BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of San Diego Gas & Electric Company (U902E) for Approval of its 2018 Energy Storage Procurement and Investment Plan.	Application 18-02-016
And Related Matters.	Application 18-03-001 Application 18-03-002

COMMENTS OF THE CLEAN COALITION ON THE PROPOSED DECISION IMPLEMENTING THE AB 2868 ENERGY STORAGE PROGRAM AND INVESTMENT FRAMEWORK AND APPROVING AB 2868 APPLICATIONS WITH MODIFICATION

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I. INDEX

Recommended changes

i. Paragraph 1 of Section 3.2.1.3 of the PD should be similarly modified to read (with additions in italics):[1]

> SDG&E may move forward with *a Standard Offer or Feed-In Tariff with market responsive pricing or* an RFO for the identified projects, provided it adheres to the guidelines set in Appendix A.

ii. Order # 7 in the PD should be amended to read (with additions in italics):

> San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company may *put forth a Standard Offer or Feed-In Tariff with market responsive pricing or* hold requests for offers that comply with this decision, including Appendix A, for front of the meter energy storage projects pursuant to Assembly Bill 2868.[2]

[1] PD at 20
[2] PD at 90

II. INTRODUCTION

The Clean Coalition respectfully submits these comments on the Proposed Decision ("PD") released February 26, 2019 implementing the AB 2868 Energy Storage Program And Investment Framework and approving SDG&E's February 28, 2018 AB 2868 Application (A.) 18-00-016 with modification ("Application"), released August 29, 2018.

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.

III. SUMMARY

- This response is focused on SDG&E's Application (A.) 18-00-016 but is applicable to all utilities for fulfilling AB 2868 procurement requirements.
- The Clean Coalition supports the PD's finding that all ownership models should be pursued and evaluated on an equal basis, including utility ownership, merchant or third party, and joint-ownership options, and considering of the full range of benefits and costs, when determining cost effectiveness.
- We oppose the RFO approach to procurement as costly and ineffective for commercial-scale and small utility-scale renewables and other distributed energy resources ("DER"), and strongly recommend authorization of a more cost effective standard offer or Feed-in Tariff ("FIT") procurement option with market responsive pricing. We reference and recommend a FIT program recently designed for the City of San Diego.
- We recommend procurement of storage paired with and charged from renewable energy sources to both reduce ratepayer costs through the applicability of federal investment tax

credits (ITC) for such storage, and coordination with the state's renewable energy and GHG reduction goals.

- We further support in concept SDG&E's efforts to site storage projects so as to offer grid resilience and emergency service for critical community public facilities, and the PD's requirements for a showing appropriate project sizing and ownership options. We extend the recommendation in line with providing indefinite solar+storage back-up power to reduce ratepayer costs while increasing critical resilience.

IV. COMMENTS

a. Multiple ownership models for storage facilities should be compared

The Clean Coalition supports the PD's finding that all ownership models should be pursued and evaluated on an equal basis, including utility ownership, merchant or third party, and joint-ownership options, and considering of the full range of benefits and costs, when determining cost effectiveness.

Utility ownership of the facilities will avoid contractual disputes and limitations on operation and dispatch, allowing the grid operator to optimize the necessary distribution grid isolation configurations, distributed energy resources management system (DERMS), and energy storage and other DER allocation for the greatest ratepayer benefit relative to operational costs over time. However, purchase and construction should also consider least cost sourcing for cost efficiency, as reflected in the PD.

As appropriately recognized by the PD, third party and joint ownership models will both ensure greater market access and participation, and because these models allow the storage facilities to potentially offer additional value streams that offset costs, they might be able to provide the services utilized by the utility at lower cost than dedicated utility owned facilities.

b. Storage facilities should be associated with renewable generation

Storage paired with and primarily charged from renewable energy sources are eligible for federal investment tax credits (ITC) of up to 30%, depending on the date of construction or

commencement of operation, and percentage of charging from renewables. This tax benefit is a major cost saving that should be considered and leveraged to reduce net ratepayer costs under various applications and ownership models. Coordinated planning and procurement must consider the intersection and integration of multiple goals to optimize procurement, reduce costs, and avoid duplicative deployment or underutilization of facilities.

