

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

Item #7 (Rev. 1)

AGENDA ID 14614

RESOLUTION

ENERGY DIVISION

E-4762

February 25, 2016

**R E S O L U T I O N**

Resolution E-4762. Adoption of time-of-use (TOU) pricing pilots pursuant to Decision (D.) 15-07-001.

PROPOSED OUTCOME:

- Pacific Gas & Electric Company's (PG&E's) Time-of-Use (TOU) Pilot Plan advice letter is approved with modifications. PG&E shall file a supplemental advice letter in compliance with this Resolution within 21 days.

SAFETY CONSIDERATIONS:

- There is no impact on safety.

ESTIMATED COST:

- The costs of PG&E's TOU Pilots are estimated to be up to \$23,108,183.

By PG&E Advice Letter (AL) 4764-E, filed December 24, 2015.

---

**SUMMARY**

On December 24, 2015, Pacific Gas & Electric Company (PG&E) filed its Time-of-Use (TOU) Pilot Plan advice letter in accordance with Decision (D.) 15-07-001 (the Decision).<sup>1</sup> The advice letter sets out PG&E's plan for three opt-in TOU pilots that will inform their Rate Design Window (RDW) application on January 1, 2018 for a default residential TOU rate and a menu of optional TOU rates. According to the advice letter, PG&E's TOU pilots will collect the following information:

---

<sup>1</sup> D.15-07-001 at 166; 303.

- How TOU rates affect economically vulnerable customers and senior customers. The measured effects will include the average peak and off-peak change in energy usage, the bill impacts, and an assessment of the behaviors underlying any shift or reduction in usage. These and other measured effects will be used to determine whether those customers would face unreasonable hardship if they were to be defaulted onto a given TOU rate.<sup>2</sup>
- The average peak and off-peak change in energy usage for each TOU rate on a utility-wide scale, as well as in the hot and moderate climate regions.
- The average peak and off-peak change in energy usage for each TOU rate for customers enrolled in the California Alternate Rates for Energy (CARE) program or the Family Electric Rate Assistance (FERA) program, and for non-CARE/FERA customers on a utility-wide scale, as well as in the hot climate region for Rate 1.
- The bill impacts for CARE/FERA customers and non-CARE/FERA customers in PG&E's hot, moderate and cool climate regions, and an assessment of the behaviors underlying any shift or reduction in usage for each TOU rate.
- The level of customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- The impact of smartphone applications on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- The impact of education and outreach (E&O) materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a given TOU rate.

---

<sup>2</sup> This determination is required by P.U. Code § 745(c)(2).

This information must be collected in the evaluation and analysis of PG&E's TOU pilots. PG&E is ordered to ensure that the deliverables as outlined in this Resolution are collected through the TOU pilots and presented as part of its January 1, 2018 RDW filing for a default residential TOU rate and a menu of optional TOU rates. A complete list of the deliverables can be found in the Deliverables Table below. PG&E's advice letter also contains a request for authorization of TOU pilot study costs as required by the Decision.<sup>3</sup>

As discussed in detail below, PG&E's advice letter, as modified herein, fulfills the requirements of the Decision and is expected to lead to the collection of the deliverables outlined in this Resolution, and is therefore approved, subject to the following modifications that must be made by a supplemental advice letter filed within 21 days.

## **BACKGROUND**

Public Utilities (P.U.) Code § 745 establishes the conditions for implementing default TOU rates for residential electricity customers. The Decision established the pathway toward default TOU rates for all residential electricity customers of California's investor-owned utilities (IOUs) by January 1, 2019.

Section 745 sets out several conditions that must be met before the implementation of default TOU rates for residential customers in 2019. These include:

- Certain classes of customers may not be defaulted without their affirmative consent – customers with medical baseline allowances, customers requesting third-party notification, and customers that require an in-person visit prior to disconnection.<sup>4</sup>
- The California Public Utilities Commission (Commission or CPUC) must ensure that any TOU rate schedule does not cause unreasonable hardship

---

<sup>3</sup> D.15-07-001 at 166.

<sup>4</sup> P.U. Code § 745(c)(1).

for senior citizens or economically vulnerable customers in hot climate zones.<sup>5</sup>

- The CPUC must strive for TOU rates that utilize time periods for at least five years.<sup>6</sup>
- One year of bill protection must be provided to customers defaulted to TOU rates.<sup>7</sup>
- A comparison of various rate options and the impact on a customer's bill must be sent to each customer annually.<sup>8</sup>
- A non-TOU rate option must be available for customers to switch to if they choose.<sup>9</sup>
- The CPUC must explicitly consider evidence addressing the extent to which hardship will be caused on: 1) customers located in hot, inland areas, assuming no change in their usage during peak periods, and 2) residential customers living in areas with hot summer weather, as a result of seasonal bill volatility, assuming no change in summertime usage or in peak period usage.<sup>10</sup>

Many of these requirements can be met without the need for an opt-in TOU pilot (e.g., the requirement to transmit bill comparisons on an annual basis). However, in order to fulfill the requirements embodied in Section 745(c)(2), it is necessary to gather data on how seniors and economically vulnerable customers in hot climate zones respond to TOU rates.

---

<sup>5</sup> P.U. Code § 745(c)(2). Note that the CPUC will separately consider the definition of many of these terms in a Decision in Phase 3 of the R.12-06-013 proceeding.

<sup>6</sup> P.U. Code § 745(c)(3).

<sup>7</sup> P.U. Code § 745(c)(4).

<sup>8</sup> P.U. Code § 745(c)(5).

<sup>9</sup> P.U. Code § 745(c)(6).

<sup>10</sup> P.U. Code § 745(d)(1)-(2). As with the Section 745(c)(2) terms, the CPUC will separately consider the definition of many of these terms in a Decision in Phase 3 of the R.12-06-013 proceeding.

The Decision also notes that parties suggested that the effectiveness of various education and outreach (E&O) strategies for customers on TOU rates be explored before the implementation of default TOU rates for residential customers in 2019.<sup>11</sup>

Additionally, we note that PG&E was ordered through a Joint Assigned Commissioner's and Administrative Law Judge's Ruling (ACR or Ruling) of September 24, 2015 to "prepare a menu of a minimum of three opt-in [TOU] rate designs for piloting beginning in 2016. At least one of the opt-in TOU pilot rates for [PG&E] must be a TOU option with a more complex combination of seasons and time periods than traditional TOU rates that better matches system needs, and must begin no later than October 1, 2016. The design of all opt-in pilots must be prepared in 2015 and submitted for Commission review and approval as part of the Tier 3 advice letters required to be filed by D.15-07-001 on January 1, 2016."<sup>12</sup>

Per the Decision's instructions, the IOUs formed a TOU Working Group that met frequently through December, 2015. The TOU Working Group collectively selected a consultant to inform their work on TOU pilot design, and the final report of the consultant to the TOU Working Group (consultant report) is attached to PG&E's TOU Pilot Plan advice letter. The consultant report heavily informed PG&E's TOU Pilot Plan development, and we expect the TOU Working Group will remain extant to consider ongoing implementation issues related to the TOU pilots, development of the survey and monitoring and evaluation (M&E) plan for the pilots, default TOU pilots for 2018,<sup>13</sup> and the preparation of the IOUs' 2018 RDW applications.

PG&E's proposed TOU pilots include the following elements:

- Three TOU rates will be tested, with varying levels of complexity and price differentiation. Rate 1 has a five hour peak period (4-9pm), while Rate 2

---

<sup>11</sup> D.15-07-001 at 165.

