs maintain the locus of control for energy far away from communities. Rather than carve out opportunities for limited participation by early adopters, policymakers should look for opportunities to mitigate the financial burdens of low-income ratepayers who will most certainly be left to pay the utility’s fixed cost of grid maintenance if not provided with an equal opportunity to generate power using renewable energy resources.

These types of opportunities might transform the customer-utility relationship. They may also further disrupt the utility business model. Policymakers should not turn away from such innovations in fear, but should look for opportunities to create new models to replace the old. Community energy carried an implicit promise to provide an opportunity to bring the most vulnerable ratepayers into the renewable energy transition. As currently conceptualized, however, the dominant model falls far short of energy justice.

The following Part offers a set of tools to resolve these concerns and reposition community solar programs within a new theoretical frame: the New Energy Commons.

IV. The new energy commons

In a community meeting concerning energy development, a community elder approached me, looked me in the eye, and asked, “What is energy?” A smile curled up the corners of her mouth, and her eyes flickered. As a scholar of energy justice, I equivocated, responding, “I think the answer is changing.” Although my response in that moment felt incomplete to both of us, it does appear that the nature of energy is changing. Indeed, what energy meant in 1900 is quite different from its 2016 meaning. This Part provides some clues to what could be emerging: the New Energy Commons.

A. Out with the old

The old energy paradigm conceptualized energy as a commodity to be extracted, refined and burned in centralized locations to create electricity. In the old paradigm, we needed extensive

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69 See e.g., Samantha Booth, Here Comes the Sun: How Securities Regulations Cast a Shadow on the Growth of Community Solar in the United States, 61 UCLA L. REV. 760, 780 (2014).
70 Owen Zinaman et al., supra note 44, at 123-24.
networks of wires to bring electricity to end-users. We built vast energy systems in reliance on this understanding of energy. In the renewable energy transitional moment, energy is reframed. Individuals, communities and, yes, even utilities, see energy as something much more accessible and connected to nearly every aspect of life. Energy surrounds all beings, and is no longer necessarily a commodity to be extracted, refined, and burned to create electricity. With a relatively minimal capital investment, individuals can now access energy to create electricity. Indeed, communities can also create electricity. In this new energy paradigm, energy is an abundant gift easily seen in the waves that surround island communities, the air that moves through breezes in windy places, and the sun that shines each day without fail.

Once accessed, energy allows for efficient pumping of water to irrigate crops, and provides increased equality and safety for women who have carried water in rural communities. It facilitates safer cooking methods to avoid using antiquated cook stoves. It allows for the lighting of homes and community streets after sunset to foster human development, and cooler classrooms for more engaged learning. Very few subjects exist with such abundance and possess such broad connective links.

These new understandings of the abundance and accessibility of energy should yield to new business and economic models to support energy development; however, disrupting the old energy paradigm poses the potential to disrupt existing social, environmental and economic relationships. In the old paradigm, capitalists were made wealthy through the extraction of oil, gas, and coal from the earth’s crust. Utilities, in partnership with the oil and gas industry, benefitted from the centralized structure of energy production, as well as the ongoing investments in energy infrastructure.

The move to develop a truly transformative energy development model has necessarily encountered steady resistance from those who have long benefited from the old paradigm. Incumbent energy interests that remain wedded to the old paradigm of centralized energy production have advanced their interests in the renewable energy sphere by introducing renewable energy development models that continue to rely on large-scale infrastructure investment. The models that have arisen to facilitate the renewable energy transition are locked into the old paradigm, which requires a centralized producer, vast transmission networks of wires, as well as a sophisticated entity to manage the system, often across multiple jurisdictions.

Even technological and policy innovations, such as smart grids and community solar programs, when implemented poorly, prolong reliance on utility scale energy projects, expensive infrastructure, and complexity. These innovations also allow utilities to continue to make investments that can be recouped in reliance on ratepayers. Such ongoing investments are necessary to sustain the utility business model. Further, such investments lock communities into a utility vision of energy development, which contradicts the embedded simplicity and resiliency that more decentralized energy development invites.