Aligning, coordinating, and potentially combining AB 2868 compliance storage development with California's renewable energy, integrated resource planning (including generation, load modification, transmission and distribution resource planning), and with GHG reduction goals, will help meet each of these goals more rapidly and cost effectively. Local municipalities and agencies for Community Choice Aggregation, air quality, emergency planning, and economic development also have closely associated and overlapping goals that various ownership and incentive models can effectively fulfill.

As discussed further below, local resilience goals, including islandable community microgrids to maintain critical community public facilities, are greatly enhanced by planning for storage facilities to be recharged from solar or other local resources that will continue to be available during a regional grid outage of any duration.

Fundamentally, the purpose of energy storage is to provide local dispatchable energy services. Pairing a storage facility with solar or other preferred resources offers greater dispatchable energy capacity at lower cost than siting and operating solar and storage independently, both due to the applicable ITC and the operational economic dispatch during both normal and emergency scenarios.

c. Recommended changes to the PD: A Standard Offer or Feed-in Tariff is preferable to RFO procurement at this project scale

We oppose the RFO approach to procurement as costly and ineffective for commercial-scale and small utility-scale DER, and strongly recommend authorization of a more cost effective standard offer or Feed-In Tariff (FIT) procurement option with market responsive pricing.

As detailed further below, the proposed RFO process is a fundamentally inferior approach to a market-adjusting FIT for relatively small projects, because the pre-established features of a FIT

offers developers the requisite price certainty and non-negotiable standard contracts to entice a robust response and lower risk and administrative costs that otherwise overwhelm the economics of commercial-scale and small utility-scale DER. In contrast, an RFO process requires applicants to incur and risk large costs frequently exceeding $100,000 just to submit a proposal, including bid preparation, project design, and frequently requisite initial interconnection studies, site selection and site control or lease option. While these costs are necessary for project development, an RFO process requires that these cost be incurred prior to submitting a proposal, meaning that the risk of the applicant losing these sunk costs is excessively high given that only a small percentage of bids will be awarded/contracted and subsequently receive any cost recovery. For relatively small DER projects especially, this uncertainty both discourages participation in RFOs and drives up the cost of bids, as applicants must factor this risk into their offers. For large transmission connected projects such costs represent a relatively small and manageable component of the total project development, however for the smaller scale projects appropriate for the distribution system, the upfront costs of RFO participation are proportionately much larger, making well designed standard offer alternatives much more efficient and effective for the DER market segment.

In order to most cost effectively meet the goals of AB 2868 the CPUC must ensure that energy storage procurements use a FIT approach to offer developers transparent upfront, market responsive pricing with standard non-negotiable contracts. With transparency, certainty, and lower administrative costs, the Commission can greatly increase storage market participation, minimize contract failure, and ensure cost-effective prices by offering low market rates that avoid the substantial costs of bid failure risk. By comparison, the proposed RFO approach is opaque, cumbersome, expensive, and replete with upfront parasitic transaction costs that result in unbearable failure rates for proposed DER projects.

The Commission cannot continue to ignore the poor track record of RFP/RFO processes for procuring DER in light of the resounding successes of standard-offer, certain acceptance approach of FIT variants. It is past time for the Commission to stop repeating the proved failure of RFP/RFOs to solicit relatively small scale projects; and it is definitely now time to move to standard-offer contracts, first-come first served contract uptake, and transparent pricing. RFP/RFOs introduce excessive bid costs, high risk premiums that property owners, developers, and ratepayers should not be forced to bear.

The Commission should therefore include a FIT program with upfront transparent prices set by market conditions with price adjustment for market response and standardized non-negotiable contracts to provide certainty. Specifically, Order # 7 in the PD should be amended to read (with additions in italics):

> San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company may *put forth a Standard Offer or Feed-In Tariff (FIT) with market responsive pricing or* hold requests for offers that comply with this decision, including Appendix A, for front of the meter energy storage projects pursuant to Assembly Bill 2868.[3]

And paragraph 1 of Section 3.2.1.3 of the PD should be similarly modified to read (with additions in italics):[4]

> SDG&E may move forward with *a Standard Offer or Feed-In Tariff (FIT) with market responsive pricing or* an RFO for the identified projects, provided it adheres to the guidelines set in Appendix A.

