

Docket No.: R.12-06-013

Exhibit No.: _____

Date: September 15, 2014

Witness: William A. Monsen

**TESTIMONY OF WILLIAM A. MONSEN ON BEHALF OF
THE VOTE SOLAR INITIATIVE CONCERNING
RESIDENTIAL ELECTRIC RATE DESIGN REFORM**

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 **Q. Please state your name and business address.**

4 A. My name is William A. Monsen. I am a Principal and Executive Vice-
5 President at MRW & Associates, LLC (MRW). My business address is 1814
6 Franklin Street, Suite 720, Oakland, California.

7

8 **Q. Please summarize your professional and educational background.**

9 A. I have been an energy consultant with MRW since 1989. During that time, I
10 have provided extensive analyses on electric power markets, particularly the
11 West Coast power markets, for various end-users, financial institutions, gas
12 pipelines and producers, Qualified Facility (QF) and independent power
13 developers, and state agencies. I have provided expert witness testimony in
14 numerous California regulatory proceedings concerning utility resource
15 planning, the market structure of the electric power market, the cost-
16 effectiveness of new resource additions, electric resource planning, power
17 pricing for QF projects, the need for power, marginal cost analysis, revenue
18 allocation and rate design, stranded costs, and California regulatory policies. I
19 have also analyzed power markets in the western US, China, Korea,
20 Wisconsin, and Massachusetts for independent power producers, financial
21 institutions, and customers.

22

23 Prior to joining MRW, I worked at Pacific Gas & Electric Company (PG&E).

24 At PG&E I held a number of positions, including Assistant Solar Engineer in

1 the Energy Conservation and Services Department, Rate Analyst in the Rate
2 Department, Rate Economist, and a Decision Support Coordinator in the
3 Economics and Forecasting Department. While at PG&E, I was responsible
4 for providing analytical support to management's decision-making process.
5 This included working on the company's initial efforts to quantify the benefits
6 of Demand-Side Management (DSM) using production cost models,
7 developing DSM forecasting models used for long-term planning studies,
8 using Monte Carlo simulation techniques to analyze electric supply and
9 demand uncertainty to quantify the value of resource flexibility, developing
10 planning models as part of PG&E's Long-Term Planning efforts, analyzing
11 utility and non-utility investment opportunities using PG&E's Strategic
12 Analysis Model, and analyzing electric resource planning issues.

13

14 I hold a Master of Science degree in Mechanical Engineering from the Solar
15 Energy Laboratory at the University of Wisconsin-Madison and a Bachelor of
16 Science degree in Engineering Physics from the University of California at
17 Berkeley. Please see Attachment A for my resume and a list of my
18 testimonies.

19

20 **Q. Have you previously testified before the California Public Utilities**
21 **Commission?**

22 A. Yes. I have previously testified before the California Public Utilities
23 Commission (Commission) on behalf of the City of San Diego, the City of

1 Long Beach, Bear Mountain, Snow Summit, the Independent Energy
2 Producers Association, the California Cogeneration Council, Duke Energy
3 North America, the Alliance for Retail Energy Markets, the Center for Energy
4 Efficiency and Renewable Technologies, the Local Governmental
5 Commission Coalition, Clearwater Port, and Commercial Energy. I have also
6 submitted testimony in proceedings before the state utility commissions in
7 Oregon, Nevada, Colorado, Massachusetts, and Arizona.

8

9 **Q. On whose behalf are you testifying?**

10 A. I am testifying on behalf of The Vote Solar Initiative (Vote Solar).

11

12 **Q. What are Vote Solar's interests in this proceeding?**

13 A. Vote Solar is a non-profit grassroots organization working to fight climate
14 change and foster economic opportunity by bringing solar energy into the
15 mainstream. Vote Solar wants to ensure that changes to residential rate design
16 approved in this proceeding do not harm customers that have already made
17 investments in solar power and support continued customer investment in
18 solar power. In particular, in this proceeding Vote Solar seeks to preserve
19 "solar-friendly" time-of-use (TOU) rate options for both existing and new
20 solar customers.

21

22 **Q. Is Vote Solar concerned only with the TOU tariffs?**

23 A. Vote Solar's concern is more broadly to ensure the continued viability of the
24 solar marketplace. To avoid duplication among intervenors, I will address

1 only TOU rate schedules in my opening testimony. Other parties will be
2 submitting testimony on tiered rate schedules appropriate for solar customers.
3 I may address tiered rate schedules and other aspects of the utilities'
4 applications in rebuttal testimony.

5
6 **Q. Please summarize your conclusions and recommendations.**

7 A. My recommendations and conclusions are as follows:

- 8 • Existing TOU rate schedules that are currently open to new customers
9 should remain open to new customers. The existing rate structures
10 should be maintained for these tariffs (e.g., customer charges should
11 not be added and tier differentials should not be adjusted) to provide a
12 meaningful rate option that is distinct from other TOU tariffs proposed
13 by the utilities and that will support the continued adoption of solar.
- 14 • Net Energy Metering (NEM) customers that are currently on TOU
15 rates should be grandfathered onto those rate schedules. This
16 grandfathering should include the existing rate structures and, for
17 PG&E's E-7 and E-8, the existing rate differential as compared to the
18 default tariff. This is appropriate because customers likely made solar
19 investments based on these rate structures and rate differentials as a
20 result of the strong encouragement of the Commission.

1 **II. UTILITIES' PROPOSALS FOR THEIR TOU**
2 **TARIFFS**

3
4 **Q. Do all of the utilities currently have optional TOU tariffs?**

5 A. Yes. The utilities currently have several categories of TOU tariffs:

- 6 1. All three utilities have tiered, TOU tariffs that are revenue neutral with
7 their default tariffs. These are: Schedules E-6 and EL-6 for Pacific Gas
8 and Electric (PG&E), TOU-D-T for Southern California Edison
9 (SCE), and DR-TOU for San Diego Gas and Electric (SDG&E);
10 2. SDG&E also has a non-tiered TOU rate schedule, Schedule DR-SES;¹
11 3. PG&E additionally has four tariff options that are not considered
12 revenue neutral with the default tariff and that are closed to new
13 customers: Schedules E-7 and EL-7, which are tiered, TOU rate
14 options, and Schedules E-8 and EL-8, which are tiered, seasonal rate
15 options;
16 4. All three utilities additionally have TOU rate options applicable to
17 customers with plug-in electric vehicles;²
18 5. PG&E additionally has a TOU tariff applicable to multi-family
19 accommodations, Schedule EM-TOU; and
20 6. SCE additionally has a seasonal rate schedule, Schedule DS.

21

¹ SCE additionally has two non-tiered TOU rate schedules: Schedules TOU-D-1 and TOU-D-2. However, customers taking service under these rate schedules are being transitioned to Schedule TOU-D-T, in accordance with Decision (D.) 13-03-031. These tariffs are therefore not included in the proposals presented in this testimony.

² These are: Schedules E-9 and EV for PG&E, Schedules TOU-D-T EV and TOU-EV-1 for SCE, and Schedules EV-TOU, EV-TOU-2, and EPEV-X, EPEV-Y, and EPEV-Z for SDG&E.

1 **Q. What are the utilities’ proposals with respect to their existing TOU rate**
2 **options?**

3 A. All three utilities propose to apply the structural changes that they have
4 proposed for their default tariffs to their TOU tariffs.³ In practice, this means
5 the utilities will add fixed customer charges to their TOU rate schedules,
6 change the number of tiers, and change the rate differentials between tiers for
7 the tiered, TOU rate schedules.⁴

8
9 Furthermore, PG&E has proposed to close Schedules E-6 and EL-7 to new
10 customers beginning January 1, 2015, and to eliminate Schedules E-6, EL-6,
11 E-7, EL-7, E-8 and EL-8 in 2016.⁵ These are PG&E’s only TOU rate options
12 that are currently available to customers in single-family homes that do not
13 own electric vehicles.⁶

14
15 **Q. How do the utilities’ proposed optional TOU rate options compare with**
16 **their existing TOU rate options?**

³ For SCE and SDG&E, see SCE and SDG&E’s Responses to Vote Solar Data Request 3, Question 2 (see Attachments B and C). For PG&E, see “Long-Term Residential Electric Rate Design Reform Proposal: Phase 1 Testimony,” R.12-06-013, February 28, 2014 (PG&E Phase 1 Testimony), p. 2-3, footnote 6.

⁴ There are limited exceptions. PG&E proposes no changes to the fixed charges that are already applied in Schedules E-8 and EL-8 and proposes no changes to its Schedule E-9 because this rate schedule will soon be eliminated (see PG&E Phase 1 Testimony, p. 2-2, footnote 4). In addition, SCE and SDG&E have not specified whether the changes proposed for their default tariffs would be applied also to the tariffs applicable to customers with electric vehicle charging load.

⁵ PG&E Phase I Testimony, p. 2-39.

⁶ PG&E Tariff Book. September 2014.

1 A. The rate options proposed by the utilities are different than their current rate
2 offerings in a number of ways. I summarize the changes for each utility
3 below.