<sup>12</sup> ACR at 1.

<sup>13</sup> By a letter submitted on November 30, 2015, the IOUs requested that the submission of default TOU pilot designs be delayed until December 16, 2016. This request was accepted by email ruling of ALJ McKinney on December 23, 2015.

has a 3-hour peak period (6-9pm) and shoulder peak periods in the summer. Rate #3 is a three-season rate with a super-off-peak rate during spring afternoons.

- PG&E proposes summer price differentials of approximately 1:1.34 for Rate 1, approximately 1:1.55 for Rate 2 and approximately 1:1.4 for Rate 3.
- A control group will remain on the existing tiered rate structure without a time-differentiated element. This will allow evaluators to test the impact of the TOU rate on a customer's load, bill and acceptance.
- Thousands of PG&E customers will be recruited onto each TOU rate and the control rate. PG&E will use a "pay-to-play" recruitment approach<sup>14</sup> that will help defend against biased samples.
- The pilots will begin in June 2016 and continue through December 2017. PG&E proposes to move TOU rate participants onto rate E-TOU-A at the end of their pilot experience.
- PG&E will encourage a subset of pilot participants to use an app to track their usage and give them reminders about the features of the TOU rate they are on.
- Pilot participants will be surveyed to determine their acceptance, understanding and engagement with the rate they are placed on.

As noted previously, PG&E proposes to collect information through various survey questions related to how customers interact with the piloted rates, including:

- How TOU rates affect economically vulnerable customers and senior customers.

---

<sup>14</sup> "Pay-to-play" refers to a financial incentive provided to participants before, during, and/or at the conclusion of the pilot to promote recruitment and to retain customers on the rate for the duration of the pilot.

- The average peak and off-peak change in energy usage for each TOU rate; the bill impacts for CARE/FERA customers and non-CARE/FERA customers.
- The level of customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- The impact of education and outreach (E&O) materials that are tailored to various customer segments and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a given TOU rate.

## **NOTICE**

Notice of the PG&E AL 4764-E was made by publication in the CPUC's Daily Calendar. PG&E states that their advice letter was distributed in accordance with General Order (GO) 96-B, and was also served on the R.12-06-013 service list.

## **PROTESTS**

Protests were filed by SolarCity Corporation (SolarCity) and Environmental Defense Fund (EDF) on January 13, 2016, requesting various modifications to PG&E's Pilot Plan. Nest Labs filed supporting comments on January 13, 2016 but did not protest PG&E's advice letter. Nest Labs' support for PG&E's pilot plan is noted. PG&E filed a reply to the protests on January 20, 2016.

## **SolarCity**

SolarCity argues that the TOU pilots only test a limited set of TOU periods and that this would bias the future default TOU rate toward those periods. Specifically, the pilots would not collect information on customer response to earlier peak periods. In addition, SolarCity argues that solar and storage

customers should be allowed to participate in the pilot, and that information about how these customers respond to TOU rates should inform future TOU rate design. SolarCity also requests that any recruitment, marketing or outreach material fairly articulate the reasons for late shifted peak periods, without assigning blame to solar or distributed generation customers. Finally, SolarCity argued that customers currently taking service on a discontinued TOU rate, which choose to participate in the pilots, be allowed to resume service on their former rate once the pilot is over.

PG&E's in its reply noted that SolarCity could have chosen to argue for its position in the TOU Working Group but chose not to do so. They also state that SolarCity provides no empirical support for its arguments, and that the recently adopted TOU Period proceeding (R.15-12-012) will address many of SolarCity's arguments. PG&E states that net energy metering (NEM) customers were excluded from the pilots for sound reasons, and the TOU Working Group agreed to do so. PG&E points out that SolarCity's argument concerning the option of participants to return to their original TOU rate is moot, as only non-TOU customers will be recruited to the TOU pilots.

### **Environmental Defense Fund (EDF)**

EDF argues that PG&E's three proposed rates are too similar to one another and that the price differences between time periods are too small. EDF argues that the proposed rates don't give customers meaningful options. They request a number of adjustments, including greater price differences between peak and super-off peak periods, greater difference between the peak and partial peak periods for Rate 2, and a shorter peak period for Rate 2. Furthermore, EDF asserts that Rate 3 should credit customers when prices are negative in wholesale markets. EDF also requests that PG&E consider EDF's proposed "smart home" rate that was proposed to the TOU Working Group. Additionally, EDF argues that PG&E's proposed technology treatments miss the opportunity to test how enabling technologies can help to mitigate bill impacts, enhance satisfaction rates and reduce environmental impacts. However, EDF has specific suggestions regarding data to be collected during the pilot and the plans for evaluating that data. Finally, EDF states that PG&E should coordinate its pilots with other projects

related to Distribution Resources Plans, utility electric vehicle pilots and the Integrated Distributed Energy Resources proceeding.

PG&E replies to EDF by stating that EDF raised many of their concerns during the TOU Working Group process and that they were not adopted at that time. PG&E also asserts that the Decision does not support many of EDF's arguments, and that its proposed rates are appropriately cost-based. PG&E generally states that it is for the Commission to ensure coordination of various projects in different proceedings.

The concerns raised by SolarCity are noted and addressed. While SolarCity criticizes elements of the TOU pilot design proposed by PG&E and developed by the TOU Working Group, it is important to note that this group included SolarCity as a participant. The Decision contains few mandates for the TOU pilots, and provides no specific requirements, guidance or direction that would support the concerns with TOU pilot design or the changes recommended by SolarCity. Therefore, their protest is rejected.

We also note that the recently created TOU Period Order Institution Rulemaking (TOU OIR) will directly address the methodology used to define TOU periods.

Similarly, EDF's protest centers on elements of TOU pilot design that they would prefer to see implemented. Like SolarCity, EDF is a participant in the TOU Working Group that helped to craft the TOU pilot designs as submitted by PG&E. EDF does not cite to any portion of the Decision or the ACR indicating that their preferred pilot design elements are specifically required, and therefore the EDF protests for the most part are rejected.

However, we agree with EDF that the rate differential for PG&E's proposed Rate 3 is too mild, and should be increased to test customer response to a well-differentiated TOU rate. Our modifications to PG&E's Rate 3 are discussed later in this Resolution.

## **DISCUSSION**

It is important to ensure that implementation of PG&E's TOU pilots proceeds smoothly and in accordance with the terms of this Resolution. Per the ACR, the

two less-complex TOU pilots must begin by June 1, 2016, and the more complex TOU pilot must begin by October 1, 2016.<sup>15</sup>

### **Required information**

In order to meet our statutory obligation embodied in Section 745(c)(2), we find that we must consider three core pieces of information for seniors and economically vulnerable customers in hot climate zones:

- 1) The average peak and off-peak change in energy usage as a result of the TOU rate.
- 2) The impact of the TOU rate on customer bills (i.e., the distribution of bill impacts for the class of customer).
- 3) The impact of the TOU rate on how these customers use energy and on these customers' choices regarding other household expenses.

These core deliverables must be collected by PG&E's TOU pilots in order to allow the CPUC to make its statutorily required findings before the implementation of default TOU rates for residential customers in 2019.

The TOU Working Group process revealed the need for more information to be collected by the pilots in order for the CPUC to make an informed decision on the potential benefits and hardships faced by PG&E's customers because of TOU rates. In light of the TOU Working Group's discussion, and to more fully comply with the Decision's requirement to analyze customer understanding, acceptance, and engagement while on TOU rates,<sup>16</sup> it is necessary to secure the following additional information beyond the core requirements of Section 745:

---

<sup>15</sup> ACR Ordering Paragraphs 2 and 3.