We reference for example and recommend a program recently designed for the City of San Diego.[5] Notably, on pages 24-28, this January 2019 FIT design includes a component specifically addressing the value of storage facilities in offering energy services dispatched by the utility or other load serving entity ("LSE") such as a CCA that contracts for dispatchable energy capacity and can in turn utilize it to provide grid or market services regardless of who owns the storage facilities and how the grid or market services change over the contract duration. The FIT is designed to attract the most cost effective projects and adjust the offered price to reflect the lowest ratepayer cost that the market can support with reduced procurement participation costs and lower risk for all parties. The recommendations are based upon relevant market analysis and best practices associated with existing successful FIT programs worldwide. As for a cost-effectiveness indication, a pricing comparison analysis for the SDG&E service

[3] PD at 90
[4] PD at 20
[5] http://clean-coalition.org/wp-content/uploads/2019/03/San-Diego-Final-Draft-FIT-Design-Recommendations-21_wb-7-Mar-2019.pdf, and http://clean-coalition.org/san-diego-sein-initiative/feed-in-tariff/

territory shows that the 20-year levelized price for local renewable energy procured under the San Diego FIT will be less than half SDG&E's business as usual (BAU) energy price; the results show FIT-procured local renewables costing 5.3 cents/kWh vs BAU-procured renewables 14.1 cents/kWh.[6] It is worth noting that the superior economics of FIT-procured local renewables gets even more compelling when considering that the BAU-procured renewables are mostly centrally generated and dependent on usage of the transmission grid, which is the fastest growing component of the cost of delivered energy.[7]

d. Discussion: An MRP FIT program, rather than an RFO process, ensures maximum bid responses, minimal contract failure, and lowest cost.

It is imperative that procurement be efficient, cost-effective, and timely. Given the importance of a successful procurement process for these distributed resources, it is critical that the CPUC require a procurement process that has low administrative costs, a strong historic record of successful bid recruitment, and a track record of turning bids into built projects. The Request for Offers (RFO) process is not such a process for recruiting commercial-scale and small utility-scale projects. The particular characteristics of DER projects requires a more streamlined and efficient process exemplified by standard offer FIT programs, as has largely been demonstrated in SMUD's FIT program, LADWP's more recent FIT program, and the Commission's own Renewable Market Adjusting Tariff (ReMAT), despite the problems associated with ReMAT's excessively restricted bi-monthly procurement caps.

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

[7] http://clean-coalition.org/policy/transmission-access-charges/

Streamlining is critical because the developers of smaller projects need price certainty, transparency, contract standardization, and streamlined interconnection in order to be enticed to provide cost-optimized bids in a short timeframe. A FIT program with market responsive pricing (MRP) provides all of these, while an RFO provides none. Since bids into an RFO involve hundreds of thousands of dollars in expenses with high levels of uncertainty around price, developers face bid costs that eat up a high percentage of the project value. A $150,000 bid on a $1.5 million project represents a 10% costs just to launch a bid for an uncertain price and uncertain contract. As a result of high administrative costs and high uncertainties, many potential bids will simply fail to materialize and those that do will include a risk premium, driving up overall costs.

Market Adjusting FIT Program Framework

1) Offer standardized, transparent, non-negotiable contracts.
2) Establish initial price for first tranche of capacity via market research.
3) Non-negotiable contracts are offered to the queue until tranche is full.
4) Adjust price at each successive tranche at price depending on market response to prior round (upward if response is weak, downward if strong)
5) Continue until all MW capacity is procured

In contrast to the proven failure of the RFO approach for smaller projects, MRP FIT programs offer transparent prices in a staged market-responsive batched reverse auction that retains the important transparency and standardization benefits while incorporating pricing set by a market auction mechanism. In an MRP FIT Program, tranches of procurement are offered on a first-come, first-serve basis at a fixed price, with price adjustments for each additional tranche depending on the response to the prior tranche. By setting the initial price at the lower end of a reasonable range, ratepayers are guaranteed a cost-effective mix that will be cheaper than RFO procurement because developers face lower risks. FITs offer price certainty and standard contracts to property owners and developers that subsequently translates to cost-effective DER to ratepayers.