4

5 **A. PG&E**

6

7 PG&E's Schedule E-6 is currently a four-tiered TOU rate with three summer
8 TOU periods, two winter TOU periods, and no customer charge.⁷ Under
9 PG&E's proposal, in 2015, Schedule E-6 would be restructured to add a
10 customer charge and reduce the number of tiers to three. In 2016, PG&E
11 would terminate Schedule E-6. To remain on a TOU tariff, most customers
12 would need to migrate to PG&E's proposed new TOU rate, E-TOU, which
13 has a fundamentally different rate structure, with a single tier and just two
14 summer TOU periods. Current E-6 customers would therefore face significant
15 tariff changes two years in a row under PG&E's proposal. Table 1
16 summarizes key differences between PG&E's current Schedule E-6 and its
17 proposed TOU rate option.

⁷ Schedule EL-6 has a similar structure. Unless otherwise noted, comments related to Schedule E-6 also apply to Schedule EL-6.

1 **Table 1: PG&E's TOU Rate Proposal for E-6 Customers⁸**

	E-6 Current	E-6 2015	E-TOU 2016
Tiered?	Yes	Yes	No
Number of Tiers	4	3	1
# Summer TOU Periods	3	3	2
Customer Charge	\$0	\$5	\$10

2

3 ***B. SDG&E***

4

5 SDG&E's proposed optional TOU rate at first glance appears structurally
6 similar to SDG&E's current Schedule DR-SES: Schedule DR-SES and
7 SDG&E's proposed new optional TOU rate schedule are both single-tiered
8 TOU rates with three summer TOU periods.⁹ However, Schedule DR-SES and
9 SDG&E's new optional TOU rate schedule differ in that the proposed new
10 optional TOU rate schedule adds a third winter TOU period, which is not part
11 of either Schedules DR-TOU or DR-SES. It is important to note that
12 SDG&E's proposed rate option is very different than SDG&E's other existing
13 TOU rate (Schedule DR-TOU), which has four tiers and two summer TOU
14 periods. Moreover, the proposed optional TOU rate has large demand-
15 differentiated fixed charges ranging from \$27.78 to \$79.53 per month instead
16 of much smaller minimum bills (about \$5 per month) in the existing TOU
17 rates. Table 2 summarizes the differences between the existing and proposed
18 rates.

⁸ PG&E Phase I Testimony, Appendix A-1.

⁹ SDG&E. "Prepared Direct Testimony of Cynthia Fang," R.12-06-013, February 28, 2014 (SDG&E Phase 1 Testimony), p. CF-49, and SDG&E Rate Schedules DR-TOU and DR-SES, August 2014.

1 **Table 2: SDG&E's Current TOU Options and Proposed New Optional TOU Rate Option**

	DR-TOU Current¹⁰	DR-SES Current¹¹	Proposed New Optional TOU¹²
Tiered?	Yes	No	No
Number of Tiers	4	1	1
# Summer TOU periods	2	3	3
# Winter TOU periods	2	2	3
Customer Charge	N/A	N/A	\$28-\$80
Minimum Bill	\$0.17/day	\$0.17/day	N/A

2

3 SDG&E’s proposed changes to its TOU rates significantly increase fixed
 4 charges and reduce variable charges compared to its current TOU rate options.
 5 For example, summer energy charges in the proposed TOU rate are lower than
 6 in Schedule DR-SES by 35 percent in the on-peak period, 31% in the semi-
 7 peak period, and 40 percent in the off-peak period.¹³ These structural choices
 8 have great bearing on the economics of solar PV projects.

9

10 ***C. SCE***

11

12 SCE’s current Schedule TOU-D-T has two tiers, two summer and two winter
 13 TOU periods, and no customer charge. The dividing line for the two tiers is
 14 130% of baseline.¹⁴ SCE proposes two new TOU rate options, both with three

¹⁰ SDG&E Rate Schedule DR-TOU, August 2014.

¹¹ SDG&E Rate Schedule DR-SES, August 2014.

¹² SDG&E Phase 1 Testimony, p. CF-49.

¹³ Calculated by comparing total commodity, delivery and DWR bond charges under Schedule DR-SES in February 2014 with the proposed total commodity, delivery, and DWR bond charges for the new proposed optional TOU rate schedule (which is revenue neutral with February 2014 tariffs). SDG&E Phase 1 Testimony, p. CF-49, and SDG&E Rate Schedules DR-SES, EECC, and DWR-BC, February 2014.

¹⁴ SCE Rate Schedule TOU-D-T, August 2014.

1 summer and three winter TOU periods.¹⁵ The first new option also has two
 2 tiers; however, this new rate option has a smaller first tier and a larger second
 3 tier.¹⁶ This option also has a customer charge, which starts at \$5 per month in
 4 2015.

5
 6 SCE’s second proposed TOU rate option is geared towards higher usage
 7 customers. It has a single tier (i.e., it does not have a baseline credit) and a
 8 much higher customer charge (starting at \$16 per month) than the current
 9 TOU rate. Table 3 summarizes the differences between the existing and
 10 proposed rate options.

11 **Table 3: SCE’s Current and Proposed TOU Rate Options¹⁷**

	TOU-D-T Current	TOU-D Option A	TOU-D Option B
Tiered?	Yes	Yes	No
Number Of Tiers	2	2	1
Tier Division	130% of Baseline	Baseline	N/A
# Summer TOU Periods	2	3	3
# Winter TOU Periods	2	3	3
Customer Charge	\$0	\$5-\$10 ¹⁸	\$16

12
¹⁵ SCE. “Phase 1 Residential Rate Change Proposal Of Southern California Edison Company,” R.12-06-013, February 28, 2014 (SCE Phase 1 Testimony), p. 47, and SCE Testimony in A.13-12-015, p. 24 (see Attachment D).

¹⁶ SCE Phase 1 Testimony, p. 47. SCE refers to this as a non-tiered rate schedule, with a baseline credit.

¹⁷ SCE Phase 1 Testimony, p. 47, and SCE Testimony in A.13-12-015, p. 24 (see Attachment D).

¹⁸ The Schedule D customer charge would apply. This charge starts at \$5 per month in 2015 and increases to \$10 per month by 2017, followed by inflation increases. SCE’s Response to Vote Solar Data Request 3, Question 2 (see Attachment B)

1 ***D. Summary Observations***
2

3 **Q. Can you make any general comments about the various proposed**
4 **changes to the IOUs' TOU rates?**

5 A. The utilities seem to have different opinions about the appropriate structure
6 for TOU rates. PG&E is proposing to reduce the number of summer TOU
7 periods from three to two, while SCE and SDG&E are proposing exactly the
8 opposite (i.e., moving from two to three TOU periods). SCE proposed to have
9 two tiers for two of its TOU tariff options but all three utilities propose TOU
10 rates with a single tier as well. This indicates to me that there is hardly a
11 consensus regarding the "proper" TOU rate design.
12
13

14 **Q. Are the utilities' proposed rate changes uniformly harmful to all**
15 **customers?**

16 A. No, these rate changes are likely to have differing impacts on customers. They
17 tend to be beneficial to high usage customers but harmful to low usage
18 customers. In addition, customers that have made the most significant
19 investments in solar photovoltaic (PV) systems relative to their energy loads
20 will generally fare poorly under the proposed TOU tariffs because, as low net
21 energy users, they will be harmed by the introduction of fixed customer
22 charges.
23

1 The utilities' proposed consolidation of tiers and reductions to the tier
2 differentials as they apply to TOU rates are likely also to benefit high usage
3 customers and to harm low usage customers including those customers that
4 have made the most significant investments in solar PV. The magnitude of the
5 impacts will be driven by the specifics of how these new rates are structured
6 (i.e., which tiers are consolidated and where the tier differentials are set).

7
8 **Q. Do you oppose the IOUs' proposed optional TOU rates?**

9 A. Not necessarily. I think that the IOUs are experimenting with their TOU rates.
10 These experiments may be useful for understanding how to encourage more
11 customers to adopt TOU rates. As I discuss further below, I am not opposed to
12 rate options for customers as long as there are options that will be attractive
13 for all customers and not just for a select class of customers (e.g., high-usage
14 customers).

15
16 **Q. Are the utilities proposing other changes to their TOU rates in other
17 proceedings?**

18 A. Yes. SCE and SDG&E have both proposed to change the definition of their
19 TOU periods for at least some customers in their ongoing Rate Design
20 Window proceeding.¹⁹

21

¹⁹ "Third Amended Scoping Memo and Ruling of Assigned Commissioner," R.12-06-013, April 15, 2014, p. 5.

1 **Q. Are Rate Design Window proceedings the appropriate place to consider**
2 **such sweeping changes to TOU rates?**

3 A. No. The appropriate place to consider such changes is in a revenue allocation
4 and rate design phase of a General Rate Case. In the revenue allocation and
5 rate design phase of General Rate Case proceedings, a much broader range of
6 parties that are affected by a change in TOU periods will be participating. This
7 is because revisions to TOU periods would have impacts on a number of
8 important issues that are not addressed in a Rate Design Window proceeding,
9 such as cost allocation and rate design. For these reasons, the Commission
10 should only consider changes in TOU periods in revenue allocation and rate
11 design phases of General Rate Cases.

