**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339.	Rulemaking 19-09-009 (Filed September 12, 2019)

COMMENTS OF THE CLEAN COALITION IN RESPONSE TO THE COMMISSION'S REQUEST FOR COMMENTS ON THE PRELIMINARY SCOPE OF RULEMAKING 19 -09-009, ISSUED AT THE CALIFORNIA PUBLIC UTILITIES COMMISSION ON SEPTEMBER 12, 2019.

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

October 21, 2019

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339.	Rulemaking 19-09-009 (Filed September 12, 2019)

COMMENTS OF THE CLEAN COALITION IN RESPONSE TO THE COMMISSION'S REQUEST FOR COMMENTS ON THE PRELIMINARY SCOPE OF RULEMAKING 19 -09-009, ISSUED AT THE CALIFORNIA PUBLIC UTILITIES COMMISSION ON SEPTEMBER 12, 2019.

I. INTRODUCTION

Pursuant to Rule 14.3 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the Clean Coalition respectfully submits these comments regarding the scope and procedural structure, as well as the specific questions presented in the Order Instituting Rulemaking (OIR) Regarding Microgrids Pursuant to Senate Bill 1339, issued September 12, 2019.

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, advanced inverters, demand response, and energy storage — and we establish market mechanisms that realize the full potential of integrating these solutions. The Clean Coalition also collaborates with utilities and municipalities to create near-term deployment opportunities that prove the technical and financial viability of local renewables and other DER.

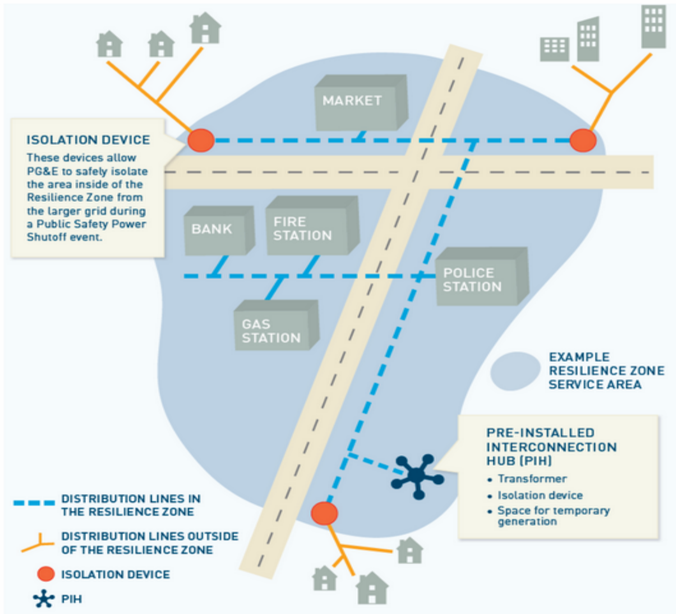
Senate Bill 1339 of 2018 calls for the Public Utilities Commission to, among other things , create a framework "To facilitate the commercialization of microgrids for distribution customers of large electrical corporations", by setting rates and tariffs, as well as developing methods "to reduce barriers with microgrid deployment." In the OIR, the Commission noted three overarching policy goals for this proceeding that should be addressed: "(1) Reducing greenhouse gas emissions; (2) adapting to the impacts of a changing climate; and (3) protecting the health, safety, and lives of California residents during catastrophic events, such as wildfires, floods, earthquakes, extreme weather, or cyber-attacks”. Focusing this proceeding on implementing Community Microgrids, enabled by a state-of-the-art Feed-In Tariff (FIT) for procuring local and dispatchable renewable energy that delivers unparalleled resilience and other grid services will be fundamental to successfully achieving the targeted outcomes outlined in the preliminary scoping memo and SB 1339.

II. COMMUNITY MICROGRIDS

Given the nature of SB 1339, this proceeding should focus on Community Microgrids as the ideal foundation for any rate or pilot program that is accepted by the Commission. Unlike a traditional microgrid, which serves a facility behind a single point of interconnection, Community Microgrids serve multiple facilities and potentially entire grid areas served by distribution and/or transmission substations.

