California Statewide Opt-In Time-Of-Use Pricing Pilot: 2017 Customer Survey Appendices

Final Second Interim Evaluation

November 1, 2017

Prepared by

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November 1, 2017

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Appendices

The following appendices provide supplementary material for the California Statewide Opt-In Time of Use (TOU) Pricing Pilot 2017 Customer Survey Results for the second interim evaluation report.

- Appendix A presents the research questions addressed by the 2016 and 2017 customer surveys; the questions were proposed by the TOU Working Group (WG), refined by the Research Into Action evaluation team, and approved by the WG in the summer of 2016 (before the first survey) and again in the spring of 2017 (before the second survey).
- Appendix B presents the 2017 customer survey analysis plan reviewed and approved by the TOU Project Coordinating Group (PCG).
- Appendix C presents the 2017 customer survey materials, including the contacts (letters and emails), the introduction and closing survey scripts, and the questionnaire with a table mapping research questions to the survey questions.
- Appendix D includes a link to an interactive dashboard demonstrating how the economic index scores are calculated.
- Appendix E includes links to more statistical details for the key findings tables in the survey results sections for each IOU in second interim report.
- Appendix F includes links to the statistical results of each question in the 2017 customer survey, by IOU, climate region, and customer segment.

Appendix A. Research Questions Addressed by TOU Customer Surveys

A.1. Research Question Development

Table A-1 shows the full list of 118 detailed research questions derived from PCG and TOU Working Group meetings, and discussions with IOU, CPUC, and CAISO staff during the spring and summer of 2016. The overlapping detailed research questions were combined or collapsed into a final set of 29 general research questions.

Table A-1: Research Topics, Detailed Questions, and General Questions To Be Addressed by the 2016 and 2017 TOU Customer Surveys

Topic	Detailed Research Questions	General Research Questions
General financial hardship	Were customers struggling to pay their household bills?	Which customers experience issues with paying their bills (any bill and/or electric bill)?
	Did customers experience any prior bill payment issues (arrears/extensions/arrangements)	
	How closely do customers monitor their electricity bill each month?	
	Do customers experience general lifestyle hardship (e.g. cannot shift energy usage due to personal/household constraints)?	
	What is the hardship? (tradeoffs/financial/lifestyle/convenience/ comfort/health/safety/perception of bills/anxiety)	
	What are customer's energy burden? (percentage of household income that goes toward energy bill)	
	What are the difference sources and types of economic hardship?	
	What types of customers experienced economic hardship(s)?	
Hardship with TOU rates	Did TOU rates make it harder to pay their electric bill or household bills in general?	Do TOU rates cause or enhance economic, or lifestyle hardship?
	Do higher TOU rates for on-peak summer use exacerbate the potential that some (low income? fixed income?) seniors might reduce A/C use due to fear of high bills enough to impact or endanger their health, due to the differential impact of high temperatures on the elderly?	
	Is there increased concern about paying bills BECAUSE of the rates?	
	How many seniors and economically vulnerable households in hot areas would be likely to suffer unreasonable hardship if they are defaulted onto TOU rates?	

Topic	Detailed Research Questions	General Research Questions
	Do TOU rates cause customers to experience hardship (segmented by cool/moderate/hot, senior status, income, rent vs own, disability status)?	
	If we determine that TOU rates cause hardship, what specific aspects of the rate underlie their perception of that hardship? Do these underlying perceptions vary by rate assignment?	
	Is there a hardship that would not exist without the TOU rate? What is incremental hardship of the TOU rate?	
	Do customers think their bills since going on the TOU Rate are lower, higher, or about the same as last year?	How do customers' perceptions of their energy bills under TOU differ by pilot group and what is considered too much (and why)?
	To what degree is higher bill a problem?	
	What level of increase in a monthly bill would cause concern? (may differ by season)	
	Do bill credits/incentive influence initial views on hardship?	
	What is the emotional breaking point (I'm tired) vs. functional breaking points (I'm already efficient)? Are customers already there? Does this differ by TOU rate, segment, or climate zone?	What are customers' "breaking points" under the TOU rates, or the type of rate plan under which they are unable to do or keep track of?
	Are we at a breaking point? Emotional health/stress - "I'm already doing so much (outside of electricity)"	
	Is the thinking/planning too much?	
	How far can we go before reaching breaking point of feeling like we are doing too much, and does this vary by treatment and demographic?	
	Do customers feel they have control?	
Demographics	Type of employment (full time/part time/seasonal - at home/at office)	What are the demographic and lifestyle characteristics of customers, and do these characteristics predict self-reported hardship, level of curtailment, satisfaction and acceptance of rates, and ability to take action?
	Ethnicity/Race/Language	
	Children	
	Do customers with respiratory conditions experience more hardship due to TOU rates? Does this differ by treatment group?	
	Do disabled customers experience more hardship due to TOU rates?	
	What are the differences in all survey results by ME&O segment (environmentally savvy vs. needs first)?	

Topic	Detailed Research Questions	General Research Questions
Household characteristics	What household/structural characteristics restrict your ability to enact certain behaviors? (Example: multifamily units/noise/communal areas/ insulation/electric vs. gas)	What household/structural characteristics correlate with customers' ability to change behavior and/or saving energy?
	Are people with outdoor living spaces able to curtail more?	
	Are customers with electric heating able to pre-warm their homes?	
	Do customers who purchase/install thermostat behave differently than those who did not?	Do enabling technologies (e.g. smart thermostat) help customers to change behavior and/or save energy?
	Would having a smart thermostat help people to curtail more?	
	Is automation (smart thermostat) going to help customers change consumption behavior?	
Satisfaction with rate	Are customers satisfied with and accepting of the TOU rates (segmented by seniors, SmartAC status, customers with higher bills compared to prior year, customers with lower bills compared to prior year, structural winners vs structural losers)?	Are customers satisfied overall and with various aspects of their TOU rate plan, and why/why not? Does satisfaction differ by RCT group?
	Would customers stay on the same rate after the pilot ends?	
	What is the impact of a TOU-oriented usage alert on load reductions, customer acceptance and customer satisfaction with TOU pilot rates?	
	Would customers recommend this TOU rate to friends and family?	
	What do TOU customers view as the value proposition? Good for me/us/them? Do they think it's good for the community? What is larger value?	
	Do they feel more control and does that lead to greater satisfaction? Or do they feel overwhelmed?	
	Are customers okay with paying different prices during different times of day?	
	Does customer acceptance vary across TOU pilot rates and customer segments?	
	Are the peak periods too long? Do they come at a bad time?	
	To what extent did bill protection and incentive impact perception of rate?	
	Perceptions about utility - how agreeable are customers with their utility? Is favorability with utility predictive of satisfaction with the pilot?	What are customers' perceptions of their utility?
	What causes attrition in the pilot?	Why do customers opt-out or leave the pilot?

Topic	Detailed Research Questions	General Research Questions
Assessment of messaging and outreach	When they signed up, were they clear on the study details?	Did customers receive, read, and understand materials?
	How did people enroll in the pilot (sign up on web, phone recruitment, etc.)?	
	Do customers recall receiving their welcome kit? Did customers see it, read it, discuss it?	
	Was the welcome kit clear and easy to understand?	
	Were the seasonal mailings clear and easy to understand?	
	Were the tips clear?	
	Is the TOU bill easy to understand?	
	Did customers read materials they received?	
	Do the materials spur customers to take action?	What is the relevance of the materials and their self-reported impact on customer's actions/behaviors?
	What materials are most effective in enhancing customer acceptance and retention, engagement, satisfaction, knowledge of rates, etc.?	
	What materials and efforts will be most effective for creating customer awareness and satisfaction leading up to the default pricing in 2019?	
	Did the materials resonate with the customer - did the customer WANT to follow the tips?	
	What materials do TOU rate participants find most useful and most preferred?	
	Did the frame - broad vs specific - of the message resonate with the customers it is targeting?	
	Were tips relevant to the customer? Does this vary by climate zone?	
	Which type of messaging was more effective - Phone, mail, email?	What is the frequency and mode of communication of the materials preferred by customers?
	How was the frequency and mode of communication? Are customers getting enough information, too much information? Are they receiving info in a channel that works for them?	
Understanding of how rates work	Do you remember that you are in this pilot?	Are customers aware they are in the opt-in pilot and that they were not on TOU rates before?
	Are customers aware that they were not on a TOU rate before?	
	Were customers aware of TOU rates before joining the pilot?	Do customers understand TOU
	Do customers find their rate easy to understand?	

Topic	Detailed Research Questions	General Research Questions
	Do customers understand that the cost of energy varies by time of day/ peak period?	rates, generally what peak periods are, and why they are designed this way?
	For almost 15 years the state and IOUs have been communicating peak as hot summer afternoons. Is the shift of peak to later in the day, late afternoon and early evening confusing?	
	Does the degree of awareness/knowledge of TOU-type things affect the level of understanding of the rate? Does it affect their ability to shift load.	
	Do customers understand why the peak period is when it is?	
	Does it make sense for TOU periods to be consistent between work and home for small business owners?	
	Do customers understand WHY TOU is happening?	
	Do customers understand that they could save money across the year?	Do customers perceive a benefit from TOU rates and do customers understand how they can be successful in managing their bill?
	What do customers view as the value proposition?	
	Do customers understand the value in looking at their bills over time/annually?	
	Do they understand the value of curtailing or shifting load across a day and how much that can save them (within a day)?	
	Do customers understand bill protection?	
	What suggestions do customers have for improving understanding/tools/materials?	What are customers' suggestions for improvements?
Actions taken	How easy was it to take action?	How easy or difficult is it for customers to take action to save energy or shift load?
	Have customers experienced other TOU-type things (costs varying based on demand) in other aspects of life? (e.g. matinees) Have customers taken action to respond to pricing like this?	
	Barriers to taking actions? What keeps customers from being able to shift/curtail?	What are the barriers to taking action?
	Would customers continue to shift/curtail even without the rate?	Do customers show persistence of taking actions?
	Do customers take alternative actions by going outside of the home and does this differ by rate type?	What are the changes in customer behavior during the pilot, and cause(s) of these changes?
	What are customers going to do to shift off the evening peak hours?	
	How will they change their consumption behavior?	

