



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

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Application of Pacific Gas and Electric Company To
Revise Its Electric Marginal Costs, Revenue
Allocation, and Rate Design Including Real Time
Pricing, to Revise its Customer Energy Statements,
and to Seek Recovery of Incremental Expenditures.
(U 39 M).

**Application 10-03-014
(Filed March 22, 2010)**

**SIERRA CLUB CALIFORNIA
REPLY BRIEF ON THE
GENERAL RATE CASE, PHASE 2**

January 10, 2011

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Summary of Recommendations

Sierra Club California urges the California Public Utilities Commission to:

1. Reject the proposal to consolidate residential electric rate tiers 3 and 4 into a single tier 3.
2. Reject the proposal to assess a flat monthly customer charge of \$3 per month.
3. Consider the negative impacts and inconsistencies of the proposed residential rate design with adopted California energy policies, including the loading order for energy conservation, energy efficiency, and renewable energy, and California laws and programs designed to achieve solar installation and greenhouse gas emissions reduction.
4. Support time of use rates that provide an adequate and meaningful incentive for solar.
5. Reject the proposal to allow “flat generation and distribution rates” using a “conservation incentive adjustment” on the distribution side of the bill, as this is a non-cost-based attempt to interfere with Community Choice Aggregators.

I. Introduction and General Background

In this reply brief before the California Public Utilities Commission, Sierra Club California (“Sierra Club,” or “SCC”) responds to Parties’ arguments in the Pacific Gas and Electric (PG&E) General Rate Case Phase 2. Sierra Club California respectfully requests an oral argument before the Commission as requested by Parties in Opening Briefs.

PG&E is proposing significant changes to its existing rate structure, including merging current residential tiers 3 and 4 into a single tier 3 rate, creating a new tier 3 rate for CARE customers, and assessing all residential customers a flat customer charge of \$3 (\$2.40 for CARE customers).¹ In addition, PG&E proposes changing baseline quantities from 60% to 55% of average usage within each climate zone.² These changes are in addition to a recently approved Decision to collapse tiers 4 and tier 5 which was approved earlier in 2010.³ PG&E is also proposing a “generation flattening” that would assess a complex charge on the distribution side of the bill.⁴

Sierra Club California is opposed to several of these rate design changes, most particularly the consolidation of tiers 3 and 4, the monthly customer charge of \$3 due to impacts on energy conservation, energy efficiency and renewable energy generation, and the generation flattening.

The effect of consolidating tiers 3 and 4, and assessing revenue through a flat customer charge cause significant environmental impacts from increased energy consumption, reduced energy efficiency retrofits, reduced photovoltaic solar installation, and associated criteria

¹ Exhibit 7 (Sierra Club) at 3; Exhibit 1 (PG&E).

² Id.

³ CPUC Decision A.10-02-029.

⁴ Exhibit 8 (Sierra Club) at 1.

pollutant and greenhouse gas emissions from increased energy consumption from polluting power plants. The generation flattening would have the effect of discouraging community choice aggregators from forming, generation providers with the potential to procure higher levels of renewable energy generation. These rate design changes contradict many energy policies of the state of California and should be rejected by the Commission.

II. Overall Residential Rate Design Proposals Discourage Energy Conservation, and Eliminate Incentives for Energy Efficiency and Renewable Energy.

A. California Energy Conservation, Renewable Energy, and Energy Efficiency Policies Should Be Given Great Weight in this Ratemaking, and Maintaining Tier 4 is Equitable Considering Disproportionate Environmental and Social Costs of Disproportionate Energy Usage.

PG&E argues that in this ratemaking, that greater weight should be given to two principles: first, for rates to be equitable by reflecting cost of service, and second, for rates to send appropriate price signals to customers.⁵ By implication, PG&E is suggesting that the commission give less weight to the principle of rates furthering public policy goals,⁶ such as the goals of the Global Warming Solutions Act, the loading order, California Solar Initiative, energy efficiency, and energy conservation.

The Commission should act carefully when implementing rate design so as not to unravel the price incentives that have been the critical background of packaging incentives for solar

⁵ PG&E Opening Brief at 5.

⁶ PG&E Opening Brief at 6.

energy generation and energy efficiency retrofits. These price incentives are appropriate in the context of public policy goals, and the Commission has already moved to modify rates to merge Tiers 4 and 5.⁷ Upon cross-examination, PG&E witness Keene acknowledged that the goals of rate design should include “the impacts on whether it incents conservation.”⁸ While the Commission’s Decision to eliminate Tier 5 appears to not have harmed solar energy or energy efficiency incentives, PG&E’s current proposals to charge a flat \$3 per month customer charge and to consolidate Tiers 3 and 4 would have serious and detrimental impacts to critical California public policy goals.

Although PG&E argues that it is inequitable for customers with usage in Tier 4 to be charged above the cost of production for Tier 4 consumption, all customers receive Tier 1 and 2 usage at substantially below the cost of production by law, necessitating a progressive rate design. The law specifically requires the Commission to maintain “an appropriate inverted rate structure” for residential rates, an approach that appropriately encourages customers to conserve.⁹ It is appropriate to maintain Tier 4 to send an adequate price signal for energy conservation.

Principles of equity also apply where there is inequitable distribution of environmental benefits and costs. “Environmental justice” means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.¹⁰ When asked whether it was fair for some customers to contribute disproportionately to climate change, and its costs to public health, air quality, natural resources, and coastal adaptation, PG&E witness Keane

⁷ Decision 10-05-051.

⁸ Transcript, PG&E, Keane at 371.

⁹ Public Utilities Code 739.7.

¹⁰ Government Code 65040.12.

answered that it is fair, “if the Commission sets prices that accurately reflect costs,” and also agreed that it is the Commission’s role to assess various customer classes’ responsibility for social costs and environmental costs of global warming as they relate to electricity rates.”¹¹

Currently, the 5 percent of customers with Tier 4 usage are responsible for 14 percent of residential electricity usage, and associated environmental burdens.¹² With a group contributing nearly three times its proportionate share of impacts to peak demand on the electricity grid and the environment, it is appropriate to maintain Tier 4 given the inequitable patterns of energy consumption and the public policy goals of conservation, solar energy, energy efficiency advanced by maintaining Tier 4.

B. PG&E’s Proposed Rate Changes Will Have Detrimental Effects on Conservation

The proposed rate design changes will negatively impact energy conservation for several reasons: (1) the collection of revenue through a fixed \$3 per month customer charge would reduce the price of electricity sold in Tier 3 by 2 cents per kWh, or a 7% reduction,¹³ (2) the consolidation of Tier 3 and Tier 4 would decrease marginal rates from 40 cents/kWh to 27.6 cents/kWh, about a 30% reduction,¹⁴ and (3) economic literature demonstrates that there are negative price elasticities for energy, meaning that customers respond to lower electricity prices by consuming more.¹⁵

PG&E has selectively quoted the literature to misrepresent the steps taken by Dr. Spearot in his analysis. Dr. Spearot identified the elasticity of -0.2 for Non-CARE customers as the most

¹¹ Transcript, PG&E, Keane, at 375-376.