Distributed energy generation located within homes or scaled up to the community level inverts the classic economic relationship embedded in the old energy paradigm. Distributed energy transforms energy. It introduces into the modern energy system the idea that energy can be

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71 Lakshman Guruswamy, supra note 33, at 87.
72 Id. at 98.
73 Id. at 87.
74 Id. at 105.
controlled by an individual user who is also a producer of energy, or a community of users and producers (prosumers). In this new energy paradigm, customers derive the bulk of financial benefits by cheaply harnessing the energy in the sun, wind, and water. The new energy paradigm also raises the participatory stakes by deepening community bonds and providing space for civic engagement and financial literacy in order to facilitate community energy development. Reactions to this transformative moment ignore this new reality. The responses generated both within the utility industry and solar industry swim against the transformative current and attempt to fit the new paradigm within the old model, which has led to continued reliance on antiquated physical infrastructure; outdated policy and regulatory regimes; and imperfect financial models.

B. Defining the new energy commons

Arguably, the limitations and policy tensions that have surfaced during the renewable energy transition could be resolved by a theoretical repositioning of the transition. Explicitly framing the new energy paradigm within a commons theoretical frame invites the development of business and economic models more closely aligned with the principles of energy justice. This new theoretical framing could also help policy makers to avoid the pitfalls of the current polarized energy debates and create space for a range of policy approaches to the energy transition. The following discussion begins by establishing the theoretical underpinnings of the commons and then explores the ways in which the new energy paradigm could be repositioned within a commons resource management frame.

Elinor Ostrom, Nobel laureate and political economist, defines common-pool resources as possessing two key characteristics. First, common-pool resources are rival, in that an individual’s use of the resources subtracts from the ability of another to use the resource.76 Second, common-pool resources are prone to free-riding or overexploitation because they are not excludable; individuals who benefit from the resources are not incentivized to share the cost of maintaining the resource.77

Ostrom’s work rebuts the presumption that to counter these challenges to common-pool resources they must be privatized. Some of her research draws on examples of commons management within traditional communities. Relying on case studies, Ostrom asserts that communities can properly manage common-pool resources through community rules and a community-based system of resource management.78 In Ostrom’s view, privatization does not necessarily provide the best pathway to sustainability, and common-property management regimes, though a form of private property, involve the allocation of rights to groups rather than

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77 THE COMMONS IN THE NEW MILLENNIUM, supra note 77, at 7.
individuals. Moreover, communities are best positioned to determine the highest and best use for common pool resources.

Turning back to energy, energy resources are themselves common-pool resources. They are rival, in that the exploitation of the resource by one party limits opportunities for exploitation by another party. They are also non-excludable and subject to free-riding if not properly managed. Traditionally, and under the old paradigm of energy development, non-renewable fossil-fuel resources such as oil, gas and coal were managed through the allocation of private rights to avoid overexploitation and facilitate the efficient management of such resources. So far, the policy approaches to the renewable energy transition have largely fallen in line with this traditional approach. Energy policies allocate private rights to exploit renewable energy resources and send electricity to the grid. Even as energy resources shift towards renewable energy resources more easily accessed and converted to electricity by individuals and community members, this development paradigm and accompanying regulatory approach persists. Arguably, this persistence on an outdated development model and regulatory approach has given rise to much of the tension between individual energy customers and utilities, as well as effectively excluded community voices from the energy discourse. Fortunately, the nature of renewable energy invites a reexamination of these approaches.

Renewable energy resources lend themselves more easily to Ostrom’s framing of commons resource management than traditional fossil fuels, such as coal, oil, and gas. As discussed, traditional fossil fuels require complex centralized facilities for extraction, refinement, and generation. In many ways, the most efficient way to exploit and manage these resources was through the allocation of private rights. Renewable energy resources, on the other hand, can be easily and relatively cheaply converted into electricity locally. Within this “New Energy Commons,” renewable energy is readily accessible to all community members and easily lends itself to management and development at the household or community level.

Despite the relative ease with which communities may now engage in energy resource management and energy system design, the overwhelming policy incentives to invest in new infrastructure by investor-owned utilities limit opportunities for community participation in energy resource management and crowd out opportunities for renewable energy generation at the community level, thus also limiting the potential of the New Energy Commons. Moreover, such aggressive investments could create a pathway dependency that limits renewable energy development by low-income people, in effect plundering the commons and curtailing opportunities for communities to benefit from cheaply accessing renewable energy. These “rival” features of the New Energy Commons require vigilance by policy makers to ensure the creation of opportunities for community planning and participation in the renewable energy transition.

Starting the policy discussion from the New Energy Commons theoretical orientation could open pathways for communities to plan, initiate, and develop energy resources in ways that correct the embedded inequalities within the old energy development paradigm. This new orientation could help to facilitate energy justice.

