Equitable Community Solar: California & Beyond

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Residential solar and utility scale solar are low-hanging fruit in the renewables transition, but targeting low-hanging fruit can only go so far. Can states innovate, reach further, and ignite near-universal consumer demand for clean energy and achieve social justice goals through equitable community solar?

For the last decade, the goal of mitigating climate change primarily drove the transition to renewable energy in states and countries that took the climate change crisis seriously. But there is even greater promise. The shift to renewable energy holds the transformative potential for broader social benefits, such as wealth-building opportunities, good jobs, health improvements, energy bill savings, and resilience in the face of power outages. Manifesting this potential requires intentional policy. Unfortunately, even in California, a state determined to lead the transition to renewable energy, the implementation of climate action is poised for inequitable disparities. Although advocates saw community solar—cooperatively generating solar energy—as an avenue for all communities to benefit from the energy transition, the state poorly designed its first community solar policy, and the program has been a failure. California is now embarking on a significantly smaller second attempt at community solar targeted at serving disadvantaged communities: the Community Solar Green Tariff. But has the state learned from its first failure? This Article analyzes California's new community solar program and proposes a framework for "equitable community solar" to improve program design, in hopes that other states learn from where the Golden State has stumbled.

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Introduction 1018
I. From Fossil Fuels to Clean Energy to Energy Justice 1021
A. Energy Justice: The Reason to Hope for Transformative Solutions 1021
B. Defining Equitable Community Solar, a Critical Strategy for Energy Justice 1023
1. What is Community Solar? 1025
2. What are the Benefits of Community Solar? 1027
3. Proposing a Definition for Equitable Community Solar 1030
II. California's Attempt at Equitable Community Solar: The Community Solar Green Tariff Program (CSGT) 1032
A. Previous Community Solar Lessons Led to the CSGT 1032
B. The CSGT is a Novel and Uncertain Approach to Equitable Community Solar, but a Step Forward 1036
1. Key Elements of the CSGT Program 1037
2. Applying the Equitable Community Solar Framework 1039
a. Ensuring Project Feasibility 1039
b. Benefiting Marginalized Communities 1040
c. Prioritizing Community Governance 1041
3. Evaluating the CSGT Based on the Equitable Community Solar Framework 1041
III. Developing Effective Equitable Community Solar Programs 1042
A. Expanding Equitable Community Solar Principles into Program Objectives and Policy Mechanisms 1043
B. California Should Improve the CSGT While Developing Equitable VNEM 1045
Conclusion 1047

INTRODUCTION

For the last decade, the goal of mitigating climate change primarily drove the transition to renewable energy in states taking the climate crisis seriously.[1] But transitioning to renewable energy offers benefits beyond climate change mitigation. The shift holds potential for broader social benefits such as wealth-building opportunities, good jobs, health improvements, energy bill savings, and resilience in the face of power outages.[2] The possibility for such benefits taps into public values including imperatives of fairness and security. Already, the growing public focus on broader social benefits from an energy transition is

1. *See, e.g.*, Melissa Powers, *An Inclusive Energy Transition: Expanding Low-Income Access to Clean Energy Programs*, 18 N.C.J.L. & Tech. 540, 542–43, 544 (2017) (describing efforts of states to decarbonize their energy systems, such as through renewable portfolio standards, distributed energy, and transportation; and noting "[m]any low-income electricity customers, however, have few viable opportunities to participate in these new electricity markets or to otherwise benefit financially from the clean energy transition").

2. *See infra* Subpart I.B.2.

increasing demand for jobs- and justice-focused climate action (e.g., the Green New Deal),[3] and this demand is in turn increasing the political will to act.[4] With just ten years left to avoid catastrophic climate impacts, that window for action is closing soon.[5]

However, even in California, a state determined to lead in the fight against climate change, the implementation of climate action is poised to replicate existing disparities.[6] With billions of dollars of wealth being created,[7] low-income communities of color have less access to these and other benefits, particularly because of structural barriers to owning solar for renters or people who do not have access to capital.[8] Amidst some recent successes for energy justice in California, such as a $1 billion commitment to solar on multifamily affordable housing,[9] the failure of community solar policy in the Golden State comes as a surprise to casual observers and an even greater disappointment to energy equity advocates.[10]

This Article addresses the barriers preventing low-income communities of color from fully accessing the benefits of community solar and proposes an

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3. *See* Zoya Teirstein, *Poll: The Green New Deal is as popular as legalizing weed*, GRIST (Jul. 22, 2019), https://grist.org/article/poll-the-green-new-deal-is-as-popular-as-legalizing-weed/; YouGov Blue, *Memo: U.S. Voters Strongly Support Bold Climate Solutions*, DATA FOR PROGRESS (Mar. 19, 2019), https://www.dataforprogress.org/the-green-new-deal-is-popular.

4. *See* Justin Worland, *How the Green New Deal Is Forcing Politicians to Finally Address Climate Change*, TIME (Mar. 21, 2019), https://time.com/5555721/green-new-deal-climate-change/.

5. Brandon Miller & Jay Croft, *Planet has only until 2030 to stem catastrophic climate change, experts warn*, CNN (last updated Oct. 8, 2018), https://www.cnn.com/2018/10/07/world/climate-change-new-ipcc-report-wxc/index.html.

6. *See* Jordan Scavo et al., *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-income customers and Small Business Contracting Opportunities in Disadvantaged Communities*, CALIF. ENERGY COMM'N 2–4 (2016) [hereinafter *Low-Income Barriers Study*] (summarizing findings of structural barriers, policy and program barriers, and business challenges limiting access to clean energy for low-income and disadvantaged communities in California).

7. *See* Press Release, U.N. Environment Programme, Renewable energy investment in 2018 hit USD 288.9 billion, far exceeding fossil fuel investment (Jun. 18, 2019) (noting that in 2018, global investment in renewable energy was $288.9 billion, including the United States spending $48.5 billion).

8. *See* Deborah Sunter et al., *Installing inequality: the racial disparities in solar deployment*, MEDIUM (Oct. 30, 2019), https://medium.com/thebeammagazine/installing-inequality-the-racial-disparities-in-solar-deployment-b251b7e6dc9e (summarizing report finding black-majority census tracts and Hispanic-majority census tracts have installed less rooftop solar than no-majority census tracts); *How Wealthy Are Residential Solar Customers?*, POWERSCOUT (Apr. 19, 2017), https://powerscout.com/site/wealthy-residential-solar-customers (finding that households with solar tend to have higher incomes); *see also Low-Income Barriers Study*, *supra* note 6, at 2–4.

9. *See* Assemb. B. 693, 2015 Leg., Reg. Sess. (Cal. 2015) (bill creating program for solar on multifamily affordable housing); Josh Cohen, *California Will Spend $1 Billion on Low-income, Multifamily Solar*, NEXT CITY (Jan. 8, 2018), https://nextcity.org/daily/entry/california-will-spend-1-billion-on-low-income-multifamily-solar.

10. *See, e.g.*, Steve Weissman & Anna M. Brockway, *Community Solar in California: A Missed Opportunity*, CTR. FOR SUSTAINABLE ENERGY (2018) (noting that California lags behind many other states in embracing community solar through utility programs); Press Release, Grid Alternatives, California Takes Steps to Expand Solar Opportunities For Low-Income and Environmental Justice Communities (Jun. 21, 2018) (coalition of energy advocates applauds California programs while calling on the state to do more).

equitable community solar framework to guide reform. The Article first outlines relevant key concepts including energy justice and community solar and then proposes a definition for equitable community solar. Equitable community solar *(1) allocates energy and benefits from one solar system to multiple customers, (2) intentionally focuses on benefitting marginalized communities, and (3) prioritizes local community governance and ownership.* Then, the Article discusses California's unsuccessful attempt at a statewide community solar program and its more recent second take at a smaller, environmental justice-geared community solar policy for pollution-burdened communities. Finally, the Article offers guidance for developing equitable community solar programs, using California as an example.

After one failed policy experiment—the Enhanced Community Renewables program (ECR), which has not resulted in a single operational project in three years[11]—California is embarking on a modest second attempt with the Community Solar Green Tariff (CSGT).[12] The new program is a slight improvement, but it is unfortunately more similar to the previous ECR model than successful virtual net metering-based community solar models in other states.[13] Not only is it unclear whether any projects will be viable under the CSGT, but the program's overall capped size (forty-one megawatts (MW) of solar capacity)[14] is a drop in the bucket of the state's electrical generation capacity of approximately 80,000 MW.[15]

Community solar is key to ensuring that low-income communities of color realize the benefits of a clean energy economy.[16] However, not a single customer of California's three major investor-owned utilities is enrolled in a community solar project.[17] Thus, as it stands, California's treatment of racial and economic justice issues as they intersect with the build-out of distributed renewables is disappointingly inadequate. But it is not too late to course correct.

With the leadership of state policymakers and grassroots activism,[18] California can make simple and meaningful changes to bump up the state's grade on energy justice by adopting policies that allow everyone, particularly marginalized communities, to benefit from renewable energy. This Article proposes four program objectives (and example policy mechanisms for each) to

11. *See infra* Part II.

12. *See id*.

13. *See infra* Subpart I.B.1 (explaining the ECR program and virtual net energy metering policies).

14. *See infra* Subpart II.B.1 (discussing program design); *infra* Subpart II.B.2 (project feasibility).

15. California's total electric generation capacity is about 80,000 MW. *Total System Electric Generation: The Year in Review*, CALIF. ENERGY COMM'N (last updated Jun. 24, 2019), https://ww2.energy.ca.gov/almanac/electricity_data/total_system_power.html.

16. *See, e.g.*, Deborah Behles, *From Dirty to Green: Increasing Energy Efficiency and Renewable Energy in Environmental Justice Communities*, 58 VILL. L. REV. 25, 45–47 (2013); *see also infra* SeubpartI.B.2.

17. *See infra* Part II.

18. *See generally* 2018 Environmental Justice Scorecard, CALIF. ENVTL. JUST. ALL. (last visited Dec. 28, 2019), https://caleja.org/scorecard2018/ (scoring legislative actors on performance on environmental justice issues).

fully realize the three-part definition of equitable community solar. Applying this framework, California can both improve the CSGT and begin developing an even more equitable community solar policy for the state. And for local and state policymakers around the country, this framework illuminates a path to develop equitable community solar policies that center justice in ways that do not compete with goals of rapid decarbonization, but rather accelerate it.