¹² Exhibit 7 at 16.

¹³ Exhibit 7 at 19.

¹⁴ Exhibit 7 at 22.

¹⁵ Exhibit 7 at 25

appropriate for this analysis because they represent the most recent estimates from U.C. Berkeley graduate student Koichiro Ito for customer level billing data for the Non-CARE group.¹⁶ Ito's empirical work was also claimed as the basis of Dr. Faruqui's model.¹⁷ However, Dr. Faruqui selectively quoted Ito to infer his choice of elasticities. Dr. Faruqui, in assuming a price elasticity of -0.13 for consumption below 100% of baseline, and -0.26 for consumption above 100% of baseline, which he refers to as elasticity estimates for different consumption blocks, are actually what Ito finds as lower and upper bounds of yearly elasticity estimates compiled over 2001-2006.¹⁸ Further, in a separate analysis within the same paper, Ito concludes that, in response to the 2000 energy crisis, "Households with smaller ex-ante consumption have slightly larger price elasticity, but the difference among the subgroups is in the range of 2%." In fact, Dr. Faruqui admits that "there is a lack of reliable data on tier-specific elasticities,"¹⁹ and Dr. Faruqui does not ground any assumptions about applying tier-specific elasticities in economic literature. Thus, Dr. Faruqui has selectively ignored that Ito finds that there is little difference across these tier groups.

PG&E then notes in their opening brief that they questioned Dr. Spearot regarding Dr. Ito's caution about over-generalizing Ito's electricity crisis findings to the effect of typical rate changes.²⁰ PG&E read a quote from Ito's article, but selectively quoted Dr. Spearot's reaction prior to his opportunity to review the paragraph. After requesting to read the paragraph from the article, Dr. Spearot explained:

¹⁶ Exhibit 7 at 25.

¹⁷ Exhibit 1 (PG&E) at 8-11.

¹⁸ Exhibit 7 at 21.

¹⁹ Exhibit 2 (PG&E) at 3-12.

²⁰ PG&E Opening Brief at 15.

A: Well, I believe he's making this comment by appealing to the small difference in first and second tier rates. But he finds very little difference across first - - the first tier and the highest tier of consumption, the fifth. I don't remember exactly how he breaks up the tiers in this case, but he looks at the very small with, roughly midline and then roughly midline consumers before the crisis and then very large consumers. So if his argument is based on the small difference between rates 1 and 2, then I - - if that's an important part of his concern then - - you know, the large, the small difference in elasticities between you know very different size customers would seem to go round that. But - -

Q: [PG&E Asks Question on a New Topic]²¹

Dr. Spearot did not dispute Ito's cautionary note related to the electricity crisis. Further, Dr. Spearot's quoting of this section was not to support his elasticity assumptions, which can be drawn from a separate analysis of 5-tier rates from 2001-2006, but to show one reason why Dr. Faruqi lacked a foundation to apply Ito's elasticity range as tier-specific.²² Finally, as Dr. Spearot pointed out the small difference in elasticities between customers in different tiers, PG&E abruptly ended questioning on this topic with a new line of questioning. Dr. Spearot appropriately assumed, in the context of a sensitivity analysis, an elasticity of -0.2 for Non-CARE customers, which is an approximate mid-point of the range which Ito found for electricity price elasticity of 5-tier rates from 2001-2006.²³

PG&E alleges that Dr. Spearot's model requires correction by adding customer response to the flat customer charge, despite the fact that customers cannot avoid a charge that is

²¹ Sierra Club, Spearot, Transcript at 147-148.

²² Exhibit 7 at 21.

²³ Exhibit 7 at 25.

independent of consumption.²⁴ In modeling customer responses to electricity price changes, Dr. Severin Borenstein states in his 2009 article on this issue - “To What Electricity Price Do Customers Respond?” - that “average price excludes the small daily connection charge that is independent of consumption.”²⁵ Both Dr. Spearot and Dr. Faruqui quote Borenstein,²⁶ who empirically demonstrates that customers likely respond to average prices, but based on a specific definition of average prices.²⁷ Dr. Faruqui did not cite empirical evidence of electricity customer behavior to defend his definition of average price to refute Dr. Borenstein’s finding. Rather, Dr. Faruqui referred to anecdotal conversations with customers and utilities and surveys, but without the empirical rigor of economic literature.²⁸ His reasoning that customers simply respond to the total bill is based on the assumption that customers won’t know there is a customer charge, yet they would still attempt to reduce consumption to lower the total bill. However, Dr. Faruqui maintains that customers will begin focusing more closely on marginal prices in light of increased customer information.²⁹ In contrast, Dr. Spearot’s method recognizes the specific economic literature demonstrating that customers respond to price signals that allow customers to avoid or reduce their charges by reducing consumption. The Solar Alliance economic analysis of PG&E’s rate proposals, which PG&E did not dispute, found that PG&E’s rate proposal has the effect of increasing energy consumption by 0.3%,³⁰ also qualitatively confirming that Dr. Spearot’s conclusions should be accepted.

²⁴ PG&E Opening Brief at 14.

²⁵ Transcript, PG&E, Faruqui, at 113.

²⁶ Transcript, PG&E, Faruqui at 112-113.

²⁷ Exhibit 7 at 23.

²⁸ Transcript, PG&E, Faruqui at 113.

²⁹ Exhibit 2 at 3-14.

³⁰ Exhibit 26 (Solar Alliance) at 12-13.

Dr. Faruqui did not dispute Dr. Spearot’s finding that consumption of Non-CARE Tier 4 customers will increase if Tier 4 prices are reduced.³¹ Dr. Spearot generally applied conservative assumptions, such as applying the average price, using an elasticity on the lower end for Non-CARE customers, and an elasticity on the higher end of the range for CARE customers. Using these conservative assumptions, consumption would increase by 110,044 MWh/year, or about 0.39% if PG&E’s proposals are adopted. Based on Dr. Spearot’s sensitivity analysis, assuming an elasticity of -0.4 for both CARE and Non-CARE as found by Reiss and White in 2005,³² consumption would increase by 451,000 MWh/year, or about 1.6%. Finally, if assuming the elasticities used by PG&E for the upper tiers and to estimate reduced CARE tier 3 consumption, -0.26 for both Non-CARE and CARE customers, consumption would increase slightly above the midpoint between 167,948 – 225,851 MWh, and 0.59 - 0.79%.

		Non-CARE Elasticity					
		0	-0.1	-0.2	-0.3	-0.4	-0.5
	0	0	170,829	341,658	512,487	683,316	854,145
	-0.1	-57,903	112,926	283,755	454,584	625,413	796,242
CARE	-0.2	-115,807	55,022	225,851	396,680	567,509	738,338
Elasticity	-0.3	-173,710	-2,881	167,948	338,777	509,606	680,435
	-0.4	-231,613	-60,784	110,044	280,873	451,702	622,531
	-0.5	-289,517	-118,688	52,141	222,970	393,799	564,628

Table 1: Estimated Change in Consumption (MWh) Relative to Current Schedule

³¹ Transcript, PG&E Faruqui at 110.

³² Exhibit 7 at 25.