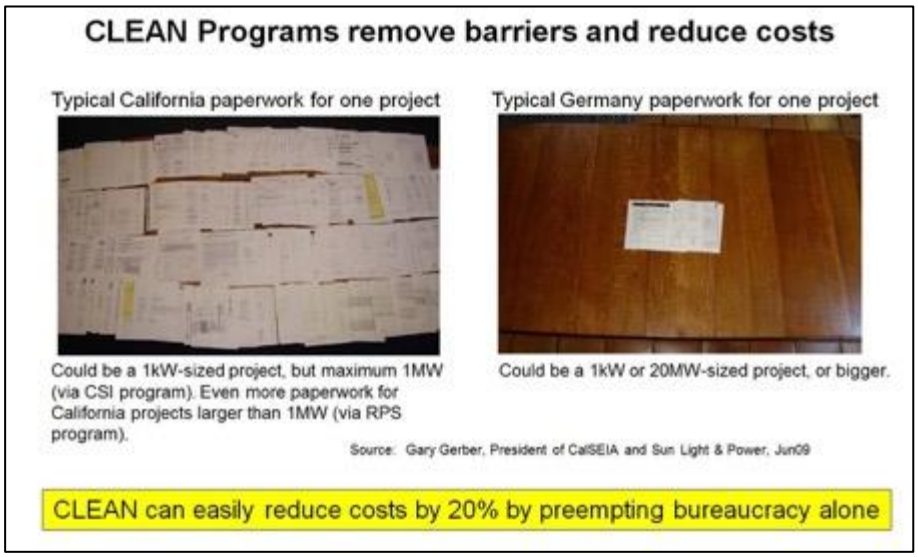
Publicly accessible information that allows developers to self-screen for interconnection also fosters faster market response and deployment. Recent improvements in the published interconnection maps and new Integration Capacity Assessment (ICA) hosting capacity data strongly support reliable site assessment. This can be further assured with a fixed-fee for qualifying projects that conform to the ICA values and related criteria such that grid upgrades are

negligible. The Clean Coalition is developing a pilot[8] with PG&E to trial such improvements as part of the Peninsula Advanced Energy Communities[9] program that should inform this additional element.

Even if the Public Utility Commission opts to allow utilities to pursue the RFO, the Commission should also support an MRP FIT program to be implemented should the initial RFO response fall short of expectations or needs.

i. FIT Programs are faster to deployment

FIT programs[10] are faster and less prone to contract failure, because they are simpler for developers to respond to and simpler for the utility to evaluate. FIT Programs use standardized contracts and prices, cutting out the individualized negotiation process that delays RFO procurement. Once the MRP FIT offer has been issued, developers can assess the offer and respond quickly to the standardized conditions. Developers also are more likely to bid because they face much lower risk, because projects that meet requirements are guaranteed a procurement contract from the utility until a tranche is filled. From the utility side, the selection process is a simpler and provides a faster standard review of whether a project meets requirements without cumbersome negotiations.



Consistent with the PD, a FIT aligns with the Commission's direction for contract approval via a single Application for multiple projects rather than submitting multiple applications for

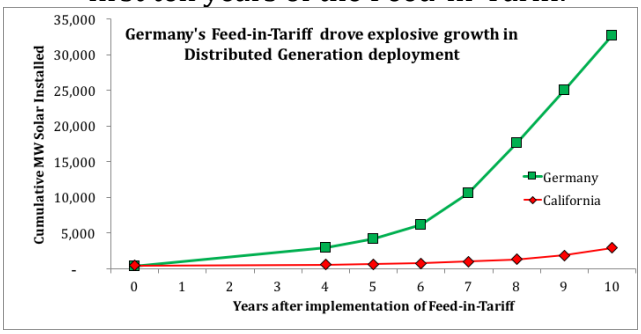
[8] http://clean-coalition.org/wp-content/uploads/2019/01/PAEC-Task-4.4-Final-Design-of-Pilot-for-Testing-Streamlined-Interconnection-Procedures-23_wb-27-Dec-2017-1.pdf
[9] Clean Coalition, Peninsula Advanced Energy Community (PAEC), http://www.clean-coalition.org/our-work/peninsula-advanced-energy-community/
[10] Also known as CLEAN Programs, http://www.clean-coalition.org/our-work/renewable-utility-programs/unleashing-clean/about-clean-programs/

individual projects. The regulatory process is much faster, because a FIT program is subject to a single CPUC program authorization in advance of procurement, rather than individualized review of each unique RFO sourced contract after bid submittal and final negotiations. RFO contract negotiation and approval typically delays deployment by at least a year, as clearly evidenced by the 12 months already passed between SDG&E's February 2018 Application and the Proposed Decision and the additional 12 months for post solicitation negotiation allowed in Appendix A, section h.

