BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Own Motion to Conduct a Comprehensive Examination of Investor Owned Electric Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations.	Rulemaking 12-06-013 (Filed June 21, 2012)

REPLY COMMENTS OF THE ALLIANCE FOR SOLAR CHOICE

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REPLY COMMENTS OF THE ALLIANCE FOR SOLAR CHOICE

The Alliance for Solar Choice ("TASC")[1] respectfully submits these reply comments pursuant to Administrative Law Judge McKinney's March 19, 2013 *Ruling Requesting Residential Rate Design Proposals* and June 24, 2013 *Ruling Confirming E-Mail Ruling Amending Procedural Schedule*.

In considering the optimal residential rate design for California's future, TASC encourages the Commission not to wind back the progress the state has made promoting technologies that are now recognized as centerpieces to the state's transition to a low-carbon energy system. Opening comments submitted by a diverse range of stakeholders in this proceeding illuminate a path forward that continues support for the California rooftop solar market while at the same time achieving the Commission's goals in this proceeding. The rate elements that best achieve these goals include:

- A default TOU rate after a transition period,
- Availability of three-tier inclining block rates with meaningful differentials,
- No fixed customer charges, and
- Customer ability to opt-out of the default TOU rate.

TASC's Opening Comments discuss these elements at length, demonstrating how they meet the goals and elements listed as objectives in this proceeding.[2] Each step the Commission takes away from these optimal rate elements will reduce customers' ability to choose distributed generation ("DG") and will slow the growth of the solar industry. Each step away from these

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1 Founding members represent the majority of the nation's rooftop solar market and include SolarCity, Sungevity, Sunrun and Verengo. These companies are responsible for tens ofthousands of residential, school and commercial solar installations in the Stateof California and have brought thousands of jobs and many tens of millions of dollars of investment to California's cities and towns.

2 TASC Comments at 6-14.

elements will reduce, and potentially undermine, the decisions tens of thousands of customers have made to go solar in response to state policies specifically intended to motivate them to deploy these technologies. Each step the Commission takes away from these elements represents a step away from the achievement of the Governor's 12 GW DG goal, as well as the state's ambitious zero-net energy building targets.

Although each of the rate elements identified above is important, TASC focuses this reply on two elements that parties' opening comments highlight as having a profound impact on consumer incentives to go solar. The two net metering ("NEM") impact analyses submitted separately by the Interstate Renewable Energy Council ("IREC") and the Sierra Club demonstrate the disproportionately detrimental impact fixed customer charges and significantly flattened tiers have on the economics of consumer decisions to go solar. An internal analysis performed by TASC supports the conclusions reached by IREC and the Sierra Club in their opening comments. Reducing the value of solar investments through fixed customer charges and significantly flattened tiers would not only hurt consumers, they also would undermine the consistent efforts of the Governors, Legislators, Commissioners and CPUC Staff that have empowered such customers to take charge of their on-site usage.

I. Net Metering is Essential to the California Rooftop Solar Market.

TASC members have installed tens of thousands of solar energy systems in the State of California. In the process, they have brought thousands of jobs and tens of millions of dollars of outside investment to California's cities and towns. Nearly all of the solar energy systems installed by TASC's member companies have been installed under California's successful NEM program. NEM provides a stable and widely accepted policy platform that has allowed TASC's member businesses to help make solar affordable and accessible to Californians, in line with

state policy goals. No party to this proceeding has more intimate, actual business experience and knowledge regarding the impacts of rate design structures on existing and potential DG customers who utilize NEM.

TASC acknowledges that rate reform should not be dictated solely by the economic implications for customer decisions to invest in demand-side solutions, like solar DG, but TASC believes the impacts of rate design on California's rooftop solar market are a critical part of this discussion. Importantly, the rooftop solar market in California should not become collateral damage in the state's efforts to reform existing rate structures to meet a range of objectives. TASC wholeheartedly agrees with IREC's opening comments advocating a "do no harm" philosophy with regard to NEM customers.[3]