I. FROM FOSSIL FUELS TO CLEAN ENERGY TO ENERGY JUSTICE

The laws and systems first put in place to regulate the mining and burning of coal to generate electrical power do not work well for managing a thoughtful transition to renewable electricity because the materials, technology, and processes are substantially different from renewable energy generation. Accordingly, the effort to decarbonize the United States' electrical sector has involved fundamental reforms to energy policy at the local, state, and federal levels.[19] Even as regulators are still developing this second wave of energy policies,[20] a third shift in policy reform is emerging: energy justice.[21] Combining the goals of proliferating renewable energy and advancing social justice is compelling because it could lead to more effective policy and increased public appeal. One critical strategy for achieving energy justice—or the equitable transition to renewable energy—is equitable community solar. Understanding this potential strategy helps to crystalize what energy justice looks like and provides important background for how to bring equitable community solar to fruition.

A. Energy Justice: The Reason to Hope for Transformative Solutions

In climate policy environments, people often talk about "the path" or "roadmap" to a zero emissions future or reliance on 100 percent renewables. Before committing to a particular course of action, we should reflect on this

19. *See generally* Jim Lazar, *Electricity Regulation in the US: A Guide*, REGULATORY ASSISTANCE PROJECT 130–40 (2016), https://www.raponline.org/knowledge-center/electricity-regulation-in-the-us-a-guide-2/ (documenting the evolution and adoption of policies to integrate renewables, such as renewable portfolio standards, renewable energy credits, and net energy metering).

20. *See* Sharon B. Jacobs, *The Energy Prosumer*, 43 ECOLOGY L.Q. 519, 521, 523–27 (2016) (describing an energy regulation landscape that is increasingly dealing with the decentralization of energy).

21. *See, e.g.*, Lincoln L. Davies, *Eulogizing Renewable Energy Policy*, 33 J. LAND USE & ENVTL. L. 309, 311–15 (2018) (discussing various ways of conceptualizing phases of renewable energy policy, including one framing that describes the current, third stage as one focused on equity among customers). While "energy justice" is a term used more commonly in legal and social science scholarship for the concept of equity and justice in renewable energy solutions, advocates and practitioners more often use the term "energy democracy" or "energy equity." *See generally* Benjamin K. Sovacool & Michael H. Dworkin, *Energy justice: Conceptual insights and practical applications*, 142 APPLIED ENERGY 435 (2015) (discussing energy justice concepts and applications); *Energy Democracy: Advancing Equity in Clean Energy Solutions*, ISLAND PRESS 2 (2017), https://static1.squarespace.com/static/5a2021c5e5dd5b3a4dda00d4/t/5abea8bd352f5337a0259269/1522444478990/9781610918510_excerpt.pdf; *Energy Equity*, CALIF. ENVTL. JUST. ALL. (last visited Jan. 4, 2020), https://caleja.org/what-we-do/energyequity/.

framing and ask ourselves: Where are we trying to go and why? The "where" is typically the solution we have identified to address an underlying problem. The problem is "why" we are trying to reach that end goal. Sometimes the why might indicate a reason to take one path instead of another to the same destination or identify a more appropriate destination altogether. If, instead of only focusing on a zero emissions future, policymakers treat climate and energy justice as an essential part of addressing emissions, then they will better answer the important questions about how we get there, shunning inequity-as-usual for transformative social empowerment.

The problem of greenhouse gasses is not an isolated problem, but one interconnected with systems that have allowed the mostly unchecked extraction of natural resources, pollution, and exploitation of human labor, lives, and livelihoods, particularly from historically marginalized communities, such as the poor, Indigenous, and people of color.[22] Born out of the civil rights, labor, and environmental justice movements, the climate justice movement has been at the forefront of drawing attention to these connections.[23] Climate justice communities and coalitions have engaged in in-depth investigation, dialogue, and analysis for many years to understand and bring awareness to the root causes of climate change and social injustice.[24] They found the root of both climate change and social inequality is an extractive economy. This analysis is summarized in the *Just Transition Framework* developed by the Climate Justice Alliance.[25]

Unpacking the root causes of climate change and inequity informs the framing of a more systemic, analytical, and evidence-based solution—what the *Just Transition Framework* refers to as a "regenerative economy."[26] A regenerative economy includes all sectors of the economy, such as transportation and food, in addition to energy. For each of these sectors, scholars, advocates, and policymakers ought to consider how that sector must change as a part of a just transition. Thus, the concept and field of "energy justice" represents this transition to the next energy economy in a way that fits the *Just Transition Framework* and addresses social equity.[27]

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22. *See generally* Carl A. Zimring, *Clean and White: A History of Environmental Racism in the United States* (2015) (documenting the connection between racism and environmental harms); *see also* Jonathan Lambert, *Study Finds Racial Gap between Who Causes Air Pollution and Who Breathes It*, NPR (Mar. 11, 2019), https://www.npr.org/sections/health-shots/2019/03/11/702348935/study-finds-racial-gap-between-who-causes-air-pollution-and-who-breathes-it.

23. *See, e.g.*, *Movement Generation Just Transition Framework Resources*, MOVEMENT GENERATION (last visited Jan. 4, 2020), https://movementgeneration.org/movement-generation-just-transition-framework-resources/; *Just Transition: A Framework for Change*, CLIMATE JUST. ALL. (last visited Jan. 4, 2020), https://climatejusticealliance.org/just-transition/.

24. *Id.*

25. *Id.*

26. *Id.*

27. *See* Shalanda Baker, Subin DeVar, and Shiva Prakash, *The Energy Justice Workbook*, INITIATIVE FOR ENERGY JUSTICE, at 9–11 (Dec. 2019) https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf.

The core concern of energy justice is ensuring the equitable access to the benefits from the energy sector in the transition to a low-carbon regenerative economy.[28] These benefits include cleaner air, cleaner water, and health improvements from renewable energy generation; the wealth and income created by clean energy assets and jobs; and the associated social and political empowerment of marginalized communities that these improved outcomes would make possible. Without access to these benefits, energy policy will continue to disenfranchise whole classes of people, as the harms and benefits of energy fall unevenly when policymakers do not pay special attention.[29]

Equitable community solar is one solution for achieving specific objectives of energy justice, such as decentralized energy provision and community governance. *The Equitable & Just National Climate Platform*, developed by environmental justice organizations and national environmental groups, includes these specific objectives.[30] While the platform represents strategies for the broader goal of climate justice and includes approaches such as "a more sustainable food and agricultural system" and "affordable, reliable, and environmentally sustainable transportation,"[31] the platform specifically includes the goal of "[a]n inclusive, just, and pollution-free energy economy."[32] That section calls for "investment and governance that distribute the benefits of this transition equitably and justly . . . includ[ing] investing in the development of innovative decentralized models of energy provision [and] community governance and ownership."[33] As the next Subpart explores, the objective of decentralized energy with community governance requires advocates and policymakers to create avenues for equitable community solar.

B. Defining Equitable Community Solar, a Critical Strategy for Energy Justice

While there are various avenues to achieving energy justice, this Article focuses on one pathway for achieving 100 percent equitable and clean energy[34] which has eluded policymakers and advocates in most jurisdictions: equitable community solar.[35] As discussed below, equitable community solar is the

28. *See id.* at 5.

29. *See* Sunter et al., *Installing inequality*, *supra* note 8.

30. Climate Platform, *Equitable and Just, Equitable & Just National Climate Platform*, A JUST CLIMATE 4 (last visited Dec. 17, 2019), https://ajustclimate.org/pdfs/ClimatePlatform.pdf.

31. *Id*. at 5.

32. *Id*. at 4.

33. *Id*.

34. *See* Powers, *supra* note 1, at 561 ("as tepid a program as community solar may be, it represents one of the only common strategies aimed at actually expanding clean energy markets and benefits to low-income communities"); *The Vision for U.S. Community Solar: A Roadmap to 2030*, VOTE SOLAR (July 2018), https://votesolar.org/policy/policy-guides/shared-renewables-policy/csvisionstudy/ (outlining pathways for millions of more households, particularly low- and moderate-income households, to control their own energy generation).

35. *See* Megan Cleveland, *State Policies for Shared Renewable Energy*, NAT'L CONF. OF STATE LEGISLATURES (Nov. 21, 2017), https://www.ncsl.org/research/energy/state-policies-for-shared-

practice of allocating the electricity and associated benefits from one solar energy system to multiple customers while intentionally focusing on benefitting marginalized communities and prioritizing local community governance and ownership.[36]

Equitable community solar is critical to achieving energy justice because the nonenergy benefits from solar (financial, health, etc.) are closely related to the ownership and siting of it.[37] Many states enable residential or commercial rooftop solar for consumption by the single onsite customer ("onsite single customer solar") through a policy called net energy metering (NEM).[38] NEM allows customers to install solar on their buildings and receive credits on their electricity bills offsetting what they have to pay the utility based on the amount of energy they produced locally, usually at the same "retail rate" that they would otherwise pay the utility for that amount of energy.[39] However, about 50 percent of Americans cannot own solar on their own homes[40]—particularly low-income families—putting in stark divide who may holistically benefit from the wealth-building potential of this transition.[41] Communities near sources of air and water pollution, like coal and natural gas power plants, potentially have the most to gain from the health benefits of switching energy sources, but as these neighborhoods are predominately home to lower-income renters,[42] without equitable community solar they may be the last to see the local siting of clean electrical generation. Community solar addresses many of these gaps.

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renewable-energy.aspx (stating that "at least 17 states and Washington, D.C. have authorized shared renewables programs").

36. *See infra* Subpart I.B.3 (proposing definition of equitable community solar).

37. *See, e.g.*, *Value of Solar*, SOLAR UNITED NEIGHBORS (last visited Mar. 27, 2020), https://www.solarunitedneighbors.org/learn-the-issues/value-of-solar/.

38. *State Net Metering Policies*, NAT'L CONF. OF STATE LEGISLATURES (Nov. 20, 2017), http://www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx.