<sup>16</sup> D.15-07-001 at 129 ("Specifically, the IOUs should quickly and thoroughly evaluate all areas of transition to default TOU, including but not limited to: load shift and load reduction, customer acceptance, appropriate parameters of residential default TOU, customer classes who are not able to respond and should remain on tiered default rate, and measure of environmental and cost savings from load shift and load reduction").

- 1) The average peak and off-peak change in energy usage as a result of a given TOU rate for all customers in PG&E's service territory, all customers in PG&E's hot climate region and all customers in PG&E's moderate climate region.<sup>17</sup>
- 2) The average peak and off-peak change in energy usage for CARE/FERA customers and non-CARE/FERA customers across PG&E's territory as a whole for all three piloted TOU rates and in PG&E's hot climate region for Rate 1.
- 3) The impact of a given TOU rate on the bills of CARE/FERA customers and non-CARE/FERA customers (i.e., the distribution of bill impacts) in PG&E's entire territory and in the hot, moderate and cool climate regions separately.
- 4) The impact of a given TOU rate on how customers change their energy usage and on these customers' choices regarding other household expenses.
- 5) The level of understanding, acceptance, and engagement while taking service on a given TOU rate among various customer groups.
- 6) The impact of smartphone applications on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate.
- 7) The impact of E&O materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding, acceptance, and engagement while taking service on a TOU rate.

---

<sup>17</sup> Per PG&E AL 4764-E, the hot region is comprised of PG&E's climate zones P, R, S, and W; the moderate region is comprised of PG&E's climate zones Q, X, and Y; and the cool climate region is comprised of PG&E's climate zones T, V, and Z.

These constitute the deliverables that must be collected by PG&E's TOU pilots, and are accounted for in PG&E's advice letter and the final report to the TOU Working Group. In the event that PG&E believes that its TOU pilots will not be able to collect these deliverables, PG&E is ordered to immediately notify the CPUC and the TOU Working Group and propose modifications to their TOU pilots that will ensure they collect these deliverables.

### **Variety within the menu of TOU pilot rates**

Both the Decision<sup>18</sup> and the ACR<sup>19</sup> require that a menu of TOU rates be offered to customers to ensure that there is adequate opportunity for a variety of residential customers to select the TOU rate that best reflects their needs. It also requires research on customer acceptance and response to a variety of rate structures. Therefore it is necessary for the pilots to study not only possible default TOU rate structures but also to study the viability of more complex TOU rate structures and customer response to these more complex rate structures.

Two components of this menu approach are the number of seasons and the distribution and timing of peak/off-peaks hours for a given TOU rate. As noted previously, PG&E proposes three different TOU rate structures, all with different peak hour and/or off-peak hour distributions and one with a three-season structure. The proposed TOU period definitions conform to the Decision and the ACR and are therefore acceptable.

A third component of the menu approach is price. Some residential customers may be less sensitive to price than others, while other customers may be very sensitive to price and would therefore react more strongly to peak to off-peak

---

<sup>18</sup> D.15-07-001 at 134 (“Consistent with our statutory obligations pursuant to AB 327, it is important to remember that any default TOU rate derived from this decision will be optional and it is essential that the IOUs provide a menu of well-designed optional tariffs, including a tiered rate, for residential customers to opt into. Most parties in this proceeding have advocated this ‘menu’ of options, to promote customer choice,[citation] and we agree that a menu of choices for customers is part of the goal of this proceeding and AB 327”).

<sup>19</sup> ACR at 3 (“[I]t is necessary to develop and evaluate a variety of TOU rate designs that may either be used as a model for a default TOU rate in 2019, and/or as viable forward-looking pricing options that accommodate the changing conditions of the grid, fulfill California’s long term energy policy objectives, and appeal to a variety of residential customers at that time”).

price differentials. At the same time, customers will have differing abilities to shift load regardless of price. It is expected that this load shift will reduce overall utility costs to the benefit of all ratepayers and in accordance with the state’s broad policy goals.<sup>20</sup> Thus, it is essential to study the impact of price on customers.

PG&E’s proposed rate design and pricing for their three TOU pilots appears below.

**TOU PILOT RATE 1 IN GRAPHICAL FORMAT**

Treatment	Season	Hour Ending																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TOU Treatment 1	Summer Weekdays	Off-Peak															Peak					Off-Peak			
	Summer Weekends	Off-Peak																							
	Winter Weekdays	Off-Peak															Peak					Off-Peak			
	Winter Weekends	Off-Peak																							

<sup>20</sup> See D.15-07-001 at 143-144 (“TOU should be a flexible customer-empowering tool to make the load curve more manageable. As EDF describes it, using TOU to ‘increase customers’ ability to be an active part of the grid will be critical to ensuring that California achieves its emission reductions, renewables and other landmark clean energy policies’... A wide-scale TOU rate for residential customers must be flexible enough to account for load shifts from year to year, while providing customers with certainty required by AB 327. This can be accomplished through the menu of rate options proposed by many parties... Options for design of TOU rates that must be considered going forward include... tranches of optional TOU rates with complementary TOU periods that considered together address grid needs, but do not impose unreasonable hardship on individual customers”).

**ILLUSTRATIVE RATES FOR TOU PILOT RATE 1**

<u>TOU Treatment 1</u>	<u>Non-CARE</u>	<u>CARE</u>
<u>Summer</u>		
Peak Period	\$0.40900	\$0.24842
Off-Peak Period	\$0.30594	\$0.18356
Baseline Credit	\$(0.08788)	\$(0.04790)
<u>Winter</u>		
Peak Period	\$0.27351	\$0.16315
Off-Peak Period	\$0.25471	\$0.15132
Baseline Credit	\$(0.08788)	\$(0.04790)

**TOU PILOT RATE 2 IN GRAPHICAL FORMAT**

Treatment	Season	Hour Ending																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TOU Treatment 2	Summer Weekdays	Off-Peak																Part-Peak	Peak		Part-Peak	Off Peak			
	Summer Weekends	Off-Peak																Part-Peak	Peak		Part-Peak	Off Peak			
	Winter Weekdays	Off-Peak																Peak		Off Peak					
	Winter Weekends	Off-Peak																Peak		Off Peak					

**ILLUSTRATIVE RATES FOR TOU PILOT RATE 2**

<u>TOU Treatment 2</u>	<u>Non-CARE</u>	<u>CARE</u>
<u>Summer</u>		
Peak Period	\$0.44779	\$0.27657
Part-Peak Period	\$0.39027	\$0.24162
Off-Peak Period	\$0.28383	\$0.16202
Baseline Credit	\$(0.08788)	\$(0.04790)
<u>Winter</u>		
Peak Period	\$0.27468	\$0.16613
Off-Peak Period	\$0.25205	\$0.15092
Baseline Credit	\$(0.08788)	\$(0.04790)

**TOU PILOT RATE 3 IN GRAPHICAL FORMAT**

Treatment	Season	Hour Ending																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TOU Treatment 3	Summer Weekdays	Off-Peak																Peak			Off-Peak				
	Summer Weekends	Off-Peak																							
	Winter Weekdays	Off-Peak																Peak			Off-Peak				
	Winter Weekends	Off-Peak																							
	Spring Weekdays	Off-Peak											Super-Off-Peak					Peak			Off-Peak				
	Spring Weekends	Off-Peak											Super-Off-Peak					Off-Peak							

**ILLUSTRATIVE RATES FOR TOU PILOT RATE 3**

	TOU Treatment 3	Non-CARE	CARE
<u>Summer</u>			
Peak Period		\$0.40900	\$0.24842
Off-Peak Period		\$0.30594	\$0.18356
Baseline Credit		\$(0.08788)	\$(0.04790)
<u>Winter</u>			
Peak Period		\$0.27658	\$0.16529
Off-Peak Period		\$0.26361	\$0.15735
Baseline Credit		\$(0.08788)	\$(0.04790)
<u>Spring</u>			
Peak Period		\$0.26778	\$0.15975
Off-Peak Period		\$0.26142	\$0.15597
Super-Off Peak Period		\$0.18220	\$0.10500
Baseline Credit		\$(0.08788)	\$(0.04790)

PG&E's price ratios for Rates 1 and 2 reflect pricing at the Tier 2 level of consumption, and do not include the baseline credit, which will change over the

course of the pilots in accordance with the tier collapse glidepaths<sup>21</sup> set forth in D.15-07-001.