II. Analyses Show Fixed Customer Charges and Flattened Tiers Will Harm NEM Customers.

The opening comments submitted by IREC and the Sierra Club highlight the negative impact that fixed customer charges and significantly flattened tiers have on the economics of consumer decisions to go solar. IREC's opening comments use an IREC-derived NEM calculator to measure the impacts of Pacific Gas and Electric ("PG&E"), Southern California Edison ("SCE"), the Division of Ratepayer Advocates ("DRA"), The Utility Reform Network ("TURN"), the Joint Solar Parties, the Natural Resources Defense Council ("NRDC") and Sierra Club proposals on solar investment.[4] IREC's approach looks at the impacts of parties' proposals on the payback period for NEM investments, or what IREC terms "NEM value".[5] IREC describes "NEM value" as the ability of bill credits (*i.e.*, avoided purchases of kWhs) to exceed

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3 IREC Comments at 3-4.
4 *Id.* at 2, 7.
5 *Id.* at 3.

the financial obligation of a NEM system over a reasonable period of time.[6] A reduction in NEM value constitutes a loss in the value of investments for existing NEM customers, meaning such customers' payback periods will lengthen.[7] A reduction in NEM value also reduces the likelihood of customers to invest in on-site solar systems.[8]

The Sierra Club analysis employs a different but complementary methodology. Sierra Club conducted what it calls a "break-even analysis" on the proposed rate designs from PG&E, SCE, San Diego Gas & Electric (SDG&E), DRA, TURN, the Joint Solar Parties and the California Large Energy Consumers Association.[9] The Sierra Club analysis "compares the average cost per kWh of purchased electricity from the utility PG&E, and the average cost per kWh generated through DG PV, both expressed as levelized costs of energy [("LCOEs")]."[10] Sierra Club then aggregates the weighted number of GWh during which the LCOE for solar DG is less than the LCOE for PG&E energy, *i.e.*, when solar DG is providing the system's owner a positive return.[11] These calculations allow Sierra Club to determine whether NEM investments would break even under a given rate proposal, a major factor in customers' decisions to invest in solar DG.

Both IREC and Sierra Club's studies demonstrate the detrimental impact of fixed customer charges on NEM customers. IREC concludes that fixed charges "have a disproportionately negative impact on NEM value and should be avoided."[12] Even PG&E and SCE's lowest suggested monthly fixed customer charge of $5 "will have a significant adverse

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6 *Id.* at 4.
7 *Id.* at 4-6.
8 *Id.*
9 Sierra Club Comments at 4.
10 *Id.* at Appendix A (p. 18).
11 Sierra Club Comments at 7-8.
12 IREC Comments at 3; Sierra Club Comments at 12.

effect on the value of NEM." [13] Sierra Club's analysis asserts that customer charges ranging between $5 and $10 would create impacts that put anywhere from 6% to 42% of the solar DG market below the break-even point.[14]

Sierra Club's analysis also highlights the potentially devastating impact of flattened tiers. Sierra Club demonstrates that the flattened tiers of certain SCE and PG&E rate structures provide virtually no positive return for NEM customers.[15] To put this result in perspective, Sierra Club shows that the loss in NEM value to customers is equal to one-third of the value of the solar DG system itself, a reduction in value equivalent to taking away the federal investment tax credit and resulting in payback periods of about 25 years.[16] Sierra Club concludes that such flattened rate structures would be disastrous for the California solar market and could even completely eliminate the economic incentive to install solar DG.[17]

To test and validate the conclusions reached by IREC and Sierra Club in opening comments, TASC conducted an assessment of the potential impacts of parties' proposals on potential NEM customers in Petaluma, San Francisco, Fontana and Santa Barbara. Like IREC, TASC's analysis, which is attached in the Appendix, focuses on the bill impacts of the various rate reform proposals.[18] TASC's analysis assesses the bill savings that solar provides relative to a customer's bill without solar. TASC member companies typically make this sort of analysis in discussing solar options with potential customers. From the perspective of commercial viability,

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13 IREC Comments at 3.

14 Sierra Club Comments at 12.

15 *Id.* at 8-9.

16 *Id.* at 9.

17 *Id.*

18 Like IREC and Sierra Club, TASC's analysis is limited by the availability of certain factors and data, as described in the Appendix. In addition, there are areas in all three analyses where better data would add more clarity. Despite these challenges, TASC believes the robustness of the relative impacts across the modeled customers and regions in its assessment – and the similarity of its results to certain results from IREC and Sierra Club – enables the Commission to draw the more general conclusions established in these comments.