12

13 **III. THE PRINCIPLES SET FORTH BY THE**
14 **COMMISSION SHOULD GUIDE THE**
15 **RESIDENTIAL RATE DESIGN RESTRUCTURING**
16

17 **Q. What principles have the Commission established to guide the residential**
18 **rate restructuring?**

19 A. In the November 2012 scoping memo in this proceeding, the Commission
20 established ten principles to guide the evaluation of residential rate design
21 proposals.²⁰ These principles are as follows:

22

23 1. Low-income and medical baseline customers should have access to
24 enough electricity to ensure basic needs are met at an affordable cost;

²⁰ “Scoping Memo and Ruling of Assigned Commissioner,” R.12-06-013, November 26, 2012, pp. 5-7.

- 1 2. Rates should be based on marginal cost;
- 2 3. Rates should be based on cost-causation principles;
- 3 4. Rates should encourage conservation and energy efficiency;
- 4 5. Rates should encourage reduction of both coincident and non-coincident
- 5 peak demand;
- 6 6. Rates should be stable and understandable and provide customer choice;
- 7 7. Rates should generally avoid cross-subsidies, unless the cross-subsidies
- 8 appropriately support explicit state policy goals;
- 9 8. Incentives should be explicit and transparent;
- 10 9. Rates should encourage economically efficient decision-making; and
- 11 10. Transitions to the new rate structures should emphasize customer
- 12 education and outreach that enhances customer understanding and
- 13 acceptance of new rates, and minimizes and appropriately considers the
- 14 bill impacts associated with such transitions.
- 15

16 **Q. Do TOU rates comport with some of these principles?**

17 A. Yes. As discussed in the May 2013 proposal by Vote Solar and The Solar
18 Energy Industries Association, principles two through five support the use of a
19 TOU rate structure:

20 By more closely aligning rates with the utility’s underlying marginal
21 costs, TOU rates will encourage conservation and energy efficiency as
22 well as the reduction of both coincident and non-coincident peak
23 demand, all of which are stated Commission goals.²¹

25 **Q. How does the manner in which TOU rates are offered affect whether or**
26 **not they satisfy other principles?**

27 A. Principles 6-10 are directly related to the types of TOU rates that are offered
28 and the rate options that are made available to customers. Principle 6 requires
29 that rates be stable and understandable and provide customer choice.

30 Principles 7 and 8 recognize the limited role for cross-subsidies and incentives
31 to support policy goals. Principle 9 requires that rates encourage economically

²¹ “Rate Design Proposal of The Solar Energy Industries Association and The Vote Solar Initiative,” R.12-06-013, May 29, 2013, p. 5.

1 efficient decision-making. Principle 10 recognizes the importance of
2 appropriate transitions to new rates, highlighting the need for customer
3 understanding and acceptance of rate changes and the consideration of bill
4 impacts in implementing these transitions. I discuss each of these issues
5 below.

6

7 **Q. Why is it important that rates be stable, understandable, and provide**
8 **customer choice?**

9 A. Rate stability and understandability are important to promote customer
10 acceptance and to reduce rate shock. Customer choice increases flexibility for
11 customers and may also promote customer acceptance. In addition, offering
12 multiple tariff options provides multiple avenues to encourage customer
13 behaviors that benefit the system as a whole, such as investments in
14 distributed generation, plug-in electric vehicles, energy efficiency, and other
15 technologies that support Commission goals. Some customers are better able
16 to make these investments and to respond to price signals than others. These
17 customers should be given the proper motivation to make these investments,
18 to the benefit of all customers. To provide low-income customers with the
19 choice and opportunities afforded other customers, CARE rates should be
20 offered for each rate option that is provided.

21

22 **Q. What is the importance of the Commission's principles related to cross-**
23 **subsidies and incentives?**

1 A. The Commission recognizes in Principles 7 and 8 that, while generally
2 speaking rates should be developed based on cost-causation principles, there
3 is a role for cross-subsidies and rate incentives as long as (i) they are
4 transparent and explicit and (ii) they are used to further the state’s policy
5 goals.

6

7 **Q. How can rates encourage economically efficient decision-making?**

8 A. The Commission has found that “dynamic pricing can lower costs by more
9 closely aligning retail rates and wholesale system conditions, thereby
10 promoting economically efficient decision-making.”²² As further explained in
11 the November 2012 scoping memo, “Such economically efficient decision-
12 making could include off-peak charging of electric vehicles, investment in
13 distributed photovoltaic energy, and adoption of cost effective demand
14 response measures aided by innovative technologies and services that support
15 reduced or shifted consumption patterns.”²³

16

17 **Q. Why is it important to minimize bill impacts associated with transitions**
18 **in rate structures?**

19 A. Rate structure changes will inevitably produce both “winners” and “losers”
20 (i.e., customers whose bills increase or decrease on account of the structural
21 changes in rates). For example, a shift to TOU rates will generally increase
22 bills for customers that use higher-than-average shares of load during the on-

²² D.08-07-045 in A.06-03-005, July 31, 2008, p. 2.

²³ “Scoping Memo and Ruling of Assigned Commissioner,” R.12-06-013, November 26, 2012, p. 7.

1 peak period and decrease bills for customers that use higher-than-average
2 shares of load during the off-peak period. These bill changes provide the
3 “losing” customers the incentive to shift load away from the peak TOU
4 periods. The logistical and technological changes needed to obtain the load
5 shift, however, cannot always be made overnight. A transition period during
6 which bill impacts are minimized allows the customer to respond to the new
7 rate structure without getting penalized with large bill increases for behaviors
8 that were consistent with prior price signals. More generally, it prevents rate
9 shock, which is a significant impediment to customer acceptance. Finally,
10 before requiring customers to change rate schedules, it is important to ensure
11 that customers have an opportunity to recover the costs of investments that
12 they made in technology to control costs under their existing rate schedules.

13 **IV. “SOLAR-FRIENDLY” TOU RATE OPTIONS**
14 **SHOULD BE AVAILABLE FOR ALL CUSTOMERS**

15
16 **Q. How should the principles outlined above be applied to offering TOU rate**
17 **options?**

18 A. As discussed above, the Commission has already recognized the benefits of
19 TOU rates in meeting the principles of aligning rates with costs and promoting
20 economically efficient decision-making²⁴ and has cited investment in
21 distributed solar PV as an example of the economically efficient decision-
22 making that the Commission is trying to promote.²⁵ However, not all TOU

²⁴ D.08-07-045 in A.06-03-005, July 31, 2008, p. 2.

²⁵ “Scoping Memo and Ruling of Assigned Commissioner,” R.12-06-013, November 26, 2012, p. 7.

1 rate structures will encourage customer investments in solar PV. To meet the
2 Commission’s goals and to maintain a healthy solar marketplace in California,
3 “solar-friendly” TOU rate options should be offered in addition to the utilities’
4 proposed TOU rate offerings. Providing multiple TOU rate offerings is
5 consistent with the Commission’s principle that rate offerings should support
6 customer choice.

7

8 **Q. What are some of the parameters of a “solar-friendly” TOU rate
9 structure?**

10 A. The TOU rate structure that would promote the most investment in solar PV is
11 a volumetric rate structure without a customer charge or a minimum charge. It
12 has significant rate differentiation between TOU periods. It also has a tiered
13 rate structure with significant rate differentiation between the top-tier and
14 lower-tier rates. Vote Solar recommends that for all new TOU tariffs, the
15 TOU rate structure should be revenue neutral with the default tariff.

16

17 **Q. Do you consider the utilities’ proposed TOU rate options to be “solar-
18 friendly”?**

19 A. No. The utilities’ proposed TOU rate options all include fixed charges, less
20 rate differentiation between tiers, and fewer tiers than in the utilities’ current
21 tiered, TOU tariffs.

22

23 **Q. What “solar-friendly” TOU options do you recommend to be offered?**

1 A. To maintain rate stability (Principle 6), I recommend that the utilities continue
2 to offer their current revenue-neutral TOU offerings without modifying their
3 current rate structures. These are PG&E's Schedule E-6, SCE's Schedule
4 TOU-D-T, and SDG&E's Schedule DR-TOU.²⁶

5
6 **Q. What do you mean by rate structures?**

7 A. Rate structures are the framework upon which rates are built. They include
8 peak demand charges, non-coincident demand charges, number of tiers,
9 number of TOU periods, rate differentials between tiers and between TOU
10 periods, customer charges, and the share of revenue collected via energy
11 charges versus demand charges. Making significant changes to these structural
12 elements by, for example, adding a demand charge or a customer charge to a
13 volumetric tariff or reducing the differential between tiers or between TOU
14 periods can have significant impacts on the economics of a customer's solar
15 PV investment.

16
17 **Q. How does your proposal differ from PG&E's proposal?**

18 A. PG&E has proposed to close Schedule E-6 to new customers in January 2015
19 and to eliminate Schedule E-6 entirely in 2016.²⁷ Under my proposal,
20 Schedule E-6 would continue to be offered with its current rate structure.

21

²⁶ To the degree that SDG&E's Schedule DR-SES is revenue neutral, it should be included in this list. Also, the low income rate options for these tariffs should be retained.

²⁷ PG&E Phase I Testimony, p. 2-39.

