BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas And Electric Company (U39E) for Review of the Disadvantaged Communities – Green Tariff, Community Solar Green Tariff and Green Tariff Shared Renewables Programs.	Application 22-05-022 (Filed December 2, 2022)
And Related Matters	Application 22-05-023 Application 22-05-024

CLEAN COALITION COMMENTS ON ADMINISTRATIVE LAW JUDGE'S RULING SETTING ASIDE SUBMISSION OF THE RECORD TO SEEK COMMENTS ON COST-EFFECTIVENESS CONSIDERATIONS

/s/ BEN SCHWARTZ
Ben Schwartz
Policy Manager
Clean Coalition
1800 Garden Street
Santa Barbara, CA 93101
Phone: 626-232-7573
ben@clean-coalition.org

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I. INTRODUCTION

Pursuant to Rule 6.2 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission") the Clean Coalition respectfully submits these reply comments in response to the *Administrative Law Judge's* ("ALJ's") *Ruling Setting Aside Submission of the Record to Seek Comments on Cost-Effectiveness Considerations,* issued at the Commission on June 23, 2023. After speaking with multiple solar developers, we urge the Commission to consider:

- Infill projects create additional value as compared to remote ground mount projects and should receive extra compensation accordingly.
- Allowing virtual pairings of solar and storage and much larger deployments of storage in the vicinity lets developers take advantage of economies of scale and provide the greatest range of benefits with the lowest $/MWh price.
- Infill projects should receive compensation for avoiding Transmission Access Charges and the Power Charge Indifference Adjustment.
- When accounting for the full range of benefits created by infill projects, the NVBT **does not** result in a cost shift.
- The $/MWh for Local Solar is less expensive than remote wholesale generation when considering factoring in avoiding Transmission Access Charges and the

Power Charge Indifference Adjustment. When considering the true cost to ratepayers, Local Solar is more cost-effective.

II. DESCRIPTION OF PARTY

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement and interconnection of distributed energy resources ("DER") — such as local renewables, demand response, and energy storage — and we establish market mechanisms that realize the full potential of integrating these solutions for optimized economic, environmental, and resilience benefits. The Clean Coalition also collaborates with utilities, municipalities, property owners, and other stakeholders to create near-term deployment opportunities that prove the unparalleled benefits of local renewables and other DER.

III. COMMENTS

1. *The record in this proceeding is deficient in regards to the cost-effectiveness of existing, modified, and new community renewable energy program proposals. Parties should submit Total Resource Cost, Ratepayer Impact Measure, and Program Administrator Cost test results for their proposals based on the Standard Practice Manual and adhere to previous Commission guidance on the application of cost-effectiveness evaluation and tests.*

The Clean Coalition has supported the Net Value Billing Tariff ("NVBT"), proposed by the Coalition for Community Solar Access ("CCSA"), throughout the proceeding. We feel that it is most appropriate to leave the full cost-effectiveness calculations to be presented in CCSA's comments. However, it is worth noting that the record is not completely deficient in regard to the cost-effectiveness results for CCSA's proposal. The Prepared Direct Testimony of Mark Fulmer contains results for both the Total Resource Cost ("TRC") test and the Ratepayer Impact Measure ("RIM") on pages 25-27. Each of the 12 scenarios Mr. Fulmer considered resulted in TRC scores of 1.05 or higher, and the six RIM scores were all at or above 0.85. Therefore, the NVBT will benefit participating ratepayers and the broader grid, without burdening non-participating ratepayers. The Clean Coalition looks forward to responding to any further cost-effectiveness testing that CCSA presents in opening comments.

Additional Value Created by Infill Projects

Cost-effectiveness tests are only representative of the program being evaluated if the costs and benefits are fully captured as variables in the formulas used for each test. AB 2316 gives the Commission liberty to use its preferred method for calculating a benefit-cost analysis but requires that a full accounting of the range of costs and benefits of **DER**.[1] However, as the Clean Coalition has showcased in past filings, there is additional value created by infill projects (located on rooftops, parking lots, or parking structures) beyond that of ground mount projects. One of the first key differences is that infill projects will be deployed within the same substation area as subscribers, whereas ground mount projects could be located anywhere in the utility service territory, requiring a longer transmission of energy before it reaches the end-user (subscriber). On the other hand, infill projects that do not require usage of the transmission grid to deliver energy to the subscribers, creating additional value that should be considered in cost-effectiveness calculations and compensation for energy exports. Other values that are unique to infill projects include: local reliability (including dispatchability when paired with storage), resilience via setting the stage for the deployment of a Community Microgrid, land use benefits, and unparalleled environmental and economic benefits. A study by the Brattle Group comparing ground mount and rooftop solar projects found under the NVBT that there is significant difference in value created, with rooftop projects leading to an additional **4.39 ¢/kWh (Low Case) to 9.05 ¢/kWh (High Case).**[2] The study considered locational energy values, generation capacity (ability to provide RA), avoided Transmission & Distribution losses, environmental values, and line losses.