With respect to environmental justice, much like the communities within Ostrom’s studies, communities engaged in commons-based energy development may determine the correct scale of energy needed within their community, based on adequate information and technical assistance. Examples of this can already be found throughout North America, where communities from Alaska

\footnote{The Commons in the New Millennium, supra note 77, at 8.}

\footnote{Id. at 22. See also David Bollier, Silent Theft: The Private Plunder of Our Common Wealth 183–84 (2002).}
to California, often with the technical assistance of utilities, have developed comprehensive community energy plans. Communities engaged in community energy planning might determine that utility scale development would better meet the community needs, or community scale development, coupled with storage and other energy innovations such as microgrids will allow the community to meet its energy needs while preserving their local environment—and their rights to manage the energy commons. The New Energy Commons frame invites the opportunity for community energy planning.

Climate justice would also be advanced within the New Energy Commons, as communities, assisted by technical experts, develop plans to increase their resilience to major weather events and protect their most vulnerable citizens. Relying on resilience and vulnerability as the starting place of community-energy development, rather than profit or return on investment presents a radical shift in energy development. These shifts are needed to facilitate climate justice. Reframing energy policy making from within a commons theoretical frame could increase pathways to community resiliency.

Finally, the New Energy Commons supports the procedural and substantive components of energy democracy, given that community energy planning and meaningful civic engagement form essential cornerstones of the management of the New Energy Commons. Such planning yields to opportunities for economic engagement in energy development projects. Indeed, within the New Energy Commons, opportunities for participation abound, as it is the collective management and stewardship of common energy resources that facilitates the community’s thriving.

If policy makers place renewed focus on the commons and communities begin to envision renewable energy resources as a part of the New Energy Commons, the existing policy tensions presented by the renewable energy transition could more easily give way to solutions rooted in energy justice. Mining the theoretical contributions of the commons literature could prove a helpful aid in this work. This chapter now concludes with a vision for the future based on early manifestations of commons-based community energy development.

V. Conclusion: envisioning an energy commons

This Chapter invites policy makers, scholars, and community members to reposition the renewable energy transition within a commons frame. This new frame, the New Energy Commons, provides a space for new thinking, bottom-up approaches, and energy system designs that render energy accessible and controllable by communities, especially low income communities that have been missing out on the renewable energy revolution. The old energy structure, reliant on centralized management of community-held resources, fades into the background, creating space for innovation, appropriate scaling, and community resilience. Although the dominant community energy discourse in many ways fails to deliver on its transformative promise, some communities have already begun to orient their energy systems within the New Energy Commons framework.

Vermont’s model for community energy offers a hint of what is possible. Its Group Net Metering program originates within the community and allows community members, separate generators of behind-the-meter electricity, to combine their accounts to receive an offset for electricity produced. This program relies on community decision-making regarding the collective energy resource, thus creating a range of opportunities for energy democracy.

In the New Energy Commons, communities may elect to combine their respective generation as in Vermont’s model, or convert existing distribution lines into microgrids, where renewable energy generated in a common area serves as anchor to the grid, and homeowners maintain smaller power systems and batteries to stabilize the grid. In this scenario communities may stand apart from a centralized utility, or elect to sell electricity back to the utility through a power purchase agreement. This approach to generation is truly decentralized. For vulnerable communities
that face the prospect of electricity instability in the climate change era, this approach to
development also promotes the key energy justice principle of climate justice.

The New Energy Commons also provides opportunities for creative financing. The Resilient
Power Project, developed by the Clean Energy Group (also of Vermont), provides concrete
analytical tools that illustrate how, after an initial capital investment in onsite renewable energy
generation and batteries, low-income ratepayers can utilize such generation and storage to lower the
cost of or eliminate electricity bills. Within an even more disruptive frame, the same low-income
ratepayers might convert the displaced economic burdens of energy costs to other means of human
development. As well documented in the environmental justice literature, low-income communities
face a battery of energy development-related harms. In the New Energy Commons, low income
communities that produce their own clean, locally sited energy are less likely to be burdened by the
environmental hazards of non-renewable energy development, thus promoting environmental justice
and energy justice.

As discussed, within the New Energy Commons, electricity moves away from its status as a
pure commodity to be sold, toward a good to be manipulated within a community, at a community
scale, and for the enjoyment of the community. Even within the current flawed approach to
community energy development, the fortuitous move toward community-based energy development
offers great promise. The importance of this moment, where communities can become generators
and distributors of their own energy, cannot be overstated.

Framing community energy development within the New Energy Commons theoretical
paradigm will dissolve existing limitations, promote energy democracy and, arguably, transform
socio-economic relationships.

And so, what is energy?

Energy is power.