Community Microgrid Representation

A Community Microgrid — powered with a high penetration of DER — is ultimately comprised of an entire distribution grid area that is served by a transmission-to-distribution substation, which would set the stage for the local electric utility to act as a Distribution System Operator (DSO). PG&E is currently planning for resilience zones, which are essentially Community Microgrids designed for resilience, as they include grid isolation switches that ensure backup power to critical community facilities.



Source: PG&E, Jul2019

PG&E Resilience Zone Diagram

A microgrid connected across the distribution system must be controlled and operated by the local electric utility that owns the distribution grid. However, that does not mean that the same utility would have to own the entire microgrid; it would only have to own the infrastructure related to grid operations. Specifically, the local electric utility would need to own the hardware upgrades to the grid itself, like the grid isolation switches, and the software systems that control the grid, like the core of Distributed Energy Management Systems (DERMS) that ensure seamless operation of the local renewable energy sources, energy storage, and other Distributed Energy Resources (DER) that comprise Community Microgrids. While DERMS are software-centric, Advanced Distribution Management System (ADMS) are hardware-centric and allow the local electric utility to optimize the performance of the distribution system through demand reduction, voltage management, grid isolations, and real-time distribution operation model and analysis (DOMA), among other features. Utility-owned ADMS and DERMS will allow them to use the existing distribution grid during transmission outages, unleashing the potential of wholesale distributed generation (WDG)[1] and Community Microgrids.

Community Microgrids have important features, including as follows:

[1] Clean Coalition Wholesale Distributed Generation web page, https://clean-coalition.org/wholesale-distributed-generation/

a. Community Microgrids must be powered by local renewable energy.

Given the risks from a potential fire or Public Safety Power Shutoff (PSPS), it is essential to develop Community Microgrids that are connected to local renewable energy on the distribution system to ensure that critical community facilities can continue to operate during disasters – and also during the increasingly frequent Public Safety Power Shutoffs (PSPS). Fossil fuel sources like natural gas or diesel generators contribute greenhouse gases and rely on fuel supplies that may not be replenishable following an earthquake or another major disaster, as was demonstrated during Super Storm Sandy and Hurricane Maria in Puerto Rico , and should not be considered a sustainable (or resilient) backup system; they certainly should not be subsidized in any way (as mentioned in SB 1339). Therefore, any microgrid must be developed with the deployment of renewable energy facilities and storage, supported by procurement of local renewable energy, energy storage, and other DER, which have no peer for direct market rate comparison.

b. A state-of-the-art Feed-In Tariff is needed.

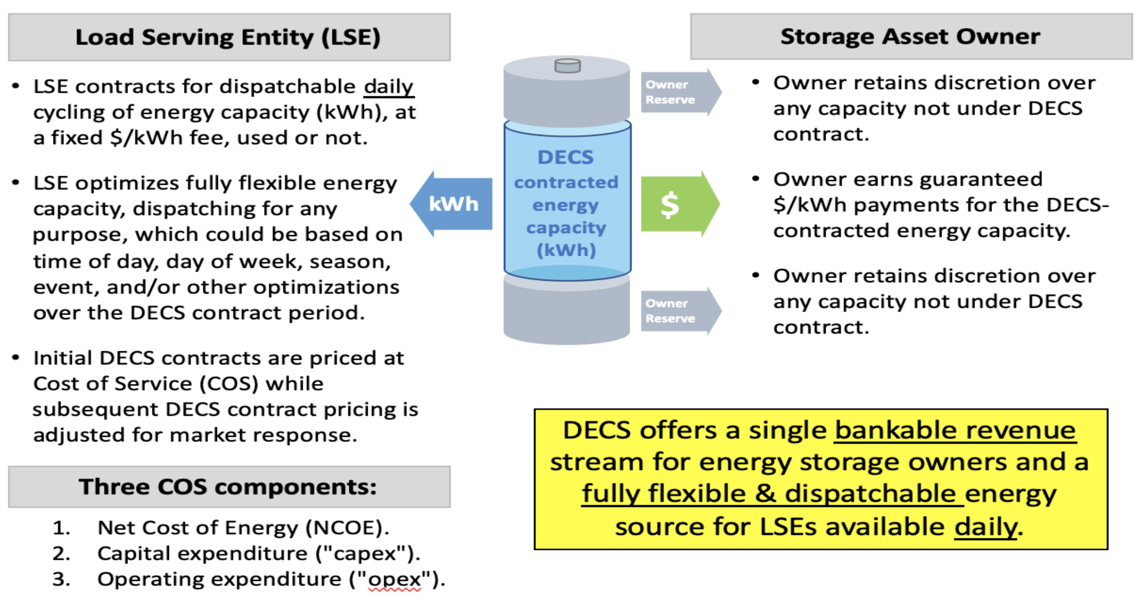
To maximize market efficiency, local renewable energy should be solicited through a standard-offer, first-come, first-served tariff approach that allows the most cost-effective market solution for procuring dispatchable local renewables: a market-responsive Feed-In Tariff (FIT) with a Dispatchability Adder. This state-of-the-art FIT is based on the Clean Coalition's recent FIT design for the City of San Diego (covered later in in this document) and should include:

- Market Responsive Pricing (MRP), which allows subsequent contract prices (after the initial FIT rate is offered) to adjust based on market responses to pricing of current contracts, ensuring that energy is procured at the lowest price. The availability of predictable and bankable long-term standard-offer contracts provides crucial revenue certainty to reduce risk and associated costs, ensuring development success while also protecting ratepayers.

■ A Dispatchability Adder, which is a fixed ¢/kilowatt-hour (kWh) energy capacity bonus on top of the FIT rate and encourages the addition of energy storage that makes renewable energy fully dispatchable. The Dispatchability Adder can be adjusted — either up or down — with its own dedicated MRP, with the bonus for subsequent contracts adjusting based on current market demand.

c. Dispatchable Energy Capacity Services (DECS) for support of standalone local energy storage.

To ensure the proper valuation of the resilience provided by local energy storage, the Clean Coalition recommends the implementation of a Dispatchable Energy Capacity Services (DECS)[2] market mechanism, which is essentially a FIT for standalone local energy storage. The Dispatchability Adder noted above is DECS implemented in combination with a FIT for local renewables. A DECS contract allows a load-serving entity (LSE) to contract with an energy storage provider for a guaranteed portion of energy storage energy capacity that can be cycled daily, as desired by the LSE. DECS offers a single bankable revenue stream for energy storage owners and a fully flexible & dispatchable energy source for LSEs available daily.



DECS Market Mechanism

---

[2] Clean Coalition DECS web page, https://clean-coalition.org/feed-in-tariffs/dispatchability-adders/

d. Streamlined interconnection of DER is necessary to address one of the largest barriers to effectively deploying microgrids.

One of the provisions in the preliminary scoping memo is to "Develop a standard for direct current metering in Electric Rule 21 to streamline the interconnection process and lower interconnection costs for direct current microgrid applications, pursuant to Section 8371(f), including net energy metering paired with storage systems and microgrids," which is likely to require coordination with proceedings for Net Energy Metering as well as interconnection.

The local electric utility responsible for managing a Community Microgrid must be able to quickly interconnect new renewable sources to the microgrid as they are developed, allowing the microgrid to grow in alignment with the needs of a community. This proceeding should plan not only for the initial development of a microgrid but also for how it will be expanded in response to the long-term needs of a community. The Clean Coalition created a streamlined interconnection pilot as part of the Peninsula Advanced Energy Community (PAEC) Initiative[3] – designed in partnership with PG&E and funded by the CEC – to ensure that interconnection of WDG resources[4] is as streamlined as for Net Energy Metering (NEM) resources. To achieve the policy goals outlined in the preliminary scoping memo, interconnection of front-of-meter (FOM) energy resources should be as streamlined and cost-effective as for behind-the-meter (BTM) resources.

e. The Feed-In Tariff that the Clean Coalition recently designed for the City of San Diego is a comprehensive example of a FIT that can unleash dispatchable local renewables and enable Community Microgrids.