	Land Use	Workforce & Societal	Grid Resiliency	Project Timelines
Value Stream	• Solar installations in urbanized/industrial environments (e.g., parking lots, rooftops) reduces the likelihood that adverse environmental impacts will occur.	• Rooftop projects can provide greater societal value as employment opportunities in urban locations are more closely aligned with disadvantaged, low income population centres	• Grid-connected batteries, coupled with renewable technologies such as solar, have the potential to provide power in the event of a grid outage (if installed with appropriate islanding controls)	• The faster speed of development for rooftop vs ground mount because of faster interconnection and permitting will ensure the benefits of CSS are realized sooner for rooftop installations in urban locations
Advantage	Rooftop	Employment – Equal Societal - Rooftop	Equal	Rooftop

[1] Public Utilities Code 769.3(5)
[2] https://www.brattle.com/insights-events/publications/the-value-of-different-types-of-community-solar-and-storage-projects-varies-significantly-depending-on-the-location-and-operating-profile-according-to-a-new-brattle-study/

The image above shows that rooftop solar is more advantageous than remote ground mount projects in terms of land use, project timelines, and societal benefits. Moreover, while the Brattle Group valued employment and grid resilience opportunities equally for rooftop and remote ground mount projects, the benefits of a local project accrue to the local community (and the subscribers, which is of particular value since these projects are primarily intended to benefit low-income ratepayers (and those who cannot host a NEM solar array on their roof).

Incremental Value Stack of Rooftop CSS

25-Year Levelized ¢/kWh

Low Case

	SCE	SDG&E	PG&E
Energy	1.22	1.58	1.02
Capacity	3.27	3.11	3.26
Transmission	-0.12	-1.19	-0.33
Distribution	1.86	0.77	0.75
Environmental	0.10	0.11	0.11
Total	6.33	4.39	4.80