In order to realize the Decision’s vision of a menu of optional TOU rates that assist the state’s broad policy goals, we must learn about the customer response to a variety of TOU rate structures and price signals in this opt-in pilot phase so that the IOUs can adequately prepare their 2018 RDW applications to include a menu of TOU rates. We find that, with one exception, PG&E’s proposed TOU pilot rate options provide an appropriate basis for this comparison.

The exception concerns PG&E’s proposed price differential for Rate 3. We are persuaded by EDF’s protest that the spring and summer price differentials for PG&E’s Rate 3 are too mild; therefore, we order PG&E to modify the summer rates to a 1:2 differential for off-peak to peak pricing (based on Tier 2 rates).<sup>22</sup> For spring, we require PG&E to modify the rates to a 1:2 differential for super off-peak to peak pricing (based on Tier 2 rates). We agree with EDF that increasing the differential ensures that “customers have significant value propositions associated with shifting demand to off-peak times.”<sup>23</sup>

**Illustrative Rates For TOU Pilot Rate 3 (revised per Jan 8, 2016 substitute sheets)**

PG&E Proposed (January 8, 2016)		Illustrative with 2:1 Spring/Summer Price Differentials			
	Non-CARE	CARE		Non-CARE	CARE

<sup>21</sup> D.15-07-001 ordered the gradual transition or “glidepath” from four tiers to two tiers, with a baseline credit, from 2015 through 2018, in order to smoothly introduce incremental billing impacts to customers.

<sup>22</sup> See Faruqui, Ahmad & Sanem Sergici, “Arcturus: International Evidence on Dynamic Pricing”, *ELECTRICITY JOURNAL*, VOL. 26, ISSUE 7: 55-56 (2013) for support for these findings. Specifically, see Figure 11 “Arc of Price Responsiveness” which indicates that demand response increases with the price differential and that a peak to off-peak ratio of at least 2.0 would be required to elicit a 5% change in demand. Because most of the studies included in the Brattle Group’s Arcturus database concentrate on summer season price response, the Arcturus data has limited relevance to the proposed spring season Rate 3 experiment. Nevertheless, Arcturus represents the best available data and indicates that a robust price differential is likely to be necessary to elicit the desired demand response.

<sup>23</sup> EDF Protest at 2.

PG&E Proposed (January 8, 2016)			Illustrative with 2:1 Spring/Summer Price Differentials		
	Non-CARE	CARE		Non-CARE	CARE
<b>Summer</b>					
Peak Period (> 100% Baseline)	\$0.40900	\$0.24842		\$0.50000	\$0.35000
Off-Peak (> 100% Baseline)	\$0.30594	\$0.18356		\$0.25000	\$0.17500
Peak Period (< 100% Baseline)	\$0.32112	\$0.20052		\$0.41212	\$0.30210
Off-Peak (< 100% Baseline)	\$0.21806	\$0.13566		\$0.16212	\$0.12710
<b>Winter</b>					
Peak Period (> 100% Baseline)	\$0.27658	\$0.16529		\$0.27658	\$0.16529
Off-Peak (> 100% Baseline)	\$0.26361	\$0.15735		\$0.26361	\$0.15735
Peak Period (< 100% Baseline)	\$0.18870	\$0.11739		\$0.18870	\$0.11739
Off-Peak (< 100% Baseline)	\$0.17573	\$0.10945		\$0.17573	\$0.10945
<b>Spring</b>					
Peak Period (> 100% Baseline)	\$0.26778	\$0.15975		\$0.34000	\$0.23800
Off-Peak (> 100% Baseline)	\$0.26142	\$0.15597		\$0.20000	\$0.14000
Super Off-Peak (> 100% Baseline)	\$0.18220	\$0.10500		\$0.17000	\$0.11900
Peak Period (< 100% Baseline)	\$0.17990	\$0.11185		\$0.25212	\$0.19010
Off-Peak (< 100% Baseline)	\$0.17354	\$0.10807		\$0.11212	\$0.09210
Super Off-Peak (< 100% Baseline)	\$0.09432	\$0.05710		\$0.08212	\$0.07110

### **Sampling Strategy**

PG&E's proposes to recruit approximately 18,500 customers onto its three TOU rates and the control rate. Approximately 3,750 customers will be assigned to each of Rates 2 and 3, and approximately 5,500 customers will be assigned to each of Rate 1 and the control rate.

This proposal includes oversampling (beyond their percentage representation in the general population) of CARE/FERA customers on all three rates, seniors (where a senior is the head of the household) in the hot climate region for Rate 1 and households with incomes less than or equal to ( $\leq$ ) 100% of the Federal Poverty Guidelines in the hot climate region for Rate 1. This oversampling is necessary to make the findings related to "senior citizens" and "economically vulnerable" customers required by P.U. Code § 745(c)(2).

We agree with PG&E and the TOU Working Group that the proposed sampling strategy supports analysis of the data upon completion of the pilots that accommodates all proposed definitions of "senior citizens" and "economically vulnerable" customers, and is therefore sufficient for the Commission to make its findings under P.U. Code § 745(c)(2). For example, the consultant report clarifies that "there are more households in the population based on the latter definition [households with at least one senior] than there are based on the former definition [a senior is the head of the household]." <sup>24</sup> Thus, there will be sufficient pilot participants to conduct the required analysis for the "senior citizens" group under either definition.

The definitions of "senior citizens" and "economically vulnerable," amongst others, were the subject of legal briefings filed by parties to R.12-06-013 on December 23, 2015 and January 11, 2016. In those briefings, the IOUs request that the Commission use this Resolution to resolve the legal briefing, rather than issue a separate Decision. However, this Resolution is solely intended to determine whether the proposed pilots meet the requirements laid out in D.15-07-001 and the ACR. Therefore, we decline to resolve the legal briefing issues here.

---

<sup>24</sup> Consultant Report at p. 39 n. 24

Should PG&E find that the sample sizes as described in their advice letter require modification, while still ensuring that the deliverables as outlined in this Resolution are collected, then PG&E may send a letter to the Director of Energy Division any time before April 1, 2016 requesting modification of their TOU pilot sample sizes. The Director is not required to approve the sample size modification and may require the use of sample sizes as described in the original TOU pilot advice letter at its discretion.