The Clean Coalition designed a FIT program for the City of San Diego that includes Market Responsive Pricing and a Dispatchability Adder. A pricing comparison[5] between the FIT and SDG&E's business-as-usual (BAU) renewables procurement, on a 20-year levelized basis, shows that local renewables procured under the San Diego FIT priced at 6.

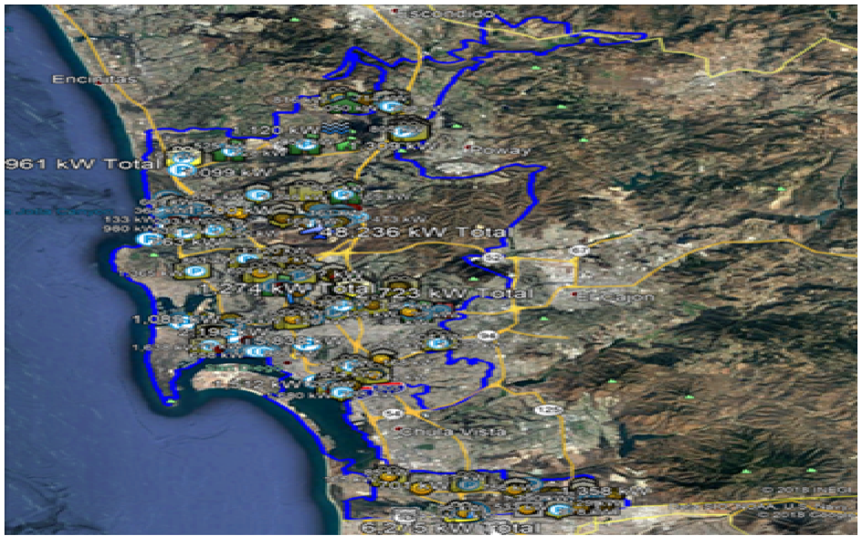
---

[3] Peninsula Advanced Energy Community (PAEC) Final Design of Pilot for Testing Streamlined Interconnection Procedures, https://clean-coalition.org/wp-content/uploads/2019/01/PAEC-Task-4.4-Final-Design-of-Pilot-for-Testing-Streamlined-Interconnection-Procedures-23_wb-27-Dec-2017-1.pdf

[4] Clean Coalition WDG Interconnection web page, https://clean-coalition.org/policy/wdg-interconnection/

[5] San Diego FIT vs. BAU analysis, https://clean-coalition.org/wp-content/uploads/2019/03/San-Diego-FIT-vs-BAU-economics-18_wb-8-Mar-2019.xlsx

9¢/kWh would be competitive with SDG&E's forecast cost of 9.5¢/kWh, accounting for future procurement, legacy Power Charge Indifference Adjustment (PCIA) costs, and meeting RPS standards. This is important considering that SDG&E's BAU procurement would be almost entirely remote centralized renewables, requiring exorbitantly expensive transmission lines.