		Non-CARE Elasticity					
		0	-0.1	-0.2	-0.3	-0.4	-0.5
	0	0.000%	0.600%	1.201%	1.801%	2.401%	3.002%
	-0.1	-0.203%	0.397%	0.997%	1.598%	2.198%	2.798%
CARE	-0.2	-0.407%	0.193%	0.794%	1.394%	1.994%	2.595%
Elasticity	-0.3	-0.610%	-0.010%	0.590%	1.191%	1.791%	2.391%
	-0.4	-0.814%	-0.214%	0.387%	0.987%	1.587%	2.188%
	-0.5	-1.017%	-0.417%	0.183%	0.784%	1.384%	1.984%

Table 2: Estimated Change in Consumption (%) Relative to Current Schedule³³

PG&E also questioned Dr. Spearot’s qualifications. Dr. Spearot is an expert in applied econometrics, with six years of experience as a research economist on empirical issues.³⁴ Although his research has covered international economics, he has addressed both theoretical and empirical topics, including the effects of international tariff programs, trade agreements, corporate finance, and firm-level behavior.³⁵ This includes research on tiered block rates within international trade tariffs.³⁶ These topics are relevant to modeling an economic system, researching appropriate elasticities, and applying them to a set of data, a standard economic approach that doesn’t require advanced expertise beyond knowledge of quantitative econometrics. Dr. Spearot testified that he is familiar with economic literature on price elasticity of electricity in the United States, and he has properly modeled the effects of the proposed rate design changes.³⁷

The implementation of increasing-block rates as an incentive for residential energy conservation has been an important part of the fundamental goals and impressive accomplishments of the California Public Utilities Commission (CPUC). The proposed changes

³³ Shown as Tables 4.3 and 4.4 in Exhibit 7 at 26.

³⁴ Exhibit 7 at 71.

³⁵ Id.

³⁶ Transcript, Sierra Club, Spearot at 151-152.

³⁷ Transcript, Sierra Club, Spearot at 152.

in the PG&E residential tier structure will remove an important incentive to increase energy efficiency and conservation as well as renewable energy generation, thus undermining the Commission's achievements and stated policy goals.

C. The Proposed Rate Changes Will Have a Detrimental and Devastating Effect on California Solar PV Programs.

PG&E claims that their rate proposal would allow California's successful solar program to continue its growth, and contribution to meeting renewable energy policy goals. In fact, the evidence demonstrates the opposite - that implementing the proposed rate changes at this time would severely threaten an industry that is on the cutting edge of California's economic growth and responding to the climate crisis.

PG&E quotes Vote Solar and Sierra Club witnesses crediting PG&E customer market share and California as a whole being the leader in solar.³⁸ As shown in the EcoShift analysis on the proposed rate changes, this leadership is in large part to the PG&E rate design. Vote Solar also showed that electricity bill savings can comprise 50 – 70% of the financial value of a solar PV investment, and this share is increasing as rebates decline.³⁹ PG&E's reasoning is akin to having the cake after eating it - eliminating the successful element of a program by virtue of the program's success.

PG&E draws an incomplete comparison to rates from Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) service areas.⁴⁰ San Diego has specific incentive

³⁸ Transcript, Sierra Club, Barsimantov and Mulvaney at 807; Vote Solar, Rose at 504.

³⁹ Exhibit 16 (Vote Solar) at 19.

⁴⁰ PG&E Opening Brief at 17.

programs to achieve cumulative installations, including incentives for large-scale warehouses, which PG&E does not do.⁴¹ Installation of solar PV in SDG&E and SCE service areas also carries a much faster return on investment, due to greater solar insolation (generation potential due to weather) in southern California.⁴² Several factors influence the rates that will allow a positive levelized cost of energy that will incent solar.⁴³ These factors include: (1) the level of solar insolation due to weather patterns; (2) the amount of electricity use for a given customer, or utility-wide, in a service area; (3) the level of government subsidies, including subsidies that decline with each step of the California Solar Initiative (CSI), and (4) customer-level factors such as education, outreach, and density of solar installers. PG&E did not introduce evidence showing why the experiences in other service areas alter the EcoShift analysis which clearly demonstrates the negative impacts of the proposed rate design changes on solar incentives.

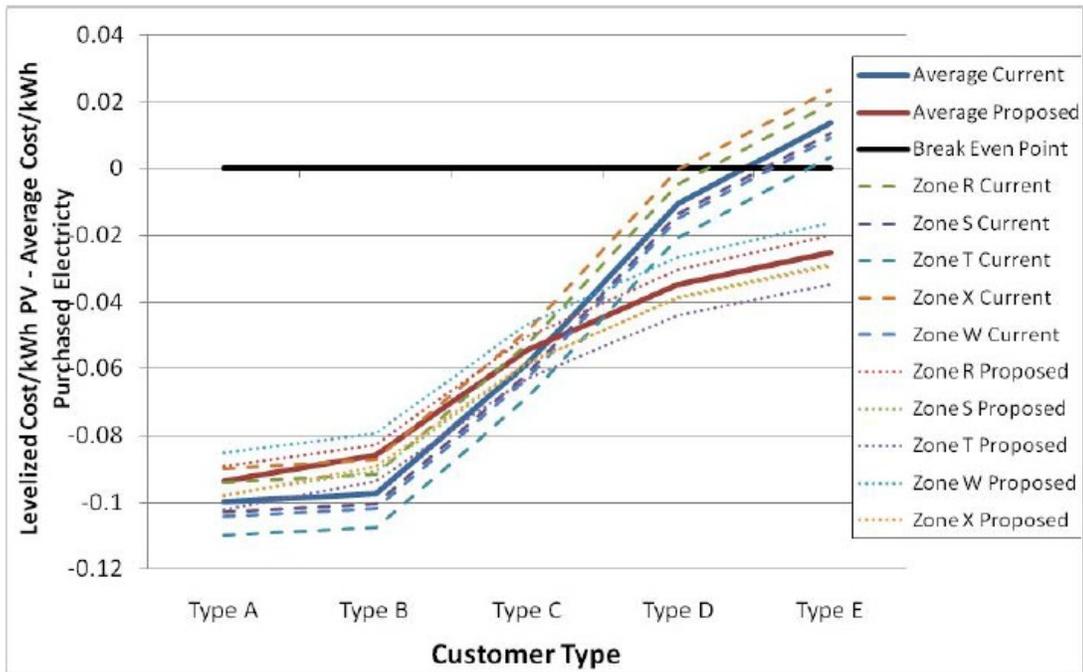


Figure 3: Difference between Levelized Cost of Energy (LCOE) / kWh from PV minus the LCOE/kWh from PG&E electricity for Non-CARE customers.⁴⁴

⁴¹ Transcript, Sierra Club, Mulvaney at 808.

⁴² Transcript, Sierra Club, Gershenson at 808.

⁴³ Transcript, Sierra Club, Basrimantov at 808.

⁴⁴ Shown as Figure 5.1 in Exhibit 7 at 34.