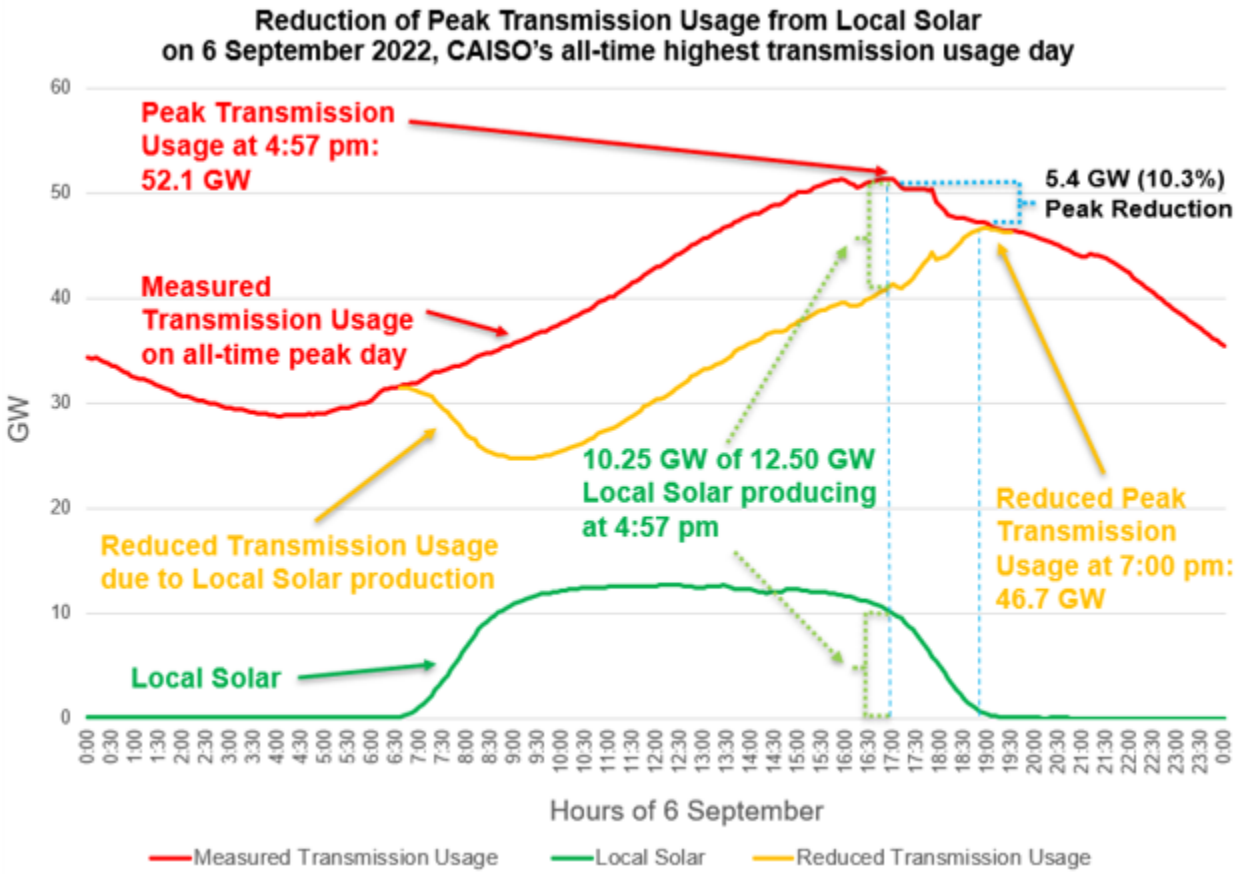
High Case

	SCE	SDG&E	PG&E
Energy	1.22	1.58	1.02
Capacity	4.61	4.39	4.66
Transmission	-0.12	-1.19	-0.33
Distribution	3.24	1.37	1.30
Environmental	0.10	0.11	0.11
Total	9.05	6.26	6.76

On average, for each of the utilities, the Low Case shows that at the very least, rooftop solar creates an additional 5.17 ¢/kWh and around 6.51 ¢/kWh for the High Case for SDG&E and PG&E. Of the three utilities, SCE has the greatest potential value, with a High Case showing 9.05 ¢/kWh in extra benefits. The Clean Coalition urges the Commission to recognize the difference in value creation depending on project type and location in any cost-effectiveness tests that are used as a rationale in selecting the design for a new program. Identifying the full value stack is essential for ensuring that projects creating the greatest value are selected rather than simply relying on the lowest-cost alternative.

For example, consider the value of standalone solar. In recent years, the Commission has reduced the value of standalone solar in the Avoided Cost Calculator ("ACC") and the Effective Load Carrying Capacity ("ELCC") and incentivized the deployment of paired storage. As a result, CCSA's proposal requires 4-hour storage; the Clean Coalition supports a storage requirement if the storage is in the vicinity of the solar. Storage significantly increases the value of solar projects by making the energy dispatchable. However, standalone solar can provide significant reliability benefits during peak periods if it is sited locally. Local solar reduces peak

transmission usage, which has the potential to save the ratepayers hundreds of billions of dollars over the lifetime of the transmission assets. Existing grid planning processes aim to ensure that sufficient transmission capacity is available to meet the peak load in the summer.



This graphic shows that if the 12.5 GW of transmission-interconnected solar recorded by CAISO on 6 September 2022 had come from local solar, the peak transmission usage on that all-time historic-peak day would have been reduced by over 10%.[3] Hence, local solar would have had a nearly 5 times greater impact in reducing peak transmission usage than the record-setting 1.2 GW of Demand Response on that day. At the peak on that day, 4:57 p.m., the solar was still producing at 82% of the total capacity, demonstrating that local solar reduces peak transmission usage by close to 50% of the installed capacity. Importantly, the benefits of local solar increase to around 70% when paired with local energy storage, including via export capabilities coming to Electric Vehicles (EVs).[4]

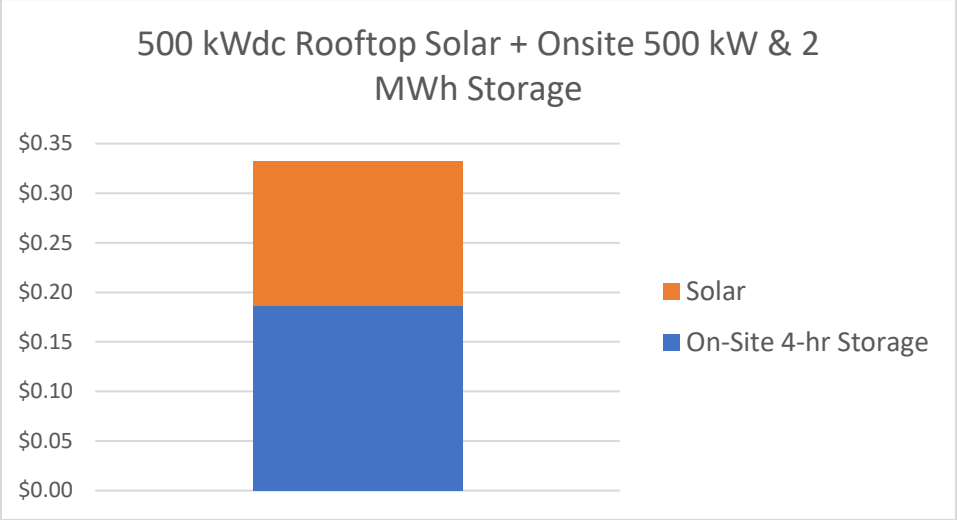
[3] https://clean-coalition.org/news/local-solar-is-the-best-solution-for-reducing-peak-transmission-usage-and-electricity-costs-for-ratepayers/

[4] Application of Center for Biological Diversity, Protect Our Communities Foundation, and Environmental Working Group for Rehearing of Decision 22-12-056 at p. 26.