1 **Q. How does your proposal differ from SCE and SDG&E’s proposals?**

2 A. SCE and SDG&E have proposed to maintain their current TOU rate schedules
3 in name only. In practice, their proposals would effectively eliminate their
4 current TOU rate schedules and replace them with new rate schedules that
5 impose fixed charges and have fewer tiers and smaller rate differentials
6 between tiers than their current TOU tariffs. Under my proposal, these
7 structural changes would not occur. The utilities’ TOU rates would continue
8 to be offered without a customer charge and with the current number of tiers
9 and rate differentials between tiers.

10

11 **Q. Why should the Commission reject the utilities’ proposals to effectively
12 eliminate the current TOU rate offerings?**

13 A. Eliminating “solar-friendly” rate options, as the utilities have proposed, may
14 have chilling effects on new investments in solar, particularly when combined
15 with changes to the NEM tariff that are under development in Rulemaking
16 (R.) 14-07-002. The utilities propose to effectively eliminate these rate
17 schedules (either by eliminating them completely or by changing their rate
18 structures) without offering any demonstration that these rate schedules are
19 flawed or any assessment of how this action would affect the Commission’s
20 policy goals of supporting investments in solar PV.

21

22 **Q. Does the Commission have the authority to maintain the current rate
23 structures without adding a fixed charge?**

1 A. Yes. Assembly Bill 327, which provides the Commission authorization to
2 approve fixed charges, up to specified limits, explicitly states that it “does not
3 require the commission to approve any new or expanded fixed charge.”²⁸

4
5 **Q. What are the benefits of offering a TOU rate schedule without a fixed
6 charge?**

7 A. To provide meaningful customer choice, different tariff offerings should have
8 different rate structures. A rate option without a fixed charge will be attractive
9 to solar PV customers, customers that are considering investments in energy-
10 efficiency, low-usage customers, and other customers that dislike fixed
11 charges. Offering this as a TOU rate option will provide an incentive for these
12 customers to select a TOU rate, thereby furthering the Commission’s goal of
13 moving towards dynamic pricing rates.

14
15 **Q. Is your proposal compatible with the objectives of this rulemaking?**

16 A. Yes, it is. As evidenced by the ten principles set forth by the Commission, this
17 rulemaking is designed not with a single objective, but with the objective of
18 balancing the Commission’s policy interests. These interests cover a broad
19 range of issues, including cost-based ratemaking, encouraging investments in
20 solar PV and other energy efficient technologies, and ensuring affordable
21 energy to meet the basic needs of low-income customers.

22

²⁸ Assembly Bill 327, Section 5, October 7, 2013 (see Attachment E).

1 As noted above, my proposal is consistent with all of the Commission’s
2 principles and promotes a number of Commission policy objectives. It is
3 designed to encourage the adoption of TOU rate structures, which better align
4 rates with costs, consistent with Principles 2 and 3. It is also designed to
5 promote investments in solar energy and energy efficiency, consistent with
6 Principles 4, 5, and 9. Maintaining current tariff options offers rate stability
7 and provides customer choice, consistent with Principle 6. Maintaining only
8 those options that are revenue neutral with respect to the default tariff avoids
9 cross-subsidies, consistent with Principles 7 and 8.

10

11 **Q. Would these tariffs remain open to all customers and not just to**
12 **customers that install solar PV systems?**

13 A. Yes. There is no need to limit access to these tariffs since they are revenue
14 neutral, meaning that the customers on these existing tariffs are fully covering
15 their cost of service. For that reason, all customers should have the option to
16 take service under these tariffs, not just customers with solar PV systems.
17 However, as discussed in the next section, if the Commission is unwilling to
18 keep these “solar-friendly” rates open to all customers, the Commission
19 should, at a minimum, grandfather existing NEM customers onto their
20 existing TOU tariffs.

21

22 **V. NEM CUSTOMERS CURRENTLY TAKING**
23 **SERVICE UNDER TOU RATE SCHEDULES**

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SHOULD BE GRANDFATHERED ON THE EXISTING TOU RATE SCHEDULES

Q. What additional considerations should be made for existing NEM customers?

A. Regardless of what the Commission determines with regard to maintaining “solar-friendly” TOU options to promote new investments in solar PV, the Commission should allow NEM customers already on TOU rate schedules to remain on their current rate schedules with existing rate structures, at least for a transition period that will provide them a fair opportunity to recoup their long-term investments in their solar PV systems.

Q. How does your proposal to grandfather existing NEM customers on their TOU tariffs differ from your proposal to keep current TOU tariffs open to all customers?

A. As discussed in the previous section, my proposal to keep current “solar-friendly” TOU tariffs open to all customers applies only to the utilities’ revenue neutral tariffs. As explained below, my proposal for grandfathering current NEM customers applies to both the revenue neutral tariffs and also to tariffs that provide discounted rates relative to the utility’s default residential tariff.

Q. What tariffs are included in your grandfathering proposal?

A. My grandfathering proposal applies to all TOU tariffs that serve NEM customers except for those that have already been scheduled for elimination.

1 These may include the following tariffs: PG&E Schedules E-6, E-7, E-8, E-9,
2 EL-6, EL-7, EL-8, EM-TOU, and EV; SCE Schedules TOU-D-T, TOU-D-
3 TEV, and DS; and SDG&E Schedules DR-TOU, DR-SES, EV-TOU, EV-
4 TOU-2, EPEV-X, EPEV-Y, and EPEV-Z.

5 ***A. NEM Customers Have Made Long-Term Investments in PV***
6 ***Systems***

7
8 **Q. Has the Commission previously found that some solar PV investments**
9 **have long payback periods?**

10 A. Yes. The Commission has found that “20 years constitutes a reasonable
11 payback period” for behind-the-meter NEM solar PV systems.²⁹

12

13 **Q. What are the benefits to these customers of their investments in their**
14 **NEM solar PV systems?**

15 A. The benefits include bill savings and tax credits.³⁰

16

17 **Q. What are the benefits to all ratepayers resulting from customers’**
18 **investments in NEM solar PV systems?**

19 A. The benefits to other ratepayers include avoided capacity, energy,
20 transmission, and distribution costs.³¹ A broad range of other benefits also
21 accrue to all ratepayers, including job growth and other economic benefits,

²⁹ D.14-03-041 in R.12-11-005, p. 21.

³⁰ California Public Utilities Commission. “California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects,” October 2001 (Standard Practice Manual 2001), p. 8 (see Attachment F).

³¹ Standard Practice Manual 2001, p. 23 (see Attachment F).

1 environmental benefits including reduced air and greenhouse gas emissions,
2 and public health benefits.

3

4 **Q. From this, can you conclude that ratepayers other than the owners of**
5 **NEM PV systems benefit from the investments by customers in their**
6 **NEM PV systems?**

7 A. Yes. All customers benefit from investments in solar PV systems. Those
8 benefits would not be possible if not for the early adopters who were willing
9 to take risks and install solar PV systems, even when facing long payback
10 periods. Those customers have helped establish the vibrant market for solar
11 PV systems that the Commission encouraged when it established the NEM
12 program.

13 ***B. Customers' Past Investments in Solar PV Projects Must be***
14 ***Protected to Avoid Discouraging Future Investments and***
15 ***Harming All Customers***
16

17 **Q. Are there future benefits to other customers from protecting past**
18 **customers' investments in solar PV systems?**

19 A. Yes. If the Commission allows rate design changes to erode the value of
20 customers' past investments in solar PV systems, the Commission may have a
21 difficult time encouraging future customer investments of any kind that have
22 extended payback periods, because customers may perceive added risk of
23 regulatory change that could undermine their investment. Customer
24 investments must therefore be protected in order to provide the reasonable

1 degree of regulatory certainty that is needed to allow for future customer-side
2 grid-supporting investments that benefit all ratepayers.

3

4 **Q. Are there other reasons that customers that have made Commission-**
5 **promoted investments based on a particular rate design should maintain**
6 **access to that rate design?**

7 A. Yes. It is a basic matter of fairness to protect customer investments that have
8 been promoted and supported by the Commission. It is also important to
9 maintain rate stability, which is one of the rate design principles identified by
10 the Commission and one of Mr. Bonbright's ten attributes of a sound rate
11 structure.³² Mr. Bonbright described this attribute as: "Stability and
12 predictability of the rates themselves, with a minimum of unexpected changes
13 seriously adverse to ratepayers and with a sense of historical continuity."³³
14 Eliminating or significantly modifying a tariff option that was used to support
15 a recent customer investment can create serious adverse harm to the customer
16 and removes the sense of predictability and historical continuity of the
17 utility's rate structures. This directly harms the customers that have made
18 investments and also harms other ratepayers by discouraging future
19 investments in grid-supporting technologies.

³² See D.14-06-029 in R. 12-06-013, June 21, 2012, p. 12, footnote 7.

³³ Bonbright, Daniels, and Kamerschen "Principles of Public Utility Rates," 1988, p. 383 (see Attachment G).