PG&E attempts to discredit EcoShift's analysis and knowledge of the solar industry by pointing to the \$9.21/W figure used in the testimony.⁴⁵ However, this figure was the most recent figure posted on the CSI website of the testimony deadline, and was subsequently updated in evidentiary hearings.⁴⁶ Declines in the price are addressed through a sensitivity analysis demonstrating severe impacts to solar installation unless the price of installed solar declines below \$7/W.⁴⁷ EcoShift identified economic data affecting the solar industry, and Dr. Mulvaney, who authored this section of the report, is a postdoctoral researcher at UC Berkeley studying the photovoltaic industry and is in frequent conversations with manufacturers, equipment suppliers, and installers.⁴⁸

The cost of installed less than 10 kW residential solar in the PG&E service territory has declined to \$7.76/W as of third quarter 2010.⁴⁹ However, this represented a cost increase of 1 percent between the 2nd and 3rd quarters in the PG&E service area, and over the same period, the cost increased by 10 percent statewide from \$8.16/W to \$9.14/W.⁵⁰ Indeed, for most of the last four years, the cost of installation in the PG&E service area closely tracked the cost of installation across all service areas.⁵¹

EcoShift identified short-term trends explaining why the decline in cost will slow, including: (1) lowered profit margins that solar installers are willing to make in the current financial crisis, (2) Chinese subsidies to solar manufacturers causing United States and European manufacturers to undersell the cost to remain competitive, (3) the relative cost share of modules at 25% of the total installed costs, and (4) the absence of expected cost declines for inverters and

⁴⁵ PG&E Opening Brief at 18.

⁴⁶ Exhibit 7 at 38; Exhibit 75.

⁴⁷ Exhibit 7 at 39.

⁴⁸ Transcript, Sierra Club, Mulvaney at 812.

⁴⁹ Exhibit 75 (Sierra Club) at 5.

⁵⁰ Exhibit 75 at 5.

⁵¹ Exhibit 75 at 5.

labor.⁵² Therefore, while Sierra Club is optimistic that the long-term trend is for the cost of solar to continue its expected decline, the evidence clearly shows that this has not occurred yet, and is not likely to occur during the period covered by this rate case.

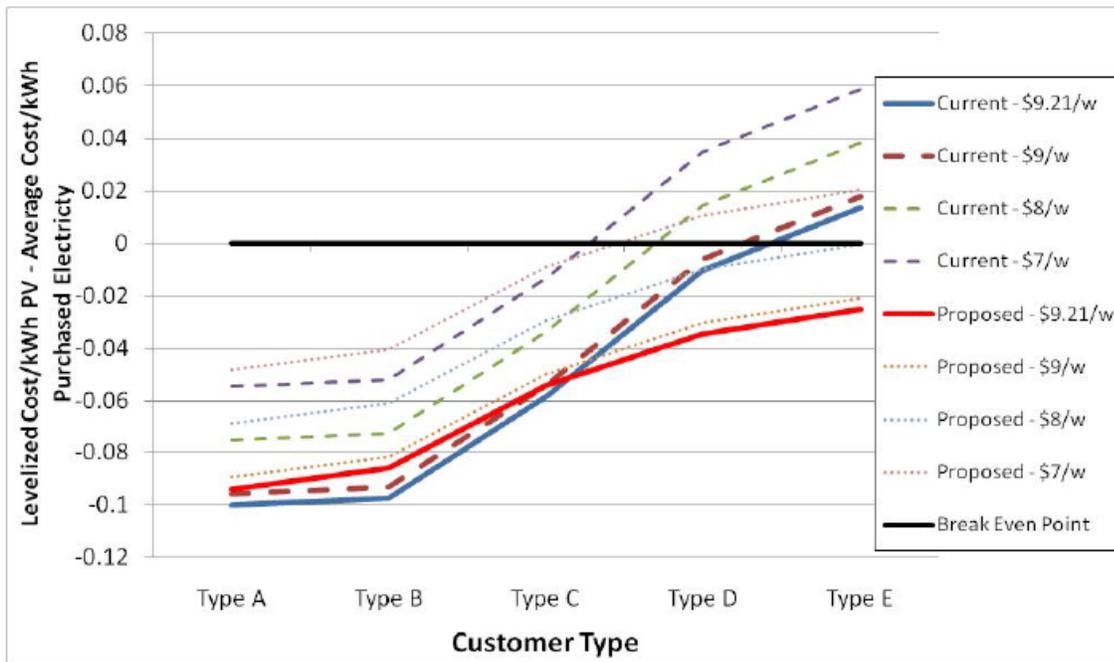


Figure 3: Effects of varying PV system costs on the difference between LCEO/kWh from PV and LCOE/kWh from PG&E electricity for 5 customer types⁵³

As the price of installed solar declines, so does the degree of impact of the proposed rates. The analysis at the initial \$9.21/W showed loss of 917,952 MWh/yr. At an installation cost of \$8/W, 2,305,692 MWh/yr of solar is incentivized under the current rates, but the proposed rates would only incent 99,935 MWh/yr. The installation cost would need to drop below \$7/W for all 2,305,692 to be incentivized. Even if the break-even point can be reached at

⁵² Exhibit 7 at 37; Transcript, Sierra Club, Barsimantov and Mulvaney at 812-814.

⁵³ Shown as Figure 5.4 in Exhibit 7 at 39.

a given cost, the proposed rate design lengthens the payback period.⁵⁴ The EcoShift analysis examined LCOE based on a 25-year payback period, which is less than optimal for customers who must take a long-term risk to invest in a system.⁵⁵

PG&E in their Opening Brief suggests that the Commission should assume significantly lower installation costs for solar,⁵⁶ and also questioned Sierra Club's witnesses, subject to check, to accept that roughly half of projects completed in 2010 fall in the range of \$6.30/W to \$7.70/W, with the highest concentration of projects completed in the \$6.80 to \$7.20/W range.⁵⁷ The figures suggested by PG&E in their Opening Brief have not been verified or documented in the record. These figures are irreconcilable with clear evidence from the California Solar Initiative website that the average cost of installing a solar project in 2010 dropped in the 2nd Quarter to \$7.67 and increased to \$7.76 in the 3rd Quarter.⁵⁸ The CSI website reports all cost statistics for solar incentive awards through the CSI program, and is the clear authoritative source on this matter. Indeed, the figures suggested by PG&E are unsupported by specific documentation or Exhibits in the record, and they are only substantiated to the extent of a limited mention of a data response during hearings.⁵⁹ Finally, PG&E presented cost figures in their rebuttal testimony that are numerically close to the CSI data, and introduced a cross-examination exhibit using the same CSI dataset as Sierra Club.⁶⁰ This evidence confirms that solar installation costs are within the range of \$7.76/W as reported by the CSI program for 3rd Quarter 2010.

⁵⁴ Transcript, Sierra Club, Barsimantov at 816

⁵⁵ Transcript, Sierra Club, Mulvaney at 815.

⁵⁶ PG&E Opening Brief at 26.

⁵⁷ Transcript, PG&E questioning of Sierra Club, Mulvaney at 811.

⁵⁸ Exhibit 75 at 4-5.

⁵⁹ Transcript, Vote Solar, Rose at 507-508.

⁶⁰ Exhibit 2 at Attachment 2B; Exhibit 53.