The results for the cost-effectiveness tests will improve if the proper information is available to allow developers to maximize the benefits of siting projects in specific locations. For example, to the extent that avoiding investments in transmission & distribution infrastructure has different values across locations, then there should be a heat map to provide details on where the locational value can be maximized—and the proper compensation levels to reflect such values. Providing developers with a greater amount of information related to site selection will surely increase the benefits for non-participating ratepayers.

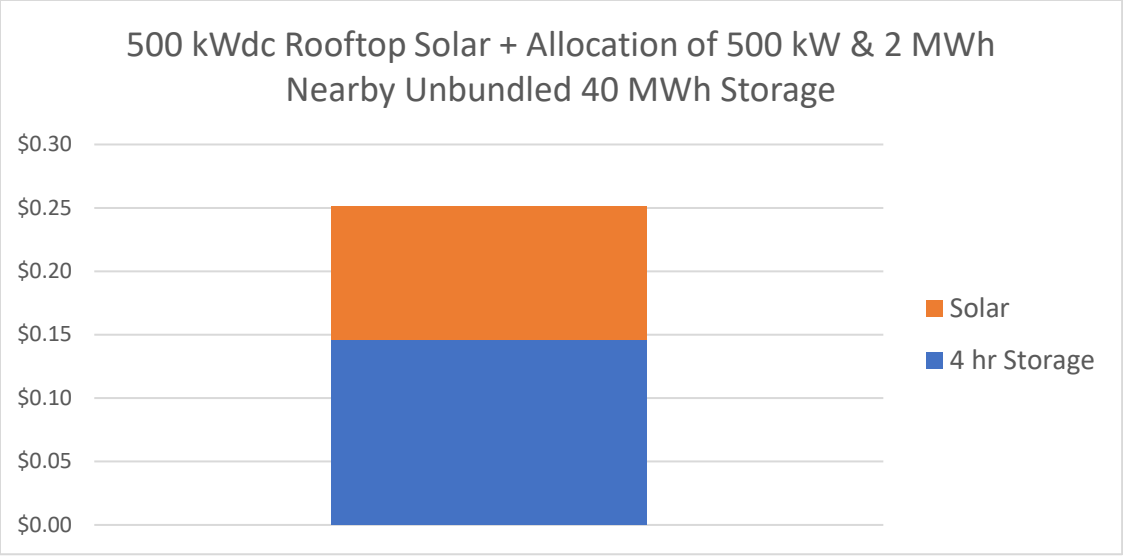
Virtual Pairings for Storage will Improve Cost-Effectiveness through Economies of Scale

Besides site selection, creative deployments of solar and storage other than co-located solar and storage can benefit the developer and the grid. In an urban environment, the amount of space required to site a 4-hour battery (as is required in the CCSA proposal)[5] and a solar project on the same parcel can be limiting. While it is possible to site solar and storage on the same site, such a requirement will reduce the number of applicants and does not take advantage of economies of scale. For example, consider the price stack for a 500 kW / 2 MWh system below.



The cost of energy storage is around 2.5x that of solar, meaning that a reduction in the installed cost of the energy storage will improve the cost-effectiveness with each project that is deployed. For example, more than doubling the size of the energy storage can reduce the total installed cost of a project under the NVBT by 20-30%.

[5] Prepared Direct Testimony of Robert Brandon Smithwood on Behalf of CCSA, at p. 50.



Therefore, a virtual arrangement, with both devices deployed within the same substation area as the subscribers, will increase siting possibilities while allowing the storage to be deployed in the location that is the most beneficial for the grid. In terms of cost-effectiveness, a 500 kW / 2 MWh system is far less beneficial to the ratepayers than a 500-kW solar deployment located in one location and a 40 MWh battery sited at a separate location within the same substation area. The larger project is also less expensive on a $/MWh basis.

With a virtual pairing, a developer can choose to site the solar on a relatively unconstrained feeder to minimize the interconnection time/cost and site the energy storage on a more constrained feeder—to improve the hosting capacity—maximizing the value of both generation and storage. There is also a practicality consideration associated with allowing virtual storage pairings. Given the existing—and increasing—code requirements surrounding the deployment of energy storage, properly siting solar and storage on the same site will be more of a challenge than finding two sites, each chosen for the specific resource that will be sited there. Thus, the Clean Coalition firmly advocates that the Commission should approve an option for virtual storage pairings, which will also improve cost-effectiveness test results for the NVBT.

2. *AB 2316 requires that any new community renewable energy program must be deemed beneficial to all ratepayers:*
    a. *How should any cost shift of or cost impact on nonparticipating ratepayers of existing, modified, or new community renewable energy proposals be quantified?*

The Clean Coalition strongly believes that the value stack created by each project under the NVBT will be sufficient to ensure that there is no cost shift. For a cost shift to exist, the program

costs must outweigh the benefits of deploying solar+storage systems and helping low-income customers save on their utility bills, which will not be the case under the NVBT because export compensation is measured solely based on benefits created.