Topic	Detailed Research Questions	General Research Questions
	What electric loads can be turned off during the day? What loads can be turned down during the evening?	Are customers changing how they use appliances and technology because of the rate?
	Can we incentivize customers to consume at different times?	
	Will prices be sufficient to get people to change their energy consumption behavior?	
General attitudes/awareness towards EE and DR	Are customers aware of EE and DR, and what do they think of these each?	What are customers' attitudes and behaviors towards EE and DR?
Website / Tools/ App use	Would customers be interested in reminders? What channel would they prefer?	What kind of technology are customers interested in as a result of the pilot?
	Is there some scope for using EV or storage?	
	Do people know they were offered the app?	What is customers' awareness and frequency of use of the apps and websites?
	Did customers download the app?	
	Did customers download the thermostat app?	
	Did customers download the SDG&E app?	
	Did customers use the app? Frequently or just once?	
	Was the SDG&E app easy to use?	Are customers satisfied with the app, alerts, and are they useful/valuable?
	Are customers satisfied with the SDG&E app?	
	Satisfaction with app?	
	Was the SDG&E app useful/valuable? How?	
	Is the app helpful? How is it helpful? If no, why not?	
	Did the app make customers more comfortable with their rate?	
	How long does it take for customers to turn off the push notification in the SDG&E app? And, why it was turned off?	What are the best features of and any improvements that should be made to the app(s)/alerts?
	What feature(s) stood out in the app?	
	What enhancements would customers like made to the app?	
	Do customers know what a smart thermostat is?	What is the level of awareness, uptake, and interest in smart thermostats?
	Uptake rate of the thermostat rebate (by climate zone, rate type, etc.)?	
	What is the best price point for the smart thermostats?	
	How quickly do customers install the thermostat?	
	Did customers own smart thermostat before Pilot?	

Topic	Detailed Research Questions	General Research Questions
	Do survey results regarding the app/thermostat vary by SDG&E segments?	Are there differences in actions taken, satisfaction, or understanding of rates by thermostat/app users vs. non-users?
	What is the impact of a smart phone app on load reductions, customer acceptance, and customer satisfaction with TOU rates?	
	Do customers with smart thermostat use SDG&E app differently than those without smart thermostat?	
Motivations for participating in Pilot	Why did customers opt in? Bill protection/incentive/etc.?	What are customers' motivation(s) for opting-in and participating in the pilot?
	Why did customers actively participate? Does this differ by rate/segment? Attitudinal and structural barriers?	
	Would customers have participated without being paid?	

A.2. Research Question Mapping

Table A-2 maps the 29 general research questions to CPUC deliverables as specified by Resolution E-4762.

Table A-2: Research Questions Mapped to CPUC Resolution E-4762

CPUC Deliverable	TOU Working Group Research Questions
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. (pg. 21)	• Which customers experience issues with paying their bills (any bill and/or electric bill)? • Do TOU rates cause or enhance economic, or health hardship? • How do customers' perceptions of their energy bills under TOU differ by pilot group (treatment and control) and what is considered too much (and why)? • What household/structural characteristics correlate with customers' ability to change behavior and/or saving energy? • How easy or difficult is it for customers to take action to save energy or shift load? • What are the barriers to taking action? • Do customers show persistence of taking actions? • What are the changes in customer behavior during the pilot, and cause(s) of these changes? Are customers changing how they use appliances and technology because of the rate?

CPUC Deliverable	TOU Working Group Research Questions
The impact of a given TOU rate on how CARE/FERA customers and non-CARE/FERA customers – in PG&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. (pg. 23)	• Which customers experience issues with paying their bills (any bill and/or electric bill)? • Do TOU rates cause or enhance economic or health hardship? • How do customers' perceptions of their energy bills under TOU differ by pilot group (treatment and control) and what is considered too much (and why)? • What household/structural characteristics correlate with customers' ability to change behavior and/or saving energy? • How easy or difficult is it for customers to take action to save energy or shift load? • What are the barriers to taking action? • Do customers show persistence of taking actions? • What are the changes in customer behavior during the pilot, and cause(s) of these changes? Are customers changing how they use appliances and technology because of the rate?
The level of customer understanding, acceptance, and engagement while taking service on a given TOU rates among various customer segments. (pg. 23)	• Are customers aware they are in the pilot and that they were not on TOU rates before? • Do customers understand TOU rates, generally what peak periods are, and why they are designed this way? • Are customers satisfied overall and with various aspects of their TOU rate plan? Does satisfaction differ by RCT group? • Do customers perceive a benefit from TOU rates and do customers understand how they can be successful in managing their bill?
The impact of SDG&E smartphone applications on energy usage and/or customer understanding, acceptance, and engagement while taking service on a given TOU rate. (pg. 24)	• What is SDG&E customers' awareness and frequency of use of the apps? • Are SDG&E customers satisfied with the app and is it useful/valuable? • What are the best features of and any improvements that should be made to the app(s)? • What kind of technology are customers interested in as a result of the pilot? • Do enabling technologies (e.g. smart thermostat) enable customers to change behavior and/or save energy?
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 of, acceptance of, and engagement with a TOU rate. (pg. 24)	• Did customers receive, read, and understand materials? • What is the relevance of the materials and their self-reported impact on customer's actions/behaviors?

Table A-3 maps the 29 general research questions to the 2016 and 2017 customer surveys.

Table A-3: Research Questions Mapped to the 2016 and 2017 Customer Surveys

		2016 Survey				2017 Survey			
Topic	Research Questions	CORE	Non-CORE	Analysis	Other data/ research	CORE	Non-CORE	Analysis	Other data/ research
General financial hardship	Which customers experience issues with paying their bills (any bill and/or electric bill)?	X				X			
	What are the sources and types of economic hardship, and types of customers experiencing hardship(s)?	X				X			
745 Resolution Questions	How and why do TOU rates cause or enhance economic and/or health hardship (if at all)?	X				Added Health Qs			
	What are customers' perceptions of their energy bills under TOU and what is considered too much (and why)? Does this vary by segment, RCT group, or climate zone?	Percept-ions		Vary by group	Too much and why	Percept-ions		Vary by group	Too much and why
	What are customers' "breaking points" under the TOU rates, or the type of rate plan under which they are unable to do or keep track of anything else?	X				X			

Topic	Research Questions	2016 Survey				2017 Survey			
		CORE	Non-CORE	Analysis	Other data/ research	CORE	Non-CORE	Analysis	Other data/ research
Demographics	What are the demographic and lifestyle characteristics of customers, and do these characteristics predict hardship, level of curtailment, satisfaction and acceptance of rates, and ability to take action?	Character-istics		Predict		Character-istics	Character-istics	Predict	
Household Characteristics	What household/structural characteristics enable/prevent customers from changing behavior and/or saving energy?	Character-istics	Character-istics	Enable/ Prevent		Character-istics	Character-istics	Enable/ Prevent	
	Do enabling technologies (e.g. smart thermostat) enable customers to change behavior and/or save energy?		Has Smart T-stat	Enable			Has Smart T-stat	Enable	
Satisfaction with Rate	Are customers satisfied overall and with various aspects of their TOU rate plan, and why/why not? Does satisfaction differ by RCT group?	Satisfied		Vary by group	Why/why not?	Satisfied		Vary by group	Why/why not?
	What are customers' perceptions of their utility?	X				X			
	How easy or difficult is it for customers to take action to save energy or shift load?	X				X			
	Why do customers opt-out or leave the Pilot?				X				X

Topic	Research Questions	2016 Survey				2017 Survey			
		CORE	Non-CORE	Analysis	Other data/ research	CORE	Non-CORE	Analysis	Other data/ research
Assessment of Messaging and Outreach	How did customers enroll (web/mail/phone) and was the information they received effective/clear?	Welcome packet and other info			Enroll	Info sent since 12/2016			Enroll
	Did customers receive, read, and understand materials?	X	X			Receive	Under-stand		
	What is the relevance of the materials and their impact on customer's actions/behaviors?	Relevance						Impact	
	What is the frequency and mode of communication of the materials preferred by customers?		Language		Frequency and mode				Frequency and mode
Understanding of How Rates Work	Are customers aware they are in the Pilot and that they were not on TOU rates before?	Aware				Aware			
	Do customers understand what the peak period and price of electricity is, and why it is designed this way?	X				Period and pricing	Why		
	What is the value proposition for participating customers and do customers understand how they can save money on the energy bills?	X							X
	What are customers' suggestions for improvements?				X				X

Topic	Research Questions	2016 Survey				2017 Survey			
		CORE	Non-CORE	Analysis	Other data/ research	CORE	Non-CORE	Analysis	Other data/ research
Actions taken	Have customers experienced demand-based pricing scenarios outside the Pilot and what is impact of this experience on their Pilot experience?				X				X
	What are the barriers to taking action?	X				X			
	Do customers show persistence of taking actions?					X		X	
	What are the changes in customer behavior during the Pilot, and cause(s) of these changes? Do actions taken vary by RCT group or segment?					X		X	
General attitudes and awareness towards EE and DR	Are customers aware of EE and DR, and what do they think of these each?	EE only				EE and DR			
Website/ Tools/ App use	What kind of technology are customers interested in as a result of the pilot?						X		
	What is customers' awareness and frequency of use of the apps?		PG&E				SDG&E		
	Are customers satisfied with the app and is it useful/valuable?		PG&E				SDG&E		

Topic	Research Questions	2016 Survey				2017 Survey			
		CORE	Non-CORE	Analysis	Other data/ research	CORE	Non-CORE	Analysis	Other data/ research
	What are the best features of and any improvements that should be made to the app(s)?		PG&E				SDG&E		
	What is the level of awareness, uptake, and best price point of smart thermostats?		Awareness and uptake		Price point		Awareness and uptake		Price point
	Are there differences by thermostat/app users vs. non-users?							X	
Motivations for participating in Pilot	What are customers' motivation(s) for opting-in and participating in the Pilot?	X			X				X

Table A-4 maps the 29 research questions and related research issues to questions in the 2017 TOU customer survey.