TASC believes this metric is the most salient since bill savings, relative to what a customer would otherwise pay for electricity, are the primary driver of the decision to invest in a solar system.

TASC's analysis confirms that party's proposals have dramatically different impacts on the economics of going solar. To understand the vast range of outcomes different rate proposals have on the economics of going solar, consider the following: the average first-year bill savings from installing solar under the most beneficial proposals across the customers modeled would be 22% compared to utility-only service. In contrast, under the most adverse proposal, the average increase in a customer's electricity expenditures would be 65%. In other words, under the most adverse proposal, going solar would mean a customer pays 65% more for energy than they would if they took utility-only service.[19] This result underscores the critical role that rate design plays in the solar value proposition.

Moreover, TASC's analysis confirms the two critical conclusions from the IREC and Sierra Club assessments: fixed customer charges and significantly flattened tiers have negative effects on both existing and future NEM customers. TASC's analysis ranks proposals based on the bill savings each provides to solar customers in different areas of the state. The rank-order of the different proposals across the customers modeled is fairly consistent from one locality to the next, revealing the effects of fixed customer charges and flattened tiers. Of the 11 proposals modeled, the three proposals that offered the most beneficial economics for solar – DRA, Joint Solar Parties and Sierra Club – are consistent across all four areas modeled. Notably, these three proposals all refrain from the use of fixed customer charges and employ meaningful rate

[19] Sierra Club's rank order for SDG&E is somewhat different than TASC's analysis. TASC believes this difference results from the rate assumptions each party used in its analysis. For example, Sierra Club assumes a summer peak rate under SDG&E's proposal of $.56/kWh. In contrast, TASC employs $.246/kWh. This assumption clearly influences the difference in rank order.

differentials. SDG&E's proposal consistently ranks the lowest, and both PG&E and SCE's rate reform proposals consistently show impacts to the value of solar that are more negative than most other proposals. While the availability of a TOU rate can help mitigate the adverse impact of the utilities' proposed default tiered rates, TASC's modeling indicates that the utilities' TOU rates are best characterized as "moderately less bad" than utility default tiered rates and "far from good" for the solar value proposition. Fundamentally, TASC's analysis demonstrates how a new rate design that relies on fixed charges and significantly flattened tiers results in disproportionate harm to NEM value.

III. Conclusion

The impacts of rate design changes on California's rooftop solar market cannot be ignored in this proceeding. The TASC, IREC and Sierra Club analyses provide independent and significant insight on the effects of fixed customer charges and significantly flattened tiers on future and existing NEM customers. These rate structures would have a profoundly negative effect on the value of solar DG, limit the state's progress in developing a robust solar market, and are unnecessary.

Respectfully submitted,

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APPENDIX

SUMMARY OF TASC'S RATE ANALYSIS

TASC offers additional analysis of the residential rate reform proposals to highlight the very substantial differences that different proposals have on solar economics, and ultimately, the health of California's solar industry. Like IREC, we focus on the bill impacts of the various rate reform proposals, specifically assessing the bill savings that solar provides relative to a customer's bill without solar. From the perspective of commercial viability, we believe this metric is the most salient as bill savings relative to what they would otherwise pay for electricity are, for most customers, the primary driver of the decision to invest in a solar system.

To conduct this analysis, we modeled the impact of each of 11 different rate reform proposals on a hypothetical customer in each of four different geographic locations. The 11 proposals represent the end-state rate designs advanced by parties with sufficient information to conduct a detailed impact assessment. For each of the four customer scenarios, we relied on load data substantially based on an actual customer located in each of four different localities. Because of this, these customers are not necessarily representative of residential customers in a given place, as they were selected based on data availability. For each of these customers, we designed a hypothetical PV system, sized to offset approximately 70% of the household's annual electrical load, having a south-facing orientation and a roof slope of 22 degrees. Once these specifications were established, we used a proprietary modeling tool to estimate each of these household's electricity bills with and without solar under each of the different rate reform proposals. To help benchmark the analysis, we also compared the results to the outcome under the customer's currently applicable default tariff.