ii. Fixed-price programs have a proven record of successful procurement

Feed-in Tariffs have a proven record of rapidly deploying substantial renewable capacity well within two years from offer to final installation. As a leading example, Sacramento Municipal Utility District (SMUD) received nearly enough bids to fill SMUD's entire 100 MW FIT on the first day the FIT was launched in January 2010. Within two years, 45 MW had been installed and within three years 98.5 MW had been successfully installed. This timeframe can be expedited to easily beat the schedule of the most expedited RFO process. Similarly, the AB1969 & ReMAT programs have successfully procured roughly 500MW of solar despite some significant ReMAT design flaws. The 98.5% success rate of the SMUD Feed-in Tariff and the record of AB1969 & ReMAT procurement is orders of magnitude better than the record with RFO programs such as the one used in SCE's PRP.

1) Germany deployed over ten times the renewable capacity California did in the first ten years of the Feed-in-Tariff.



2) Germany installed nearly all of this capacity as in front of the meter distribution grid connected projects under 2MW.
3) Germany realized rates translate into a cost in California of **between 4 and 6 cents/kwh**, after accounting for California's tax incentives and increased output under a better solar resource,

Similarly, other jurisdictions have used FITs to drive strong growth in renewables where there has been a strong push for rapid, cost-effective deployment. In one of the most dramatic

examples of an exceptionally effective deployment of solar energy capacity, Germany outpaced California's deployment by a factor of over 10 between 2002 and 2012, across all market segments, including behind-the-meter, front-of-meter, and utility-scale, while driving down rates to an effective California cost of between 4 and 6 cents a kWh for rooftop solar.[11]

iii. MRP FIT Programs deliver market adjusting cost-effective prices

By starting with an initial price that meets the minimum cost requirements and adjusts according to the response to the initial offer, MRP FIT programs guarantee procurement is cost-effective. The initial price could be established by market research or a price based on the PPA price deemed reasonable for similar project approved by the CPUC. Alternatively, although such an approach would remove the benefits of a transparent upfront price, the price of the initial round could be set by a Japanese Reverse Auction, in which the price offered for the first batch of capacity is lowered in stages, with bids withdrawing from the round until only enough bids to fill the first capacity tranche are left.[12] Even with a less aggressive initial offering price, costs are contained with an MRP FIT Program in which subsequent offer prices adjust depending on the market response in the prior tranche. Furthermore, desired elements associated with storage capacity can be either included in project requirements or induced through adders to incentivize specific dispatchability of the project capacity in order to ensure that the resulting offers can meet the procurement use case requirements while allowing remaining project capacity to leverage additional value streams.

iv. RFO is a model of how not to procure DER

The public deserves a more effective and transparent process than an RFO can provide. For example, SCE pointed to its Preferred Resources Pilot (PRP) RFO program precisely as an

[11] Translating the installed costs per kWh into the California context must account for the exchange rate of euro denominated costs, the favorable tax treatment of solar (30% ITC plus other incentives), and the fact that a solar panel in California delivers 33% more energy per installed watt because of the better solar resource.