Table A-4: Research Questions Mapped to 2017 Customer Survey Questions

Research Questions	Research Issues	Associated Questions
Which customers experience issues with paying their bills (any bill and/or electric bill)?	Issues paying energy bill/Tradeoffs under TOU	Q11, Q12, Q24
	Financial well-being	Q9, Q10
	Sources of hardship	Q28, Q29, Q30
Do TOU rates cause or enhance economic, or lifestyle hardship?	TOU cause/enhance hardships	Q14, Q15, Q16, Q17, Q18, Q19, Q20
How do customers' perceptions of their energy bills under TOU differ by pilot group and what is considered too much (and why)?	Perception of energy bills under TOU	Q13
What are the demographic and lifestyle characteristics of customers, and do these characteristics predict self-reported hardship, level of curtailment, satisfaction and acceptance of rates, and ability to take action?	Respondent's name on bill	Q1
	Age of respondent	Q23 in 2016 survey
	Education of respondent	Q25
	Race/ethnicity of respondent	Q32
	Annual household income	Q26
	Employment status of respondent	Q27
	Number and age of household members	Q31
	Household members with disability/medical condition	Q29, Q30
What household/structural characteristics correlate with customers' ability to change behavior and/or saving energy?	Own/rent home	Q34
	Type of building/home	Q35
	Size of home (bedrooms)	Q35 in 2016 survey
	Household occupancy times	Q33
	Type of cooling equipment in home	Q36
	Type of heating equipment in home	Q37
Do enabling technologies (e.g. smart thermostat) help customers to change behavior and/or save energy? (ACTIONS TAKEN can get at changes in behavior)	Thermostat for cooling and/or heating in home	Q38
	Type of thermostat	Q39
	Thermostat settings	Q40
	Smart technologies in home	Q53
	Satisfaction with and usefulness of smart technologies	Q54, Q55

Research Questions	Research Issues	Associated Questions
	Interest in smart technologies	Q56
Are customers satisfied overall and with various aspects of their TOU rate plan, and why/why not? Does satisfaction differ by RCT group?	Overall satisfaction with the rate	Q3
	Satisfaction with TOU components and benefits received	Q4
What are customers' perceptions of their utility?	Favorability towards utility	Q3
Did customers receive, read, and understand materials?	Awareness and consumption of the program materials (bill protection)	Q41, Q42, Q43, Q44, Q45
What is the relevance of the materials and their self-reported impact on customer's actions/behaviors?	Satisfaction with the program materials in relation to the relevance to customer's behaviors	Q47, Q48
Are customers aware they are in the opt-in pilot and that they were not on TOU rates before?	Recall participation	Q2
	General awareness of TOU concept	Q5
Do customers understand TOU rates, what peak periods generally are, and why the rates are designed this way?	Awareness of TOU plan details	Q6, Q7
	Awareness of reasons for TOU rates	Q8
Do customers perceive a benefit from TOU rates and do customers understand how they can be successful in managing their bill?	Understand how to manage bill	Q4, Q5, Q6, Q19
How easy or difficult is it for customers to take action to save energy or shift load?	Extent of behavior change implemented	Q21
	Level of ease to implementing behavior change	Q22
What are the barriers to taking action?	Barriers to implementing behavior change	Q23
What are the changes in customer behavior during the pilot, and cause(s) of these changes? Are customers changing how they use appliances and technology because of the rate?	Behavior changes implemented	Q19 in 2016 survey and Q21 in 2017 survey
What is customers' awareness and frequency of use of the apps and websites?	Awareness of the pilot website	Q46
	Usefulness of pilot website	Q47
	Awareness of the pilot app for smart phone users	Q49
	Rate of downloading the pilot app	Q50
	Ways participants are using the pilot app	Q51

Research Questions	Research Issues	Associated Questions
Are customers satisfied with the app, and what are the best features of and any improvements that should be made to the app(s)/alerts?	App/Alert features and satisfaction	Q51, Q52
What are customers' attitudes and behaviors towards EE and DR?	Awareness, knowledge, attitudes	Q24

Appendix B. 2017 TOU Customer Survey Analysis Plan

The following memorandum is the analysis plan for the 2017 customer survey, drafted by Research Into Action, and reviewed and approved by the PCG.

Memorandum

To: TOU Working Group

From: Benjamin Messer, Zac Hathaway, Jordan Folks, and Jane Peters, Research Into Action

Date: August 15, 2017

Re: 2017 Survey Analysis Plan

This memo describes Research Into Action's analysis plan for the 2017 survey. This survey is the second of two surveys and, coupled with the impact results, are designed to inform the 2018 Default Pilot and eventual roll-out of default TOU rates across California.

The 2016 and 2017 opt-in pilot was required by the CPUC July 2015 decision D15-07-001 in the Residential Rate Reform OIR (R12-06-013). A TOU Pilot working group was formed to design the opt-in pilot with assistance from Nexant who documented the plan in the December 2015 report "Time-of-Use Pricing Opt-in Pilot Plan." The three IOUs then filed advice filings with the IOU specific detailed plans which were adopted, as modified, in Resolutions E-4762(PG&E), E-4761(SCE), and E-4769(SDG&E). The resolutions describe expected deliverables of the opt-in pilot, and are the basis of this research plan.

During May and June of 2015, the research team worked with the California Public Utilities Commission (CPUC), the individual Investor Owned Utilities (IOUs), and the TOU Working Group to develop a list of research questions for the pilot survey. The list was updated for the 2017 survey after discussions with the CPUC and IOUs during April and May of 2016. The multifaceted needs of this pilot present challenges to developing a honed list of research questions. The goals of the opt-in pilot are to:

- Allow the IOUs and CPUC to identify the effects of different pilot TOU rates relative to the current tiered rate structure,
- Estimate load impacts for tested opt-in pilot rates,
- Assess the degree of hardship for some customers that may result from the opt-in pilot TOU rates – particularly on vulnerable populations in hot climate zones,
- Assess the effectiveness of the messaging and outreach, customer understanding, acceptance, and satisfaction of TOU rates, and
- Assess whether enabling technologies mitigate load impacts and increase satisfaction with TOU rates.

The team worked with the TOU Working Group to design a survey to answer, in part, the goals of the opt-in pilot. This memo provides an outline of the analysis plan Research Into Action will follow for analyzing data from the 2017 TOU survey. We will analyze customers' responses to survey questions to answer specific research questions the team developed from the 2016 and 2017 opt-in pilot survey research plans.

First, our analysis will help answer several broad questions about the impact of TOU rates that were specified by the CPUC in its resolutions,[1] with an emphasis on understanding customers' experiences during the period from December 2016 to when they completed the survey (between June and August 2017):

- Did customers experience hardship?
- What are barriers to load shifting or load reduction activities?
- Are certain behaviors or activities higher among customers on TOU rates compared to OAT?
- Are customers aware, do they understand, are they satisfied with rate?
- How useful were the outreach and other Pilot materials?
- Do customers understand bill protection, receive a letter about their bill protection, and know when bill protection ends?

Second, the analysis will provide insights within specific customer segments in three climate regions. To both comply with the CPUC's requirements in its resolutions and for consistency with the way load and bill impacts will be reported by Nexant, we will perform treatment versus control comparisons among the climate regions and customer segments listed in Table B-1 for each IOU across RCT groups (Rates 1, 2, and 3 compared to Control).

Table B-1: Climate Regions and Segments Included in Comparisons Between Control and Rate Groups

Climate region	Segments
Hot	Seniors
	<=100% FPG
	100-200% FPG
	Non-CARE/FERA*
	CARE/FERA*
	CARE/FERA-eligible*
Moderate	Non-CARE/FERA
	CARE/FERA
Cool	Non-CARE/FERA
	CARE/FERA

* PG&E Control and Rate 1 groups and SCE Control and Rate 2 groups will exclude the oversample to avoid skewing the populations toward the oversampled seniors and low-income customers.

[1] Please refer to Appendix A for an illustration of how the CPUC's mandated deliverables directly match to the research questions developed by the Time-of-Use Working Group.