39. JASON COUGHLIN ET AL., A GUIDE TO COMMUNITY SHARED SOLAR: UTILITY, PRIVATE, & NONPROFIT PROJECT DEVELOPMENT 4 (May 2012) ("Net metering allows customers to bank this excess electric generation on the grid, usually in the form of kilowatt-hour (kWh) credits during a given period. Whenever 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.' This results in the customer purchasing fewer kilowatt-hours from the utility, so the electricity produced from the renewable energy system can be valued at the retail price of power.").

40. *See* DAVID FELDMAN ET AL., NAT'L RENEWABLE ENERGY LAB., SHARED SOLAR: CURRENT LANDSCAPE, MARKET POTENTIAL, AND THE IMPACT OF FEDERAL SECURITIES REGULATION v (2015) (finding that 49 percent of households are unable to host a solar energy system).

41. *See How Wealthy Are Residential Solar Customers?*, POWERSCOUT, supra note 8; *see also Low-Income Barriers Study*, *supra* note 6, at 2–4.

42. A California "Priority Populations" mapping tool shows a significant overlap between low-income census tracts and pollution-vulnerable census tracts. *See Priority Population Investments*, CALIF. AIR RES. BD. (last updated Oct. 1, 2018), https://ww3.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm. Seventy percent of low-income households are renters. *Low-Income Barriers Study*, *supra* note 6, at 12.

1. What is Community Solar?

"Community solar" generally refers to a communal or cooperative approach to solar generation, although some use it as a shorthand for "community shared solar" specifically.[43] The National Renewable Energy Laboratory defines community shared solar as the practice of allocating the electricity and associated benefits from one solar energy system to multiple customers.[44] However, the National Renewable Energy Laboratory considers the term community solar to be broader than shared solar and also inclusive of models that do not involve sharing solar energy among multiple customers, such as "group purchasing" or "community-driven financial models" for projects providing energy to single customers. Advocates tend to use the phrase community solar or community solar gardens in reference to projects that involve community ownership or governance.[45] Increasingly, technical experts use and distinguish terms such as "shared renewables" and "community-owned" renewables to clarify whether collective ownership is involved. Likewise, experts refer to whether projects are "onsite" (e.g., on a building roof) versus "offsite," (e.g., solar mounted to the ground somewhere other than the customer's property) as well as whether they involve multiple customers from one project (e.g., shared solar) versus a single customer per solar project.[46] These terms and their relationships are presented visually below.

43. *See id.* at 1–2 (contrasting the primary usage of community solar as meaning shared solar with related ideas of group purchasing and community-driven financial models); *Community Solar*, SOLAR ENERGY INDUSTRIES ASS'N (last visited Jan. 4, 2020), https://www.seia.org/initiatives/community-solar (defining community solar as shared solar); *Community solar: what is it?*, ENERGY SAGE (last updated Aug. 29, 2019), https://www.energysage.com/solar/community-solar/community-solar-power-explained/ (defining community solar as shared solar and noting that it "can refer to both 'community-owned' projects as well as third party-owned plants whose electricity is shared by a community").

44. *See* Feldman, *supra* note 40, at v.

45. *See* Behles, *supra* note 16, at 45 (stating "[t]he concept of a community solar garden has been proposed as a way to allow renters to have a share in renewable energy generated in their neighborhood. The general definition of a community solar garden is a solar project owned, developed, or controlled—in full or in part—by residents of the community in which the project is located"); Jennie C. Stephens et al., *Operationalizing Energy Democracy*, FRONTIERS IN COMMUNICATION (Oct. 3, 2018), https://www.frontiersin.org/articles/10.3389/fcomm.2018.00043/full (stating "[g]enuine community energy projects, such as the Boardman Hill Solar Farm, the Randolph Community Solar Farm, and White River Community Solar, take an approach that prioritizes full community ownership and careful long-term stewardship of the land"); Hannah J. Wiseman & Sara C. Bronin, *Community-Scale Renewable Energy*, 4 SAN DIEGO J. CLIMATE & ENERGY L. 165, 168 (2012–2013) (defining community renewable energy as involving collective ownership, operation, management, and instigation by a community).

46. *See, e.g.*, Feldman, *supra* note 40, at 2–3. Onsite solar means the solar panels are located at the same site where the solar energy is consumed and offsite solar means the solar panels are located somewhere other than where the customer resides—for example on another building or on the ground. *Id.*

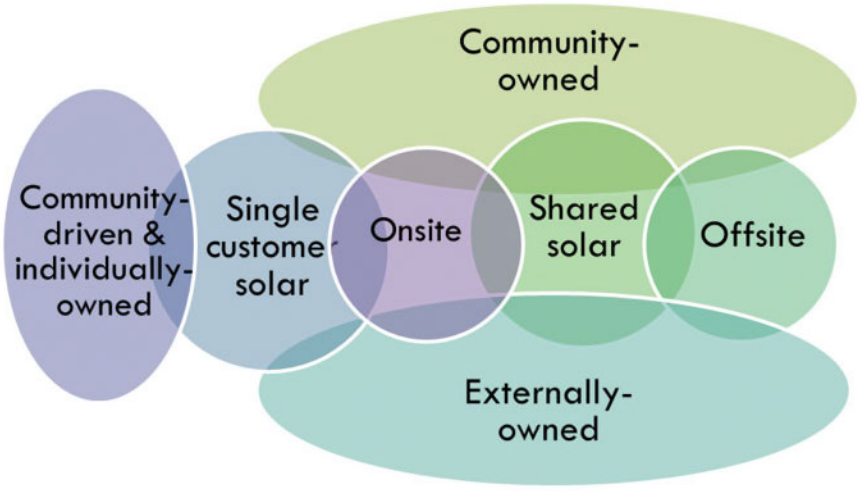

Figure 1: Models within Community Solar

As the diagram indicates, in addition to being either onsite or offsite, shared solar can either be community owned, by a cooperative or nonprofit, for example, or externally owned, by a for-profit company that is not based in the target community, for example. Furthermore, community-owned solar can refer to either community-owned shared solar or community-owned single customer solar. Examples of community-owned shared solar projects[47] include those by Cooperative Energy Futures in Minnesota[48] and Co-op Power in New England.[49] Examples of community-owned single customer solar projects include those by University Park Community Solar LLC in Maryland[50] and People Power Solar Cooperative in California.[51]

47. This Article will adopt the convention of using community solar as a shorthand for community shared solar.

48. *About: Our Vision*, COOPERATIVE ENERGY FUTURES (last visited Jan. 4, 2020), https://www.cooperativeenergyfutures.com/vision1; *see also* Mike Hughlett, *Solar energy co-op sells subscribers energy — and a piece of the business*, STAR TRIBUNE (Dec. 7, 2018), http://www.startribune.com/solar-energy-co-op-sells-subscribers-energy-and-a-piece-of-the-business/502206491/.

49. About Us, CO-OP POWER (last visited Jan. 4, 2020), https://www.cooppower.coop/about-us; *see also, Energy Democracy: Co-op Power – A Profile in Cooperative Ownership*, CENTER FOR SOCIAL INCLUSION (Feb. 25, 2016), https://www.centerforsocialinclusion.org/publication/energy-democracy-co-op-power-a-profile-in-cooperative-ownership/.

50. UNIVERSITY PARK SOLAR: A FOR-PROFIT PRIVATE MEMBERSHIP LLC FOR SOLAR ENERGY, http://www.universityparksolar.com/ (last visited Jan. 4, 2020); *see also* Stephanie Hughes, *Crowd-sourcing solar energy*, MARKETPLACE (Jan. 6, 2012), https://www.marketplace.org/2012/01/06/crowd-sourcing-solar-energy/.

51. *About*, PEOPLE POWER SOLAR COOPERATIVE (last visited Jan. 4, 2020), https://www.peoplepowersolar.org/about; *see also* Maria McCoy, *Cooperative Ownership Puts Community Solar in the Community — Episode 94 of Local Energy Rules Podcast*, INST. FOR LOCAL SELF-RELIANCE (Jan. 1, 2020), https://ilsr.org/people-power-solar-coop-ler-episode-94/.

Most community shared solar programs rely on a policy called Virtual Net Energy Metering (VNEM).[52] Similar to NEM, VNEM allocates electricity bill credits to customers of shared solar systems for the amount of energy produced by their share of the community solar project every billing cycle.[53] This allows even those customers who cannot install solar on their roofs to participate and benefit from a community solar project installed somewhere else. [54]

2. What are the Benefits of Community Solar?

In addition to providing more customers with clean energy, and thus addressing climate change, there are many other potential benefits of community solar.[55] These benefits are discussed more below, but they typically fall into four categories: (1) economic benefits; (2) health benefits; (3) resilience benefits; and (4) electrical grid benefits.

Potential economic benefits include electrical bill savings (particularly beneficial for low-income households that spend a higher share of income on utility bills),[56] wealth building (through shared ownership of solar assets),[57] workforce development, and family-sustaining jobs.[58] Health benefits arise from solar generation reducing the need for fossil fuel-based power plants, thereby decreasing local air pollution.[59] Prospective resilience benefits include keeping the lights on during power outages if solar is paired with storage, which can be vital if adopted by critical facilities such as hospitals and shelters and housing for vulnerable communities.[60] Community solar could also lead to electrical grid benefits "such as frequency control, voltage control[,] and ramping capability."[61]

Beyond the matter of *what* benefits community solar might offer is the matter of *who* can benefit from such programs. Community solar could be more

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52. *See* Coughlin et al., *supra* note 39, at 34.

53. *Id*.

54. *See, e.g*., John Farrell, *Beyond Sharing – How Communities Can Take Ownership of Renewable Power*, INST. LOCAL SELF-RELIANCE (Apr. 26, 2016), https://ilsr.org/report-beyond-sharing/ (noting the intersection of "community-owned" and "shared renewables" within definitions of community renewable energy).

55. *See* Behles, *supra* note 16, at 46–47; Powers, *supra* note 11, at 559–61; Wiseman & Branin, *supra* note 44, at 165–66.

56. *See* Douglas Gagne, *Community Solar: Lifting the Energy Burden on Low-Income Households*, NAT'L RENEWABLE ENERGY LAB. (Jul. 2, 2018), https://www.nrel.gov/state-local-tribal/blog/posts/community-solar-lifting-the-energy-burden-on-low-income-households.html.