1 ***C. Commission Precedent Favors Maintaining Consistent Rate***
2 ***Structures to Protect Customer Investments in Solar PV***

3
4 **Q. Has the Commission recognized the importance of grandfathering rate**
5 **structures for certain customers in order to protect customer**
6 **investments?**

7 A. Yes. In 2014 alone, the Commission has applied this principle at least three
8 times: in D.14-01-002 in Phase 2 of SDG&E's General Rate Case (GRC),³⁴ in
9 D.14-03-041 in the NEM transition period proceeding,³⁵ and in the scoping
10 memo in SDG&E's 2015 Rate Design Window proceeding.³⁶ I discuss each of
11 these below.

12 **i) Phase 2 of SDG&E's 2012 Test Year General Rate Case**

13
14 **Q. How did the Commission recognize the importance of maintaining rate**
15 **structures in order to protect customer investments in SDG&E's GRC**
16 **Phase 2 decision?**

17 A. In D.14-01-002, the Commission denied a partial settlement agreement that
18 had been entered into by SDG&E, the City of San Diego, the Solar Energy
19 Industries Association, the City of Chula Vista, and the San Diego Solar
20 Coalition. The settlement agreement would have shifted distribution costs
21 from peak demand charges to non-coincident demand charges for medium and
22 large commercial and industrial customers, including customers on SDG&E's
23 "solar-friendly" tariff, Schedule DG-R, which is open to non-residential

³⁴ D.14-01-002 in Application (A.)11-10-002, Jan. 16, 2014, pp. 30-31, 33-34.

³⁵ D.14-03-041 in R.12-11-005, March 27, 2014, p. 20.

³⁶ "Scoping Memo and Ruling of Assigned Commissioner," A.14-01-027, May 15, 2014, p. 5.

1 customers with renewable distributed generation. Existing DG-R customers
2 would additionally have been eligible to receive a one-time bill credit to
3 defray the incremental costs associated with the new rate design.³⁷

4
5 San Diego Consumers Action Network (SDCAN) and San Diego County
6 Public Agencies (SDCPA) opposed the proposed settlement agreement, at
7 least in part on the grounds that it would harm some existing solar customers.
8 SDCPA, which is a coalition of school districts and water districts that have
9 invested in solar, stated that they “relied on the economics of SDG&E’s
10 Distributed Generation-Renewable (DG-R) tariff” in making their solar
11 investments and that the proposed rate design “decimates” the economic
12 assumptions underlying their investments.³⁸

13
14 The Commission found merit in the arguments of SDCAN and SDCPA and
15 rejected the settlement agreement.

16
17 **Q. Was it reasonable for SDCPA to rely on the structure of an existing tariff**
18 **for a long-term investment?**

19 A. Yes. It would not be reasonable to assume that future rate levels will remain
20 the same over an extended period; however, it is reasonable to assume that
21 rate structures will remain the same. Indeed, it is difficult to imagine what
22 other assumption would be more reasonable.

³⁷ D.14-01-002 in A.11-10-002, pp. 23-26.

³⁸ D.14-01-002 in A.11-10-002, p. 31.

1

2 **Q. How did the Commission address the reasonableness of SDCPA’s**
3 **reliance on the economics of an existing tariff for a long-term investment?**

4 A. In rejecting the proposed settlement agreement, the Commission gave little
5 weight to SDG&E’s argument that it was not reasonable for SDCPA to
6 assume that the rate design would not change, referring to it as “SDG&E’s
7 perspective.”³⁹ The Commission gave further credence to the reasonableness
8 of SDCPA’s assumption of consistency in rate design by stating that
9 SDG&E’s waving aside SDCPA’s concerns heightened the Commission’s
10 concerns about the settlement.⁴⁰

11

12 **Q. What is your key conclusion from this decision?**

13 A. The Commission took seriously SDCPA’s concern that the proposed change
14 in rate structure would undermine the economics of solar investments by
15 SDCPA’s members and took the notable step of rejecting a multi-party
16 settlement agreement in order to maintain rate structures that would protect
17 the economic viability of these investments in NEM solar PV systems.

18 **ii) The NEM Transition Period Proceeding**

19

20 **Q. Is there another recent Commission decision that recognized the**
21 **importance of maintaining rate structures in order to protect customer**
22 **investments in NEM systems?**

³⁹ D.14-01-002 in A.11-10-002, p. 33.

⁴⁰ D.14-01-002 in A.11-10-002, p. 33.

1 A. Yes. In D.14-03-041 (NEM Grandfathering Decision), the Commission
2 established a transition period of 20 years from the customers’ distributed
3 generation interconnection date during which customers already on NEM
4 tariffs may continue to receive service on the previously applicable NEM
5 tariff.⁴¹ The Commission developed this transition period to “ensure that
6 customers who interconnect renewable distributed generation systems under
7 the currently applicable net energy metering program have a reasonable
8 opportunity to recoup the costs of their investment in those systems.”⁴² The
9 Commission further found “that adopting a transition period that denies
10 customer-generators the opportunity to realize their expected benefits would
11 not be in the public interest, to the extent that it could undermine regulatory
12 certainty and discourage future investment in renewable distributed
13 generation.”⁴³ The Commission also noted “the desirability of ensuring that
14 customers have an opportunity to receive a return somewhat consistent with
15 their expectations.”⁴⁴

16 **iii) SDG&E’s 2015 Rate Design Window**

17
18 **Q. How was the importance of maintaining rate structures in order to**
19 **protect customer investments in solar PV projects noted in the Assigned**
20 **Commissioner’s scoping memo in SDG&E’s 2015 Rate Design Window?**

⁴¹ D.14-03-041 in R.12-11-005, p. 2.

⁴² D.14-03-041 in R.12-11-005, p. 3.

⁴³ D.14-03-041 in R.12-11-005, p. 20.

⁴⁴ D.14-03-041 in R.12-11-005, p. 20.

1 A. In A.14-01-027, SDG&E requested changes to its TOU period definitions.
2 Commissioner Florio’s scoping memo for that proceeding explicitly suggests
3 that intervenors may include proposals to grandfather the current TOU period
4 definitions for customers who have already made investments based on
5 existing TOU period definitions to avoid adverse harm from the structural
6 change in rates:

7 Finally, I am concerned that SDG&E’s proposed changes will affect
8 customers with solar energy systems who are already on TOU rates,
9 and who made their investment in those systems based on the existing
10 definitions of TOU periods in SDG&E territory. Intervenor testimony
11 may include proposals to “grandfather” these customers to avoid
12 adverse effects from any future TOU period changes; SDG&E should
13 respond to any such proposals in its rebuttal testimony.⁴⁵
14

15 **iv) Conclusion**

16
17 **Q. What is your conclusion with regard to maintaining rate structures to**
18 **protect customer investments?**

19 A. The Commission has clearly recognized the importance of maintaining rate
20 structures to protect Commission-promoted customer investments in solar
21 energy systems. There are two main reasons for this: (1) to ensure fairness to
22 customers that have made significant financial investments in solar PV
23 systems and (2) to prevent the harm that could come from undermining
24 regulatory certainty in the Commission’s rate setting. Without the regulatory
25 certainty that rate structures will remain in place long enough to provide a fair
26 opportunity to recoup their investment, customers may not have the

⁴⁵ “Scoping Memo and Ruling of Assigned Commissioner,” A.14-01-027, May 15, 2014, p. 5 (see Attachment H).

1 confidence to make the significant investments required for distributed
2 generation, electric vehicles, and other technologies needed to meet the State's
3 energy policy and greenhouse gas reduction goals.

4 ***D. Specific Actions Must be Taken in This Proceeding to Protect***
5 ***Customers' Investments in Solar***

6

7 **Q. What actions are needed in this proceeding to maintain TOU rate**
8 **structures to protect customer investments?**

9 A. With regard to TOU tariffs, the Commission can protect customers'
10 investments in solar PV systems by grandfathering current NEM customers on
11 their existing TOU rate schedules with the existing rate structures.

12

13 **Q. How does this differ from the utilities' proposals?**

14 A. As discussed above, the utilities all have proposed to apply the rate structure
15 changes proposed for their default tariffs to their TOU tariffs, too. This
16 involves adding customer charges, consolidating tiers, and reducing the rate
17 differential between tiers. Under my proposal, current NEM customers would
18 be able to remain on the existing TOU tariffs without these structural changes.
19 The rate levels in these grandfathered tariffs would change over time with the
20 change in overall revenue requirements, consistent with how rates are adjusted
21 in the revenue allocation and rate design phase of the utilities' General Rate
22 Cases, but the rate structures would remain unchanged.

23

1 In addition, PG&E has proposed to close Schedule E-6 in January 2015 and to
2 eliminate Schedules E-6, E-7, and E-8 in January 2016. Under my proposal,
3 these rate schedules would remain open to NEM customers that currently take
4 service under these rate schedules. In addition, as discussed above, Schedule
5 E-6 and other revenue-neutral tariffs would remain open to all customers.⁴⁶

6 **i) NEM Customers Should be Allowed to Remain on their Current**
7 **TOU Rate Schedules, with their Current Rate Structures in**
8 **Place, for a Transition Period**
9

10 **Q. Do many NEM customers take service under PG&E’s current TOU**
11 **schedules?**

12 **A.** Yes. PG&E’s Additional Supplemental Testimony, which is based on 2011
13 load data, shows that more than 60 percent of PG&E’s NEM customers take
14 service under TOU rate schedules.⁴⁷

15

⁴⁶ References in this section to Schedules E-6, E-7, and E-8 pertain also to Schedules EL-6, EL-7, and EL-8, respectively.