Overall, we will replicate analyses and reporting from 2016 survey (in the first interim report) for the questions in the 2017 survey that are the same as the questions in the 2016 survey. This will ensure consistency in the analysis and reporting of results between the first and second interim reports, and will facilitate comparisons between 2016 and 2017 results. For the new questions we added to the 2017 survey, we will analyze and report results using similar methods and formatting as we use for analyzing and reporting the results from questions we included in both the 2016 and 2017 surveys. Similar to the 2016 survey analysis, we will take the following five steps to analyze the 2017 survey data:

1. **Validate Data:** Prior to analyzing the data, we will review the survey dispositions and question response frequencies by climate region/customer segment/rate group to assess whether the response rates at both the survey and question levels show evidence of threats to validity and reliability. We will flag and strongly consider excluding questions where the response rates differ between the control and treatment groups.
2. **Review Initial Frequencies and Crosstabs:** We will calculate frequencies of customers' responses for each survey question and by each TOU segment. For example, we will conduct crosstabs for each survey question by RCT group, and depending on sample size, we will partition crosstabs by segment (e.g. comparisons between the control and treatment groups for CARE/FERA customers in the hot region).
3. **Assess differences in responses between control and treatment groups:** We will conduct the appropriate bivariate analyses between variables and climate regions/customer segments/rate groups to determine whether there are statistically significant differences between groups. The team will use t-tests for comparing means of interval variables, z-test for differences in proportions of bivariate variables, and chi-square tests for comparing distributions between categorical variables.
4. **Create hardship metrics:** We will use exploratory factor analyses (EFA) methods to combine multiple survey questions or items into one variable for analyses. We will focus our factor analyses on survey questions directly applicable to financial and health hardship. In this step, we anticipate using a maximum likelihood extraction method with a varimax rotation. If the data are not normally distributed, or we find the resulting factors are highly correlated, we will consider other extraction and rotation methods.
5. **Assess degree of incremental hardship due to TOU rates:** We will perform mean and/or proportion comparisons to determine whether hardship varies by experimental treatment group. Section 1.2 describes the hardship analysis in more detail. We will also assess whether TOU rates cause a change in respondents' understanding of rates, energy-saving actions taken by customers, and customer satisfaction.

Please note that the specific analyses described in this memo may change depending on the distribution of responses we observe in the survey data. For example, if most responses to a rating-type question are nines or tens on a zero to ten-point scale, we may have to exclude that question from our analyses. While we endeavored to avoid this issue by wording questions a specific way, we cannot entirely predict whether this will happen. Thus, while we will make our best effort to follow this analysis plan as written, we may have to deviate from it if the data flout statistical assumptions.

Also, after the second interim report is completed, we will draft an analysis plan for analyzing differences in results between the 2016 and 2017 surveys for select questions that are included in both surveys. We plan to conduct the analyses in late-2017 and early-2018, and the results of these

comparison analyses will be reported in an appendix or in the final report. We will discuss which survey questions to analyze and the reporting timing/methods in a future meeting(s) with the PCG.

Detailed Analyses by Research Topic

This section outlines our general analytical approach to answer each research question outlined in the opt-in TOU survey research plan. We organize each research question under the 10 broader research topics.

General Financial Hardship

Research Question: Which customers experience issues with paying their bills (any bill and/or electric bill) since December 2016?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- Since December 2016, how well do these statements describe you and your situation? 1) Because of my money situation, I feel like I will never have the things I want in life. 2) I am just getting by financially. 3) I am concerned that the money I have won't last. (Q9)
- How often does the following statements apply to you? 1) I have money left over at the end of the month. 2) My finances control my life. (Q10)
- Since December 2016, how many times, if at all, has your household had difficulty paying your bills? (Q11)
- How did your household afford to pay electricity bills and/or other basic needs since December 2016? (Q12)
- Using a scale of 0 to 10 where 0 means do not agree at all, and 10 means completely agree, please tell me how much you agree with each statement. 1) I often worry whether there is enough money to pay my electricity bill. (Q24)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.
- Include questions 9 - 12 for use as variables in hardship analyses (see Section 1.2 for more details).

Hardship with TOU Rates

Research Question 1: Did TOU rates cause or enhance economic or health hardship since December 2016?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

Economic Hardship:

- Since December 2016, how well do these statements describe you and your situation? 1) Because of my money situation, I feel like I will never have the things I want in life. 2) I am just getting by financially. 3) I am concerned that the money I have won't last. (Q9)
- How often does the following statements apply to you? 1) I have money left over at the end of the month. 2) My finances control my life. (Q10)
- Since December 2016, how many times, if at all, has your household had difficulty paying your bills? (Q11)
- How did your household afford to pay electricity bills and/or other basic needs since December 2016? (Q12)
- Using a scale of 0 to 10 where 0 means do not agree at all, and 10 means completely agree, please tell me how much you agree with each statement. 1) I often worry whether there is enough money to pay my electricity bill. (Q24)

Health Hardship: We will perform three analyses to measure health hardship. First, we will replicate the analysis conducted for the first interim report, looking at the number of medical events due to heat for households with AC and a household member with a disability. Second, we will conduct the same analysis with questions about the number of medical events due to cold, for those with electric heating equipment and a household member with a disability. Third, we will conduct an exploratory factor analysis with all the health-related survey questions to construct a health hardship metric, similar to the economic hardship metric.

- On warm days since December 2016, how often, if ever, were you or any members of your household uncomfortably hot inside your home because you were trying to save money on your electricity bill? (Q14)
- On warm days since December 2016, how often, if ever, did you or any members of your household need medical attention because it was too hot inside your home? (Q15)
- On cold days since December 2016, how often, if ever, were you or any members of your household uncomfortably cold inside your home because you were trying to save money on your electricity bill? (Q16)
- On cold days since December 2016, how often, if ever, did you or any members of your household need medical attention because it was too cold inside your home? (Q17)
- Since December 2016, how often, if ever, was the health of you or any members of your household not good? Please select only one. (Q18)
- Since December 2016, how often, if ever, did the poor health of you or any members of your household keep you or them from doing usual activities, such as self-care, work, or recreation? Please select only one. (Q19)
- Since December 2016, how often, if ever, was the poor health of you or any members of your household at least partially caused by trying to manage your household's electricity usage or bills? Please select only one. (Q20)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Create the financial hardship index used in the first interim report for use in hardship analyses.
- Create a health hardship metric for heat-related health effects for households with AC and a person(s) with a disability.
- Create a health hardship metric for cold-related health effects for households with AC and a person(s) with a disability.
- Create a health hardship index using exploratory factor analysis for use in hardship analyses.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) of each metric across climate regions/customer segments/rate groups.

Research Question 2: How do customers' perceptions of their energy bills under TOU differ by pilot group (treatment and control) since December 2016?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent would you agree with the following statements about your current study rate plan? 6) The rate is affordable (Q4)
- Since December 2016, has your household's electricity bills been high, lower, or about the same as you expected? (Q13)

Analyses: The team will perform the following analyses with the survey question to answer the first part of the research question regarding how customers perceive their energy bills under TOU.

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Demographics

Research Question: What are the demographic and lifestyle characteristics of customers who responded to the 2017 survey?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question. We will analyze and interpret findings from respondent-level and household-level demographic questions separately.

Household Level Questions:

- Which of the following best describes your household's annual income in 2016, before taxes? (Q26)

- Since December 2016, have you or other members of your household experienced any of the following? (Q28)
- Do any of following apply to you or others in your household? 1) Has a serious disability, respiratory condition, or other serious medical condition. 2) Receives disability payments. (Q29)
- Does anyone in your household have a disability or serious medical condition that requires any of the following item? 1) Your home to be cooled on warm days. 2) Your home to be heated on cool days. 3) You to use more energy for medical equipment. 4) Them to be home most of the day. (Q30)
- How many people in each of the following age categories lived in your home since December 2016, not including yourself? 1) Under 6 years old. 2) Between 6 and 17 years old. 3) Between 18 and 64 years old. 4) Between 65 and 84 years old. 5) 85 years or older. (Q31)

Respondent-Level Questions:

- Which of the following best describes the highest level of education you completed? (Q25)
- What is your current employment status? (Q27)
- Which categories describe you? 1) American Indian or Alaska Native. 2) Asian. 3) Black or African American. 4) Hispanic, Latino, or Spanish origin. 5) Native Hawaiian or Other Pacific Islander. 6) Middle Eastern or North African. 7) White. 8) Some other race, ethnicity, or origin. (Q32)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Household Characteristics

Research Question 1: What are the household/structural characteristics of customers who responded to the 2017 survey?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed separately for answering the research question:

- During the past six months, was there someone usually home during each of the following times on weekdays and weekends? 1) Morning. 2) Afternoon. 3) Evening. 4) Night. (Q33)
- Do you or others in your household own your home, rent your home without subsidized housing assistance, or rent your home with subsidized housing assistance? (Q34)
- What kind of house or building do you live in? (Q35)
- Do you have the following items for cooling your home? For the items you have in your home, please mark how often you've used them to cool your home on warm or hot days since December 2016. 1) Central air-conditioning system. 2) Room air conditioning unit that is portable or attached to your window. 3) Ceiling or portable fan(s). 4) Other cooling equipment. (Q36)

- Do you have the following items for heating your home? For the items you have in your home, please mark how often you've used them to heat your home on cool or cold days since December 2016. 1) Electric furnace. 2) Gas furnace. 3) Baseboard heating. 4) Wall or cadet heater. 5) Portable or space heater. 6) Other heating equipment (Q37)
- Does your home have a thermostat to control your cooling and/or heating equipment? (Q38)
- Is your thermostat programmable? (Q39)
- What temperature do you typically set your thermostat at in late afternoon and evening times on cold weekdays and weekends? (Q40)
- "Smart" devices and appliances are now available that connect to your home's Wi-Fi and have advanced features, like the ability to remotely control it from a smartphone or tablet, and to automatically turn off or adjust when no one is home, when not in use, and/or when electricity prices are highest. Does your home any of the following "smart" devices or appliances? 1) Smart thermostat to control heating and/or cooling, like the Nest or Ecobee. 2) Smart light bulbs, like Philips Hue, GE Link, or LIFX. 3) Smart refrigerator. 4) Smart clothes washer or dryer. 5) Smart dishwasher. 6) Smart water heater and/or water heater controller. 7) None of the above. (Q53)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Research Question 2: Do enabling technologies (e.g. smart thermostat, appliances, etc.) help customers to change behavior and/or save energy?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- "Smart" devices and appliances are now available that connect to your home's Wi-Fi and have advanced features, like the ability to remotely control it from a smartphone or tablet, and to automatically turn off or adjust when no one is home, when not in use, and/or when electricity prices are highest. Does your home any of the following "smart" devices or appliances? 1) Smart thermostat to control heating and/or cooling, like the Nest or Ecobee. 2) Smart light bulbs, like Philips Hue, GE Link, or LIFX. 3) Smart refrigerator. 4) Smart clothes washer or dryer. 5) Smart dishwasher. 6) Smart water heater and/or water heater controller. 7) None of the above. (Q53)
- On a scale of 0 to 10, where 0 means not satisfied at all and 10 means extremely satisfied, how satisfied are you with your smart devices or appliances? (Q54)
- On a scale of 0 to 10, where 0 means not useful at all and 10 means extremely useful, how useful are your smart devices or appliances at helping your household reduce or shift your energy usage? (Q55)
- On a scale of 0 to 10 where 0 is not interested at all to 10 extremely interested, how interested are you or members of your household in having these smart devices or appliances in your home? (Q56)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Satisfaction with Rate