57. *See Community solar*, SOLAR UNITED NEIGHBORS (last visited Jan. 4, 2020), https://www.solarunitedneighbors.org/learn-the-issues/community-solar/.

58. *See Energy for All: Community Solar*, GRID ALTS. (last visited Jan. 4, 2020), https://gridalternatives.org/what-we-do/energy-for-all/community.

59. *See* Anthony Giancatarino, *Community-Scale Energy: Models, Strategies and Racial Equity*, CENTER FOR SOCIAL INCLUSION (Jul. 31, 2013), https://www.centerforsocialinclusion.org/wp-content/uploads/2013/10/Community-Scale-Energy-Models-Strategies-and-Racial-Equity.pdf.

60. *See* Seth Mullendore et al., *Resilience for Free: How Solar+Storage Could Protect Multifamily Affordable Housing from Power Outages at Little or No Net Cost*, CLEAN ENERGY GRP. (2015), https://www.cleanegroup.org/wp-content/uploads/Resilience-for-Free-October-2015.pdf.

61. *See* Weissman & Brockway, *supra* note 10, at 2.

inclusive than onsite single customer solar if it expands benefits to renters and other customers.[62] For instance, renters often cannot benefit from onsite single customer solar programs because most of these programs apply only to single-occupant buildings, not multifamily buildings. And renters of single-family homes typically do not have much influence over a landlord's decision whether to install solar panels on their property. Even some homeowners are not able to participate in onsite single customer solar because of limited roof exposure to sunlight or limited access to capital or credit to purchase or finance solar panels.[63]

In contrast, all utility customers are typically able to participate in community solar, including renters and homeowners with shaded roofs, because the solar panels can be either located on a multifamily building or offsite. And while limited access to capital or credit is still a barrier for some customers to benefit from community solar, economies of scale generally reduce the upfront costs of participation.[64] In addition, the larger pool of customers, potentially including larger institutional customers, allows developers to be more relaxed with credit score requirements.[65]

However, without special attention, community solar will not benefit everyone, including the low-income and low-wealth families named by community solar advocates as intended beneficiaries. Two key scholars working in the field of energy equity, while noting the possible benefits of community solar, have highlighted three challenges for ensuring equity in such programs: (1) feasibility of project financing and construction; (2) equitable access for low-income customers; and (3) sufficiently significant benefits from participation.

First, Deborah Behles, Associate Professor of Law at Golden Gate University, discusses advantages of community solar from an environmental justice perspective but also points out issues regarding the initial financing and construction of projects.[66] Behles presents the case for increasing distributed renewable energy for vulnerable communities[67] and offers that community solar is one mechanism that could increase distributed renewables and its associated benefits in environmental justice communities.[68] Nevertheless, she also

62. *See* Powers, *supra* note 1, at 561.

63. *See Low-Income Barriers Study*, supra note 6, at 43–47.

64. *See* Wiseman & Bronin, *supra* note 45, at 166 n.1.

65. *See, e.g.*, Avery Ellfeldt, *Powered By Faith, Religious Groups Emerge As A Conduit For A Just Solar Boom*, NPR (Dec. 15, 2019), https://www.npr.org/2019/12/15/784483810/powered-by-faith-religious-groups-emerge-as-a-conduit-for-a-just-solar-boom (stating "Cooperative Energy Futures, the Minneapolis-based nonprofit that spearheaded the project, eliminated credit score requirements to ensure the garden was accessible to the immediate community."). Other providers, such as Solstice, use alternatives to FICO credit scores rather than eliminating credit checks entirely. *The EnergyScore: For a More Inclusive Solar Future*, SOLSTICE (last visited Jan. 4, 2020), https://solstice.us/solstice-blog/energyscore-more-inclusive-solar-future/.

66. *See* Behles, *supra* note 16, at 45–47.

67. *Id*. at 33–45 (noting potential environmental benefits, economic benefits, and health benefits of distributed renewable energy).

68. *Id*. at 45.

identifies the primary pitfall that could prevent environmental justice communities from realizing these benefits: "the costs [for a solar developer] of entering such a market may still be cost-prohibitive for environmental justice neighborhoods, depending on how the incentives and systems are designed."[69]

That is what happened in California a few years after the publication of Behles' article, when the state implemented its community solar law in a way that did not provide enough financial incentive for solar developers to build projects in environmental justice communities.[70] Colorado's community solar law was not designed to credit customers the full retail rate of electricity for their share of energy from a community solar project.[71] California's policy also reduces the credit a participating customer receives by subtracting transmission, distribution, and other costs.[72] The outcome is such a small financial incentive that it does not make economic sense for customers or developers to participate, and no projects have been built since the California community solar program opened in 2016.[73]

A second roadblock to realizing equitable benefits occurs when not all customers are able to participate. Melissa Powers, Professor of Law at Lewis and Clark Law School, argues that community solar "will likely not broadly expand low-income participation in the clean energy economy,"[74] at least not as it is currently designed, because "many low-income ratepayers lack the resources to buy shares of a community solar array."[75] Powers explains that the majority of community solar programs are not designed with low-income access in mind—and even those that have "carve-outs" to reserve a certain percentage of program capacity for low-income customers face substantial challenges.[76]

And even if projects are built and low-income customers can participate, Powers questions whether the financial benefits are substantial enough to constitute value for customers. Powers contends that participation "will not necessarily yield direct financial benefits for these participants; depending on the size of the solar array and the number of participants, the division of the net metering rights into distinct shares may substantially diminish the value of net metering for each individual participant."[77]

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69. *Id.* at 46 (citing Colorado's community solar law as an example).

70. *See infra* Subpart II.A.

71. *See* Behles, *supra* note 16, (noting "Colorado's legislation, for example, allows the utility to subtract a charge determined to cover the cost of delivering and integrating the community solar garden into the grid. These costs can be overestimated as transmission and distribution data is not widely available and studies have not been performed to sufficiently determine the benefit of distributed generation to the distribution and transmission systems.")

72. *See infra* Subpart II.A.

73. *See id.*

74. *See* Powers, *supra* note 1, at 545.

75. *Id.* at 545–46 n.25.

76. *Id.* at 560.

77. *Id.* As this Article discuss further below, California's CSGT program addresses the financial incentive issue by guaranteeing a flat 20 percent discount to participating customers rather than operating on a virtual net metering basis. *See supra* Subpart II.B.

Given this debate regarding what the benefits of community solar are and who attains these benefits, it is important for energy policymakers to have a clear definition of *equitable* community solar—beyond the basic definition of community solar.[78]

3. Proposing a Definition for Equitable Community Solar

By synthesizing, building on, and responding to advocates' and scholars' analysis, this Article proposes a definition for equitable community solar to guide policy-making processes that address the existing barriers and map out mechanisms to achieve the proposed benefits. In sum, equitable community solar: allocates energy and benefits from one solar system to multiple customers, intentionally focuses on benefitting marginalized communities, and prioritizes local community governance and ownership.

The first element is simply the standard definition of community solar; however, it is crucial that this element is met and that projects can, in fact, be financed and constructed, because without this basic foundation, the second and third elements are not possible. Therefore, this first element can also be considered as a principle of "project feasibility" within equitable community solar.

I add two elements beyond basic project feasibility to the definition of community solar. First, equitable community solar intentionally focuses on benefitting historically and presently marginalized communities. This Article uses the term "marginalized communities" to denote the broadest level of customer targeting.[79] Each jurisdiction should define "marginalized communities" or a similar term for purposes of its community solar policy through a fair, public, and accessible policy-making process. To support this discourse, based on the analysis of intended benefits and intended beneficiaries, this Article offers the follow definition:

> marginalized communities: communities at the frontline of pollution and climate change ("frontline communities") and those historically and presently disenfranchised by racial, economic, and social inequity.[80]

This definition includes communities who have had limited access to the financial and other benefits of solar due to socioeconomic barriers, such as

78. *See supra* Subpart I.B.1.

79. Similar terms used by practitioners and policymakers include "vulnerable communities," "environmental justice communities," and "disadvantaged communities." *See* Maria McCoy, *Community Solar With an Equity Lens: Generating Electricity and Jobs in North Minneapolis — Episode 57 of Local Energy Rules Podcast*, INST. FOR LOCAL SELF-RELIANCE (Jul. 24, 2018), https://ilsr.org/community-solar-equity-ler-episode-57/ (using "vulnerable communities"); *Environmental Justice Communities*, ILL. SOLAR FOR ALL (last visited Jan. 4, 2020), https://www.illinoissfa.com/environmental-justice-communities/ (using "environmental justice communities"); *Solar in Disadvantaged Communities*, CAL. PUB. UTILS. COMM'N (last visited Jan. 4, 2020), https://www.cpuc.ca.gov/SolarInDACs/ (using "disadvantaged communities").

80. Baker et al., *supra* note 27, at 5.

income or language, as well as environmental justice communities: those who have been historically burdened by pollution and disproportionately bore the cost of the externalities of fossil fuels, such as increased incidences of asthma and other harms.[81] Given the history of race- and geography-based discriminatory energy and environmental hazard siting policy, it is important not to limit the definition of marginalized communities to only low-income or low-wealth communities. For example, the same communities of color that were systemically marginalized through policies such as redlining are more likely to suffer from asthma.[82] In addition, while poor households will be more vulnerable to climate change impacts,[83] other communities that will be disproportionately harmed by climate change may be more identifiable by geography.[84] Thus, at a minimum, a more specific definition of marginalized communities at the state or local level should include a geographic identification of intended beneficiaries, such as one based on geographic information system (GIS) mapping of pollution-burdened census tracts[85] and zones more vulnerable to climate change impacts such as storm surges, flooding, heat waves, heat island effects, drought, and fire.[86] Examples include the U.S. EPA's Environmental Justice Screening and Mapping Tool (EJSCREEN) and the California Communities Environmental Health Screening Tool (CalEnviroScreen).[87]

Second, equitable community solar prioritizes local community governance and ownership over ownership by external for-profit investors and developers driven primarily by financial interest.[88] In addition to retaining more economic benefits from the financial ownership of energy generation, collective management of community solar projects allows communities to prioritize for themselves other potential benefits such as whom to purchase the solar panels

81. *See generally* Emanuele Massetti et al., *Environmental Quality and the U.S. Power Sector: Air Quality, Water Quality, Land Use and Environmental Justice*, OAK RIDGE NAT'L LAB./U.S. DEP'T OF ENERGY (Jan. 4, 2017), https://www.energy.gov/sites/prod/files/2017/01/f34/Environment%20Baseline%20Vol.%202—Environmental%20Quality%20and%20the%20U.S.%20Power%20Sector—Air%20Quality%2C%20Water%20Quality%2C%20Land%20Use%2C%20and%20Environmental%20Justice.pdf.