⁴⁷ PG&E. “Additional Supplemental Testimony Pursuant to ALJ Ruling Dated July 22, 2014,” R. 12-06-13, August 8, 2014 (PG&E Additional Supplemental Testimony), p. 2.

1

Table 4: Rate Schedule Distribution of PG&E's NEM Customers

Rate Schedule	Number of NEM Customers
E-1 (Tiered)	14,798
TOU Rate Schedules	
E-6	9,905
E-7	12,231
E-8 ⁴⁸	893
Subtotal NEM TOU	23,029
Total NEM	37,827
% NEM on TOU schedules	61%

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3
4

5 **Q. What would be the customer bill impact if PG&E's current TOU**
6 **schedules were eliminated, as proposed by PG&E?**

7 A. As discussed above, PG&E proposes to (1) impose structural rate changes on
8 its TOU tariffs in 2015 and then (2) to eliminate these rate schedules entirely
9 in 2016. Each of these changes represents a significant change and, in most
10 cases, the same customers would be harmed by both sets of changes. To
11 examine the impact of these changes, I evaluated the cumulative bill impacts
12 for PG&E's E-6 NEM customers for these two transitions. To simplify the
13 analysis, I focused on customers with 100 kWh to 550 kWh per year of net
14 energy usage. These customers make up 56 percent of PG&E's Schedule E-6
15 NEM customers, covering the 25th to 75th percentile of Schedule E-6 NEM
16 customers by usage.⁴⁹ Focusing on these customers avoids complications
17 associated with customers with negative net energy over the course of the year

⁴⁸ Schedule E-8 is a seasonal rate schedule, which is a rudimentary form of a TOU rate schedule.

⁴⁹ Calculated from PG&E Additional Supplemental Testimony, p. 41.

1 and also excludes the high-usage customers, who tend to benefit from
2 PG&E's proposed changes in TOU rates.

3
4 As shown in Table 5, for many of these mid-range E-6 NEM customers,
5 PG&E's proposals would result in significant bill increases in both 2015 and
6 2016. On average, these customers would face an 11 percent increase in 2015,
7 followed by a 23 percent increase in 2016, for a two-year increase of 37
8 percent.⁵⁰

9 **Table 5: Two-Year Bill Impacts for 25th - 75th Percentile of E-6 NEM Customers by Usage**⁵¹

Usage	Number of Customers	2015 Bill Impact	2016 Bill Impact	Two-Year Bill Impact
100 - < 150 kwh	659	23%	55%	91%
150 - < 200 kwh	707	20%	38%	66%
200 - < 250 kwh	730	15%	28%	47%
250 - < 300 kwh	682	10%	20%	33%
300 - < 350 kwh	640	7%	16%	24%
350 - < 400 kwh	609	6%	12%	18%
400 - < 450 kwh	538	4%	9%	13%
450 - < 500 kwh	476	3%	5%	8%
500 - < 550 kwh	366	2%	3%	6%
Total	5,407	11%	23%	37%

10

11 **Q. Are these bill increases reasonable?**

12 A. No. Double-digit increases two years in a row as a result of PG&E's proposal
13 is contrary to the Commission's Principle 10, which requires that the bill
14 impacts associated with a transition to a new rate structure be appropriately
15 considered and minimized. Moreover, the cumulative 37 percent increase is a
16 staggering level of increase, particularly given that Schedule E-6 is already

⁵⁰ 137% = 111% * 123%.

⁵¹ PG&E Additional Supplemental Testimony, pp. 41 and 49.

1 revenue neutral with respect to Schedule E-1. NEM customers that have made
2 investments based on the existing E-6 TOU rate schedule should not be forced
3 to adopt new rate structures that impose such bill impacts.

4

5 **Q. Isn't it the case that PG&E's bill impact assessment shows net benefits to**
6 **Schedule E-6 customers in 2016 from the transition to the new Schedule**
7 **E-TOU?**

8 A. Yes, this is correct. For all Schedule E-6 customers (i.e., high usage, low
9 usage, and negative usage customers), PG&E finds an average bill reduction
10 of 7 percent for E-6 customers migrating to Schedule E-TOU.⁵²

11

12 **Q. How do you respond to this?**

13 A. This average "benefit" masks the significant harm that is caused to certain
14 TOU customers. PG&E's average bill impact measure includes both positive
15 bill impacts and negative bill impacts.⁵³ More importantly, PG&E's bill
16 impact measure is an average bill impact. The average bill impact is skewed
17 by the inclusion of higher-usage customers in the average, since the higher
18 usage customers tend to have lower bills under PG&E's Schedule E-TOU
19 than under Schedule E-6. The averaging masks the thousands of low-usage
20 customers whose bills would be increased substantially due to this forced

⁵² PG&E Additional Supplemental Testimony, p. 11.

⁵³ Some E-6 NEM customers have negative monthly usage and see small increases in their bills. However, since their bills are negative, these customers show a percentage decrease in their monthly bills. See PG&E Additional Supplemental Testimony, p. 41.

1 migration. For example, 46 percent of E-6 customers would have bill
2 increases greater than 20 percent when migrating to E-TOU.⁵⁴

3

4 **Q. Would high-usage NEM customers be harmed by your proposal?**

5 A. No. Under my proposal, high-usage customers would retain the option to
6 migrate to Schedule E-TOU, where their bills would likely be lower. Unlike
7 PG&E's proposal, my proposal offers additional choice to existing TOU
8 customers and does not remove any options.

9

10 **Q. What would be the customer impacts if SCE's and SDG&E's TOU**
11 **schedules were modified to adopt the rate structure changes proposed for**
12 **the utilities' default residential tariffs?**

13 A. 7,500 SCE NEM customers and 1,700 SDG&E NEM customers currently take
14 service under TOU rate schedules and would be affected by the proposed
15 structural changes.⁵⁵ SCE and SDG&E did not provide NEM bill impact
16 analyses specific to the TOU rate schedules. It is likely that low-usage
17 customers would be most negatively affected, due to the addition of the fixed
18 customer charge. Maintaining the existing TOU rate options for these
19 customers would provide them an opportunity to recoup their solar PV
20 investments while also allowing customers the option to switch to the utilities'
21 proposed new optional TOU tariffs.

⁵⁴ PG&E Additional Supplemental Testimony, p. 14.

⁵⁵ Responses of SCE and SDG&E to Vote Solar Data Request 4, Question 1b(i) (see Attachments B and C).

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Q. Do you propose that current NEM customers be allowed to remain indefinitely on current TOU rate schedules with current rate structures?

A. No. The Commission developed a transition framework for NEM customers in the NEM Grandfathering Decision that “balances the interests of participating and non-participating customers by gradually shifting customers to the successor tariff after they have received a reasonable return on their systems, or upon their request.”⁵⁶ I recommend that the Commission apply the provisions of the transition framework in the NEM Grandfathering Decision to my proposal to grandfather NEM customers’ TOU rate design structures. In particular, the NEM Grandfathering Decision established a transition period of 20 years from the year of interconnection during which NEM customers may remain on their current NEM tariff.⁵⁷ It established that customers who opt to switch to the successor NEM tariff before the end of their transition period may not later move back to their previously applicable NEM tariff.⁵⁸ It also extended the transition period offer both to current NEM customers and to customers who apply to take service under a NEM tariff by July 1, 2017, or the date on which a utility reaches its NEM transition trigger level, whichever is earlier.⁵⁹

⁵⁶ D.14-03-041 in R.12-11-005, pp. 23-24.
⁵⁷ D.14-03-041 in R.12-11-005, p. 2.
⁵⁸ D.14-03-041 in R.12-11-005, p. 23.
⁵⁹ D.14-03-041 in R.12-11-005, pp. 20-21.

1 **Q. Why is this a reasonable approach?**

2 A. Maintaining the same transition provisions for both the grandfathering of the
3 NEM tariff and NEM customers' TOU tariffs provides for administrative
4 simplicity because the end of a customers' NEM tariff transition period will
5 be the same as the end of that customers' TOU tariff transition period. It is
6 also logically sound because the aims of the transition period are the same in
7 both cases (i.e., to provide NEM customers with a fair opportunity to recoup
8 the cost of their solar PV systems).

9
10 **Q. Now that the Commission has already established a transition period for
11 NEM tariffs, is a transition period for TOU tariffs also needed?**

12 A. Absolutely. The aims of the NEM transition period will not likely be achieved
13 unless the transition period applies to both the NEM tariff and the TOU tariff
14 because significant changes to either rate schedule can undermine the
15 economics of solar investments. In other words, as SDCPA testified in
16 SDG&E's GRC proceeding, the decision to invest in solar is based not only
17 on the provisions of the NEM tariff, but also on the provisions of the standard
18 tariff to which the NEM tariff is coupled.⁶⁰ The two tariffs together determine
19 the economics of the solar investment so NEM customers must retain access
20 to both these tariffs in their current forms in order to have a fair chance to
21 recoup the cost of their investments.