Research Questions: Are customers satisfied overall and with various aspects of their TOU rate plan and their IOU since December 2016, and does satisfaction differ by RCT group?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- On a scale of 0 to 10, where 0 means not satisfied at all and 10 means extremely satisfied, how satisfied are you overall with the following? 1) Your current electricity plan. 2) [IOU NAME]. (Q3)
- On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent would you agree with the following statements about your current study rate plan? 1) The rate is easy to understand. 2) The rate is fair. 3) The rate provides me with opportunities to save money. 4) The new rate is better than my old rate. 5) The rate works with my household's schedule. 6) The rate is affordable. 7) My electricity bill is easy to understand. 8) My electricity bill helps me understand the time of day I'm spending the most money on electricity. 9) The peak and off-peak time periods are easy to remember. 10) I would recommend my electricity rate plan to friends or family. 11) I want to stay on my new rate plan after this study ends. (Q4)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Assessment of Messaging and Outreach

Research Questions 1: Did customers receive materials they were sent since December 2016?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- Since December 2016, [IOU] has sent you seasonal newsletters with seasonal tips to help you manage your electricity use. Do you remember receiving any of these newsletters? (Q45)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Research Question 2: What is the relevance of the materials and their self-reported impact on customer's actions/behaviors since December 2016?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- For each of the sources of information you used, please rate how useful you found the information in managing your electricity use, where 0 is not useful at all and 10 is extremely useful. 1) Seasonal newsletter. (Q47)
- Thinking about all the things that [IOU] has done to communicate with you about your new rate, including your bills, seasonal newsletters, other mailings and emails, and the website, how satisfied are you with [IOU]'s communications overall? (Q48)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Research Question 3: Do TOU customers understand bill protection, receive a letter about bill protection, and know when bill protection ends?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- [IOU] provided bill protection for 12 months to those participating in the [IOU STUDY NAME]. Bill protection means that, over the course of the year, if the total amount you paid on your current study rate plan is more than you would have paid on the standard rate plan, you will be credited the difference on an upcoming electricity bill. Do you understand what bill protection means? (Q41)
- PG&E provided bill protection for 12 months to those participating in the Electric Rates Study. Please select which of the following describes what bill protection means. (Q42)
- Did you receive a letter in the past few weeks from [IOU] [IF IOU=SDG&E OR PG&E, INSERT: that mentioned when your bill protection is ending, OR IF IOU= SCE, INSERT: about your bill protection]? (Q43)
- Are you aware that your bill protection [IF IOU=SDG&E OR SCE, INSERT: ends in June or July 2017, OR IF IOU=PG&E, INSERT: ended in June 2017]? (Q44)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Understanding How Rates Work

Research Question 1: Are customers aware they are in the pilot?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- According to our records, your household signed up with [IOU NAME] to participate in a rate study, called the [IOU STUDY NAME], that began last summer (2016) and ends this December (2017). Which of the following best describes your participation in the study? (Q2)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Research Question 2: Do customers understand TOU rates, generally what peak periods are, and why they are designed this way?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- Please select all the statements below that describe the price of electricity for your rate as of June 2016, when your household enrolled in the rate study. "Under my current study rate the price of electricity is different depending on… 1) The time of day. 2) The day of the week. 3) The season. 4) The weather or temperature. 5) The total amount of electricity you use. 6) None of the above. (Q5)
- To the best of your knowledge, at what hours of the day on weekdays is electricity the most expensive to use based on your current study rate plan? Mark all the hours when electricity is most expensive to use. (Q6)
- To the best of your knowledge, are electricity rates in the summer higher, lower, or the same as they are in the winter? (Q7)
- To the best of your knowledge, why do you think [IOU] is changing to time of use rates? (Q8)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups (except Q6, which is asked only to treatment groups).

Research Question 3: Do customers perceive a benefit from TOU rates and do customers understand how they can be successful in managing their bill?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent would you agree with the following statements about your current study rate plan? 1) The rate is easy to understand. 2) The rate is fair. 3) The rate provides me with opportunities to save money. 4) The new rate is better than my old rate. 5) The rate works with my household's schedule. 6) The rate is affordable. 7) My electricity bill is easy to understand. 8) My electricity bill helps me understand the time of day I'm spending the most money on electricity. 9) The peak and off-peak time periods are easy to remember. 10) I would recommend my electricity rate plan to friends or family. 11) I want to stay on my new rate plan after this study ends. (Q4)
- Using a scale of 0 to 10 where 0 means do not agree at all, and 10 means completely agree, please tell me how much you agree with each statement. 1) I often worry whether there is enough money to pay my electricity bill, 2) I can better manage my electricity bill by changing when I use electricity, 3) I can consistently plan my electricity use based on the time of day. (Q24)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Actions Taken

Research Question 1: How easy or difficult is it for customers to take action to save energy or shift load since December 2016?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- Since December 2016, how often, if at all, did you take the following actions to reduce your household's electricity usage in the afternoon and evenings? 1) Reduced using or turned off your home's air conditioning in the warm afternoons and evenings. 2) Reduced using or turned off your home's heating equipment in the cold afternoons and evenings. 3) Avoided doing laundry during the afternoon and evenings. 4) Avoided running the dishwasher during the afternoon and evenings. 5) Avoided running my spa or pool pump during the afternoon or evenings. 6) Avoided cooking during the afternoon or evenings. 7) Turned off lights not in use during the afternoon and evening. 8) Turned off office equipment (computer, printer, etc.) during the afternoon and evening. 9) Turned off entertainment systems (TV, Nintendo, etc.) during the afternoon and evening. 10. Pre-cooled the home by running air conditioning earlier in the day on warm days. (Q21)

- Since December 2016, how easy was it for you or members of your household to take any actions to reduce your electricity usage in the afternoon and evenings? Please use a 0 to 10 scale where 0 means not easy at all and 10 means extremely easy. (Q22)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Research Question 2: What are the barriers to taking action?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- Which of the following, if any, has kept you from reducing or shifting your electricity usage in the afternoon and evenings since December 2016? 1) Nothing keeps me from shifting my usage. 2) I have done all I can do 3) My household already uses very little electricity. 4) My home gets uncomfortable if I try to reduce electricity usage. 5) Child(ren) in household make it difficult to change our routines. 6) Disabled household member makes it difficult to change our routines. 7) Elderly household member makes it difficult to change our routines. 8) Working from or being at home most of the day makes it difficult to use less electricity. 9) My schedule doesn't allow me to reduce my usage. 10) I have old appliances that use a lot of energy. 11) I don't know what actions to take to reduce or shift my electricity usage. (Q23)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Research Question 3: Do customers show persistence of taking actions during the Pilot? Are customers changing how they use appliances and technology because of the rate?

Survey Question: The following survey questions from the 2016 and 2017 TOU instrument will be analyzed for answering the research question:

- Since December 2016, how often, if at all, did you take the following actions to reduce your household's electricity usage in the afternoon and evenings? 1) Reduced using or turned off your home's air conditioning in the warm afternoons and evenings. 2) Reduced using or turned off your home's heating equipment in the cold afternoons and evenings. 3) Avoided doing laundry during the afternoon and evenings. 4) Avoided running the dishwasher during the afternoon and evenings. 5) Avoided running my spa or pool pump during the afternoon or evenings. 6) Avoided cooking during the afternoon or evenings. 7) Turned off lights not in use during the afternoon and evening. 8) Turned off office equipment (computer, printer, etc.) during the afternoon and evening. 9) Turned off entertainment systems (TV, Nintendo, etc.)

during the afternoon and evening. 10. Pre-cooled the home by running air conditioning earlier in the day on warm days. (Q19 in 2016 survey and Q21 in 2017 survey)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate difference in proportions for each item between the 2016 and 2017 surveys across climate regions/customer segments/rate groups.
- Conduct statistical comparisons of the difference in proportions (t-tests, z-tests) across climate regions/customer segments/rate groups.