If, in the course of recruitment, PG&E experiences difficulty in meeting its recruitment targets, it must consult with its pilot implementation consultant, Energy Division and the TOU Working Group on additional steps it can take to meet the recruitment targets. In the event that PG&E believes that its TOU pilots will not be able to collect the deliverables as outlined in this Resolution, PG&E is ordered to immediately notify the CPUC and the TOU Working Group and propose modifications to their TOU pilots that will ensure they collect these deliverables.

### **PG&E's proposals for meeting its mandated deliverables**

The final report of the consultant to the TOU Working Group (consultant report) is attached to PG&E's advice letter. The consultant report details the specific ways in which PG&E plans to collect the mandated deliverables, including sampling methodologies, recruitment strategies and statistical precision.

The particular details of PG&E's implementation plans are too numerous to mention here, and we refer interested parties to the consultant report for more information. Generally speaking, we find that the mechanisms outlined in the consultant report are reasonable and should be used to guide the implementation of PG&E's TOU pilots.

Below we outline the detailed experimental design approaches that are contained in either the consultant report or in PG&E's TOU Pilot Plan that will be used to collect the mandated deliverables. At a minimum, PG&E must employ the approaches as outlined below.

<b>Deliverable</b>	<b>PG&amp;E's Proposal</b>
<p><b>The average peak and off-peak change in energy usage (or lack thereof) by seniors and economically vulnerable customers in hot climate zones as a result of a given TOU rate.</b></p>	<p>PG&amp;E will employ a RCT design and pay-to-play (PTP) recruitment strategy to recruit approximately 3,000 customers onto each of Rate 1 and the control rate (the otherwise applicable tariff (OAT) or tiered rate) in PG&amp;E's hot climate region. Sample sizes will be large enough to produce load impacts with confidence intervals in the range of <math>\pm 2-3\%</math> with 90% confidence for a variety of customer segments on Rate 1 in PG&amp;E's hot climate region, including seniors, CARE/FERA customers, and households with incomes <math>\leq 100\%</math> of the Federal Poverty Guideline (FPG).</p>
<p><b>The impact of a given TOU rate on the bills of seniors and economically vulnerable customers in hot climate zones (i.e., the distribution of bill impacts).</b></p>	<p>Bills will be calculated for both treatment and control customers in two ways; as if their usage were billed on the TOU rate in question, and as if their usage were billed on the OAT. The difference between those two bills will result in a distribution of bill impacts for treatment customers and a distribution of bill impacts for control customers. Comparing the two distributions will illustrate how much of the bill impact results from structural wins and losses and how much results from changes in usage in response to the TOU rate. Sample sizes will be large enough to produce valid bill impact distributions for a variety of customer segments on Rate 1 in PG&amp;E's hot climate region, including seniors, CARE/FERA customers, households with incomes <math>\leq 100\%</math> of FPG, and households with incomes between 100 and 200% of FPG.</p>

<b>Deliverable</b>	<b>PG&amp;E's Proposal</b>
<p><b>The impact of a given TOU rate on how seniors and economically vulnerable customers in hot climate zones change their energy usage and on these customers' choices regarding other household expenses.</b></p>	<p>Surveys will be administered to both treatment and control customers, and will include questions regarding energy usage habits (e.g. the timing of end-use activities, thermostat settings by rate period) and barriers to load shifting or load reduction activities. Questions will also be designed to detect certain forms of hardship (e.g. not paying other bills to pay energy bill). Answers will be compared between treatment and control customers to determine whether certain behaviors or activities are higher among customers on TOU rates relative to customers on the OAT. Sample sizes will be large enough to produce valid survey data for a variety of customer segments in PG&amp;E's hot climate region, including seniors, CARE/FERA customers, households with incomes <math>\leq</math> 100% of FPG, and households with incomes between 100 and 200% of FPG on Rate 1; and CARE/FERA customers on Rates 2 and 3.</p>
<p><b>The average peak and off-peak change in energy usage as a result of a given TOU rate for all customers in PG&amp;E's service territory, all customers in PG&amp;E's hot climate region, and all customers in PG&amp;E's moderate climate region.</b></p>	<p>PG&amp;E will employ a RCT design to recruit customers onto the three TOU rates and the control rate. The total number of PG&amp;E customers on each of Rates 2 and 3 will be approximately 3,750, and 5,500 on Rate 1. The RCT sampling approach will also be used to create minimum samples of roughly 1,250 customers for each TOU rate in each of PG&amp;E's hot, moderate and cool climate regions. Sample sizes will be large enough to produce load impacts with confidence intervals in the range of <math>\pm 2-3\%</math> with 90% confidence for all customers for a given TOU rate across PG&amp;E's service territory as a whole and for a given TOU rate in each of PG&amp;E's hot and moderate climate regions.</p>

<b>Deliverable</b>	<b>PG&amp;E's Proposal</b>
<p><b>The average peak and off-peak change in energy usage as a result of a given TOU rate for CARE/FERA and non-CARE/FERA customers across PG&amp;E's territory as a whole and in the hot climate region for Rate 1.</b></p>	<p>The RCT design, PTP recruitment strategy and recruitment targets described above will create sample sizes large enough to produce load impacts with confidence intervals in the range of <math>\pm 2-3\%</math> with 90% confidence for CARE/FERA and non-CARE/FERA customers for a given TOU rate across PG&amp;E's service territory as a whole and for Rate 1 in PG&amp;E's hot climate region.</p>
<p><b>The impact of a given TOU rate on the bills of CARE/FERA customers and non-CARE/FERA customers (i.e., the distribution of bill impacts) in PG&amp;E's entire territory and in the hot, moderate and cool climate regions separately.</b></p>	<p>Bills will be calculated for both treatment and control customers in two ways; as if their usage were billed on the TOU rate in question, and as if their usage were billed on the OAT. The difference between those two bills will result in a distribution of bill impacts for treatment customers and a distribution of bill impacts for control customers. Comparing the two distributions will illustrate how much of the bill impact results from structural wins and losses and how much results from changes in usage in response to the TOU rate. Sample sizes will be large enough to produce valid bill impact distributions for CARE/FERA and non-CARE/FERA customers for a given TOU rate across PG&amp;E's service territory as a whole and in each of PG&amp;E's hot, moderate and cool climate regions.</p>

<b>Deliverable</b>	<b>PG&amp;E's Proposal</b>
<p><b>The impact of a given TOU rate on how CARE/FERA customers and non-CARE/FERA customers – in PG&amp;E's entire territory and in the hot, moderate and cool climate regions separately – change their energy usage and on these customers' choices regarding other household expenses.</b></p>	<p>Surveys will be administered to both treatment and control customers, and will include questions regarding energy usage habits (e.g. the timing of end-use activities, thermostat settings by rate period) and barriers to load shifting or load reduction activities. Questions will also be designed to detect certain forms of hardship (e.g. not paying other bills to pay energy bill). Answers will be compared between treatment and control customers to determine whether certain behaviors or activities are higher among customers on TOU rates relative to customers on the OAT. Sample sizes will be large enough to produce valid survey data for CARE/FERA and non-CARE/FERA customers for a given TOU rate across PG&amp;E's service territory as a whole and in each of PG&amp;E's hot, moderate and cool climate regions.</p>
<p><b>The level of customer understanding, acceptance, and engagement while taking service on a given TOU rates among various customer segments.</b></p>	<p>The recruitment approach for PG&amp;E's TOU pilots does not allow for a direct measure of acceptance rates for each rate option because customers are being paid to participate in the study (and to stay on the rate) and will be randomly assigned to the three different TOU pilot rates. However, surveys will be used to assess customer awareness, understanding, and satisfaction and these metrics can be compared across rate options as an indirect measure of customer acceptance. Sample sizes will be large enough to produce valid survey data for a variety of customer segments.</p> <p>As part of the end-of-pilot survey in the summer of 2017, customers will be asked whether they would prefer to stay on the TOU rate or return to the OAT. They will also be asked if they would prefer one of the other TOU rates if they had an option. Following payment of the last portion of the incentive, which will be made after completion of the end-of-pilot survey, differential dropout rates will be tracked as an indicator of customer preferences.</p>