82. Kara Manke, *Historically redlined communities face higher asthma rates*, BERKELEY NEWS (May 22, 2019), https://news.berkeley.edu/2019/05/22/historically-redlined-communities-face-higher-asthma-rates/.

83. Carmin Chappell, *Climate change in the US will hurt poor people the most, according to a bombshell federal report*, CNBC (last updated Nov. 26, 2018), https://www.cnbc.com/2018/11/26/climate-change-will-hurt-poor-people-the-most-federal-report.html.

84. *See, e.g.*, U.S. GLOBAL CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT (2017), https://nca2018.globalchange.gov/.

85. *See, e.g.*, *EJSCREEN: Environmental Justice Screening and Mapping Tool*, U.S. EPA (last visited Jan. 4, 2020), https://www.epa.gov/ejscreen; Cal. Office of Envtl. Health Hazard Assessment, *CalEnviroScreen 3.0*, https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30 (last updated June 25, 2018) (follow the link for the CalEnviroScreen 3.0 Map to view health hazards).

86. *See, e.g.*, *Data Snapshots: Reusable Climate Maps*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. (last visited Jan. 4, 2020), https://www.climate.gov/maps-data.

87. *Supra* note 85.

88. *See infra* note 45.

from and whom to train or hire to install them. Decentralized and distributed generation is key for allowing communities to access benefits from managing their own energy generation.

Taken all together, these three elements of equitable community solar—ensuring project feasibility, benefiting marginalized communities, and prioritizing community governance—can serve as evaluation measures for existing policies, such as the California programs discussed in Part II, as well as guiding principles to help design equitable community solar policies, as discussed in Part III. These three components are necessary to actually achieve equitable community solar's ultimate goals—the holistic economic, health, resilience, and grid benefits that advocates seek.

II. CALIFORNIA'S ATTEMPT AT EQUITABLE COMMUNITY SOLAR: THE COMMUNITY SOLAR GREEN TARIFF PROGRAM (CSGT)

California offers a useful case study on equity in community solar policy, as the state's efforts touch on many of the issues raised by advocates and scholars. California's first attempt at community solar, a program called Enhanced Community Renewables, has so far failed to result in any operational projects.[89] The state later implemented a second community solar policy with a different statutory mandate and with previous lessons under its belt. The result is the CSGT program, a novel approach to equitable community solar that may lead to a small number of projects[90] and will likely further educate state regulators about how to best implement community solar.

A. Previous Community Solar Lessons Led to the CSGT

In 2013, Governor Jerry Brown signed into law Senate Bill (SB) 43, creating the Green Tariff/Shared Renewables (GTSR) program.[91] This broader initiative led to a subsidiary policy, the ECR program, California's first attempt

89. *See* PAC. GAS & ELEC. CO., MONTHLY GREEN TARIFF SHARED RENEWABLES PROGRESS REPORT OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) FOR ACTIVITIES OCCURRING IN AUGUST 2019 (Sept. 26, 2019), http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M319/K898/319898348.PDF (reporting 1.66 MW procured and 0 MW enrolled for ECR projects); SO. CAL. EDISON CO., SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) MONTHLY GREEN TARIFF SHARED RENEWABLES PROGRAM PROGRESS REPORT (Sept. 26, 2019), http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M319/K898/319898310.PDF (reporting six MW procured, zero MW online, and zero MW enrolled for ECR projects); SAN DIEGO GAS & ELEC. CO., MONTHLY GTSR PROGRAM PROGRESS REPORT OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E) FOR ACTIVITIES OCCURRING AUGUST 2019 (Sept. 25, 2019), http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M319/K530/319530422.PDF (reporting 2.4 MW procured and 0 MW subscribed for ECR projects).

90. The CSGT program has a cap of forty-one MW of generation capacity. *See Alternate Decision Adopting Alternatives to Promote Solar Distributed Generation in Disadvantaged Communities*, Decision 18-06-027, No. 14-07-002 at 56 (Cal. Pub. Utils. Comm'n, June 21, 2018) [hereinafter "Decision 18-06-027"]. This is comparted to the State, which has an overall generation capacity of about 80,000 MW. *See Total System Electric Generation*, *supra* note 15.

91. S.B. 43, 2013 Leg., Reg. Sess. (Cal. 2013).

at providing communities with access to offsite shared renewable energy when it opened for enrollment in 2016.[92] Simultaneously, the state began another process in 2013 when reauthorizing the state's NEM program for homes and businesses with onsite single customer solar via passage of Assembly Bill (AB) 327.[93] AB 327 directed the California Public Utilities Commission (CPUC), the state electricity regulatory authority, to develop specific alternatives to the standard net metering tariff to ensure the growth of renewable distributed generation "among residential customers in disadvantaged communities."[94] One alternative developed by the CPUC in 2018 is the CSGT.[95] Lessons from the ECR program influenced many of the features of the CSGT program,[96] which is expected to become operational in 2020.[97]

The ECR program is one of two components of the GTSR program.[98] The other component is called the Green Tariff program.[99] The purpose of SB 43 is to expand access to the benefits of renewable energy to customers who cannot access the benefits of onsite generation.[100] While renewable energy has grown significantly in California, about 50 percent of households are still not able to participate in onsite single customer solar generation, due to cost, location, renting, or other reasons.[101] As part of SB 43, the ECR program was intended to address that gap in access to onsite energy and create an avenue for people to access electricity from community-based renewable energy projects. The ECR program allows anyone within the service territories of California's three largest investor-owned utilities (IOUs)—Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), and Southern California Edison (SCE)—the opportunity to participate in "offsite" electrical generation, such as solar panels

92. *See Decision Approving Green Tariff Shared Renewables Program for San Diego Gas & Elec. Co., Pacific Gas & Elec. Co., & S. Cal. Edison Co. Pursuant to S. B. 43*, Decision 15-01-051, No. 12-01-008, No. 12-04-020, No. 14-01-007 (Cal. Pub. Utils. Comm'n, Jan. 29, 2015) [hereinafter "Decision 15-01-051"]; Decision Addressing Participation of Enhanced Community Renewables Projects in the Renewable Auction Mechanism & Other Refinements to the Green Tariff Shared Renewables Program, Decision 16-05-006, No. 12-01-008, No. 12-04-020, No. 14-01-007 (Cal. Pub. Utils. Comm'n, May 12, 2016) [hereinafter "Decision 16-05-006"].

93. Assemb. B. 327, 2013 Leg., Reg. Sess. (Cal. 2013).

94. CAL. PUB. UTIL. CODE § 2827.1(b)(1).

95. *Alternate Decision Adopting Alternatives to Promote Solar Distributed Generation in Disadvantaged Communities*, Decision 18-06-027, No. 14-07-002 (Cal. Pub. Utils. Comm'n, June 21, 2018) [hereinafter "Decision 18-06-027"].

96. *See id.* at 39–41.

97. *See* Resolution E-4999, "Pursuant to Decision 18-06-027, Approving with Modification, Tariffs to Implement the Disadvantaged Communities Green Tariff and Community Solar Green Tariff Programs" at 69 (Cal. Pub. Utils. Comm'n, Jan. 29, 2015), http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M297/K211/297211380.PDF.

98. *See* CAL. PUB. UTIL. CODE § 2833(p); *Decision Approving Green Tariff Shared Renewables Program for San Diego Gas & Elec. Co., Pacific Gas & Elec. Co., & S. Cal. Edison Co. Pursuant to S. B. 43*, Decision 15-01-051, No. 12-01-008, No. 12-04-020, No. 14-01-007 (Cal. Pub. Utils. Comm'n, Jan. 29, 2015) at 2–4 [hereinafter "Decision 15-01-051"].

99. *Id*.

100. *See* CAL. PUB. UTIL. CODE § 2831(a), (b), (g).

101. *See* Feldman et al., *supra* note 40, at v; *Low-Income Barriers Study*, *supra* note 66, at 43–54.

or other renewables located somewhere other than on their own building or land.[102] The ECR program allows customers to contract directly with a developer and subscribe to a specific renewable energy project (such as solar) for all or a portion of the customer's energy needs.[103] The customer receives a credit from their utility for the amount of energy generated by their share of the ECR project.[104] The CPUC began rulemaking for the ECR program in 2015 and finalized most of the rules in 2016.[105] The three regulated utilities held the first auctions to procure ECR projects in August of that year.[106]

According to the CPUC's final rules for the ECR program, the IOUs credit customers for their share of community solar generation at around the "wholesale" rate for generating renewable electricity, the price that the utility would pay for electricity from renewable sources on the open market.[107] For example, under PG&E's rates for its ECR program, the credit for customers is roughly 6¢/kWh.[108] Then a customer and the solar project developer separately determine what rate the customer will pay the developer for the subscription to the community solar project.[109] If, for example, the customer is paying the ECR developer 9¢/kWh, the customer would be spending more money overall. They would pay 3¢/kWh more than they would otherwise pay to the utility if they did not subscribe to the ECR solar project.

For this reason, the rate that the IOUs credit customers is a key factor in whether ECR projects will make financial sense for developers and customers. The amount of credit that customers receive from the IOUs will determine how much the customers are willing to pay developers. And developers must obtain enough revenue through the subscription fees it charges its customers to cover the costs of the project, otherwise there will be no incentive to develop an ECR project.

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102. *See* CAL. PUB. UTIL. CODE §§ 2831–2833.

103. Decision 15-01-051, *supra* note 98, at 61–64. The ECR program allows any renewable energy generation and is not limited to solar energy.

104. *Id*. at 65–66.