General Attitudes and Awareness Towards Energy Efficiency and Demand Response

Research Question: What are customers' attitudes and behaviors towards EE and DR?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- Using a scale of 0 to 10 where 0 means do not agree at all, and 10 means completely agree, please tell me how much you agree with each statement. 1) I often worry whether there is enough money to pay my electricity bill. 2) I can better manage my electricity bill by changing when I use electricity. 3) I can consistently plan my electricity use based on the time of day. 4) I conserved electricity in my home over the past six months. 5) If my electricity bill goes up, I feel like I must do something to reduce it. (Q24)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Use of Website, Tools, and Apps

Research Question 1: What is customers' awareness and frequency of use of the apps (SDG&E only) and websites since December 2016?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- Since December 2016, have you visited the following websites? (Q46)
- When your rate changed last summer (2016), SDG&E invited you to download a smartphone app that notifies customers like you of when electricity rates change during the day. It also allows you to check your electricity usage. Have you heard about and downloaded the app? (Q49)
- Have you used SDG&E's smartphone app? (Q50)

- Please indicate whether or not you have used each of the following features of the app. For each feature you have used, please indicate how helpful you find this feature on a scale of 0 to 10, where 0 means not helpful at all and 10 means extremely helpful. 1) Alerts during the day that the electricity rates have changed. 2) Access to your monthly projected bill amount. 3) Summary of monthly usage by peak period. 4) Access to more detailed information about your household energy use patterns. (Q51)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Research Question 2: Are customers satisfied with the app, alerts, and website(s), and are they useful/valuable?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- For each of the sources of information you used, please rate how useful you found the information in managing your electricity use, where 0 is not useful at all and 10 is extremely useful. 2) [IOU Websites visited]. (Q47)
- Thinking about all the things that [IOU] has done to communicate with you about your new rate, including your bills, seasonal newsletters, other mailings and emails, and the website, how satisfied are you with [IOU]'s communications overall? (Q48)
- On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent do you agree with the following statements about the app? 1) The app is easy to use. 2) The alerts have helped me reduce my electricity use during peak periods. 3) The app does <u>not</u> provide enough information about my household's usage for me to take action. 4) There are too many alerts. 5) I would recommend this app to friends and family. (Q52)

Analyses: The team will perform the following analyses with the survey questions to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.

Research Question 3: What are the best features of and any improvements that should be made to the SDG&E app/alerts?

Survey Question: The following survey question from the 2017 TOU instrument will be analyzed for answering the research question:

- On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent do you agree with the following statements about the app? 1) The app is easy to use. 2) The alerts have helped me reduce my electricity use during peak periods. 3) The app does <u>not</u> provide enough information about my household's usage for me to take action. 4) There are too many alerts. 5) I would recommend this app to friends and family. (Q52)

Analyses: The team will perform the following analyses with the survey question to answer the research question:

- Calculate descriptive statistics (frequencies, means, etc.) by all RCT groups and TOU segments

Research Question 4: What is the level of awareness, uptake, and interest in "smart" devices?

Survey Questions: The following survey questions from the 2017 TOU instrument will be analyzed for answering the research question:

- "Smart" devices and appliances are now available that connect to your home's Wi-Fi and have advanced features, like the ability to remotely control it from a smartphone or tablet, and to automatically turn off or adjust when no one is home, when not in use, and/or when electricity prices are highest. Does your home any of the following "smart" devices or appliances? 1) Smart thermostat to control heating and/or cooling, like the Nest or Ecobee. 2) Smart light bulbs, like Philips Hue, GE Link, or LIFX. 3) Smart refrigerator. 4) Smart clothes washer or dryer. 5) Smart dishwasher. 6) Smart water heater and/or water heater controller. 7) None of the above. (Q53)
- On a scale of 0 to 10, where 0 means not satisfied at all and 10 means extremely satisfied, how satisfied are you with your smart devices or appliances? (Q54)
- On a scale of 0 to 10, where 0 means not useful at all and 10 means extremely useful, how useful are your smart devices or appliances at helping your household reduce or shift your energy usage? (Q55)
- On a scale of 0 to 10 where 0 is not interested at all to 10 extremely interested, how interested are you or members of your household in having these smart devices or appliances in your home? (Q56)

Analyses: The team will perform the following analyses with the survey questions to answer the research question.

- Calculate descriptive statistics (frequencies, means, etc.) by climate regions/customer segments/rate groups.
- Conduct statistical comparisons (t-tests, z-tests, chi-squares, etc.) across climate regions/customer segments/rate groups.

Hardship Analysis

The remainder of this document describes the steps we will take to identify whether there is an incremental increase in hardship for pilot participants due to TOU rates. We will attempt to answer the following hardship-related research questions in our analysis of the 2017 survey.

- Do TOU rates increase hardship compared to the control rate?
- Does the level or existence of hardship vary by rate or customer segment?

To answer the targeted hardship research questions, we first need to create several metrics – particularly metrics for economic/financial hardship and health hardship. Table B-2 provides a list of the metrics we plan to calculate for this hardship analysis. To create the TOU-specific hardship metrics, we will run exploratory factor analyses (EFAs) to identify which survey questions consistently measure

financial or health hardship, and, if possible, to create two continuous variables that adequately measure the concepts of financial hardship and health hardship. We anticipate using a Maximum Likelihood extraction method with an orthogonal rotation (most probably Varimax). If we find evidence that factors may be correlated, we will consider using an oblique rotation method.

Once we have identified survey questions that adequately measure financial hardship and health hardship, we will assess the metric's internal consistency using Cronbach's alpha tests. Finally, to the extent possible, we will assess construct validity by conducting associative tests to see whether the metric correlates with associated items. This will be challenging since financial and health hardship, as measured for this pilot, goes beyond more traditional, static metrics, such as energy burden. Nevertheless, we will run correlations between energy burden calculations, the CFPB financial well-being scale (if not included in the metric itself), and household income. In Table B-2, we list the set of groups and metrics we will use to help answer the research questions listed above.

Table B-2: Anticipated Metrics We Will Generate for the Hardship Analysis

Metrics	Description
Financial Hardship	Scaled combination of survey responses on hardship questions focused on finances
Health Hardship	Scaled combination of survey responses on hardship questions focused on health
CFPB Financial Well-Being	Scaled combination of CFPB survey responses

Once we have developed these metrics, we will use them to identify whether there are differing levels of hardship between the control and treatment groups. We will use t-tests, z-tests, or chi-squares to identify a) whether there is an increase in hardship for the treatment groups in comparison to the control rates, and b) whether the increase varies by a specific group (such as seniors, CARE/FERA customers, or hot climate zone customers).

Identifying CARE/FERA Eligible – Data Imputation Process to Estimate Income for Item Non-Responders

To estimate CARE/FERA eligibility for each survey respondent, we will need to use data from the survey, namely self-reported household income and the number of persons in the household. Historically, income questions often suffer from a high rate of non-response by survey takers. This section outlines our approach to impute data, if we observe a high-level of non-response for our income question.

To impute income data, we will first identify the non-response rate for this survey question and assess whether there are differences in non-response rates by TOU segments. If we see a higher non-response rate in non-senior and non-CARE/FERA groups – groups less vital to assessing hardship for the 745 decision - we will proceed with the following plan:

1. Use responses from the 2017 survey if available.
2. If they are not available, we will use responses from the enrollment survey.

3. Finally, if those data are not available, we will use third party data as an approximate income level for each household.

However, if we see a higher non-response rates in critical populations, such as CARE/FERA groups, we will run the regressions described below with three income variants:

1. A model that includes only data from those who provided their income in the 2016 survey.
2. A model that also includes the imputed data described above, and
3. A model that excludes income altogether from the model.

We will compare whether these models and see whether the models provide statistically significant differences, if they do, we will assess the use of income in our regression models.

Appendix C. 2017 TOU Customer Survey Materials

The 2017 TOU survey was an attempted census of all 47,674 pilot participants who remained in the Pilot through May 2017.[2,3] The team designed a survey implementation strategy tailored to customers based on which of the three survey modes – web, mail, or phone - they used to respond to the 2016 TOU survey (Table C-1). Those customers who did not respond to the 2016 survey or who responded via the web were placed in the "web group". Customers who responded in 2016 via the mailed paper booklet were placed in the "mail group," and customers who responded via a phone interview were placed in the "phone group." Customers in each of these groups were also divided into two groups based on whether or not they had an email address.

For the web group, the team implemented the "email-mail-phone (EMP)" approach used for the 2016 survey. Web group customers received an invitation letter, followed by a reminder letter or email, a booklet and letter, and another reminder letter or email before receiving phone calls. The team then called a sample of nonrespondents and sent those with email addresses two more email reminders to boost response rates; the last email reminder was sent only to SCE and SDG&E customers with an email address.

For the mail group, the team mailed customers an invitation letter and booklet, followed by two reminder emails or letters before calling customers. The team then called a sample of nonrespondents and sent those with email addresses two more email reminders to boost response rates; the last email reminder was sent only to SCE and SDG&E customers.

The team made one phone call to a sample of 8,800 nonrespondents in the web and mail groups and in customers segments with lower response rates. The team made up to three calls to 1,200 nonrespondents in the web and mail groups and in segments with the lowest response rates. About 80% of all nonrespondents in the web and mail groups received at least one phone call.

For the phone group, the team mailed customers an invitation letter informing them to complete the survey via the web, wait for a phone call, or call to schedule an interview. This was followed by up to three phone calls to all customers in the phone group, and two reminder emails to those with an email address; the last email reminder was sent only to SCE and SDG&E customers.

All letters and emails contained the web survey address and passcode so that respondents could complete the survey online at any time. All survey materials, including phone interviews, except the booklet and the last two reminder emails for the web, mail, and phone groups, were available in five languages: English, Spanish, Chinese (Mandarin), Vietnamese, and Korean (SCE and SDG&E only).

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2 About 14% of pilot participants (n=~7,432) opted out of the Pilot between September 2016 and May 2017, the months during which the survey samples were compiled for the 2016 and 2017 surveys, respectively.

3 The reported total sample size excludes the PG&E (n=84) and SCE (n=77) Community Choice Aggregation (CCA) program customers included in the sample the team received from the IOUs. The CCA customers were included in the survey implementation but were excluded from all analyses.