First, the growth of distributed generation is inherently beneficial to all ratepayers, due to the peak transmission reduction effect (discussed above in the previous question). To summarize, the benefits of having solar+storage systems that deliver energy to end users without relying on the transmission grid infrastructure benefits the broader rate base, as it reduces the strain on the total grid during peak conditions & extreme weather events and limits the need for new transmission infrastructure. Therefore, it is essential that any new program approved by the Commission properly values the avoided transmission savings from infill projects, via avoiding Transmission Access Charges ("TAC"). It is important to differentiate avoiding TAC from the avoided transmission value under the ACC; TAC covers present & historical transmission costs, whereas the ACC partially covered the future transmission investments that are avoided by DER. Not relying on transmission infrastructure reduces losses and operations & maintenance costs, reducing present costs (TAC), and creates value by enabling more optimal economic outcomes to occur for energy delivered via the transmission grid. This value creation is the reason why infill Community Solar projects should avoid TAC. On the other hand, the ACC values DER that obviate specified (planned) transmission infrastructure investments required to meet peak demand but does not have a value for avoided unspecified transmission value.[6]

Second, under the NVBT, projects are compensated based on energy values and avoided costs under the ACC, meaning that there should not be a cost shift. Any analysis should factor in the greater value created by infill projects when compared with remote ground mount projects. Third, when evaluating if a cost shift exists, the first question is whether a cost shift from participating ratepayers to nonparticipating ratepayers or a cost shift from unbundled customer to bundled customers is being considered. Given the value created by infill projects and the discussion above, the Clean Coalition believes the Commission can rule out a significant cost shift between participating and non-participating ratepayers. In addition, this program will have no effect on the transition of customers from a utility to a Community Choice Aggregator ("CCA") and has nothing to do with the portfolio of transmission-interconnected legacy

[6] Unspecified Avoided Transmission values come from DER that stop existing transmission projects from meeting the threshold that would require any upgrade.

Renewable Portfolio Standards ("RPS") contracts that CCA customers pay for via the Power Charge Indifference Adjustment ("PCIA"). New projects deployed under the NVBT will not replace any legacy contracts because there are no "like" distribution-level contracts. Therefore, there should not be any specific cost shift related to unbundled and bundled customers and we believe that the PCIA should be completely avoided for all infill projects.

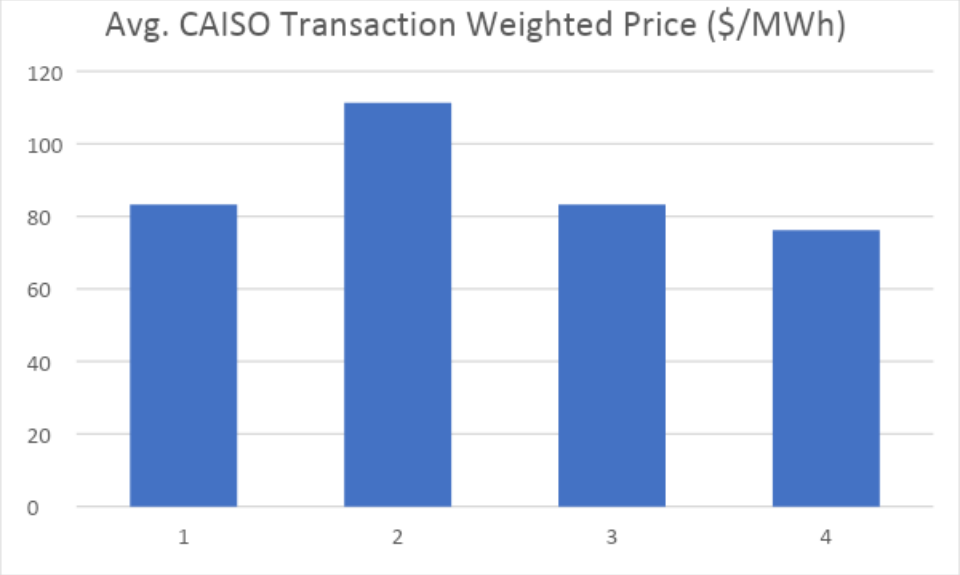
Fourth, one of the inputs into cost-effectiveness calculations is administrative costs, which is heavily impacted by the number of administrators and how the existing programs are transitioned (or remain in effect). The calculations will look quite different if there is one administrator versus having each of the utilities serve as an administrator versus having each utility and CCAs administrate the NVBT. If the Commission allows CCAs to serve as program administrators—as is currently the case—it is unclear whether a cost shift from participating CCA-customers to non-participating CCA customers should be addressed at all, since it is prerogative of each CCA to use extra funds in customer-facing programs. As long as there is no a cost shift between unbundled and bundled customers, which the Clean Coalition believes will be the case based on the rationale above, it will be cost-effective to have CCAs as program administrators.