105. *See id*. at 56–75; *See Decision Addressing Participation of Enhanced Community Renewables Projects in the Renewable Auction Mechanism & Other Refinements to the Green Tariff Shared Renewables Program*, Decision 16-05-006, No. 12-01-008, No. 12-04-020, No. 14-01-007 (Cal. Pub. Utils. Comm'n, May 12, 2016) [hereinafter "Decision 16-05-006"]. One lingering issue related to requirements for the developer of an ECR project to obtain a legal opinion on securities compliance was ultimately decided in 2017. Decision 15-01-051, *supra* note 98, at 71; Decision 16-05-006, *supra* note 105, at 34; *Decision Modifying the AmLaw 100 Securities Opinion Requirement for Enhanced Community Renewables Projects Under the Green Tariff Shared Renewables Program in D.15-01-051*, Decision 17-07-007, No. 12-01-008, No. 12-04-020, No. 14-01-007 (Cal. Pub. Utils. Comm'n, July 13, 2017).

106. Brian Orian & Briane Ness, *Results from California's First Community Solar RFO*, RENEWABLE + LAW BLOG (Mar. 28, 2017), https://www.lawofrenewableenergy.com/2017/03/articles/solar/results-from-californias-first-community-solar-rfo/.

107. Decision 15-01-051, *supra* note 98, at 65.

108. *Electric Schedule E-ECR: Enhanced Community Renewables Program*, PAC. GAS & ELEC. CO. 3 (Oct. 1, 2019), https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-ECR.pdf.

109. Decision 15-01-051, *supra* note 98, at 64.

In contrast to the design of the ECR program, in onsite single customer solar under NEM, a customer is credited for solar power they generate at approximately the retail rate, the same rate as they would otherwise pay the utility.[110] In California, the average price the utility charges a residential customer to generate and deliver electricity to them—the retail rate—is approximately 19¢/kWh.[111] Therefore, when customers generate solar energy under NEM, they are credited on their utility bill for about 19¢/kWh of solar generation.[112] If the customer did not pay upfront for the full cost of installing the system to own it outright, they are likely paying the third-party installer of the system monthly payments for the solar energy being generated by the panels. For example, if the NEM customer is paying the developer 9¢/kWh, they would be saving money overall because the net of the +19¢/kWh credit on their bill and -9¢/kWh paid to the developer means they are paying 10¢/kWh less than they would otherwise pay to the utility if they did not have solar.

Because the developer of an ECR project is not likely to be able to cover its costs of development if it charges the customer less than 6¢/kWh, the developer would be forced to charge the ECR customer a premium to cover its costs.[113] Not many customers are interested in paying more for their power, even if it is cleaner.[114]

Indeed, this pricing structure, among other issues, has led to none of the utility's ECR programs securing any customers as of September 2019. The three IOUs have only made conditional commitments to procure projects—6 MW by SCE, 2.4 MW by SDG&E, and 1.66 MW by PG&E—but have not enrolled any subscribers.[115] Moreover, that ten MW of greenlit projects is less than 2 percent of the 600 MW allocated to the GTSR program overall.

Applying the three elements of equitable community solar proposed in Part I to evaluate the ECR program is a brief exercise. As it currently stands, the program fails to achieve project feasibility of creating facilities that allocate the benefits of solar generation to multiple customers, and in turn also fails to ensure

110. *See* Jason Coughlin et al., *supra* note 39, at 4.

111. *Electric Power Monthly: Table 5.6.A. Average Price of Electricity to Ultimate Customers by End-Use Sector*, U.S. ENERGY INFO. ADMIN. (Oct. 24, 2019), https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a.

112. This is a rough estimate. Actual NEM credit values vary not only by utility, but also by customer. In addition, most customers participating in NEM now have to transition to a "time-of-use" rate that ever further complicates exactly how much their retail rate and NEM credit rate is based on the specific time of day. *See Net Energy Metering (NEM)*, CAL. PUB. UTILS. COMM'N (last visited Jan. 7, 2020), https://www.cpuc.ca.gov/General.aspx?id=3800.

113. *See* Brian Orion, *A Rough Start, Possible Reforms for California's Community Solar Program*, GREENTECH MEDIA (Apr. 18, 2017), https://www.greentechmedia.com/articles/read/a-rough-start-possible-reforms-for-californias-community-solar-program (estimating developers may need to charge a premium of 3¢/kWh).

114. *See id.* (3¢/kWh considered outside the range many customers will tolerate).

115. *See* PAC. GAS & ELEC. CO., PROGRESS REPORT, *supra* note 89; SO. CAL. EDISON CO., MONTHLY GREEN TARIFF REPORT, *supra* note 89; PROGRESS REPORT OF SAN DIEGO GAS & ELECTRIC, *supra* note 89.

benefits to marginalized communities or community governance. Fortunately, just as the ECR program failure was becoming apparent, California energy regulators were beginning a separate policy-making process to take a second crack at the community solar nut.

B. The CSGT is a Novel and Uncertain Approach to Equitable Community Solar, but a Step Forward

In 2017–2018, during the second half of the AB 327 implementation proceeding, the CPUC had an opportunity to revisit the issue of equity in its distributed generation policies.[116] Along with directing the CPUC to revisit and extend a version of the NEM program for onsite single customer solar, AB 327 required the CPUC to provide alternatives to NEM and ensure the growth of distributed renewable energy among "disadvantaged communities."[117]

In implementing AB 327, the CPUC created a modest tariff-based community solar program: the CSGT.[118] The CSGT program aims "to allow primarily low-income customers in certain disadvantaged communities to benefit from the development of solar generation projects located in their own or nearby disadvantaged communities" to "provide benefits to the participating customers, benefits to their communities, and benefits to the environment."[119] The CSGT is meant to fill a gap in clean energy programs, specifically serving renters and low-income communities who do not reside in multifamily buildings, and provide them a way "to access green benefits from a local source at an affordable cost."[120] Furthermore, it strives to allow indirect community ownership and leverage unique community solar funding sources.[121]

The CSGT is a community solar program based on a "green program" or "green tariff" model rather than VNEM.[122] Subscribing residential customers on the CSGT get 100 percent renewable energy at a 20 percent discount as compared to their otherwise applicable electricity bill rate.[123] The program requires community involvement; CSGT projects must have a nonprofit or government

116. *See* Anne E. Simon, *Administrative Law Judge's Ruling Seeking Updated Proposals and Comments on Alternatives for Disadvantaged Communities*, No. 14-07-002 (Cal. Pub. Utils. Comm'n, Mar. 14, 2017).

117. CAL. PUB. UTIL. CODE § 2827.1(b)(1). The term "disadvantaged communities" was not defined in the statute, but is now commonly used in California energy policy to refer to communities facing higher pollution burdens and other vulnerabilities. *See Disadvantaged Communities*, CAL. PUB. UTILS. COMM'N (last visited Mar. 29, 2020) https://www.cpuc.ca.gov/discom/. Unless otherwise directed, the state typically uses the CalEnviroScreen, a tool created by the California EPA, to designate specific census tracts as disadvantaged communities. *Id.*

118. Decision 18-06-027, *supra* note 90, at 56.

119. *Id.*

120. *Id.* at 57.

121. *Id.*

122. *Id.* at 64.

123. *Id.* at 74.

"local sponsor." The local sponsor is eligible to receive the 20 percent bill discount.[124]

1. Key Elements of the CSGT Program

- Program Capacity: The CSGT program is limited to forty-one MW in total across all IOUs and community choice aggregators (another type of energy provider in California).[125] This represents an estimated 6,724 households.[126]
- Project Size: The upper limit on project size is three MW or 30 percent of the total capacity in that IOU's CSGT program, whichever is larger.[127] The program explicitly does not set a lower limit on project size.
- Definition of Disadvantaged Community ("DAC"): One of the top twenty-five most vulnerable census tracts statewide as identified by CalEnviroScreen 3.0, as well as the "22 census tracts in the highest 5 percent of CalEnviroScreen's Pollution Burden, but that do not have an overall CalEnviroScreen score because of unreliable socioeconomic or health data."[128]
- Location of Projects & Customers: CSGT projects must be sited in a DAC and subscribers to a project must be in the same census tract.[129]
- Ownership: The CSGT is meant to allow a "sense" of indirect community ownership in projects as well as community involvement. The program does not incentivize financial ownership, but indirect ownership is still technically feasible because there can be third party ownership, and participants can be part of an entity that owns the project.[130]
- Low-Income Requirement: 50 percent of customers must be low-income customers. For this program, the CPUC defines low-income customers as those eligible for California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance Program (FERA).[131]

124. *Id*. at 76–78.
125. *Id*. at 65.
126. *Id*. at 65 n.40.
127. *Id*. at 73.
128. *Id*. at 16.
129. *Id*. at 66, 68. For certain communities in the San Joaquin Valley, subscribers may be located in a DAC within forty miles of the DAC where the project is located. *Solar in Disadvantaged Communities*, CAL. PUB. UTILS. COMM'N, *supra* note 79.
130. *See* Decision 18-06-207, *supra* note 92, at 75 (stating that the CSGT program "allows for local ownership of projects if feasible." The CPUC declined to set requirements or incentives for community ownership, instead leaving "this to the market and communities to determine.").
131. *Id*. at 72.

- Bill Credit: The CSGT program provides a flat guaranteed 20 percent discount on a customer's total bill based on their "otherwise applicable residential tariff" before signing up for the CSGT program.[132]
- Community Sponsorship:
    - Requirement: In order to demonstrate community involvement, CSGT projects must have a "non-profit community-based organization or local government 'sponsoring' a project on behalf of residents."[133] Sponsorship requires a letter of commitment from the organization, which must include elements such as a demonstration of community interest, estimates of size and subscriptions, a preliminary outreach plan, and community siting preferences.[134] Sponsors should also include job training and workforce development efforts.[135]
    - Incentive: The local sponsor is also eligible to receive the same CSGT bill credits (i.e., the 20 percent discount) for up to 25 percent of the project's capacity, but not more than the sponsor's energy needs.[136]
- Procurement Process: Projects are accepted through an auction-based process, in which the project is selected after a competitive solicitation. Once accepted, the IOU executes a Power Purchase Agreement (PPA) with the applicant solar project developer. The CSGT program does not require any direct relationship between the subscriber and the project developer.[137] IOUs must issue at least two Request for Offers (RFOs) per year for CSGT projects and prioritize four types of projects in particular, listed below.[138]
    - Prioritizations:
        - Projects located in top 5 percent most vulnerable communities (about 500 census tracts).[139]
        - Projects located in San Joaquin Valley pilot communities.[140]
        - Projects that leverage other government funding or projects "that provide evidence of support or endorsements" from local or state climate programs or initiatives.[141]

132. *Id*. at 74.
133. *Id.* at 76.
134. *Id*.
135. *Id*. at 86.
136. *Id*. at 77.
137. *Id*. at 79.
138. *Id*. at 82.
139. *Id*. at 65, 82.
140. *Id*. at 82.
141. *Id*. at 82.