Table C-1: 2017 TOU Pilot Customer Survey Implementation Methods

Survey Group	% of Sample	First Contact	Second Contact	Third Contact	Fourth Contact	Fifth Contact	Sixth Contact
Web Group with Email	66%	Invitation Letter	Reminder Email	Booklet & Letter	Reminder Email	Reminder Email [a]	Reminder Email [b]
						Phone Calls [c]	
Web Group without Email	19%	Invitation Letter	Reminder Letter	Booklet and Letter	Reminder Letter	Phone Calls [c]	
Mail Group with Email	9%	Invitation Letter and Booklet	Reminder Email	Reminder Email	Reminder Email [a]	Reminder Email [b]	
					Phone Calls [c]		
Mail Group without Email	3%	Invitation Letter and Booklet	Reminder Letter	Reminder Letter	Phone Calls [c]		
Phone Group with Email	2%	Invitation Letter	Reminder Email	Reminder Email [a]	Reminder Email [b]		
			Phone Calls [d]				
Phone Group without Email	1%	Invitation Letter	Reminder Letter				
			Phone Calls [d]				

[a] Sent only to English-speaking nonrespondents.

[b] Sent only to SCE and SDG&E English-speaking nonrespondents.

[c] A total sample of 8,800 nonrespondents in the from the segments with low response rates in the web and mail groups received one phone call and a sample of 1,200 nonrespondents from the segments with the lowest response rates in the web and mail groups received up to three phone calls.

[d] All phone group customers received up to three phone calls.

The sections below present the survey letters and emails, survey introduction and closing scripts, and the survey instrument.

C.1. 2017 Customer Survey Communications

C.1.1. Invitation Letter

Web & Nonrespondent Group Letter

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

Thank you for your participation in <IOU Name>'s <Study Name>, which began the summer of 2016 and will end in December 2017. We invite you to complete the second and final <Study Name> survey to share your experience and opinions and earn your **<Survey Incentive Amount> bill credit**.

Your feedback on the study over the past six months will help us design electric rate plans that work for customers like you. **To provide your household's feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

Please complete the survey online by simply entering the internet address below into your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- Washington State University's (WSU) Social & Economic Sciences Research Center is conducting this survey on behalf of <IOU>. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify <IOU's> sponsorship of this survey, contact <IOU's> dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you in advance for completing the survey and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Mail Group Letter (Included Paper Booklet)

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

Thank you for your participation in <IOU Name>'s <Study Name>, which began the summer of 2016 and will end in December 2017. We invite you to complete the second and final <Study Name> survey to share your experience and opinions and earn your **<Survey Incentive Amount> bill credit**.

Your feedback on the study over the past six months will help us design electric rate plans that work for customers like you. **To provide your household's feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

If you have internet access, you may complete the survey online by simply entering the internet address below into your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, an interviewer from Washington State University (WSU) will attempt to call you in the next few days, or you can contact WSU at 1-800-833-0867 or <Study Email> to schedule a date and time to be interviewed at your convenience.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you in advance for completing the survey and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Phone Group Letter

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

Thank you for your participation in <IOU Name>'s <Study Name>, which began the summer of 2016 and will end in December 2017. We invite you to complete the second and final <Study Name> survey to share your experience and opinions and earn your **<Survey Incentive Amount> bill credit**.

Your feedback on the study over the past six months will help us design electric rate plans that work for customers like you. **To provide your household's feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

If you have internet access, you may complete the survey online by simply entering the internet address below into your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, an interviewer from Washington State University (WSU) will attempt to call you in the next few days, or you can contact WSU at 1-800-833-0867 or <Study Email> to schedule a date and time to be interviewed at your convenience.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you in advance for completing the survey and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.1.2. Second Contact

Web and Nonrespondent Group Email

<Date>

SUBJECT: Give <IOU Name> Feedback to Earn Your <Survey Incentive Amount> Bill Credit
FROM: WSU on behalf of <IOU Name>

Dear <Customer Name>,

We are writing to thank you for your participation in <IOU Name>'s <Study Name> and to invite you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final Time of Use Rate Plan Study survey. Sharing your experience and opinions is important for helping us design electric rate plans that work for customers like you.

If you or someone in your household has already completed the survey, thank you! **If you have not completed the survey, please have a person who makes decisions about your electricity bills complete the 20-minute survey by August 5, 2017.**

You can complete the survey online by simply clicking the link below, or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- Washington State University's (WSU) Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for your time and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Web and Nonrespondent Group Letter

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

We are writing to thank you for your participation in <IOU>'s <Study Name> and to invite you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. Sharing your experience and opinions is important for helping us design electric rate plans that work for customers like you.

If you or someone in your household has already completed the survey, thank you! **If you have not completed the survey, please have a person who makes decisions about your electricity bills complete the 20-minute survey by August 5, 2017.**

You can complete the survey online by simply typing the internet address below into your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

Your responses are confidential and voluntary. Once your completed survey is processed, <IOU Name> will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- Washington State University's (WSU) Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

We look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Mail Group Email

<Date>

SUBJECT: <IOU Name> <Study Name> - Earn your survey incentive now!
FROM: WSU on behalf of <IOU Name>

Dear <Customer Name>,

We want to thank you for participating in <IOU Name>'s <Study Name> and remind you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. If you have already completed this survey, thank you! If not, we still need to hear from you about your experience in the Study over the past 6 months.

Your feedback will help us design electric rate plans for customers like you. **To provide your feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

You can complete the survey online by simply clicking the link below or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a couple of weeks ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, please contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

We look forward to your feedback!

Sincerely,
<IOU Study Team/Manager>
<IOU Name>

Mail Group Letter

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

We want to thank you for participating in <IOU Name>'s Time <Study Name> and remind you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. If you have already completed this survey, thank you! If not, we still need to hear from you about your experience in the Study over the past 6 months.

Your feedback will help us design electric rate plans for customers like you. **To provide your feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

If you have internet access, please enter the internet address below into your internet browser to access the survey. Once the survey page loads, please enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a couple of weeks ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, please contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

We look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Phone Group Email

<Date>

SUBJECT: <IOU Name> <Study Name> - Earn your survey incentive now!
FROM: WSU on behalf of <IOU Name>

Dear <Customer Name>,

We are writing to thank you for your participation in <IOU Name>'s <Study Name> and to invite you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. Sharing your experience and opinions is important for helping us design electric rate plans that work for customers like you.

If you or someone in your household has already completed the survey, thank you! **If you have not completed the survey, please have a person who makes decisions about your electricity bills complete the 20-minute survey by August 5, 2017.**

You can complete the survey online by simply clicking the link below, or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, an interviewer from Washington State University (WSU) will attempt to call you in the next few days, or you can contact WSU at 1-800-833-0867 or <Study Email> to schedule a date and time to be interviewed at your convenience.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for your time and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Phone Group Letter

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

We are writing to thank you for your participation in <IOU Name>'s <Study Name> and to invite you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. Sharing your experience and opinions is important for helping us design electric rate plans that work for customers like you.

If you or someone in your household has already completed the survey, thank you! **If you have not completed the survey, please have a person who makes decisions about your electricity bills complete the 20-minute survey by August 5, 2017.**

If you have internet access, you can complete the survey online by simply typing the internet address below into your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, an interviewer from Washington State University (WSU) will attempt to call you in the next few days, or you can contact WSU at 1-800-833-0867 or <Study Email> to schedule a date and time to be interviewed at your convenience.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

We look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.1.3. Third Contact

Web and Nonrespondent Group Letter (Included Paper Booklet)

<Date>

<Customer Name>
<Customer Address>
<City, State, Zip>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

Dear <Customer Name>,

We want to thank you for participating in <IOU Name>'s <Study Name> and remind you to earn your **<Survey Incentive Amount> bill credit** by completing the second and final <Study Name> survey. If you have already completed this survey, thank you! If not, we still need to hear from you about your experience in the Study over the past six months.

Your feedback will help us design electric rate plans for customers like you. **To provide your feedback, please have a person who makes decisions about your electricity bills complete the 20-minute survey no later than August 5, 2017.**

If you have internet access, please enter the internet address below into your internet browser to access the survey. Once the survey page loads, please enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the enclosed paper survey and mail it back in the enclosed postage-paid envelope.

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- Washington State University's (WSU) Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

We look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

Mail Group Email

Date: 7/12/17

SUBJECT: Reminder: Give <IOU Name> Feedback to Earn Your <Survey Incentive Amount> Bill Credit
FROM: WSU.on.behalf.of.<IOU Name>

Dear <Customer Name>,

We are writing you to provide a final reminder to earn your **<Survey Incentive Amount> bill credit** and to thank you for participating in <IOU Name>'s <Study Name>. To receive your **<Survey Incentive Amount> bill credit**, please complete the 20-minute Time of Use Rate Plan Study survey. Your feedback is very important for helping us design electric rate plans for customers like you.

If you or someone in your household completed and returned this survey, please accept our sincere thanks! If not, we still need to hear about your experience in the Study over the past six months. Please complete the survey by August 5, 2017.

You can complete the survey online by simply clicking the link below or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a few weeks ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

If you prefer to take the survey over the phone, *please call WSU and leave your name, telephone number, and a date and time to reach you to schedule an interview.*

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for participating in <IOU Name>'s <Study Name> and we look forward to your feedback!

Sincerely,
<IOU Study Team/Manager>
<IOU Name>

Mail Group Letter

<Date>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

<Customer Name>
<Customer Address>
<City, State, Zip>

Dear <Customer Name>,

We are writing you to provide a final reminder to earn your **<Survey Incentive Amount> bill credit** and to thank you for participating in <IOU Name>'s <Study Name>. To receive your **<Survey Incentive Amount> bill credit**, please complete the 20-minute <Study Name> survey. Your feedback is very important for helping us design electric rate plans for customers like you.

If you or someone in your household completed and returned this survey, please accept our sincere thanks! If not, we still need to hear about your experience in the Study over the past six months. Please complete the survey by August 5, 2017.