⁶⁰ D.14-01-002 in A.11-10-002, p. 31.

1 **ii) PG&E’s Schedules E-7 and E-8 Rate Differentials Compared to**
2 **the Default Tariff Should be Preserved**

3

4 **Q. Would increasing the rates under PG&E’s Schedules E-7 and E-8 be**
5 **considered a structural rate change in this circumstance?**

6 **A.** Yes. PG&E’s Schedules E-7 and E-8 have been closed to new customers since
7 January 2008⁶¹ and January 2003, respectively.⁶² NEM customers that are on
8 these rate schedules are therefore primarily early adopters that invested in
9 NEM systems prior to 2008 when the systems were much more expensive
10 than today. Without the discounted rate levels that are provided in these
11 tariffs, it is likely that many of these investments would not have been
12 economically justifiable and would not have been made. These early adopters
13 did not benefit from the steep reductions in the cost of solar power of recent
14 years and many will likely not be able to recoup the costs of their PV
15 investments if they face rate increases to bring their rate levels in-line with the
16 default tariff.

17

18 **Q. To what extent are customers who installed residential PV prior to 2008**
19 **early adopters?**

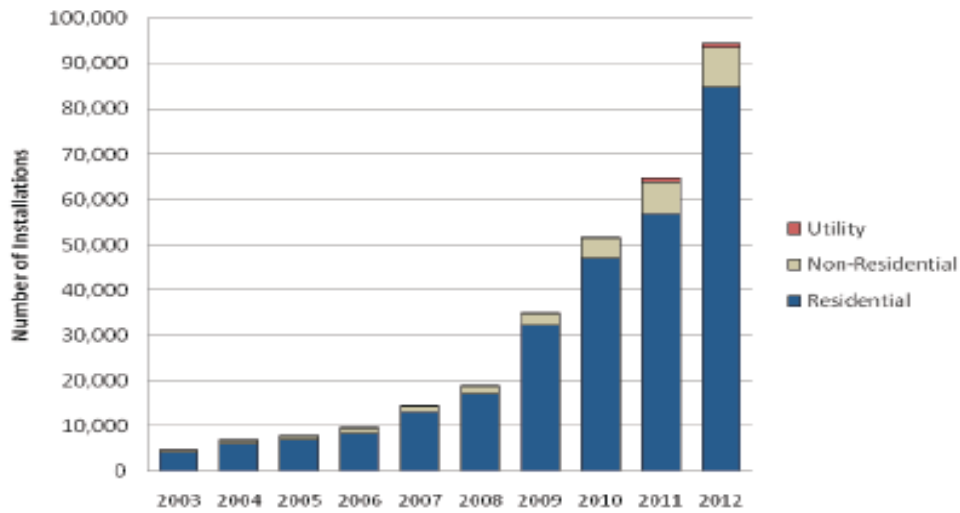
20 **A.** Customers who installed PV systems prior to 2008 can be considered early
21 adopters because they were installing their systems prior to (1) the boom in
22 solar installation rates and (2) the rapid decline in solar PV prices. Prior to

⁶¹ With limited exceptions for customers that had submitted a California Solar Initiative application or an interconnection application to PG&E on or before December 31, 2007. D.08-06-011 in A.04-06-024, Ordering Paragraph 2, p. 24.

⁶² PG&E Schedule E-7, January 2008, and PG&E Schedule E-8, January 2003.

1 2008, fewer than 15,000 residential PV systems were being installed each year
 2 nationwide (see Figure 1).⁶³ By 2009, that rate more than doubled, and in
 3 2013, over 140,000 residential PV systems were installed,⁶⁴ about 10 times as
 4 many systems as were installed in 2007.⁶⁵ Those who installed solar prior to
 5 2008 were engaged in a much smaller solar marketplace than exists today.

6 **Figure 1: Number of Annual U.S. Grid-Connected Photovoltaic Installations, 2003-2012**⁶⁶



7
 8 These customers were also buying systems with higher unit costs (see Figure
 9 2). From 2005-2007, residential and commercial photovoltaic systems up to
 10 10 kW cost about \$9 per Watt_{DC}.⁶⁷ Beginning in 2008, prices began to decline
 11 significantly on an annual basis, down to about \$5 per Watt_{DC} in 2012, with

⁶³ Larry Sherwood, “U.S. Solar Market Trends 2012,” Interstate Renewable Energy Council, July 2013 (Sherwood 2013), p. 5 (see Attachment I).

⁶⁴ Larry Sherwood, “U.S. Solar Market Trends 2013,” Interstate Renewable Energy Council, July 2014, p. 8 (see Attachment J).

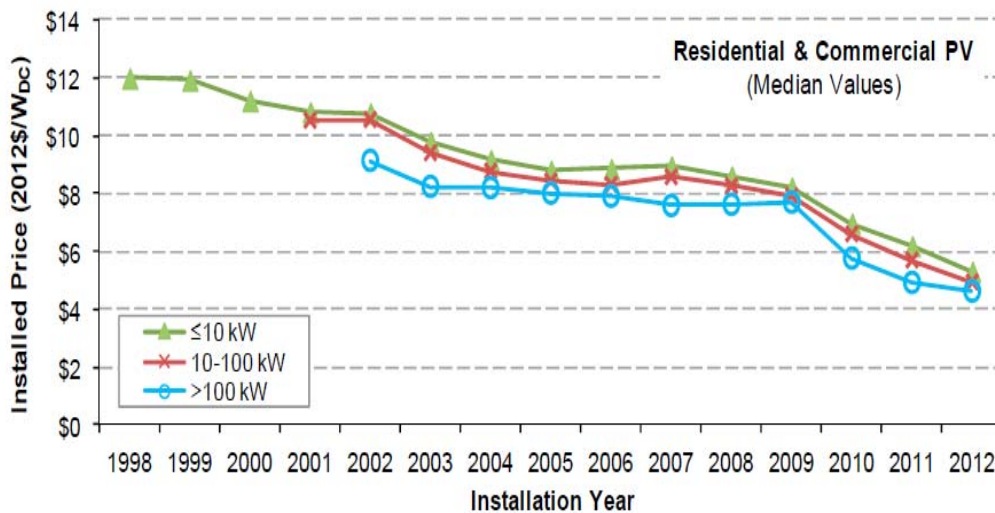
⁶⁵ Sherwood 2013, p. 5 (see Attachment I).

⁶⁶ Sherwood 2013, p. 5 (see Attachment I).

⁶⁷ Barbose, Darghouth, Weaver, and Wisser. “Tracking the Sun VI: An Historical Summary of the Installed Price of Photovoltaics in the United States from 1998-2012,” Lawrence Berkeley National Laboratory, July 2013 (Tracking the Sun VI), p. 13 (see Attachment K).

1 preliminary data indicating even lower prices in 2013.⁶⁸ Customers that
2 installed solar PV systems prior to 2008 likely paid close to double or more
3 than they would have paid for the same size system today.

4 **Figure 2: Installed Cost of Residential and Commercial Solar Photovoltaic Systems, 1998-2012⁶⁹**



5

6 **Q. Why should the Commission protect early adopters' investments if they**
7 **were uneconomic without discounted rates?**

8 A. The early adopters were responding to the policy signals and rate differentials
9 provided by the Commission and the State in making their decisions to invest
10 significant sums of money in a technology that was expensive and not widely
11 used. These investments must be protected in order not to discourage future
12 customer investments in new grid-supportive technologies by adding the risk
13 of regulatory uncertainty to already-risky investments.

14

⁶⁸ Tracking the Sun VI, pp. 13-14 (see Attachment K).

⁶⁹ Prices in 2012 dollars. Tracking the Sun VI, p. 13 (see Attachment K).

1 Moreover, early adopters should not be penalized because solar prices have
2 fallen. Early adopters willing to take on the risk and high cost of a new
3 technology provide a testing ground for the product that, if successful, opens
4 up the product to mainstream consumers with lower risk tolerances. In other
5 words, it was early adopters' investments that, in part, paved the way for the
6 significant growth in the solar market and the associated price reductions that
7 have been seen in recent years.

8

9 **Q. What would be the bill impact for E-7 and E-8 NEM customers if the**
10 **current rate discounts were removed?**

11 A. PG&E's NEM bill impact analysis shows a bill increase of 55 percent for the
12 median-usage Schedule E-7 NEM customer as a result of PG&E's proposal to
13 eliminate the rate differential that is part of the current tariff, with 65% of
14 customers facing increases of more than 20 percent and increases for most
15 customers ranging from a low of 10 percent to more than 100 percent.⁷⁰ These
16 bill increases would affect more than 12,000 PG&E NEM customers (see
17 Table 4).⁷¹

18

⁷⁰ PG&E Additional Supplemental Testimony, pp. 7 and 43. Calculated 55% by removing the 2.1% revenue requirement increase from the 58.1% increase for customers with 350-400 kWh of usage (55% = 1.581/1.021-1).

⁷¹ PG&E Additional Supplemental Testimony, p. 2.