  - Projects that include job training and workforce development factors: "As part of their RFO process, utilities should prioritize job training and workforce development factors. Further, sponsors should ensure that their efforts include job training and workforce development efforts to benefit the local communities which would benefit from the projects."[142]
- Cost Containment: To constrain the costs associated with the CSGT program, the CPUC requires the IOUs to "limit contract awards to Community Solar Green Tariff program projects whose bid price is at or below the higher of 200 percent of the maximum executed contract price in either the Renewable Auction Mechanism's as-available peaking category or the Green Tariff program."[143]

2. Applying the Equitable Community Solar Framework

Applying the definition of equitable community solar proposed in Part I demonstrates the progress made in the design of the CSGT compared to the ECR program.

a. Ensuring Project Feasibility

Because the CSGT is not a VNEM-based program, the economics of developing projects are a bit more obscure, and ultimately it is not clear if projects will be constructed under this program. To build a project, a solar project developer must first secure a PPA from the utility, which will then allow the developer to finance the project. To secure a PPA, the developer must submit a bid in a competitive, auction-based solicitation. The bid is an offer to sell power from a proposed CSGT project at a specified price. As noted above, the utilities may not accept bids more than twice the cost of the highest bid accepted in another specified renewable energy auction. By design, auction bids are confidential, so developers do not know what price will win in a CSGT procurement auction, and thus how much a developer will get paid for power from a CSGT project. However, wholesale renewable energy contracts for utility scale solar have recently been in the range of 2 to 4¢/kWh,[144] so the CSGT bid cap might be around 4 to 8¢/kWh.[145] At that range, it is possible, but not clear,

142. *Id*. at 86.

143. *Id*. at 84.

144. Mark Bolinger et al., *Utility-Scale Solar: Empirical Trends in Project Technology, Cost, Performance, and PPA Pricing in the United States – 2019 Edition*, BERKELEY LAB 37 (Dec. 2019), https://emp.lbl.gov/sites/default/files/lbnl_utility_scale_solar_2019_edition_final.pdf (reporting most post-2017 contracts in the study's sample are priced between $20/MWh and $40/MWh).

145. However, CSGT may have higher executed contracts than 4¢/kWh, so 200 percent of the highest such contract may be higher than 8¢/kWh.

if such revenue will be enough to cover construction, customer acquisition, and other costs to build a project.[146]

On the other hand, the economics of participation from a customer's standpoint are in some ways clearer for the CSGT than a net metering-based program. With net metering programs, a customer receives credits on their electricity bill and pays the utility less per month; however, they either have to pay upfront to install their system or pay the solar company monthly payments in addition to their utility bill. Therefore, it can be a bit more challenging to calculate how much a customer might save overall. In contrast, with the CSGT program, the customer has a clear and specific 20 percent discount and no additional bills. In sum, it appears the CSGT program has potential for projects to get constructed and for customers to be interested in participating.

b. Benefiting Marginalized Communities

If projects can be built, the CSGT will represent a significant step forward for equitable community solar in California. Even though the program is limited in its overall size to only be up to forty-one MW, it would allow the development of local solar projects that customers could choose to receive their power from at a clear discount and with no upfront costs. It would allow customers in communities overburdened from pollution to access these benefits and would not only be limited to low-income customers. Nevertheless, it is a major issue of fairness and equity that the program size is so small, that customers do not have access to bill credits as valuable as net metering-based credits, and that the procurement pricing limitations leave so much doubt as to whether projects can get built at all.

Compared to the ECR program, the CSGT moves the state a few steps forward, closer to equitable community solar. The CSGT was specifically designed to target barriers faced by disadvantaged communities in accessing the benefits of distributed renewable generation, using the geographic targeting tool CalEnviroScreen to identify vulnerable communities to be the beneficiaries of the program. In addition, the CSGT also emphasizes economic equity by requiring that 50 percent of customers be low income. On the one hand, this may drive accessibility and affordability for working class families because they must be included, but it may also make it challenging to build projects and sign up enough customers.

146. While 9¢/kWh ($90/MWh) has been a high enough price to enable projects in a comparable context, a municipal electric service provider's feed-in tariff program for local projects sized below one MW, the CSGT program is a bit more complex in ways that might make development costlier. *See Feed-in Tariff*, MCE (last visited Jan. 8, 2020), https://www.mcecleanenergy.org/feed-in-tariff/#FIT.

c. Prioritizing Community Governance

The CSGT does not focus on direct community control, governance, or asset ownership of energy. Yet, in designing the CSGT, the CPUC argued that the program still promoted a form of ownership by construing ownership as "the sense of [the community] associating themselves with the project" because "the purpose of community solar is to link the community that is served with the site of the project."[147] It aims to achieve this in part by ensuring that "community members can see or easily get to the location of the project."[148] Proximity of projects to customers is valuable, but to be clear, there is no meaningful pro-ownership element in this policy, and it requires a stretch of the imagination to view it as such. While the program does not incentivize actual collective asset ownership of solar projects, indirect ownership is still technically feasible because there are no restrictions to a third party owning the system, and community members could self-organize to be part of an entity that owns the project, such as a nonprofit or cooperative.[149]

Even though it remains to be seen if community members will form legal entities to cooperatively own the projects without financial incentives or support, the CSGT does promote local community involvement in a few other ways. The program aims to promote local solar generation in pollution-burdened communities by requiring that customers and projects are within five miles of another.[150] This advances decentralized and distributed generation close to the source of demand. In addition, by requiring a local community sponsor, projects will only move forward if they have some connection to the community and its public institutions. By allowing the sponsor to access the 20 percent discount, the program incentivizes participation by an anchor institution and encourages the use of local community building rooftop space for community solar.

3. Evaluating the CSGT Based on the Equitable Community Solar Framework

Overall, the CSGT achieves a few key advances. First, it offers bill savings and a predictable customer discount to participants. This encourages customer adoption and supports consumer protection. Second, it specifically targets benefits based on geographic and economic considerations. Third, it focuses benefits for residential customers, but includes community anchor institutions to encourage project development and expand social benefits. If the projects can be built, the CSGT would represent a small but important improvement beyond the status quo, achieving a bit more in the way of benefiting marginalized

147. Decision 18-06-027, *supra* note 90, at 65.

148. *Id.*

149. *See* Decision 18-06-027, *supra* note 90, at 75 (stating that the CSGT program "allows for local ownership of projects if feasible." The CPUC declined to set requirements or incentives for community ownership, instead leaving "this to the market and communities to determine.").

150. *Id*. at 66, 68.

communities than promoting community governance, but nevertheless enabling community involvement slightly.

Yet, there are characteristics of the CSGT which may limit its scale and success. Primarily, the procurement mechanism, pricing structure, and customer qualification requirements may turn out to limit project feasibility. And the program's forty-one MW capacity limit is small in terms of the scale of energy needed to serve the target constituencies. Thirty-two percent of California's IOU customers are considered low-income,[151] and the CSGT defines disadvantaged communities as the 25 percent most pollution-burdened and vulnerable census tracks in the state. But the program would only serve, at most, 0.05 percent of the state's residents.[152] Given this sad reality, it is imperative that California revisit the program with an eye to fully meeting the principles of equitable community solar.

III. DEVELOPING EFFECTIVE EQUITABLE COMMUNITY SOLAR PROGRAMS

Third wave energy regulations designed to achieve energy justice are the strategic solution for tackling the interwoven crises of climate change and social injustice.[153] With only a decade remaining for radical action,[154] evidence points to the need and efficacy of scaling up a movement for renewable energy by fitting it within broader social movements for equity, rather than the other way around.[155] Treating equity as a secondary consideration to be added on to renewable energy policy, like a side dish rather than baked in, will fail to adequately respond to the larger problem of an extractive economy that itself has inequity baked in.[156] Instead, the intersectional framework of energy justice has the potential to speed up solutions by identifying the much larger pool of allies interested in the benefits of an equitable clean energy economy—rather than the critical but smaller pool of conservation-driven environmentalists and wealthy profit-driven corporations that have historically supported clean energy policy.[157] A crucial component of energy justice—in policy and practice—is inclusive and cooperative governance of local energy generation, like equitable community solar.[158] The path forward for equitable community solar in California and beyond lies in developing a detailed policy framework to reform energy regulations in every state, and this Article proposes key elements for

151. Based on qualifications for the California Alternative Rates for Energy (CARE). LOW-INCOME BARRIERS STUDY, *supra* note 6, at 15.

152. The CPUC estimated forty-one megawatts of capacity would serve the equivalent of 6,724 households. There are 12,965,435 households in California. *QuickFacts: California*, U.S. CENSUS BUREAU (last visited Jan. 8, 2020), https://www.census.gov/quickfacts/CA.

153. *See supra* Part I.

154. *See* Miller & Croft, *supra* note 55.

155. *See* Teirstein, *supra* note 3; YouGov Blue, *supra* note 3.

156. *See supra* Subpart I.A.

157. *See id*.

158. *See Equitable & Just National Climate Platform*, *supra* note 31, at 4.

equitable community solar program design so that advocates and policymakers may expand on this framework and flesh out concrete policies for their jurisdictions. Applying this framework, California can both improve the CSGT and begin developing an even more equitable community solar policy for the state.