Fifth, there is a broad benefit to developing renewable energy projects in historically under-developed areas (e.g., disadvantaged communities and brownfield sites). Helping bring green energy to low-income ratepayers, with similar benefits to Net Energy Metering ("NEM") systems brings the state closer to achieving electrification. Similarly, infill projects, including those developed on brownfield sites, help maximize the use of existing space and lessen the need to develop our pristine natural lands. As a result, the Clean Coalition advocates for a brownfield adder and have done so since our first filing. Finally, while there might not be a specific dollar amount associated with achieving policy objectives, a program like the NVBT, which simultaneously brings the state closer to achieving multiple objectives (Community Solar procurement target, bill savings for low-income residents, deploying energy storage, and improved reliability), accrues the real benefits associated with making incremental progress toward multiple statutory goals.

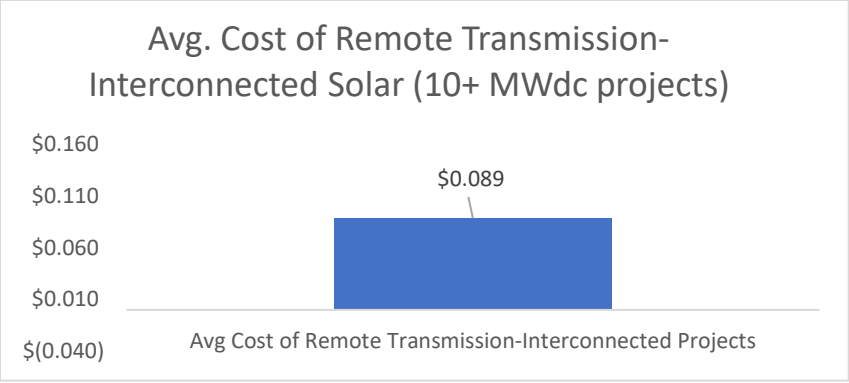
b. What would be the resulting cost shift for new community renewable energy program proposals? How would this compare to any cost shifts associated with existing or modified programs? How do the costs of new community renewable energy program proposals compare to the costs of wholesale clean energy resources? Provide all

assumptions (size of program, compensation rate, outside funding or incentives, administrative costs, etc.).

This question seems to have an unfortunate premise, asking parties to compare the cost of community renewable energy with the costs of wholesale clean energy resources, without accounting for the full range of benefits from both. As discussed, infill community renewable energy projects have a significantly greater benefit than transmission-interconnected resources. The image below shows prices from the most recent four quarters from the Federal Energy Regulatory Commission's ("FERC's") Electric Quarterly Reports.[7]

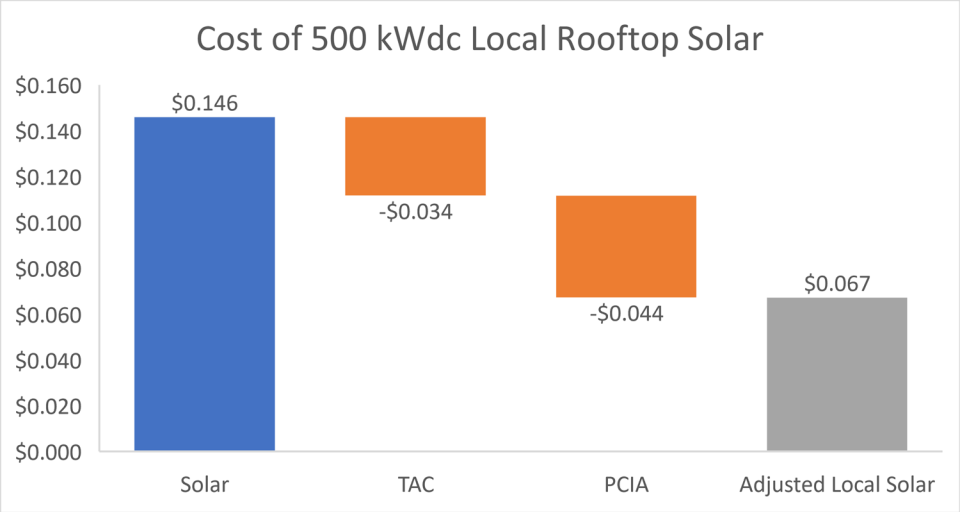


Over the last four quarters, the average price for generation is $88.54/MWh, which will be rounded up to $0.089/MWh (see the image below) for the sake of convenience. This is the price that a wholesale solar system can expect to see.



[7] This information is reported by S&P Global Market Intelligence.

On the other hand, the price for a standalone rooftop solar system is around $0.146/MWh, which at face value is higher than the wholesale price. However, when adding in the unique value provided by infill projects, avoiding TAC and the PCIA, the story changes drastically. See pages 7 and 8 for an explanation of why it is reasonable for infill projects to avoid TAC and the PCIA.