PG&E also suggests that its proposal could help the solar industry through the small increase to the Tier 3 rate.⁶¹ While this is qualitatively in the right direction of Tier 3 customers toward the break-even point, the EcoShift analysis demonstrates that Tier 3 customers will remain below the break-even point under existing market conditions.⁶²

D. PG&E’s Proposed Rate Design Proposals Are Inconsistent With California Energy Policies.

PG&E’s rate design proposals would eliminate key incentives for solar PV installation, energy efficiency upgrades, and energy conservation. These proposals are inconsistent with California energy policies, as set forth in the loading order, Integrated Energy Policy Report, California Solar Initiative, and Climate Change Scoping Plan, Big Bold Energy Efficiency Strategies, and Energy Action Plan.

The Public Utilities Code requires utilities to first meet their “unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.”⁶³ The Commission and the California Energy Commission (CEC) have additionally established California’s procurement policies through the “loading order” in the California Energy Action Plan.⁶⁴ The state’s first priority is to encourage energy efficiency; the second priority is to achieve increased development of renewable energy generation, including

⁶¹ PG&E Opening Brief at 19.

⁶² Exhibit 7 at 34, 39.

⁶³ Public Utilities Code 454.5(b)(9)(C).

⁶⁴ California Energy Commission, Energy Action Plan II, 2005.

http://docs.cpuc.ca.gov/word_pdf/REPORT/51604.pdf.

distributed generation such as solar PV, with efficient natural gas-fired power plants and transmission infrastructure improvements third in the loading order.⁶⁵

The California Energy Commission described the reasoning for the loading order in its 2009 Integrated Energy Policy Report (“IEPR”), stating that “Energy efficiency and demand response measures are the first resources in the loading order because they can contribute to meeting climate change goals with little or no impact on the environment and with measurable benefits (for example, cost savings) to the consumer.”⁶⁶ The Commission has recognized strategies to achieve the energy efficiency goals of the loading order in the “Big Bold Energy Efficiency Strategies,” which emphasize HVAC upgrades.⁶⁷

The California Solar Initiative (CSI) is another critical policy of the state of California to achieve 3,000 MW of distributed solar facilities within the period of 2007-2016, with the ultimate goal of effecting a market transformation that will make solar PV systems cost-effective in California.⁶⁸ The CPUC stated in the 2008 Energy Action Plan that, “Renewable energy policy is a cornerstone of our approach to reducing greenhouse gas emissions in the electricity sector,” and has committed to a goal of 33 percent of the power delivered in California to be from renewable sources by 2020.⁶⁹ The 2009 IEPR also recognized the benefits of distributed generation.⁷⁰

⁶⁵ Id.

⁶⁶ California Energy Commission, *2009 Integrated Energy Policy Report*, Final Commission Report, December 2009, CEC -100-2009-003-CMF at 21.

⁶⁷ CPUC Decisions D.07-10-032 and D.07-12-051.

⁶⁸ Decision 05-12-044 and Decision 06-01-024; Public Resources Code § 2851; Public Resources Code § 25780.

⁶⁹ California Public Utilities Commission, the California Energy Commission, and the California Power Authority Energy Action Plan Update, 2008, p. 2.

⁷⁰ CEC -100-2009-003-CMF at 27.

The Global Warming Solutions Act established California's policy of reducing greenhouse gas emissions to 1990 levels by 2020.⁷¹ The Scoping Plan relies on energy efficiency measures that reduce energy use by 32,000 GWh and 800 million therms by 2020, corresponding to 15.2 million metric tons of CO₂-equivalent emissions (MMTCO₂E). The 33% renewables portfolio standard is needed to achieve a reduction of 21.3 MMTCO₂E, and the Million Solar Roofs measure is needed to achieve procurement of 3,000 MW total installations to achieve reductions of 2.1 MMTCO₂E.⁷² PG&E has fallen short of the Renewables Portfolio Standard (RPS) statutory requirement of 20% renewable energy by 2010, as the current amount of renewables in the portfolio amounts to only 14.4%.⁷³

PG&E's residential rate design proposals remove critical incentives to achieving California energy policies. These proposals are therefore inconsistent with California energy policies and should be rejected.

III. Proposed Monthly Customer Charge Discourages Energy Conservation, and Reduces Incentives for Energy Efficiency and Renewable Energy.

PG&E proposes to assess \$3 non-CARE and a \$2.40 CARE customer charge. Sierra Club California opposes this proposal because the effect on conservation and upper tier incentives for energy efficiency and solar installation will be negative. Fixed prices do not encourage energy conservation since they are not tied to how much energy is consumed, and customers cannot avoid these charges by using less energy.

⁷¹ Assembly Bill No. 32 (Pavley, 2006) California Health and Safety Code, §§ 38500 et seq.

⁷² California Air Resources Board, *Climate Change Scoping Plan*, December 2008, available at: <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>. at 44-45, 53.

⁷³ Exhibit 7 at 43.

Recovering revenue lost through the proposed rate change would be equivalent to reducing tier 3 rates by 2 cents/kWh, or a 7% reduction in the marginal price for tier 3 customers. In effect, this is another blow to the efficacy of a tiered system, and will further limit the effectiveness of the CPUC in achieving energy efficiency and renewable energy policies. Collecting revenue through a customer charge will lower the marginal price charged to Tiers 3 and 4, and will reduce the incentive of the rate structure for customers to undertake energy efficiency retrofits and solar installation. A significant portion of the lost incentives due to being below the break-even point for these investments is due to revenue charged as a flat customer charge and reduced tiered rates.

Sierra Club California concurs with the legal analysis of PG&E's proposed customer charge that is argued by TURN, Solar Alliance, and DRA.⁷⁴ Public Utilities Code Section 739.9(a) limits increases in residential rates for usage up to 130% baseline to "the annual percentage change in the Consumer Price Index from the prior year plus 1 percent, but not less than 3 percent and not more than 5 percent per year." The Commission has longstanding policies that customer charges must be included in the calculation of baseline rates, and that there must be more than a 10% difference between Tier 1 and 2 rates. The proposed \$3 customer charge exceeds the limits of Section 739.9(a) and cannot be implemented unless current Tier 1 and 2 baseline rates are reduced.

IV. Proposed CARE Tier 3 Rate

Sierra Club California takes no position on the proposed CARE Tier 3 rate. Opinions expressed by EcoShift Consultants do not reflect the positions of Sierra Club California. Sierra Club

⁷⁴ Opening Briefs of TURN, DRA, and Solar Alliance.