1 PG&E's NEM bill impact analysis shows more moderate increases (mostly in
2 the range of 10 percent to 20 percent) for Schedule E-8 NEM customers.⁷²

3 Fewer than 1,000 PG&E NEM customers take service under Schedule E-8.
4

5 **Q. Has the Commission previously found it appropriate to maintain the E-7
6 and E-8 rate differentials?**

7 A. Yes. In D.06-12-025, the Commission reversed a previous decision to
8 eliminate Schedule E-7 and provided for (1) a limited reopening of Schedule
9 E-7 for new solar customers and (2) continued access to the rate schedule for
10 customers already enrolled and for customers that would enroll prior to the
11 adoption of new TOU rates in PG&E's then-pending GRC.⁷³ The Commission
12 maintained the discounted Schedule E-7 rates for these categories of
13 customers in order to support the development of solar projects in
14 California.⁷⁴ Similarly, when the Commission suspended the availability of
15 Schedule E-8 to new customers in D.01-05-064, the Commission left
16 Schedule E-8 open to customers already taking service under that rate
17 schedule with the existing rate differentials unchanged.⁷⁵
18

⁷² PG&E Additional Supplemental Testimony, p. 45.

⁷³ D.06-12-025 in A.04-06-024, December 14, 2006, p. 3.

⁷⁴ D.06-12-025 in A.04-06-024, December 14, 2006, Finding of Fact 1, p. 4.

⁷⁵ D.01-05-064 in A.00-11-038, May 15, 2001, pp. 37-38.

1 **Q. Is maintaining the E-7 and E-8 rate differentials for NEM customers**
2 **consistent with the Commission’s rate design principles?**

3 A. Yes. Principle 7 states: “Rates should generally avoid cross-subsidies, unless
4 the cross-subsidies appropriately support explicit state policy goals.”⁷⁶ As
5 discussed above, to support future customer investments in preferred
6 resources, the Commission must provide the regulatory certainty that
7 customers will continue to have access to the rate structures upon which they
8 base their long-term investment decisions for enough time to have a fair
9 chance at recovering their investment costs. Protecting early-adopting NEM
10 customers’ investments in PV by keeping in place existing rate differentials is
11 a low-cost way to support customer investments to meet future state policy
12 goals.

13
14 **Q. What is the near-term cost of maintaining the Schedule E-7 differentials**
15 **for current NEM customers?**

16 A. I have estimated the near-term annual costs of the Schedule E-7 rate
17 differential to NEM customers at less than \$2.6 million per year based on the
18 difference in the average NEM rate for Schedule E-7 customers and the
19 average NEM rate for Schedule E-6 customers applied to the net electricity
20 usage of NEM customers on Schedule E-7 in 2011 (see Table 6).⁷⁷

⁷⁶ “Scoping Memo and Ruling of Assigned Commissioner,” R.12-06-013, November 26, 2012, pp. 5-7.

⁷⁷ PG&E Additional Supplemental Testimony, p. 2.

1 **Table 6: Reduction to E-7 NEM Bills under E-7 Rates compared with E-6 Rates⁷⁸**

	NEM MWh	Average Rate for NEM Customers, ¢/kWh		Annual Bill, \$ Millions		
		E-7	E-6	E-7 Rate	E-6 Rate	Difference
E-7	73,770	14.3	17.8	\$10.55	\$13.12	\$2.57
E-7L	2,343	9.7	10.3	\$0.23	\$0.24	\$0.01
E-7 Total	76,113	14.2	17.6	\$10.77	\$13.36	\$2.59

2

3 **Q. Why did you compare Schedule E-7 to Schedule E-6 in developing your**
 4 **comparison?**

5 A. Schedule E-6 is designed to be revenue neutral with Schedule E-1. The
 6 difference between the average Schedule E-6 rate and the average Schedule E-
 7 1 rate is therefore due to differences in the load shapes of customers on these
 8 rate schedules. Since Schedules E-6 and E-7 are both TOU tariffs and
 9 Schedule E-1 is not, the Schedule E-7 load shapes are likely to be more
 10 similar to the Schedule E-6 load shapes than the Schedule E-1 load shapes,
 11 and the average Schedule E-6 rates are therefore more applicable rate
 12 comparisons for Schedule E-7 customers than the average Schedule E-1 rates.

13

14 **Q. What is the near-term cost of maintaining the E-8 rate differentials for**
 15 **current NEM customers?**

16 A. PG&E's NEM bill impact report shows the average Schedule E-8 rate as
 17 higher than the average Schedule E-6 rate and lower than the average
 18 Schedule E-1 rate. Conservatively using the Schedule E-1 rate as the basis for

⁷⁸ PG&E Additional Supplemental Testimony, p. 2.

1 comparison yields a near-term annual cost of the Schedule E-8 rate
2 differential to NEM customers of \$0.22 million (see Table 7).

3 **Table 7: Reduction to E-8 NEM Bills under E-8 Rates compared with E-1 Rates⁷⁹**

	NEM MWh	Average Rate for NEM Customers, ¢/kWh		Annual Bill, \$ Millions		
		E-8	E-1	E-8 Rate	E-1 Rate	Difference
E-8	9,626	18.8	21.0	\$1.81	\$2.02	\$0.21
E-8L	505	10.7	11.8	\$0.05	\$0.06	\$0.01
E-8 Total	10,131	18.4	20.5	\$1.86	\$2.08	\$0.22

4

5 **Q. Why did you compare Schedule E-8 to Schedule E-1 in developing your**
6 **comparison?**

7 A. Schedule E-8 is a seasonal rate schedule, which is a very basic form of a TOU
8 rate schedule. However, Schedule E-8 does not have different TOU periods
9 within each season. Thus, I assumed that Schedule E-8 customers' load shapes
10 are more similar to load shapes for Schedule E-1 customers than to Schedule
11 E-6 customers.

12

13 **Q. What is the total near-term and long-run cost of keeping Schedules E-7**
14 **and E-8 open to NEM customers and to maintain the existing rate**
15 **differentials?**

16 A. The total near-term cost for keeping Schedules E-7 and E-8 open to
17 NEM customers with the existing rate differentials is about \$2.8 million per

⁷⁹ PG&E Additional Supplemental Testimony, p. 2.

1 year.⁸⁰

2

3 In the long-run, the cost of the rate differentials will decline over time as
4 customers leave these rate schedules at -- or prior to -- the end of their 20-year
5 transition periods since Schedules E-7 and E-8 will remain closed to new
6 customers under Vote Solar's proposal. Assuming conservatively that (1) the
7 transition period for all NEM customers currently on these rate schedules ends
8 20 years following the date these tariffs were closed to new customers and (2)
9 that all NEM customers currently on these tariffs remain on these tariffs until
10 their transition periods end, I estimate a total cost of the rate differentials
11 through the transition period of about \$35 million (see Table 8).

12 **Table 8: High-End Estimate of Cost of Continuing the Schedules E-7 and E-8 Rate Differentials**
13 **for NEM Customers Through the Transition Period (Dollars in Millions)**

	E-7	E-8	Total
Annual Cost based on 2011 Usage	\$2.6	\$0.2	\$2.8
Estimated End of Transition Period ⁸¹	2027	2022	
Years in Transition Period	13	8	
High-end estimate of cost through transition period ⁸²	\$33.6	\$1.7	\$35.4

14

15 **Q. What are your conclusions with regard to the Schedule E-7 and E-8 rate**
16 **differentials?**

17 A. The Schedule E-7 and E-8 rate differentials relative to the default tariff should
18 be maintained for current customers for the same reasons that current

⁸⁰ \$2.8 million = \$2.59 million for E-7 + \$0.22 million for E-8.

⁸¹ Calculated as twenty years after the last date that the tariffs were open to new customers in December 2007 for Schedule E-7 and December 2002 for Schedule E-8.

⁸² Calculated by multiplying the Annual Cost based on 2011 Usage by the Years in Transition Period.

1 Schedule E-6 customers should be allowed to keep taking service under the
2 existing Schedule E-6 rate structure. It is both a matter of fairness to the
3 customer and a matter of good policy to not take action to harm investments
4 that were encouraged by the Commission. Ending the rate differentials for
5 Schedules E-7 and E-8 could weaken the Commission's ability to incentivize
6 customers to make significant investments in grid-supporting technologies in
7 the future. PG&E's proposal to eliminate the rate differentials is inconsistent
8 with the Commission's rate design principal of appropriately considering and
9 minimizing bill impacts, is unfair to the solar early-adopters that are taking
10 service under these rate schedules whose investments paved the way for the
11 significant price reductions seen in more recent years, and provides negligible
12 direct cost-savings to other customers. PG&E's proposal should therefore be
13 denied.

14

15 **Q. Are these conclusions specific to Schedules E-7 and E-8?**

16 A. No. If the rate levels of any of the other TOU tariffs are lower than in the
17 utility's default residential tariff, these tariffs should also be maintained with
18 the current rate differential in place for NEM customers already taking service
19 under the tariffs. This is needed to protect NEM customers' investments, as
20 discussed for Schedules E-7 and E-8. These two schedules were called out
21 only because of PG&E's proposal to eliminate their rate differentials; the
22 same principles apply to all the TOU tariffs.

23

1 Q. Does this conclude your opening testimony?

2 A. Yes.