On average, avoided TAC is a benefit of $0.034/MWh and the avoided PCIA is around $0.044/MWh. When factoring in those two benefits with the price of solar for a local rooftop solar project, the adjusted price for the local solar is around $0.067/MWh, which is a lower price than the $0.089/MWh remote wholesale generation. Therefore, even without considering the ACC benefits, the rate for local rooftop solar is the most economical option.

Crucially, remote wholesale clean energy sources are typically large-scale projects that require a substantial amount of time to complete and take a significantly larger amount of land, and complete with other land uses in California. The smaller footprint of Community Solar and—most importantly—appropriately sited community solar projects (by the load in infill locations) would reduce this cost and competition of land use from wholesale clean energy resources.

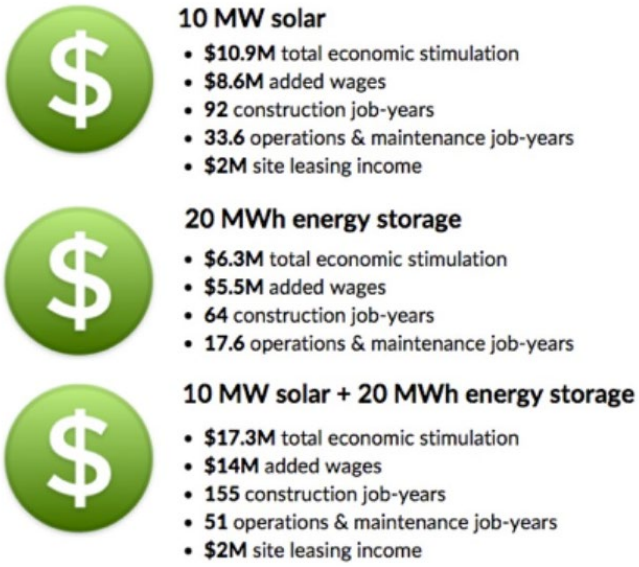
To properly account for the true range of costs and benefits, the Commission should consider the full spectrum of project types, from rooftop deployments to community renewable energy program proposals and extending up to remote wholesale clean energy resources at the high end of the size spectrum.

c. *For new community renewable energy proposals, what would be the potential monthly bill impacts for non-participating ratepayers should the proposals be adopted? For new community renewable energy proposals, what would be the potential monthly bill impacts for participating ratepayers should the proposals be adopted?*

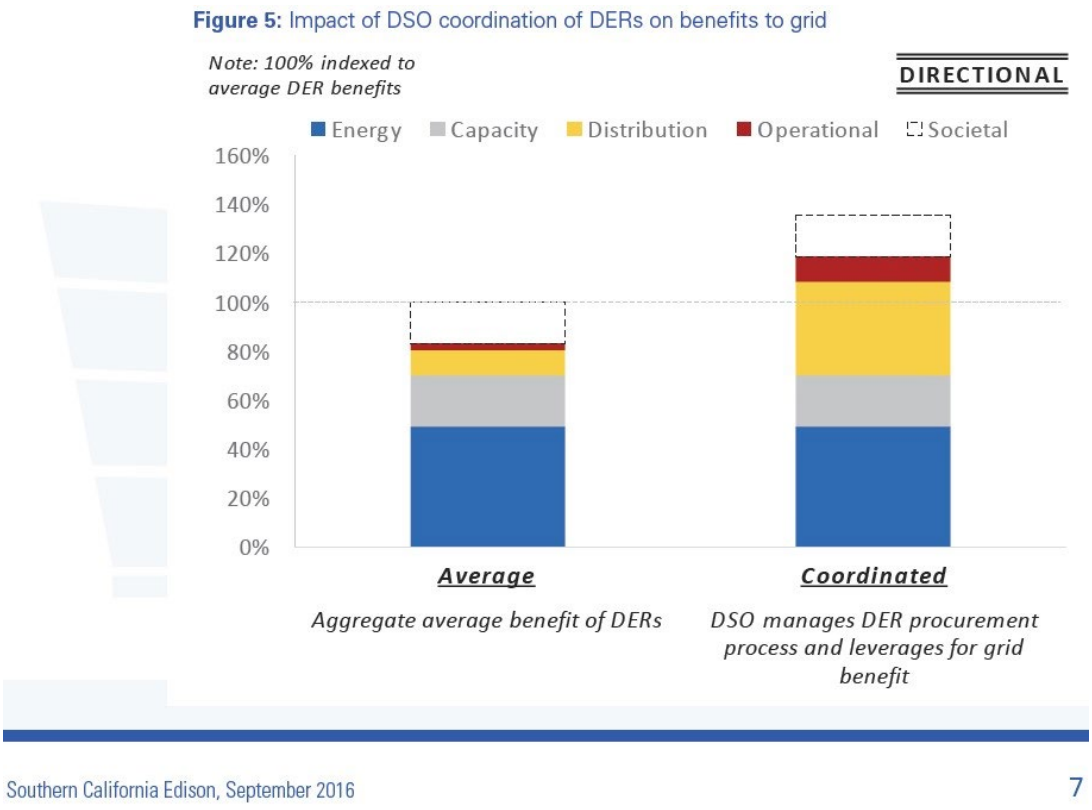
We have no answer at this time, though we reserve the right to respond to comments made by other parties.