California concurs with Dr. Spearot's findings that the CARE Tier 3 rate would reduce consumption among CARE Tier 3 customers. However, a detailed analysis of equity impacts of the CARE Tier 3 proposal is beyond the scope of EcoShift's analysis. In addition, the disproportionate use among Non-CARE customers of 5 percent customers in Tier 4 and 5 consuming 14% of the total electricity is not the case with CARE customers, with CARE Tiers 3, 4, and 5 customers are 5% of all customers but using 4.6% of total electricity.⁷⁵ The CARE Tier 3 rate would not be likely to alter CARE customer decisions to undertake investments in solar or major energy efficiency retrofits under current incentive structures.⁷⁶

V. Proposed Reduction in Baseline Percentage from 60 % to 55%

Sierra Club California takes no position on the proposed Reduction in Baseline Percentage from 60% to 55%. While a greater number of customers will be charged at a higher tier rate for a portion of their billed energy use, the marginal rate for the higher tiers also declines to maintain the constant revenue requirement. Dr. Spearot's analysis of energy consumption testing the impact of the change to baseline quantities resulted in a very small increase to total energy consumption by 0.02%.⁷⁷ This proposal also had no impact on the EcoShift economic model affecting solar PV.⁷⁸

⁷⁵ Exhibit 7 at 16.

⁷⁶ Exhibit 7 at 16, 34.

⁷⁷ Exhibit 7 at 20.

⁷⁸ Exhibit 7 at 29.

VI. Proposed Tier Changes for Non-CARE customers Discourage Energy Conservation, and Eliminate Incentives for Energy Efficiency and Renewable Energy.

The five-tier residential rate structure that has been in place from 2001-2009 has advanced the priorities in the state's loading order by sending effective price signals to high-usage customers to reduce energy usage, and to consider energy efficiency and installing solar PV to reduce or eliminate the customer's energy use.

Although PG&E claims that its proposals to not signal a desire to harm energy conservation, energy efficiency, and renewable energy, the expected consequences of PG&E's proposals speak louder than mere words. PG&E did not refute in its rebuttal testimony or Opening Brief arguments EcoShift's specific findings of impacts to energy efficiency investments, instead arguing that their proposal "leaves plenty of incentive," and if there were minor impacts to these programs, that these reasons are less important than providing rolling back rates for a small group of 5 percent of customers who use 14 percent of total electricity.⁷⁹

In fact, the current PG&E rates create a strong economic incentive to upgrade to more efficient air conditioners, while the proposed three-tier rate structure virtually eliminates that incentive.⁸⁰ By reducing the marginal cost of consuming electricity above 130% of baseline and flattening rates above that level, PG&E's proposed rate structure would reduce the price signal in favor of conservation and reduce the cost-effectiveness of energy efficiency measures. The efficiency of central air conditioning systems is rated by a Seasonal Energy Efficiency Ratio (SEER), with higher numbers indicating more efficient units. EcoShift modeled customer

⁷⁹ PG&E Opening Brief at 58.

⁸⁰ Exhibit 7 at 59.

decisions under the existing and proposed rates, finding that, as an example, a customer in Fresno upgrading from SEER 10 would save 1,514 kWh/year by upgrading to SEER 14, and 2,650 kWh/year by upgrading to SEER 20.⁸¹

To determine if upgrades would continue to make economic sense if the proposed rate changes were adopted, the Savings-to-Investment ratio (SIR) was used as an indicator. A SIR greater than 1 indicates that an investment in energy efficiency equipment would pay for itself within its useful life, and a SIR less than 1 indicates that the equipment would not be economically efficient.⁸² The analysis shows that for a homeowner in Fresno or Bakersfield (PG&E climate zones R and W), upgrading from a SEER 10 to SEER 14 or 20 would make economic sense under the current rate structure, but not under the proposed rate structure. For both upgrades in either climate zone, SIR is greater than 1 under the existing rates, but less than 1 under the proposed rate changes.⁸³

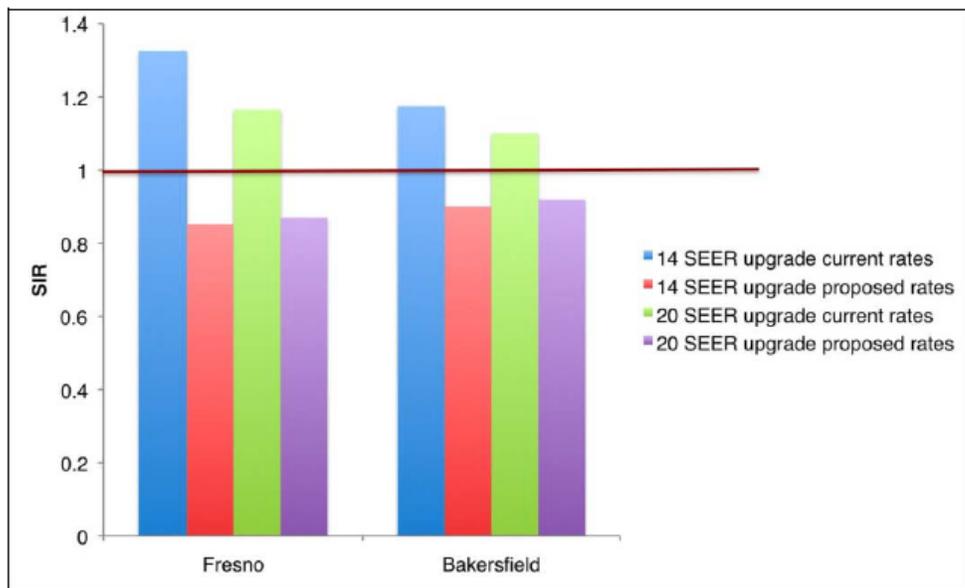


Figure 4: Sample Savings to Investment Ratio for Air Conditioner Upgrades from SEER 10 under current and proposed rates.⁸⁴

⁸¹ Exhibit 7 at 60.

⁸² Exhibit 7 at 60.

⁸³ Exhibit 7 at 61.

⁸⁴ Shown as Figure 6.4 in Exhibit 7 at 61.

This is hardly a “minor” effect, as PG&E asserts. The cumulative effect of eliminating this incentive can have negative consequences for meeting the State’s energy efficiency goals. In just these two climate zones, there is a potential savings of 20,804 MWh/year for upgrades to SEER 14 and 53,369 MWh/year for upgrades to SEER 20. While not all households will upgrade to SEER 20, and some may already have high efficiency HVAC systems, these calculations give an indication of the energy savings from energy efficiency that are at stake if the proposed rates are adopted.⁸⁵ The economic incentive for solar energy installation would also be eliminated under the proposed rate design. Finally, the proposed elimination of tier 4 would also dampen the incentive for energy conservation, counter to the conservation policies expressed in the Public Utilities Code.

PG&E argues that there is inequality between high-consumption and low-consumption households, whereby “PG&E’s current tiered generation rate structure produces results whereby households consuming in the upper tiers are subsidizing households with consumption limited to the lower tiers.”⁸⁶ However, a key objective of increasing-block energy pricing is to provide an incentive for energy conservation. The system of inverted block rates is designed to create a clear price signal for consumers that should discourage high energy use. Users that currently conserve electricity in the lower tiers will see their overall bills increase, by as much as 15% compared to current rates, while upper tier users see their bills decrease by as much as 35%⁸⁷ PG&E, in its proposal to limit inverted pricing only to the extent of certain marginal costs, has ignored measures of equity that take into account the costs of disproportionate energy consumption.

⁸⁵ Exhibit 7 at 62.

⁸⁶ Exhibit 1.

⁸⁷ Exhibit 7 at 13.