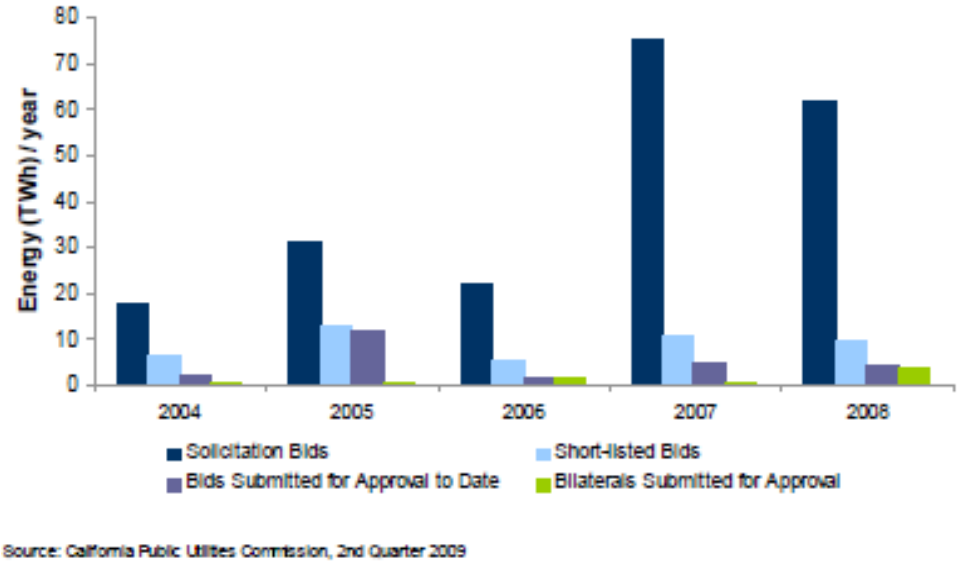
[12] For example, if the first tranche were the required 21MW, a Japanese Reverse Auction would accept all bids meeting standard contract requirement for the auction. Starting at a high price, the price is lowered in each auction round by a fixed amount. In each round, bids commit to taking that price or withdrawing until only 21MW remain. These bids receive that auction price, and the price for subsequent rounds is based on this price. 21MW is the price for all remaining bids. Such a procurement method would guarantee procurement of the minimum required 21MW of capacity at the minimum market price.

example that struggled to procure large amounts of DER in a timely manner in its testimony before the California Energy Commission in Oxnard on September 14, 2018.[13] SCE also received recommendations to adopt a FIT approach for that program as well, but declined to adopt that methodology. Where timing, price, transparency, and success are critical, the RFO process is vastly inferior to an MRP FIT.

v. The RFO process is too slow, too expensive, and too prone to failure.

In sharp contrast to fixed price, fixed contract programs, the RFO process is slow, expensive, and highly prone to failure. For example, a review of the Renewables Portfolio Standard (RPS) auction shows that fewer than one in ten bids result in executed projects, while the Renewable Auction Mechanism (RAM) has recorded an abysmal failure rate of 95% with only 28 executed contracts out of 552 bids (see Figure 1 and 2). Similarly, SCE's PRP RFO failed to produce a high number of successful bids.

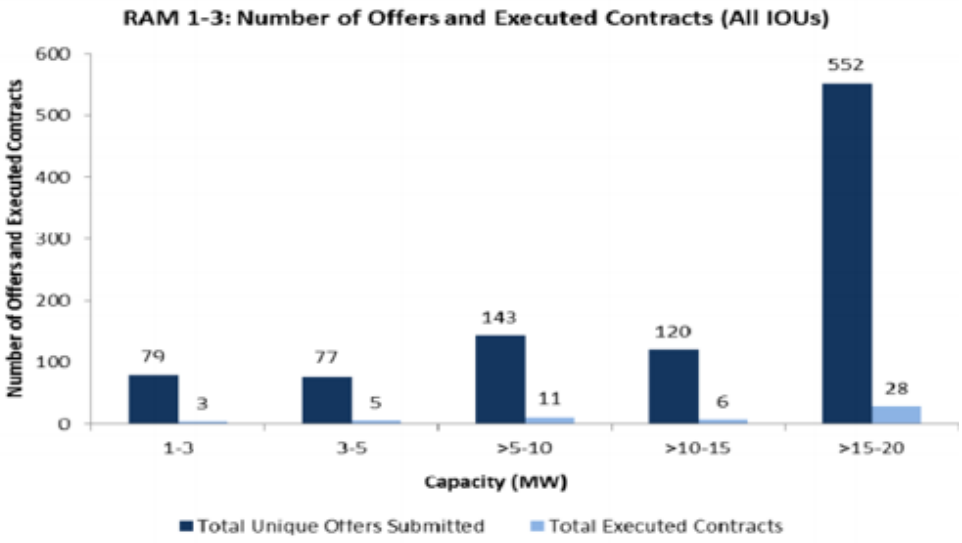
Figure 1 - Fewer than 1 in 10 bids results in an executed contract



Source: California Public Utilities Commission, 2nd Quarter 2009

[13] Transcript of 09/14/2017 Evidentiary Hearing, Puente Power Project Application for Certification, TN# 221283, Docket 15-AFC-01, pages 236 and following. http://docketpublic.energy.ca.gov/PublicDocuments/15-AFC-01/TN221283_20170921T111219_Transcript_of_09142017_Evidentiary_Hearing.pdf

Figure 2 – RAM has resulted in a high failure rate.