d. *Beyond bill impacts, what would the quantifiable and measurable benefits be to non-participating ratepayers of a new community renewable energy program? Similarly, beyond bill impacts, what would the quantifiable and measurable benefits be to participating ratepayers of a new community renewable energy program?*

Responses to the previous questions address many of the unique benefits that infill solar+storage projects will create. The first is a **reliability benefit**. The state needs new procurement and local resources—paired with storage—to match consumer demand. Adding new renewable capacity is essential to meet increasing demand and emergency reliability margins. Moreover, the dispatchability that comes from energy storage ensures that there will be distributed energy available in case of grid emergencies (excess demand or extreme weather events). In either case, local energy is the most efficient resource and lessens the need for energy imports from the transmission grid. This creates a local benefit and a broader benefit to the rate base, due to the reduced strain transmission grid increased efficiency from less energy losses. The second benefit is **added resilience**. Each infill project helps to set the stage for a Community Microgrid, which is particularly beneficial if the projects are located in, or near, disadvantaged communities (e.g., within the same substation area). Because disadvantaged communities usually have fewer existing deployments of distributed generation than wealthier communities, each deployment is an opportunity for future value creation for the entire local area, not just program participants. Third, the NVBT will bring **investment** to local communities that would otherwise not occur on the same scale. Deploying projects will create jobs; the Clean Coalition found that deploying blocks of solar and storage will lead to the following results, over 20 years:



In addition to the direct economic benefits to the community in the form of job creation and economic stimulus, Community Solar projects will help bring in state and federal incentives that might otherwise be not go to California-based projects. Fourth, each deployment **helps to meet a state-mandated procurement target** in a timely manner and lays the foundation for a truly robust Community Solar program for infill projects. Considering that California has previously lacked the level of growth seen in programs in states around the country (particularly in the northeast), a new program will boost development levels and ensure that customer-sited renewables continue to growth sustainably. Fifth, as has been discussed in previous Clean Coalition filings, distributed energy has the potential to increase in value over time as the utilities in California progress with implementing DERMS and the debate about a DSO resolves itself.



3. *If a community solar project has no on-site load and is installed "in front of the meter," is it appropriate for it to be considered a demand-side resource and compensated using values based on the Avoided Cost Calculator rather than least-cost best-fit evaluation through the integrated resource planning process? Identify which avoided cost values would be appropriate to apply and why they are appropriate.*

The Clean Coalition does not believe that the least-cost best-fit ("LCBF") methodology is appropriate in this situation because the framework is inherently based on broader grid reliability and impacts on the transmission system. In D. 04-07-029, the Commission created a standard for the LCBF methodology that includes the cost of the generation, the cost of integrating renewables with California's grid (fit with the existing resource portfolio), and necessary transmission upgrades. The LCBF methodology does not require a full consideration of the benefits of the proposed project and begins with the presumption that a specific investment is needed.[8] In contrast, the NVBT is intended to provide low-income customers across with the state with savings while maximizing benefits to the grid, which does not lend itself well to a methodology that focuses on the best fit for an area. We support the CCSA proposal and thus believe that the ACC should be applied fully (other than energy values).

[8] https://www.raponline.org/wp-content/uploads/2022/03/rap_shenot_bca_md-psc_2022_feb_23.pdf

4. *For new community renewable energy program proposals not based on existing or modified programs, describe the specific timelines for the contracting, construction, interconnection, subscription and billing for such new programs.*

Infill projects, which do not rely on the transmission grid, will have a quicker development timeline than ground mount projects. This is particularly valuable due to the leg up developers seeking federal funds will have over projects with a longer development timeline. For infill projects, interconnection and permitting will be significantly less time intensive and costly than ground mount projects, especially if the Rule 21 interconnection process is available for Community Solar projects to use. In addition, infill projects will not have to go through the California Environmental Quality Act ("CEQA") Environmental Impacts Report ("EIR") process because they are being deployed on a built environment.

IV. CONCLUSION

The Clean Coalition respectfully submits these comments and requests that the Commission adopt the most practical program for infill solar, that includes an option for virtual storage pairings. We support the NVBT and urge the Commission to approve additional value adders for infill projects based on the value created. The overall goal of Community Solar is to maximize value to subscribers and the ratepayers, not simply attempting to minimize costs.

/s/ BEN SCHWARTZ
Ben Schwartz
Policy Manager
Clean Coalition
1800 Garden Street
Santa Barbara, CA 93101
Phone: 626-232-7573
ben@clean-coalition.org

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