VII. Proposed TOU rates, and Proposals for E-A7, EL-A7, baseline credit for E-7 and EL-7, and E-9A and E-9

Sierra Club California concurs with the proposal and technical analysis of the Solar Alliance, in their recommendations for E-6 and E-7 rates that encourage solar PV.⁸⁸ Time of Use price signals should generally be simple and understandable to customers. Such rates should provide an adequate and meaningful incentive for solar installation, though should not provide an excessive subsidy beyond what is needed to encourage customers to make a rational investment decision. The Solar Alliance recommendations accomplish this.

VIII. The Proposal for Flat Generation and Distribution Rates with Tiered Conservation Incentive Adjustment Has No Cost Basis, Discourages Community Choice Aggregation, and Should be Rejected

A. The CIA Proposal Lacks a Cost Basis and Should Be Rejected.

PG&E has proposed “flat generation and distribution rates” with a “conservation incentive adjustment” charged on the distribution side of the bill aimed to “level the playing field” between PG&E and Community Choice Aggregation (CCA) competitors. Sierra Club California agrees with the City and County of San Francisco (CCSF) and Marin Energy Authority (MEA) that PG&E’s proposal is an attempt to interfere with the competition of Community Choice Aggregators and other potential competitors by reducing PG&E’s generation

⁸⁸ Exhibit 26 (Solar Alliance) at 19-49.

rates for its highest usage customers, without demonstrating that such reduced rates are cost-based.

PG&E has not specifically demonstrated that the CIA proposal is needed to address a problem with its current rate design. While PG&E claims that its CIA proposal is cost-based, PG&E grounds this assessment in its imposition of new costs charged to customers, but not in a revenue requirement or cost of service study. CCSF shows concurrence among several witnesses from CCSF, PG&E, and SCE that the cost of electricity generation increases as usage goes up.⁸⁹ A tiered generation rate is consistent with this cost trend, but a flat generation rate where prices do not increase with higher usage is inconsistent with this cost trend.

PG&E also considers its tiered TOU prices during peak usage to be reflective of marginal costs.⁹⁰ Peak usage indicates cost trends that further support finding that the general cost trend of generation increases as usage increases. A cost analysis would fail to demonstrate a cost basis for the CIA proposal.

B. The CIA Proposal Allows Cost-Shifting Onto CCA Customers and CCAs.

The CIA proposal transfers PG&E portfolio generation-related costs, outside of the power contracts that CCAs are withdrawing from PG&E procurement, onto transmission and distribution costs that are born by CCA customers.⁹¹ The CIA will allow the potential for cost-shifting onto a CCA customer. The CIA is proposed to move approximately \$6.4 billion in energy purchases per year, or about a 7% shift in energy costs.⁹² The CIA proposal would

⁸⁹ CCSF Opening Brief at 1; Exhibit 5 at 4.

⁹⁰ PG&E Opening Brief at 66.

⁹¹ Exhibit 9 (Sierra Club) at 6.

⁹² Exhibit 9 at 9.

increase rates faced by MEA customers by 6% to 25% depending on the phase of MEA's customer enrollment.⁹³

While PG&E claims this is overall revenue-neutral to its customers, this is actually cost-shifting 7% of its entire annual power cost onto the distribution side of the bill, translating into charges that may be revenue neutral to the entire class of residential and unbundled customers, but not revenue-neutral from the perspective of many CCA (unbundled) customer bills. PG&E has admitted in its testimony that the proposed CIA rates will impact economic bypass for CCAs⁹⁴ CCAs would not otherwise be subject to Generation-related PG&E costs following load departure and payment of the CCA CRS according to the established Commission process.⁹⁵

Sierra Club California urges a clear separation of distribution and generation charges so that such cost-shifting may not occur, and the CIA interferes with this separation.

C. The CIA Interferes with CCA Ratesetting Authority of Locally Elected CCA Governing Boards.

CCAs are granted ratesetting authority under the Public Utilities Code, and they are afforded specific protection against both outside interference or regulation by the Commission, and against cost-shifting or charges for costs not attributable to them.⁹⁶ Only costs that are attributable to a CCA customer may be charged to that customer.⁹⁷ As PG&E generation-related cost allocations, from which its conservation funding is extracted, no longer serve a CCA customer's Transmission and Distribution customer following the customer's CCA enrollment,

⁹³ Exhibit 48 (MEA); Transcript, PG&E, Keane at 359.

⁹⁴ Exhibit 1 at 20.

⁹⁵ Exhibit 9 at 45.

⁹⁶ Public Utilities Code Section 366.2(c)(3)(B).

⁹⁷ Public Utilities Code 366.2(c)(17).

commencement of service and 120-day opt-out period, there is no legal or policy basis for that customer to be charged any fee or rate component that is not cost-based and attributable to that customer.

The CIA amounts to artificially designing generation rates for CCAs, as the Public Utilities Code expressly and exclusively grants this authority to the locally elected boards of the Community Choice Aggregators. The Commission has held that the CPUC does not intend to regulate CCAs in their rate-setting function.⁹⁸ The Commission has also decided that utilities must prepare for load departure of CCAs.⁹⁹ PG&E argues that CCA Governing Boards nominally maintain their ratesetting authority, but PG&E ignores the impact of imposing a non-cost-based, non-attributable, and non-bypassable charge onto CCA customers.¹⁰⁰ The CIA, in altering the bills that CCA customers face, inherently restricts the discretion of Governing Boards to exercise their statutory authority to design rates in the way that addresses local customer needs and the CCA's unique business plan. In particular, the CIA proposal discourages CCAs from adopting their own tiered rates, instead requiring CCAs to incorporate a rate structure adopted by the Commission without a cost basis.

D. Prior Settlements Regarding Other Utilities Do Not Justify Approval of the CIA Proposal.

PG&E refers to settlements approved by the Commission for SDG&E and SCE to justify why PG&E's proposal should be approved.¹⁰¹ However, Commission Rules regarding

⁹⁸ Decision R.03-10-003.

⁹⁹ Decision D.04-12-046.

¹⁰⁰ PG&E Opening Brief at 75.

¹⁰¹ PG&E Opening Brief at 69.

Commission approval of settlements state that “Unless the Commission expressly provides otherwise, such adoption does not constitute approval of, or precedent regarding, any principle or issue in the proceeding or in any future proceeding.”¹⁰² The Commission should disregard PG&E’s reliance on these settlements, as doing so violates Commission Rules of Practice and Procedure. The policy behind this Rule preserves the ability of the Commission to make an informed decision following an adequate briefing of all issues raised by Parties. Indeed, in the Decisions PG&E refers to regarding SDG&E, the Commission did not address substantive issues raised by flat generation rates.¹⁰³ Further, the SCE decision is distinguished from PG&E’s proposal because SCE’s entire rate differential was reflected in generation rates, and not in distribution rates.¹⁰⁴ PG&E’s distribution rates already include a significant 12.5 cent differential for tiered distribution rates.¹⁰⁵ Finally, the SCE decision did not find a relationship between the proposal and cost of service, and did not address the anti-competitive problems associated with a CIA rate component limiting CCAs from fully exercising its ratemaking authority, nor could it have addressed the re-programming and customer education issues associated with this proposal.¹⁰⁶

E. PG&E’s CIA Proposal Is Aimed at Interfering with CCA and Other Competitors.

Sierra Club California agrees with CCSF and MEA that PG&E would gain an unfair competitive advantage if it were able to force CCAs to compete against a non-cost-based

¹⁰² Commission Rule of Practice and Procedure 12.5.