The issues are entirely predictable given the cumbersome administrative process of an RFO for both developers and utilities. Under RFOs, developers prepare detailed and individualized bids without the benefit of transparency of the possible contract price or any certainty of offer acceptance. This elevated risk and customization of proposals reduces the number of bids and increases the price as administrative costs and risk premiums are folded into bids. Furthermore, the process of shortlisting, negotiation, failure, repeated negotiations, offers and then CPUC approval results in unnecessary delays and fewer procured resources. The risks for developers, negotiation failures, and delays in an RFO mean that recruitment will be weaker and the prices will be higher.

e. SDG&E's proposed microgrid development has merit and would be enhanced by pairing the energy storage with local renewable generation

We further support in concept SDG&E's efforts to site storage projects so as to offer grid resilience and emergency service for critical community facilities,[14] and the PD's requirements for a showing appropriate project sizing and ownership options. This effort is well aligned with recent wildfire protection plans and more broadly with the importance of providing emergency service for critical community facilities in the event of any outage. We extend the

[14] Exhibit SDGE-05A at SP-5 (island critical public-sector facilities); SP-6 (integrate renewables, reduce GHG emissions, reduce dependence on petroleum); SP-6 and SP-7 (resource adequacy).

recommendation in line with providing indefinite solar+storage backup power to reduce ratepayer costs while increasing critical resilience.

Support of critical community facilities for public safety and providing additional resilience value is firmly in accord with Commission directives in Appendix A, section (h.)(i.) and the Wildfire Mitigation Plans established under Public Utilities Code Section 8386 and associated public safety power shutdown protocols for both distribution and transmission systems. As noted above, pairing the storage with renewables offers significant tax benefits to reduce cost to ratepayers, while also greatly enhancing resilience to prolonged outages. Natural disasters including fires and earthquakes, as well as bad-actor grid attacks, will result in prolonged outages at local and regional levels.

A Community Microgrid[15] is a new approach for designing and operating the electric grid, based on local renewables and other distributed energy resources (DER) like energy storage and demand response. Although linked to the main electric grid, during a power outage a Community Microgrid can isolate from the broader grid and provide indefinite renewables-driven backup power, allowing critical community facilities like fire stations, emergency shelters, and critical water and communications infrastructure to remain online indefinitely, even during extended grid outages. Renewables+storage microgrids can provide indefinite backup power to critical loads and is a critical resilience value that cannot be achieved by stand-alone energy storage, which cannot be recharged during a grid outage. Additionally, without the support of microgrid paired generation, stand-alone storage must reserve for the maximum required emergency need, and therefore cannot fully realize multi-use applications that would greatly reduce ratepayer costs.

Storage that is paired with renewables can provide indefinite resilience to critical community facilities and may be efficiently procured via a FIT program that includes a dispatchability adder as described in the previously referenced FIT that was recently designed for the City of San Diego. Paired procurement reduces overall ratepayer costs, while maintaining a distinct budget for the storage component as this is applied as an energy capacity adder for qualifying energy storage capacity that makes the renewables fully dispatchable.

[15] http://clean-coalition.org/community-microgrids/

V. Conclusion

The Clean Coalition emphasizes the importance of the Commission taking all necessary steps to ensure success in implementing the AB 2868 Energy Storage Program And Investment Framework. The Proposed Decision adopts important and appropriate modifications to the submitted Advice Letter and would be further enhanced by authorization of more effective procurement practices that expand opportunities for property owners, developers, solutions providers, and utilities while streamlining procurement processes and optimizing grid benefits and cost-effectiveness for all, including ratepayers. Foremost among these steps would be the implementation of an MRP FIT program.

Respectfully submitted,

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