<b>Deliverable</b>	<b>PG&amp;E's Proposal</b>
<p><b>The impact of smartphone applications on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate.</b></p>	<p>PG&amp;E will divide pilot participants in half and offer the smartphone application to one group and not to the other. If acceptance of the application is great enough, an impact assessment will be conducted to determine whether the information provided through the application increased load response for rate participants who receive it. If application acceptance is too low, statistical matching will be used to develop a control group for estimating load impacts. Answers to survey questions pertaining to customer awareness, understanding and satisfaction, and other metrics will be compared between those who download the application and those who don't to determine whether there are significant differences in these metrics. Application acceptance rates will also be reported and compared across rate options and customer segments.</p>
<p><b>The impact of education and outreach (E&amp;O) materials that are tailored to various customer segments (including seniors, renters, and non-English speaking customers) and to certain cognitive profiles/customer personas on customer understanding of, acceptance of, and engagement with a TOU rate.</b></p>	<p>Surveys will be used to assess usefulness and preferences for each of the primary types of E&amp;O materials. Responses will be compared across rate options, customer segments and customer personas to determine whether different treatment groups, customer segments or customer personas find some materials more or less useful than others. Answers to survey questions pertaining to customer awareness, understanding, and satisfaction, and other metrics will also be compared across rate options, customer segments and customer personas to determine whether there are significant differences in these metrics.</p>

**Ensuring E&O material is appropriately tailored to a variety of different customers to ensure the success of the TOU pilots**

The transition of California IOU customers to TOU rates will be a complex process that requires extensive education and outreach to customers to help them understand TOU rates. It is important that the TOU pilots test E&O approaches that will help the IOUs ensure that the rollout of TOU as a default residential rate in 2019 is a success and that Californians see the value in the switch to TOU rates.

PG&E proposes to provide all pilot participants with a “Welcome Kit” at the start of the pilot, and follow-up direct mail and/or email communications in summer 2016, winter 2016-17, spring 2017 and summer 2017. These direct communications will be supplemented by dedicated web pages for each rate (including the control rate) and social media channels for each rate. In addition, approximately half of all pilot participants will be encouraged to download a smartphone application designed to help customers engage with their energy usage.

The direct communications will include key messages in large print and will be provided in customers’ preferred language (English, Spanish, Chinese and perhaps others, depending on participant demographics). Beyond this basic level of targeting, PG&E will also draw on various other customer data points, including its nine customer personas/psychographic profiles to ensure that its E&O messages are relevant and speak to the different motives behind customer energy usage behavior. We also support PG&E’s idea of providing climate-specific E&O.

We find PG&E’s E&O plan to be reasonable, and support the use of customer personas/psychographic profiles and other customer data points to craft targeted messaging for pilot participants. PG&E’s customer base is diverse and different customers will likely respond to TOU rates in different ways.

## **Technology**

PG&E proposes to conduct an ethnographic study of smart thermostat owners to develop a better understanding of customer behavior, preferences and expectations in regards to these devices. PG&E believes this would provide stakeholders with “critical real world experience around the potential value of

smart thermostats in the context of residential TOU rate treatments.” PG&E will not recruit additional customers to conduct this study; rather, thermostat owners will be identified through the course of recruitment and later asked to participate in the ethnographic study. The information PG&E seeks may be gathered through paper surveys, in-depth phone interviews, customers’ diaries of daily behaviors or focus groups. PG&E proposes to hire a consultant to refine the design of the study and to run it at a cost of \$400,000. Altogether, PG&E estimates that the study will cost \$500,000.

We appreciate that qualitative learnings are an important part of developing a full and complete understanding of smart thermostats. However, given the uncertainty around the specific details of the study, and the large incremental cost of the study, we do not approve the smart thermostat ethnographic study at this time. We believe that the qualitative information gathered through surveys and focus groups of customers participating in SCE and SDG&E’s smart thermostat technology treatments will provide a sufficient basis on which to decide whether or not to further pursue investigations of smart thermostats, TOU rates, and customer satisfaction and behavior. This is because thousands of customers are expected to be included in the SCE study of smart thermostat owners alone, and this is very large sample from which to draw conclusions about their behavior in response to TOU rates.

PG&E also proposes to offer a smartphone or web-enabled application to approximately half of all pilot participants. This application will convey a variety of useful information to pilot participants, such as “pricing information, TOU-specific performance feedback, energy savings tips informed by user-specific end use load-disaggregation and “gamification” features to encourage energy savings or load shifting.”<sup>25</sup> The study will primarily focus on the impact of the application on customer satisfaction and understanding of TOU. Depending on how many customers download the application, PG&E may also be able to assess the impact on the average peak and off-peak change in energy usage by those customers. The application will be offered via seasonal direct mail/email communications, as well as through two separate direct mail/email communications.

---

<sup>25</sup> Consultant Report at 65.

We find that PG&E's application treatment will provide important learnings about the potential for such technology to improve customer understanding of, acceptance of and engagement with TOU rates. The application represents an E&O approach that has not been previously tested and that has the potential to be offered to all customers in 2019. We approve PG&E's application treatment as proposed with one requirement: it must be available as a smartphone application or as mobile-friendly web application to ensure access to the application by the broadest swath of pilot participants.

### **Recruitment**

PG&E proposes to send recruitment letters to approximately 200,000 customers through direct mail. PG&E may also conduct outbound calling to customers who do not respond to a direct mail recruitment offer. PG&E does not plan to offer bill protection to pilot participants, due to concerns that it may dampen the load impacts of the TOU rates. The IOUs are conducting pre-tests to examine a number of facets of the recruitment process, including delivery channel, incentive amount, payment schedule, bill protection and the enrollment rates of different customer segments.

We find PG&E's recruitment approach to be generally reasonable, but recognize that many elements of the final recruitment drive will be impacted by the results of the IOUs' recruitment pre-tests. However, PG&E must offer bill protection to pilot participants if it is determined by Energy Division to be necessary to achieve recruitment targets and participant retention. If bill protection is ultimately offered, we order the bill protection credits to be recorded in PG&E's Residential Rate Implementation Memorandum Account (RRIMA), not in PG&E's Distribution Revenue Adjustment Mechanism.

We therefore order PG&E to consult with its pilot implementation consultant, Energy Division and the TOU Working Group on the final recruitment approach once the pre-test results become available.

PG&E will exclude from the pilots those customers included in P.U. Code § 745(c)(1) – which generally includes customers with a medical need for electricity

or who otherwise require special notice for disconnection. We note that “customers who the commission has ordered cannot be disconnected from service without an in-person visit from a utility representative,”<sup>26</sup> may include customers who are not already flagged in PG&E’s databases. In order to address this concern, PG&E will ask pilot participants during recruitment to certify that there is no one living in their home who has a medical issue that relies on a constant supply of electricity.