¹⁰³ See Decisions D.05-12-003, D.08-02-034, D.09-09-036.

¹⁰⁴ D.09-08-028 at 18.

¹⁰⁵ Exhibit 1, Appendix C.

¹⁰⁶ Decision D.09-08-028.

generation rate that insulates the utility from competition for its highest usage customers.¹⁰⁷ Further, under FERC Order 888, transmission access should be non-discriminatory in order to facilitate wholesale competition. PG&E's proposal to adopt a CIA that would disproportionately impact CCA customers through a Transmission and Distribution Charge is discriminatory against customers considering or receiving service from companies that seek to compete with PG&E under AB 117, the CCA law.

PG&E asserts that Sierra Club witness Paul Fenn's arguments are not at issue in this proceeding, but Fenn's testimony paints a background of anti-competitive motives and actions by PG&E.¹⁰⁸ There is a significant history and documented record indicating the motivation to take such actions in the ratesetting process, specifically PG&E statements that CCAs are "taking our customers."¹⁰⁹ PG&E has also engaged in heavy local lobbying and non-cooperative activities to obstruct CCA formation.¹¹⁰ PG&E questions the relevance of the energy crisis to this proceeding, but Fenn explains that anticompetitive practices of PG&E and other utilities resulted in the "insertion of various charges into the electric bill which harmed the competitive market and blocked the conditions for economic bypass by competitors and choice for customers which resulted in a very inactive direct access market during this period."¹¹¹ This history should inform the Commission's policies on rate design because it indicates a history of anti-competitive proposals and actions that precede the CIA proposal, showing PG&E's intentions to impose an anti-competitive burden on CCAs and their customers.

The changes in the procurement process and procurement investments discussed by Fenn illustrate the opportunity for self-dealing where PG&E is both an electric utility and gas utility

¹⁰⁷ CCSF Opening Brief at 8; MEA Opening Brief at 17.

¹⁰⁸ PG&E Opening Brief at 81.

¹⁰⁹ Exhibit 9 at 6.

¹¹⁰ Exhibit 9 at 36-39.

¹¹¹ Transcript, Sierra Club, Fenn at 722, additional examples at 729.

and may allow for comingling of resources.¹¹² Fenn testified that CCAs play an important role in preventing self-dealing and because “they are designed clearly as organizations of ratepayers to join their demand in a local government process to negotiate with competitive suppliers,” and “as demand-side entities, they bring a demand-side approach to electricity procurement, which in fact favors electricity procurement, which in fact reduces fuel use.”¹¹³ Fenn’s testimony tends to show that CCAs have a role in preventing self-dealing by other utilities, promoting competition in the energy market, and addressing procurement more from a demand-side perspective.

F. The Commission Should Reject PG&E’s CIA Proposal because it is Intended to Interfere with CCA by Imposing Non-Bypassable, Non-Cost-Based Charges onto Customers, and Undermines Local CCA Ratesetting Authority.

PG&E has not been able to justify this proposal by demonstrating a cost basis and attribution to CCA customers. In addition, this change would require re-programming PG&E’s billing system at a cost of \$3.6 million.¹¹⁴

Sierra Club California urges that PG&E’s proposed charges for the CIA and EPMC be rejected in their entirety in the GRC because these charges constitute shifting costs from bundled service customers’ generation costs to CCA customers transmission costs in violation of AB 117 and CPUC decisions not to regulate CCA’s. These charges additionally harm economic bypass conditions, and hinder the energy efficiency, conservation, and renewable portfolio standard acceleration role of CCAs in California.

¹¹² Transcript, Sierra Club, Fenn at 724-725.

¹¹³ Transcript, Sierra Club, Fenn at 731-732.

¹¹⁴ Exhibit 6 (CCSF) at Exhibit A.

IX. Other Issues

X. Conclusion

Overall, Sierra Club California finds that the proposed change in tier structures and baseline usage will negatively affect energy conservation, renewable energy adoption, and energy efficiency by PG&E customers, as well as shift the burdens of paying for energy from wealthier households that consume more electricity to lower-income, low-consuming households. We have found that consumption will increase by 110 GWh annually, which corresponds to an additional release of 26,171 metric tons of CO₂.

We have also found that, due to the elimination of financial incentives for purchasing residential solar PV, a potential savings of at least 918.0 GWh per year is forgone (185,912 metric tons of CO₂). In terms of jobs related to PV, if all residential PV currently incentivized were installed, roughly 21,085 jobs would be created.

In energy efficiency, just looking at air conditioner upgrades in two PG&E climate zones, savings of up to 53.4 GWh per year (25,423 metric tons of CO₂) will be disincentivized. The total impact for all of PG&E territory would likely be much higher.

Due to the projected increase in energy consumption, greenhouse gas and criteria pollution emissions, and loss of renewable energy and efficiency retrofit and PV installation jobs, we find that the proposed residential rate design will be detrimental to the goals of the CPUC and the state of California. The proposed residential rate design runs counter to ratemaking principles encouraging conservation and efficiency in the Public Utilities Code, the loading order, the goals stated in the Energy Action Plan, Integrated Energy Policy Report, and

the Climate Change Scoping Plan, including the Million Solar Roofs and California Solar Initiatives. Sierra Club California strongly urges the Commission to reject the flat monthly customer charge and the consolidation of tiers 3 and 4. These rate design changes contradict energy policies of the state of California and should be rejected by the Commission.

Sierra Club California urges that PG&E's proposed charges for the CIA and EPMC be rejected in their entirety in the GRC because these charges constitute shifting costs from bundled service customers' generation costs to CCA customers transmission costs in violation of AB 117 and CPUC decisions not to regulate CCA's. These charges additionally harm economic bypass conditions, and hinder the energy efficiency, conservation, and renewable portfolio standard acceleration role of CCAs in California.

Respectfully submitted on this day, January 10, 2011

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VERIFICATION

I am the Senior Advocate with Sierra Club California and am authorized to make this verification on its behalf. I am informed and believe that the matters stated in this pleading are true.

I declare under penalty of perjury that the matters stated in this pleading are true and correct.

Executed on the **10th day of January, 2011**, at Sacramento, California.

/s/ Jim Metropulos

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CERTIFICATION OF SERVICE

Application 10-03-014

I, Jim Metropulos, certify that on this day January 10, 2011, I sent copies of the attached Sierra Club California's comments on the General Rate Case, Phase 2 to be served on all parties by emailing a copy to all parties identified on the electronic service list provided by the California Public Utilities Commission for this proceeding, and also by efileing to the CPUC Docket office, with a paper copy to Administrative Law Judge Thomas Pulsifer, and Presiding Commissioner Michael Peevey.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on January 10, 2010, at Sacramento, California.

Dated: January 10, 2011 at Sacramento, California.

/s/ Jim Metropulos

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