The assumptions in TASC's analysis are based on our members' collective experience effectively selling and deploying solar to meet the energy needs of tens of thousands of California residential customers. To assess whether a given rate proposal would be consistent with continued growth of the solar market, or present a significant liability, we assumed that the current PPA price that is generally commercially viable to offer in California is approximately $.19/kWh. We also assumed that in order for solar to be attractive, a customer's combined bill, including both their remaining utility bill plus payments under a solar PPA, must provide at least 10% savings relative to their pre-solar utility bill. Finally, we also calculated the PPA price that would be required in order to yield the targeted 10% savings under each of the rate reform proposals.

While seemingly straightforward, our analysis was somewhat confounded by the fact that none of the proposals that involved TOU rates provided information regarding their proposed TOU periods. To address this issue, we assumed that the current definition of TOU periods in utilities' existing tariffs will prevail in this proceeding. However, this assumption posed certain challenges in some instances, since some parties proposed TOU periods do not match the existing TOU periods. For example, in modeling SDG&E's rate reform proposal for a customer served by PG&E, none of the customer's usage would ever be billed (or solar output credited) at the Winter-Peak TOU rate proposed by SDG&E, because PG&E has no winter peak period. We also acknowledge that our methodology is built around a specific solar facility size and design, which are not optimized to each of the specific rate proposals.

Despite these challenges, we believe the results provide useful information regarding the relative impacts of the various proposals offered by parties as their preferred "end-state" rate designs on the economics of going solar. Given the robustness of those relative impacts across the modeled customers and regions, we also believe the results enable us to draw some more general conclusions regarding their likely impacts on the solar market.

The high level results from our analysis indicate the following:

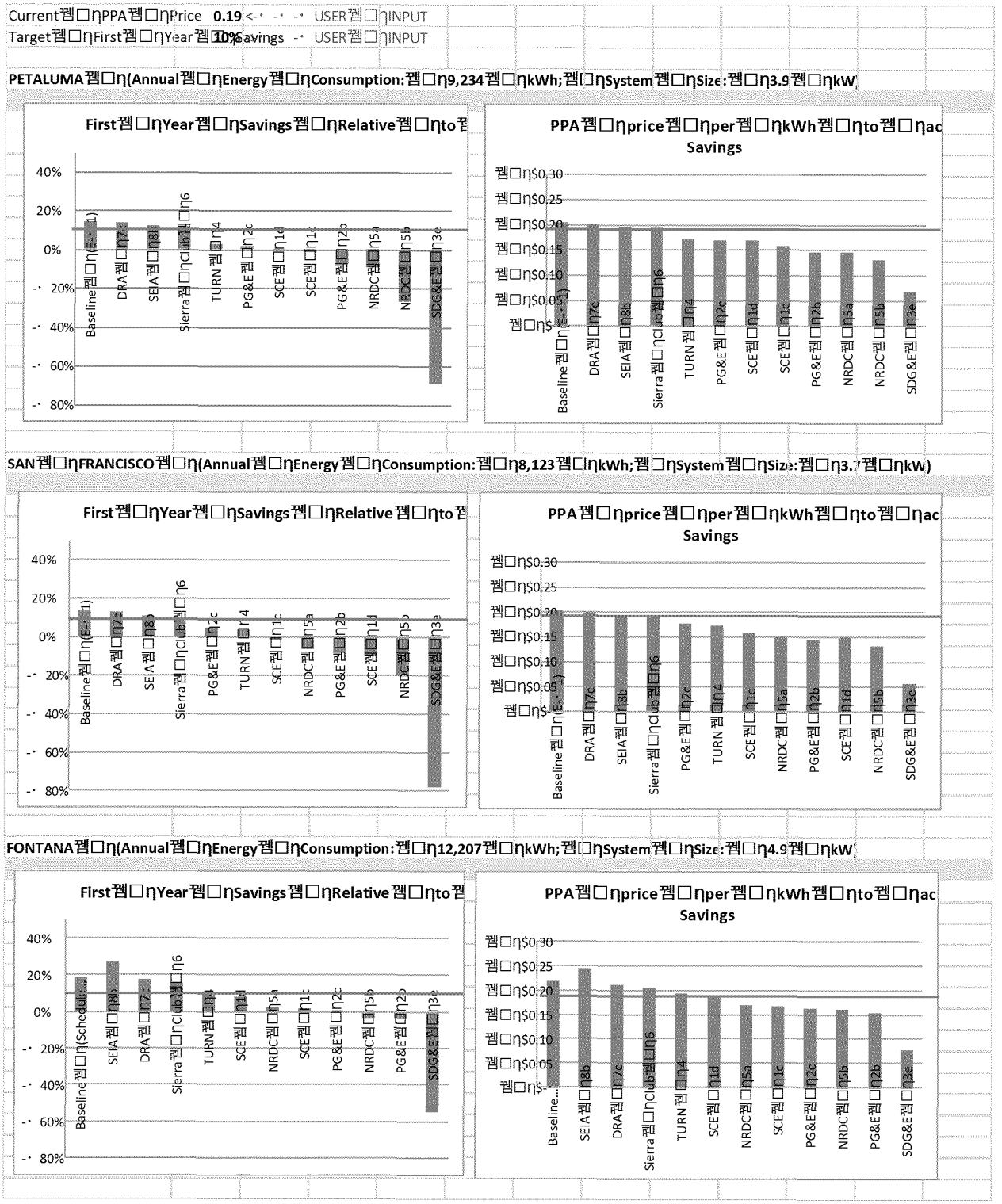
- The impact of the different rate proposals on the economics of going solar varies dramatically. For the customers modeled, first year savings from the proposals that were most beneficial averaged 22% across the customers modeled, while the first year savings for the proposals that was least beneficial averaged -65% (i.e. on average customers' bills were 65% higher with solar than without). This underscores the absolutely fundamental role that rate design plays in driving the solar value proposition.
- The rank order of the different proposals across the customers modeled was fairly robust. Of the 11 proposals modeled, the three proposals that offered the most beneficial economics for solar were consistent across all four customers scenarios. While there was more variation in the ranking across customers modeled for those proposals that provided the least beneficial economics, SDG&E's proposal consistently ranked the lowest.
- Both PG&E's and SCE's rate reform proposals consistently ranked as more negatively affecting solar value than most other parties' proposals. The availability of a TOU rate generally helped improve the economics of going solar relative to their proposed default tiered rate, with the degree to which the TOU rate enhances the economics of solar dependent on whether the TOU rate is offered as an opt-in or is the default rate.
- The results of the analysis are highly sensitive to the assumed commercially viable PPA price of $.19/kWh. As the PPA price declines, an increasing number of the proposals yield the assumed 10% first year savings, such that at a PPA price of $.13/kWh virtually all of the proposals, with the notable exception of SDG&E's, providing compelling savings (for SDG&E's proposal to work, PPA pricing would have to decline to approximately $.06-$.08/kWh for the customers we modeled). However, even in instances where the adjustment in the PPA price appears modest to preserve the customer value proposition, it's important to keep in mind the significant pricing pressures the industry is already subject to, most notably the scheduled decline in the federal ITC from 30% to 10% in 2017. All of this suggests that regardless of what rate proposal the Commission determines to pursue as the desired end-sate, the transition path should reflect realistic expectations regarding the commercially viable price at which solar can be offered. Additionally, substantial thought will need to be given to how to address the adverse impact rate reform could

have on the economics of solar for those customers that have already invested in a solar system

Generally, these results support the features of rate design that will facilitate the continued robust deployment of customer-side distributed generation, in particular the importance of avoiding fixed charges and the valuable roles that rate tiers with meaningful differentials can provide.

The detailed results from our analysis are provided below.