PG&E will use a third party data service to determine household characteristics (e.g. the federal poverty level of households) in order to target its recruitment to achieve the necessary samples. However, we order PG&E to also include questions in its recruitment materials to collect self-reported data on the following: household income, number of people in the household, number of seniors in the household, and whether the head of household is a senior. We order PG&E to consult with its pilot implementation consultant, Energy Division and the TOU Working Group to determine whether to use the third party data or the self-reported data to assign enrolled customers to sampling segments. PG&E must develop and maintain practices to assure that individual customer data confidentiality is maintained both within its own use of such records as well as in any reports to CPUC staff and the Working Group.

In addition, we order PG&E to provide in-language support to those customers who call PG&E to ask questions and/or to enroll in the pilot to further facilitate participation by non-English speaking customers.

### **Interaction of other customer communications with the experimental integrity of the TOU pilots**

The Decision requires PG&E to send paper bill comparisons to their customers twice per year starting in 2016.<sup>27</sup> It is likely that if TOU pilot participants receive these bill comparisons, the experimental integrity of the TOU pilot may be compromised. This is because customers receiving the comparison may be told that they would be better off under a different rate and therefore would be encouraged to leave the experiment at the same time that their participation is

---

<sup>26</sup> P.U. Code § 745(c)(1)

<sup>27</sup> D.15-07-001 at 142.

most critical. PG&E states that it will not send bill comparison reports to pilot participants. This is appropriate.

PG&E also proposes to shield pilot participants from recruitment outreach materials for E-TOU A and E-TOU B. We support this proposal as to do otherwise would confuse pilot participants about the nature of their own TOU rate and potentially persuade them to leave the pilot prematurely.

### **Evaluation and analysis of the data that emerges from the TOU pilots**

The vast amount of data that emerges from the TOU pilots will require extensive ex post measurement and evaluation (M&E) to produce the deliverables outlined in the previous section. Much of the information to be gathered from the TOU pilots will depend on surveys of pilot participants. This is particularly true concerning the explanations for behaviors underlying any shift or reduction in usage by pilot participants, and the attribution of the impacts of specific E&O materials on customer understanding of, acceptance of and engagement with a given TOU rate.

While both PG&E's advice letter and the consultant report attached to the advice letter begin the process of detailing the survey topics, surveying methodology, ex post measurement and evaluation, and evaluation criteria to be used to generate this information, we make no finding at this time concerning these items. Instead, we note that PG&E, along with the other IOUs and the TOU Working Group, will be scoping and issuing a Request for Proposals (RFP) for a survey and M&E consultant(s). Thus, we order PG&E to work closely with this consultant, the Energy Division and the TOU Working Group to develop the TOU pilot participant survey topics, surveying methodology, ex post M&E methodologies and evaluation criteria. Furthermore, with respect to the number of surveys, we direct PG&E to consult with the survey consultant, the Energy Division and the TOU Working Group to decide whether or not to survey pilot participants a third time after the summer of 2017, and whether or not to offer an incentive payment for completion of this survey.

We expect this working relationship to closely mirror that of the Project Coordination Groups (PCGs) that exist in the Energy Efficiency Evaluation,

Measurement and Verification Plan.<sup>28</sup> Specifically, we order PG&E to work with Energy Division and the TOU Working Group to initiate a Level 3 PCG, or Research Project Team, that is responsible for project scoping, and vetting of instruments and deliverables.

### **Post-Pilot Rate Migration**

Upon completion of the pilot, PG&E plans to provide pilot participants with information about PG&E's existing residential rate plans, including existing opt-in TOU rates (E-TOU-A and E-TOU-B). PG&E states that "[i]f a participating customer on the TOU Pilot rates (not control group) does not affirmatively choose another rate plan, they will be migrated to the E-TOU-A rate plan after the end of the pilot."<sup>29</sup> While pilot participants are free to *opt-in* to E-TOU-A, D. 15-07-001 finds that default TOU rates should begin in 2019, not 2018.<sup>30</sup> Therefore, we order PG&E to migrate pilot participants to the residential tiered rate in effect at the time, unless the customer explicitly chooses E-TOU-A or another rate schedule.

### **Cost of the TOU pilots**

In its TOU advice letter, PG&E estimated the cost of all three TOU pilots to be up to \$23,108,183. The actual costs will not be precisely known until after the pilots are completed, but PG&E states that this represents the highest costs that are expected.

These costs will be tracked in a memorandum account and their reasonableness will be assessed in a future CPUC proceeding.

---

<sup>28</sup> 2013-2015, Energy Division & Program Administrator, Energy Efficiency, Evaluation, Measurement and Verification Plan, Version 5, CPUC, May 2015 at 293-294. Generally, a Level 3 PCG discusses the research objectives, data collection instruments, and overall methodologies for a given study. The Level 3 PCG consists of IOU staff, ED staff, and any contractors/consultants.

<sup>29</sup> AL 4764-E at p. 9-8.

<sup>30</sup> D.15-07-001 at p. 172.

PG&E must include information on the actual costs incurred as the pilots progress in its quarterly Progress on Residential Rate Reform report.<sup>31</sup>

### **Approval of PG&E's TOU Pilot Plan advice letter**

We find the PG&E's proposed TOU pilots are largely sufficient to gather the required information and meet the required deliverables but must be modified as outlined in this Resolution. PG&E shall file a supplemental advice letter in compliance with this Resolution within 21 days. We conditionally approve the proposed tariffs in PG&E's advice letter, with the exception of Rate 3 as noted above, and order PG&E to file final updated tariffs and updated rate tables in the supplemental advice letter.

### **COMMENTS**

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the CPUC. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties on January 22, 2016.

PG&E filed comments on the draft of this resolution on February 16, 2016. PG&E made several suggestions for changes to the draft resolution as discussed below.

The CPUC considered comments that focused on factual, legal, or technical errors and made appropriate changes to the Resolution.

PG&E first argues that its pilot rate 3 should not be modified to include the price differentials outlined in this resolution. PG&E states that these differentials are too high and are not aligned with actual costs, which will lead to a revenue shortfall. They also argue that price differentials should be based on equivalent

---

<sup>31</sup> See D.15-07-001 at 299.

cent/kWh rate differences rather than particular ratios as used by this resolution. Finally, PG&E states that the Decision emphasized the exploration of default TOU rates that maximized customer acceptance, and therefore the price differentials for pilot rate 3 ordered by this resolution are inappropriate.

PG&E's suggested changes on this matter are rejected. Pilot rate 3 is designed to experiment with unusual rate differentials and hourly structures to determine if customers will accept it and if a significant revenue shortfall will occur, among other things. While PG&E asserts an ex ante judgment that customers will not accept pilot rate 3 and that it will result in an unacceptable revenue shortfall, we feel it is appropriate to wait until the data is collected to come to these conclusions. Further, we note that the Decision examined and relied on an array of price ratios to determine some elements of rate design structure, and we therefore decline to accept PG&E's assertion that the use of such price ratios is inappropriate.

PG&E seeks confirmation that its smartphone/web-enabled app need only be offered to half of its pilot participants, in order to test the effectiveness of the app by comparing app users to a control group that does not have access to the app. We confirm that this approach is appropriate.

PG&E seeks confirmation that references in this resolution to an implementation consultant actually refers to the Joint IOU Design Consultant. We use the terms interchangeably.

PG&E seeks a change to this resolution that confirms that the reference to the need to "consult" the TOU Working Group, Energy Division and the implementation consultant on changes to a final recruitment plan does not mean that unanimous TOU Working Group approval is required to proceed with recruitment plan changes. Instead, PG&E proposes that this resolution allow PG&E to unilaterally change its recruitment approach after informing the TOU Working Group, Energy Division and the implementation consultant of any potential changes. This would be done by amending the wording of the resolution to require informing the parties noted above, rather than consulting them.