Map of Clean Coalition Solar Siting Survey for San Diego

Summary by Structure Types

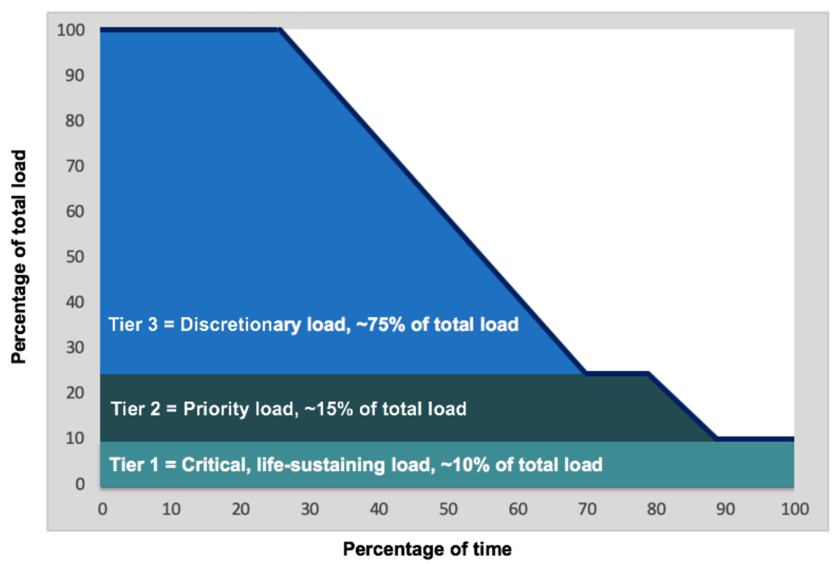
ZIP	Rank	Roof_Flat	kW_Total	Pkg_Lot	kW_Total	Pkg_Garage	kW_Total	Roof_Angled	kW_Total	Water	kW_Total
Total:	% of survey:	24.0%		72.9%		2.8%		0.2%		0.2%	
Totals:		237	119,630 kW	478	363,748 kW	25	14,189 kW	5	1,086 kW	1	1,120 kW
92037	19	3	1,746	9	6,125	-	-	-	-	-	-
92093	11	-	-	25	16,674	3	1,141	-	-	-	-
92101	4	4	5,040	18	32,242	2	3,136	-	-	-	-
92102	25	3	1,512	4	2,227	-	-	-	-	-	-
92105	31	-	-	3	1,547	-	-	-	-	-	-
92106	23	-	-	3	5,306	-	-	-	-	-	-
92108	2	6	1,292	38	48,419	4	1,575	-	-	-	-
92109	6	-	-	22	24,542	-	-	-	-	-	-
92110	8	14	9,200	13	13,951	-	-	-	-	-	-
92111	9	13	7,004	22	14,854	-	-	-	-	-	-
92113	12	6	3,092	23	10,192	-	-	-	-	-	-
92115	20	3	1,432	5	4,704	-	-	-	-	-	-
92117	27	1	26	3	2,940	-	-	2	571	-	-
92120	18	11	5,071	9	2,926	-	-	-	-	-	-
92121	10	8	3,762	23	15,659	-	-	-	-	-	-
92122	21	4	707	6	3,724	3	1,358	-	-	-	-
92123	7	13	7,715	14	15,533	2	819	-	-	-	-
92126	14	7	2,758	15	8,827	1	497	-	-	-	-
92127	5	11	8,365	30	19,369	-	-	-	-	-	-
92128	13	9	4,149	15	8,505	-	-	-	-	-	-
92129	24	1	210	6	5,068	-	-	-	-	1	1,120
92130	15	2	301	16	9,051	1	1,099	-	-	-	-
92131	29	1	273	1	1,505	-	-	-	-	-	-
92134	30	-	-	-	-	3	1,673	-	-	-	-
92136	26	-	-	5	3,667	-	-	-	-	-	-
92145	3	29	8,054	82	39,668	-	-	3	515	-	-
92154	1	56	38,565	34	33,193	-	-	-	-	-	-
92161	28	-	-	5	2,198	1	245	-	-	-	-
92173	16	21	4,922	12	3,944	-	-	-	-	-	-
92182	17	6	1,383	14	4,494	5	2,646	-	-	-	-
92199	22	5	3,053	3	2,695	-	-	-	-	-	-

San Diego Solar Siting Survey conducted by the Clean Coalition

In a Solar Siting Survey that the Clean Coalition conducted for the City of San Diego (pictured above), over 500 megawatts (MW) of technical solar siting potential were identified on large rooftops, parking lots, and parking structures with siting potential of at least 1 MW. The siting potential expands to multiple GW if the minimum project size is lowered to 100 kW.

f. Valuing resilience is essential to accurately compensating for the full benefits of Community Microgrids.

The communities with the greatest need for the resilience provided by Community Microgrids are those in high-fire-risk areas – and those served by transmission lines that are routed through high-fire-risk areas. The avoided cost of not losing power in the event of a disaster or PSPS makes a microgrid extremely valuable to businesses and critical facilities in a community. However, there is currently no standard method to ascribe a monetary value to the protection offered by a microgrid. A part of this proceeding should include the creation of a framework that properly values the resilience a microgrid brings to a community. The Clean Coalition wishes to direct the commission to VOR123[6], a mechanism to properly value the market externality that is resilience. The chart below demonstrates the electric load prioritized into three tiers to be valued for resilience (standard average tier sizes are shown here; the size of each tier may differ for specific facilities depending on individual circumstances).