Party	Proposal Index	Basic Description
SCE	1c	End-state default two-tiered rate; $5 fixed charge
SCE	1d	End-state default non-tiered TOU rate; $15 or $20 fixed charge, with the higher fixed charge applying to customers with demand > 5 kW
PG&E	2b	End-state two-tiered rate; $10 fixed charge
PG&E	2c	End-state optional non-tiered TOU rate; $10 fixed charge
SDG&E	3e	End-state default non-tiered, TOU rate; fixed charged of $38.24
TURN	4	End-state default 3-tiered rate with fixed differentials; no fixed charge
NRDC	5a	End-state default three-tiered rate for customers with demand < 7 kW; no fixed charge
NRDC	5b	End-state three-tiered TOU rate for customers with demand > 7kW; no fixed charge
Sierra Club	6	End-state default two-tiered TOU rate; no fixed charge
DRA	7c	End-state default, tiered TOU rate; minimum $5 bill
SEIA	8b	End-state default two-tiered TOU rate; no fixed charge


Current PPA Price 0.19 <- USER INPUT
Target First Year Savings 10% USER INPUT
PETALUMA (Annual Energy Consumption: 9,234 kWh; System Size: 3.9 kW)
First Year Savings Relative to
PPA price per kWh to ac
Savings
$0.30
$0.25
$0.20
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$0.10
$0.05
40%
20%
0%
-20%
-40%
-60%
-80%
Baseline (E-1)
DRA 7c
SEIA 8b
Sierra Club 6
TURN 4
PG&E 2c
SCE 1d
SCE 1c
PG&E 2b
NRDC 5a
NRDC 5b
SDG&E 3e
SAN FRANCISCO (Annual Energy Consumption: 8,123 kWh; System Size: 3.7 kW)
First Year Savings Relative to
PPA price per kWh to ac
Savings
Baseline (E-1)
DRA 7c
SEIA 8b
Sierra Club 6
PG&E 2c
TURN 4
SCE 1c
NRDC 5a
PG&E 2b
SCE 1d
NRDC 5b
SDG&E 3e
FONTANA (Annual Energy Consumption: 12,207 kWh; System Size: 4.9 kW)
First Year Savings Relative to
PPA price per kWh to ac
Savings
Baseline (Schedule...
SEIA 8b
DRA 7c
Sierra Club 6
TURN 4
SCE 1d
NRDC 5a
SCE 1c
PG&E 2c
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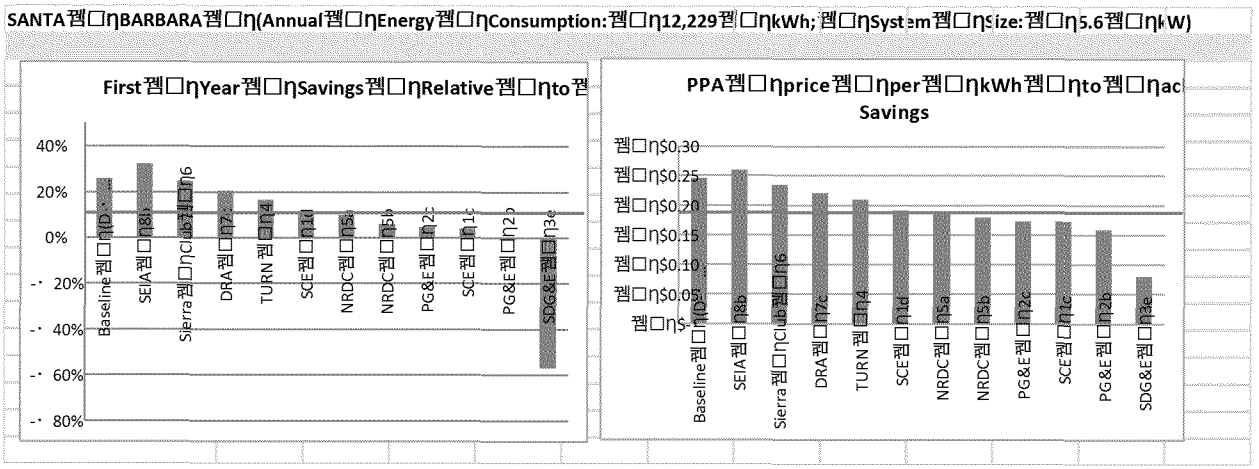
PG&E 2b
SDG&E 3e


SANTA□ηBARBARA□η(Annual□ηEnergy□ηConsumption:□η12,229□ηkWh;□ηSystem□ηSize:□η5.6□ηkW)
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Sierra□ηClub□η6
DRA□η7c
TURN□η4
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Sierra□ηClub□η6
DRA□η7c
TURN□η4
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NRDC□η5b
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SDG&E□η3e