A. Expanding Equitable Community Solar Principles into Program Objectives and Policy Mechanisms

Equitable community solar is a unique strategy because of its potential to achieve goals that other energy justice strategies may be less effective at reaching, such as the opportunity for renters and low-income customers to benefit from health, wealth, and other advantages of the renewables transition. Therefore, like any strategy, it is valuable to map out the tactical program design elements that can achieve specific objectives on the path to long-term goals. The proposed guidance below is not meant to be a complete and exhaustive list of specific mechanisms that should be a part of equitable community solar policy design,[159] but is instead meant to be illustrative of a process that starts with guiding principles and elaborates objectives that support these principles so that sound policies can be developed. Critically, policy development processes should enable open and accessible public participation, with intentional efforts made to include and support the participation of marginalized communities.

The proposed equitable community solar guiding principles of (1) ensuring project feasibility; (2) benefiting marginalized communities; and (3) prioritizing community governance[160]—along with the California case studies[161]—provide the starting point to develop more granular program objectives that will achieve these principles. As a starting point, this Article encourages four such objectives: viable compensation, customer targeting, compensation incentives (or "adders"), and customer protection and program simplicity.

First, to achieve project feasibility, the experience of the ECR and the CSGT show the need to ensure viable compensation. Viable compensation has two components: project development and customer participation. First, the design of pricing and financial elements of the program must, at a minimum, be sufficient for project developers (for-profit or community-based) to finance and construct projects that will breakeven and offer at least enough additional return to incentivize engaging in the effort to build a project. Moreover, the pricing and financial elements must, at a minimum, be sufficient to represent value to the potential electricity customer subscribers as compared to their current electricity costs.

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159. This analysis will focus on programs designed to enable equitable community *shared* solar, however, the shorter term "community solar" will be used, given the common practice in policy-making realms to refer to shared solar simply as community solar.

160. *See supra* Subpart I.A.

161. *See supra* Part II.

Second, for projects to benefit marginalized communities, policies must target specific customer groups. There are various ways to approach this, but two key routes are (1) income- or wealth-based targeting and (2) geography-based targeting. Such targeting can apply to whomever qualifies for the community solar program overall or can apply to minimum requirements for participation (e.g., 25 percent of a project's customers must be from marginalized communities). Alternatively, customer targeting could be addressed entirely by compensation adders alone, discussed below. Eliminating program caps overall, or at least for marginalized communities and community-owned projects, would also ensure robust benefits are achieved and realized by the intended beneficiaries.

Third, community solar programs must employ compensation incentives, also called "adders," for projects to both benefit marginalized communities and enable community governance. An adder essentially *adds* some amount of value to a developer, a customer—or both—to encourage certain types of projects or participation by particular target groups. Such incentives are particularly important to ensure that benefits reach marginalized communities, by either adding payment values to project developers that serve such communities, or by providing an additional credit or electric bill savings directly to customers. These adders can be based on the definition of "marginalized communities" (or other target communities) that a jurisdiction develops, and at a minimum should include incentives for low-income households and projects in targeted geographic areas such as pollution-burdened census tracts. In addition, adders are important for promoting community-owned projects. Other policy goals may be advanced by incentives such as prioritizing solar on the built environment (e.g., rooftops and brownfields); workforce development (e.g., job training, local hiring requirements, higher paying jobs, union jobs); locational grid benefits; or projects paired with storage (particularly for critical infrastructure like hospitals, schools, or shelters).[162]

Fourth, for projects to benefit marginalized communities and enable community governance, policies must promote customer protection and program simplicity. Potential mechanisms include consumer disclosures, outreach, and education; clear statements or projections of program costs and benefits; on-bill financing; eliminated (or modified and more inclusive) credit requirements; limits on cancelation or debt collection fees; and accessible project development processes (via interconnection or procurement applications) to ensure that community-based organizations may build community-centered projects.

162. The Massachusetts SMART program provides a useful illustration of adders. *See, e.g.*, John Farrell, *The New 1,600 MW Solar Program for Massachusetts Really is SMART*, INST. FOR LOCAL SELF-RELIANCE (Apr. 11, 2017), https://ilsr.org/the-new-1600-mw-solar-program-for-massachusetts-really-is-smart/.

These four objectives can help guide policymakers in creating new equitable community solar programs or improving programs, including California's CSGT.

B. California Should Improve the CSGT While Developing Equitable VNEM

The design and scale of the CSGT program represent a cautious approach to testing out community solar; yet, as discussed, equitable community solar is critical to achieving energy justice. Particular adjustments to the CSGT related to the four program design objectives discussed above can help the CSGT embrace the three guiding principles for equitable community solar. Ultimately, California would benefit from shifting to an "Equitable VNEM" program in place of the CSGT by moving to a retail-rate VNEM model paired with other features that promote community governance and benefits for marginalized communities. Alternatively, or at the same time, regulators can improve the CSGT along the lines of each of the four program objectives to shift from serving 0.05 percent of customers to at least 5 percent of the state's population.

First, regarding viable compensation and project development—as discussed above—the CSGT's cap on auction bid prices for potential projects may limit the feasibility of project construction, particularly for smaller projects, nonprofit or other projects that are not able to access the federal solar investment tax credit, or other projects that may uniquely benefit marginalized communities but be more costly to develop. If California adopted a VNEM-based community solar program, it would increase the potential funding for projects, both making project development more viable in general, as well as promoting the ability to advance community ownership and other benefits for marginalized communities. For example, if the retail rate and VNEM credit were around 19¢/kWh, then even with 5¢/kWh (or a little over 25 percent) of the credit being retained by a customer (to save that much on their electricity bill), 14¢/kWh would be available for project development costs, as opposed to the 4 to 8¢/kWh that might be the maximum allowed under the CSGT.[163]

In the interim, while developing a VNEM program, the state could still make improvements on the tariff-based CSGT program to advance the objective of viable compensation by either raising the maximum auction bid or instead moving to a transparent and clear price signal. With the first approach, California could increase the CSGT's maximum bid price for project PPAs, from 200 percent to perhaps 300 percent of the contract price.[164] Doing so might allow projects to be built with contracts possibly being able to fall within the higher end of the estimated new maximum cap of 6 to 12¢/kWh. Or alternatively, the CSGT would be even more likely to achieve viable compensation for an array of

163. *See supra* Subpart II.B.2.

164. Currently, contract awards to CSGT program projects are capped at the maximum executed contract price in either the Renewable Auction Mechanism's as-available peaking category or the CSGT program. *See* Decision 18-06-027, *supra* note 90, at 84.

projects if instead of an auction for projects, developers knew the specific price at which power would be purchased in the program, as with a feed-in tariff.[165] CSGT projects could be guaranteed a PPA price such as 14 to 18¢/kWh if not allowing any adders beyond this, or a base price of 10 to 14¢/kWh if allowing adders. If adders are employed, as discussed below, it would also be easier to balance goals of cost containment, benefiting marginalized communities, and promoting community governance, because the general price could be set lower for larger projects that do not meet other equity features, and which may be feasible at a lower contract price without incentives.

Second, for targeting customers such as marginalized communities, the CSGT does a good job of targeting customers geographically based on pollution burden, but it does not offer participation or benefits for anyone outside of these zones. To expand benefits and better achieve the principles of equitable community solar, the CSGT could open up participation to low-income or low-wealth households or community-owned projects located anywhere in the service territories of the regulated utilities. Moreover, while the CSGT's 50 percent minimum participation requirement for low-income customers helps to target those customers, it could prevent the development of projects that would otherwise meet the program's overall goals, such as serving pollution-burdened communities. Instead, the requirement could be lowered to 25 percent with a financial incentive for projects over half subscribed by low-income households.

Third, adders and incentives could be incorporated into the CSGT to allow the program to be more nuanced and balance cost minimization goals with policy goals of promoting certain kinds of projects and serving particular subgroups of customers. For instance, adders (perhaps in the range of 2 to 5¢/kWh) could be provided to smaller projects (e.g., under one MW), those that serve more low-income customers or other marginalized customers, projects that are community-owned or controlled, and other projects with features mentioned above such as those on built environments and not accessing the federal investment tax credit.

Fourth, the CSGT has some strengths in terms of customer protection and program simplicity, particularly on the consumer side, but it has plenty of room for improvement on the side of the developer's experience. The guaranteed 20 percent bill discount for participating consumers, without any other fees, protects customers from potential deceptive business practices and makes the value of the program transparent. However, as noted above, the auction method for project procurement does not provide ease of participation for community-based projects, particularly the type that might be smaller, more local, and focused on benefiting the community. There are only two auctions per year and it is unclear what bid prices will succeed. In addition to other recommendations made above, California could either change the CSGT program to accept applications on a rolling basis or, at a minimum, increase the number of auctions per year.

165. *See, e.g.*, MCE, *supra* note 146.

Finally, a major issue overall with the CSGT is the maximum size of the program. The forty-one MW of solar generation capacity for the program is a mere 0.05 percent of the state's total electrical generation capacity. Given that about 50 percent of households cannot access onsite solar generation, the program is utterly insignificant compared to the need. The GTSR program overall has a maximum program size of 600 MW including ECR projects, so at a minimum California ought to allow the CSGT projects to count as ECR projects and continue to be greenlit as the available GTSR program capacity allows. Beyond that, a reasonable goal might be to serve 5 percent of the state's customers, with approximately four gigawatts of capacity.

After the CSGT launches in 2020, with time running short to take drastic action to address climate change in an equitable fashion, advocates and regulators should pay close attention to see if projects get built, if marginalized communities see robust benefits, and whether communities are able to govern and manage their own generation. While some success is possible and is absolutely hoped for, the myriad of issues that exist with the CSGT's current design already point to room for improvement. As the program is evaluated and revisited, the guiding program objectives and policy mechanisms recommended above may offer a route to increase its effectiveness.

CONCLUSION

Equitable community solar presents a significant hope—not just for customers and policymakers, but for social justice and climate advocates alike. At a time when federal climate action is uncertain, it is a policy tool that can be employed locally, at the city or utility level, or statewide for marginalized communities and the general public to personally benefit from a clean energy economy. Yet, over the past several years it seems to have become murkier rather than clearer; a mesmerizing jewel just out of grasp. But a period of experimentation and failure, as exemplified by California's community solar efforts, is natural in any policy and market evolution. Now, with the benefit of these lessons and insights, an equitable community solar framework has become clear, along with guiding program objectives and policy mechanisms that can direct the development of detailed policies around the country. And it is not a moment too soon to get it done.