[6] Clean Coalition Value of Resilience (VOR123) web page, https://clean-coalition.org/disaster-resilience/

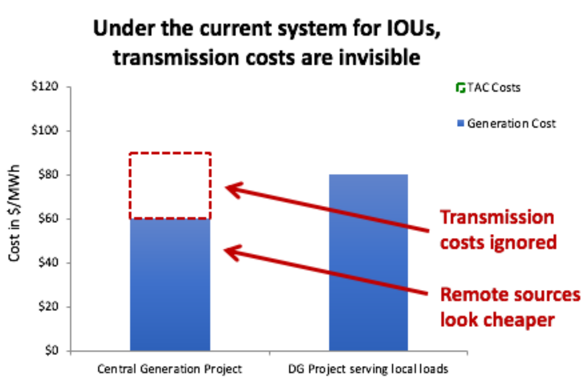
The load tiers in the chart are defined as follows:

- Tier 1 loads, usually about 10% of the total electric load, are mission-critical and life-sustaining loads — crucial to keep operational at all times, including during grid outages.
- Tier 2 loads, usually about 15% of the total load, are priority loads that should be maintained as long as doing so does not threaten the ability to maintain Tier 1 loads.
- Tier 3 loads, usually about 75% of the total, are discretionary loads and are only maintained when doing so does not threaten the ability to maintain Tier 1 and 2 loads.

Valuing resilience – by using the VOR123 methodology – helps to capture the true benefit of a Community Microgrid.

g. Transmission Access Charges are a substantial barrier to development of Community Microgrids due to their inappropriate application in Participating Transmission Owner (PTO) utility service territories, regardless of whether energy uses the transmission grid.

Unlike remotely generated energy, locally generated energy – such as that exported from a microgrid – does not require construction of a massive transmission network to move electricity from source to customer. When this major advantage is priced into the total cost of energy, clean local energy is much more competitive and less expensive in many cases, as illustrated below:



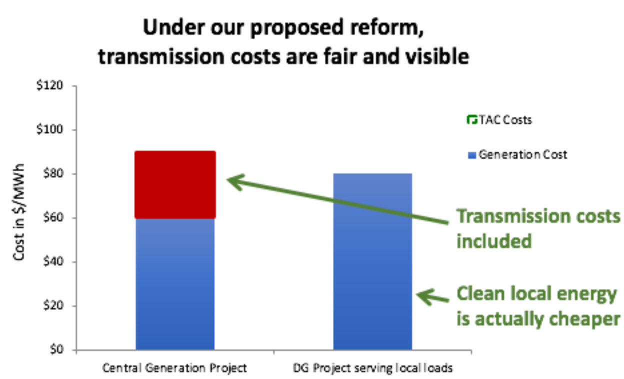


Diagram of the real cost of central generation with Transmission Access Charges

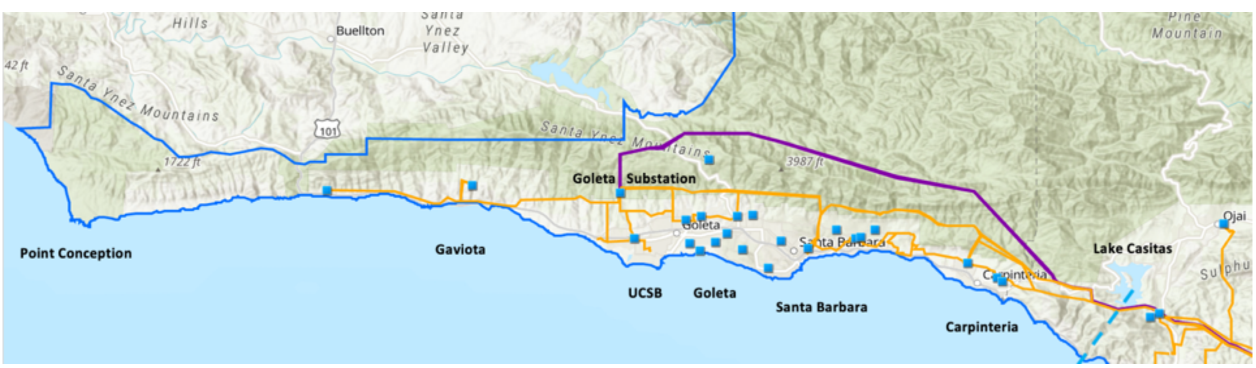
Transmission Access Charges (TAC) misapplied to local energy by investor-owned utilities (IOUs), but not by most municipal utilities, add 3 cents per kWh to the cost of clean local energy projects — raising the cost of this energy by as much as 50%. This cost increase disadvantages the potential of microgrids to drive economic development and resilience for every community in California.