We recognize that PG&E requires speedy resolution of recruitment questions in order to implement these pilots effectively. While we do not change the wording of this resolution as suggested by PG&E, we do note that we expect the TOU Working Group, Energy Division and the implementation consultant to respond very quickly to any changes requested by PG&E to its recruitment plan.

PG&E states in its comments that it does not plan to calculate bill protection on a monthly basis, but rather on an annual basis for each customer. We understand that the TOU Working Group is considering details related to the implementation of bill protection and therefore we do not approve or reject this proposal in this resolution.

PG&E argues that it should be allowed to record its bill protection costs in its Distribution Revenue Adjustment Mechanism (DRAM). They assert that as the cost of bill protection is actually a recovery of existing costs and authorized revenue requirements due to retroactive rate changes. In that sense, the cost of bill protection is similar to a revenue shortfall that would be experienced by decreased loads or sales. PG&E argues that such shortfalls are normally recovered through the DRAM or other balancing accounts. Finally, PG&E argues that bill protection costs should not be subject to a reasonableness review as the costs are simply the result of a mathematical calculation and do not involve any discretion of the part of the utility.

While we understand PG&E's perspective we reject their proposal on this matter. PG&E's assumes that bill protection in the context of the TOU pilots is a recoverable shortfall in revenue requirements analogous to unexpectedly low sales or an otherwise unavoidable retroactive change in rates that leads to a revenue shortfall. There are two reasons why this is not so.

First, bill protection is expressly used in these pilots as an incentive for participant recruitment and retention. As with the staggered incentive payment, which PG&E does not suggest be recorded in the DRAM, it is a financial tool that will be used to help keep customers enrolled in the pilots. Because of the very narrow and tactical purpose that these bill protection payments serve, and the limited context of the TOU pilots themselves, it is not comparable to retroactive changes to rates or revenue shortfalls due to low sales. Instead, bill protection

payments in this case are a subset of the overall costs related to the TOU pilots which must be recorded and assessed in PG&E's TOU Pilot Memorandum Account.

Second, the amount of money that is eventually spent by PG&E on bill protection will be directly related to the efforts made by PG&E to educate and inform pilot participants on the ways in which they can use their pilot rates to save money on their energy bills. As the number of pilot participants that utilize off-peak savings increases, the amount of money needed for bill protection will decrease. Bill protection expenditures are, therefore, not a simple matter of mathematics. The amount of bill protection paid by PG&E will indeed relate to PG&E's efforts on the E&O front. Therefore, we believe that the reasonableness of PG&E's bill protection expenses may be assessed at a later time, given the very narrow application of bill protection payments in the context of the TOU pilots.

Regarding in-language support for pilot participants, PG&E notes in their comments while there are a few major languages spoken in their territory, there is minimal penetration of other languages. While PG&E does not seek a specific change to this resolution on this topic, we clarify that PG&E is only expected to provide in-language support for those languages that it currently has the capacity to service.

PG&E seeks clarification that it is only the senior/non-senior status of a head of household that should be collected by an enrollment survey, rather than the absolute age of the head of household. We agree with PG&E and have made the appropriate change in this resolution.

PG&E points out that this resolution makes a typographical error on page 20 by referring to oversampling in PG&E's pilot rate 2 when it should refer to pilot rate 1. This change has been made.

In its comments, PG&E expressly accepts certain elements of this resolution, including the need to segment E&O by psychographic profile and/or persona, the need not to send paper rate comparisons to pilot participants, and the need to work closely with the TOU Working Group on implementation matters.

## **FINDINGS**

1. PG&E's proposed rate structures conform to D.15-07-001 (the Decision) and the Joint Assigned Commissioner's and Administrative Law Judge's Ruling (ACR or Ruling) of September 24, 2015 and are therefore acceptable, notwithstanding our required changes to PG&E's Rate 3.
2. We find that the mechanisms outlined in the TOU Working Group's final report are reasonable and should be used to guide the implementation of PG&E's TOU pilots.

## **THEREFORE IT IS ORDERED THAT:**

1. Pacific Gas & Electric Company's (PG&E's) Time-of-Use (TOU) Pilot Plan advice letter (AL 4764-E) is approved as modified herein.
2. PG&E shall modify the summer rates for Rate 3 to a 1:2 differential for off-peak to peak pricing (based on Tier 2 rates). For spring, we require PG&E to modify the Rate 3 rates to a 1:2 differential for super off-peak to peak pricing (based on Tier 2 rates).
3. PG&E shall draw on various customer data points, including its nine customer personas/psychographic profiles, to ensure that its education and outreach (E&O) messages are well-informed, relevant, and targeted to the different motives behind customer energy usage behavior.
4. PG&E's educational application must be available as a smartphone application or as a mobile-optimized web application to maximize access by all pilot participants.
5. PG&E shall consult with its pilot implementation consultant, Energy Division and the TOU Working Group on the following:
  - a. A final recruitment plan.
  - b. Whether it is necessary (as determined by Energy Division) to offer bill protection to pilot participants to achieve recruitment targets and participant retention; and if bill protection is offered, PG&E shall record the bill protection credits in its Residential Rate Implementation Memorandum Account.
  - c. Whether to use the third party data or the self-reported data to assign enrolled customers to sampling segments.

6. PG&E shall provide in-language support to those customers who call PG&E to ask questions and/or to enroll in the pilot.
7. PG&E shall include questions in its recruitment materials to collect self-reported data on the following: household income, number of people in the household, number of seniors in the household, and whether the head of household is a senior. PG&E must develop and maintain practices to assure that individual customer data confidentiality is maintained both within its own use of such records as well as in any reports to CPUC staff and the Working Group.
8. In the event that PG&E believes that its TOU pilots will not be able to collect the deliverables as outlined in this Resolution, PG&E is ordered to immediately notify the CPUC and the TOU Working Group and propose modifications to their TOU pilots and/or schedules that will ensure they collect these deliverables.
9. PG&E is ordered to ensure that the deliverables as outlined in this Resolution are presented as part of its January 1, 2018 Rate Design Window (RDW) filing for a default TOU rate and a menu of TOU rate options.
10. PG&E must work closely with the survey consultant, Energy Division and the TOU Working Group to:
  - a. Develop the TOU pilot participant survey topics, survey plan and the measurement and evaluation plan.
  - b. Decide whether or not to survey pilot participants a third time after the summer of 2017, and whether or not to offer an incentive payment for completion of this survey.
  - c. Initiate a Level 3 Project Coordination Group, or Research Project Team, that is responsible for TOU pilot measurement and evaluation scoping, and vetting of instruments and deliverables.
11. PG&E must ensure that paper bill comparisons are not sent to TOU pilot participants, including the control participants, in order to ensure the integrity and successful execution of the pilots.
12. PG&E must migrate pilot participants to the residential tiered rate upon completion of the TOU pilots and prior to the implementation of default

TOU in 2019, unless the customer explicitly chooses E-TOU-A or another rate schedule.

13. PG&E must include information on the actual costs incurred as the pilots progress in its quarterly Progress on Residential Rate Reform report.
14. PG&E shall file a supplement to AL 4764-E within 21 days of this Resolution's adoption with modifications reflecting the judgment of this Resolution.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on February 25, 2016; the following Commissioners voting favorably thereon:

---

TIMOTHY J. SULLIVAN  
Executive Director