In the development of rates and tariffs in support of microgrids, as required by Section 8371(b) and (d) of the Public Utilities Code, in order to avoid shifting costs between ratepayers, the application of TAC charges to energy exported from microgrids should be disallowed.

By pricing in the cost of transmission for remotely generated energy — and the avoided cost of local energy — LSEs will procure the energy that is truly most cost-effective for customers, creating a market for grid services from microgrids that benefit all ratepayers. By aligning pricing with reality, this reform will correct the existing market distortion that has led to explosive growth in transmission spending and depressed the market value of clean local energy, inhibiting microgrids and other DER at the same time.

III. Pilot Program Comments

a. To facilitate third-party procurement for a Community Microgrid, a pilot program should prioritize the Goleta Load Pocket.



Map of the Goleta Load Pocket (GLP)

The Goleta Load Pocket[7] (GLP) spans a 70-mile stretch of California coastline from Point Conception to Lake Casitas, encompassing the cities of Goleta, Santa Barbara (including Montecito), and Carpinteria. The GLP is served by only two transmission lines, which both run on the exact same transmission towers through tens of miles of mountainous terrain that is rated at the highest fire risk level — resulting in the GLP being extremely vulnerable to transmission outages, including during PSPS. The GLP's single point of interconnection to the transmission system exists at the Goleta Substation, and as indicated, if one of the transmission lines goes out, the second and only other transmission line will go out too — and the GLP will completely lose the source of the vast majority of the energy that serves it. While there are several distribution lines routed along the coast through Carpinteria that can be energized in the case of a transmission outage, they would not provide enough electricity to power the entire area.

Because the GLP is a highly transmission-vulnerable, disaster-prone region, the GLP Community Microgrid is being designed to deliver an unparalleled trifecta of economic, environmental, and resilience benefits to the area. To achieve indefinite renewables-driven backup power that provides 100% protection to the GLP against a complete transmission outage ("N-2 event"), 200 MW of solar and 400 megawatt-hours (MWh) of energy storage needs to be sited within the GLP.

b. The Goleta Load Pocket Community Microgrid will be completed with solar on built environments.

The 200 MW of installed solar needed in the GLP is only five times greater than the current amount installed throughout the region. Reaching the 200 MW goal can be achieved with installations on only 7% of all of the built environments in the GLP (on rooftops, parking lots, and parking structures). The GLP is the perfect location for a pilot program; currently there is no true Community Microgrid on the scale of the GLP region in California. This proceeding should prioritize proving the feasibility of Community Microgrids for a larger region than just a single small city.

[7] Clean Coalition Goleta Load Pocket Community Microgrid web page, https://clean-coalition.org/community-microgrids/goleta-load-pocket/

IV. Conclusion

The Clean Coalition appreciates the opportunity to submit these comments on this Preliminary Scoping Document. This proceeding is an important step towards resilience and unleashing the potential of the WDG market through a community microgrid; the Clean Coalition urges the Commission to take this opportunity to create an ambitious Community Microgrid pilot program in the Goleta Load Pocket.

Respectfully submitted,
Ben Schwartz
____/S/_____
Policy Associate for the
Clean Coalition

Dated: October 21, 2019