If you have internet access, simply enter the internet address below into your internet browser. Once the survey page loads, please enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a few weeks ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

If you prefer to take the survey over the phone, *please call WSU and leave your name, telephone number, and a date and time to reach you to schedule an interview.*

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for participating in <IOU Name>'s <Study Name> and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.1.4. Fourth Contact

Web and Nonrespondent Email

<Date>

SUBJECT: Reminder: Give <IOU Name> Feedback to Earn Your <Survey Incentive Amount> Bill Credit
FROM: WSU.on.behalf.of.<IOU Name>

Dear <Customer Name>,

We are writing you to provide a final reminder to earn your **<Survey Incentive Amount> bill credit** and to thank you for participating in <IOU Name>'s <Study Name>. To receive your **<Survey Incentive Amount> bill credit**, please complete the 20-minute <Study Name> survey. Your feedback is very important for helping us design electric rate plans for customers like you.

If you or someone in your household completed and returned this survey, please accept our sincere thanks! If not, we still need to hear about your experience in the Study over the past six months. Please complete the survey by August 5, 2017.

You can complete the survey online by simply clicking the link below, or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a few days ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

If you prefer to take the survey over the phone, *please call WSU and leave your name, telephone number, and a date and time to reach you to schedule an interview.*

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for participating in SCE's Time of Use Rate Plan Study and we look forward to your feedback!
Sincerely,
<IOU Study Team/Manager>
<IOU Name>

Web and Nonrespondent Letter

<Date>

Complete this <Study Name> survey to earn a <Survey Incentive Amount> bill credit.

<Customer Name>
<Customer Address>
<City, State, Zip>

Dear <Customer Name>,

We are writing you to provide a final reminder to earn your **<Survey Incentive Amount> bill credit** and to thank you for participating in <IOU Name>'s <Study Name>. To receive your **<Survey Incentive Amount> bill credit**, please complete the 20-minute <Study Name> survey. Your feedback is very important for helping us design electric rate plans for customers like you.

If you or someone in your household completed and returned this survey, please accept our sincere thanks! If not, we still need to hear about your experience in the Study over the past six months. Please complete the survey by August 5, 2017.

If you have internet access, simply enter the internet address below into your internet browser. Once the survey page loads, please enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please instead complete the paper survey we mailed to you a few days ago and mail it back in the postage-paid envelope we provided. If you need another paper survey, contact Washington State University (WSU) at 1-800-833-0867 or <Study Email>, and provide your name and mailing address.

If you prefer to take the survey over the phone, *please call WSU and leave your name, telephone number, and a date and time to reach you to schedule an interview.*

Your responses are confidential and voluntary. Once your completed survey is processed, we will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills. This is the final bill credit of the <Total Incentive Amount> total in reward payments for your participation in the <Study Name>.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on our behalf. For questions or to schedule an interview, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify our sponsorship of this survey, contact our dedicated line at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Thank you for participating in <IOU Name>'s <Study Name> and we look forward to your feedback!

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.1.5. Fifth Contact

Email to all Nonrespondents

<Date>

SUBJECT: Last Chance to Earn Your <Survey Incentive Amount> Bill Credit from <IOU Name>

Dear <Customer Name>,

This is your final reminder to earn your **<Survey Incentive Amount> bill credit** by completing the <IOU Name>'s <Study Name> survey. Your feedback is very important for helping us design better electricity rates for customers like you.

If you have already completed the survey, thank you! **If you have not completed the survey, please have a person who makes decisions about your electricity bills complete the survey by August 5, 2017. Your <Survey Incentive Amount> bill credit will not be available after this date.**

You can complete the survey online by simply clicking the link below or typing it into the address bar in your internet browser. Once the survey page loads, enter the passcode below to begin your survey. (NOTE: Enter the internet address in the address bar in your internet browser, not in the space for online searches.)

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please return the paper booklet survey we mailed you a few weeks ago. The paper booklet should be postmarked by **August 5, 2017**. You can also call Washington State University (WSU) at **1-800-833-0867** to take the survey on the phone.

Your responses are confidential and voluntary. Once your completed survey is processed, <IOU Name> will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on behalf of <IOU Name>. If you have questions about the survey, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify <IOU Name>'s sponsorship of this survey, contact <IOU Name> at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.1.6. Sixth Contact

Email to All SCE and SDG&E Nonrespondents

<Date>

SUBJECT: One More Reminder to Earn Your <IOU Name> Bill Credit

Dear <Customer Name>,

We are writing one more time to encourage you to complete <IOU Name>'s <Study Name> survey. We want everyone to earn the **<Survey Incentive Amount> bill credit**.

If you have already completed the survey, thank you!

If not, please log in to the following website to complete the questions by August 5, 2017. Your <Survey Incentive Amount> bill credit will not be available after this date.

Web address: www.opinion.wsu.edu/RateSurvey2017

Passcode: <Passcode>

If you are unable to complete the survey online, please return your completed paper booklet we mailed you or call Washington State University (WSU) at **1-800-833-0867** to take the survey on the phone.

Your responses are confidential and voluntary. Once your completed survey is processed, <IOU Name> will apply a **<Survey Incentive Amount> bill credit** to one of your next two monthly electricity bills.

Questions?

- WSU's Social & Economic Sciences Research Center is conducting this survey on behalf of <IOU Name>. If you have questions about the survey, please call WSU at **1-800-833-0867** or email <Study Email>. If someone is not available to answer your call, please leave a voice mail including your name, contact number and preferred call back times.
- If you would like to verify <IOU Name>'s sponsorship of this survey, contact <IOU Name> at <IOU Phone> Monday - Friday, 8 a.m. - 7 p.m. or e-mail us at <IOU Email>.

Sincerely,

<IOU Study Team/Manager>
<IOU Name>

C.2. 2017 Customer Survey Introductions and Closings

C.2.1. Web Survey Introduction/Closing:

Introduction:

Landing Page

We want to thank you for your participation in this survey!

This survey may not display correctly on a smartphone or small screened device. For better results, you may want to use a computer or tablet. If you have any issues taking the survey please call 1-800-833-0867 or email [STUDY EMAIL] and we'll help you. If you reach voice mail, please leave your name and phone number and we will return your call as soon as possible.

To continue the survey please enter your passcode below.

Intro Page

As you may recall, your household enrolled to participate in the [IOU] [IOU STUDY NAME] that began the summer of 2016 and will end in December 2017. As part of your participation, it is important that we get your feedback about your experience in this study during the past six months to help design electricity rates that that work better for customers like you.

- Please have a member of your household who makes decisions about your household's electricity usage and bills complete this 20-minute survey.
- [IOU] will credit <u>one</u> of your next two upcoming electricity bills with [SURVEY INCENTIVE AMOUNT]. This [Survey Incentive Amount] bill credit is the final bill credit of the total [TOTAL INCENTIVE AMOUNT] as part of your participation in the [IOU STUDY NAME] and is available only to those who complete this survey. Please be sure to click the Submit button at the end of the survey to send your answers.
- Your responses are voluntary and will be kept confidential.

Questions or issues? If you have any questions about the survey, please call 1-800-833-0867 or email [Study Email]. If you reach voice mail, please leave your name and phone number and we will return your call as soon as possible.

Please click "Next" to begin the survey. Thanks for your assistance!

Closing:

Thank you for completing the survey! Please click "Submit" to finish your survey.

After your survey is submitted, [IOU] will apply your [SURVEY INCENTIVE AMOUNT] bill credit to one of your next two electricity bills. If you do not receive your bill credit within the next two billing cycles, please contact [IOU] at [IOU PHONE/EMAIL].

C.2.2. Paper Booklet Introduction / Closing:

Title page:

[IOU NAME]

[IOU STUDY NAME]

2017 Participant Survey

Please have a person who makes decisions about your household's electricity usage and bills complete the survey. If you have questions or need help with the survey, please call Washington State University at 1 (800) 833-0867. If you reach voice mail, please leave your name and phone number and we will return your call as soon as possible.

For the following questions, please mark your response by filling in the bubbles or squares.

Closing/Last page:

Thank you for completing this survey!

Please use the postage-paid envelope to return your survey. Once we receive your survey booklet, [IOU] will apply your [Incentive amount] bill credit to one of your next two electricity bills. If you do not receive your bill credit within the next two billing cycles, please contact [IOU] at [IOU PHONE/EMAIL].

C.2.3. Phone Introduction / Closing:

Introduction:

Hello, may I speak with <Customer Name>? Is someone else available who makes decisions about your household´s electricity bill?

I am from Washington State University, calling on behalf of <IOU_FULLNAME>. Our records show that your household has been a participant in the <IOU_ABBRNAME> <IOU_STUDNAME> that began the summer of 2016 and will end December 2017. I am calling to ask a few questions about your experience in the study during the past six months. By completing these questions, <IOU_ABBRNAME> will credit one of your next two upcoming electricity bills with $< Survey Incentive Amount>. The $<SURVEY INCENTIVE AMOUNT> bill credit is the final bill credit of the total $<TOTAL INCENTIVE AMOUNT> as part of your participation in the <IOU_STUDNAME> and is available only to those who complete this survey.

Do you have about 20 minutes to answer our questions?

Your responses are voluntary and confidential so that no individual can be identified by the answers they give to our questions.

Do you have any questions before we get started?

Refusal Prevention:

<IOU_ABBRNAME> is conducting this study you have participated in to prepare for the California Public Utilities´ Commission´s planned statewide transition of all eligible residential electric customers to a time-of-use rate plan in 2019. Other TOU rate options may be provided too, and all customers will be able to opt out onto a tiered monthly rate if they do not prefer a TOU rate. <IOU_ABBRNAME> is conducting this survey to get feedback on your experience in the study so far, including how changes to electricity rates impact your life and electricity bills, so that <IOU_ABBRNAME> can design electricity rates that work for customers like you.

If you have any questions about this survey, please contact Kent Miller by phone at 1-800-833-0867 or by email at <STUDY EMAIL>.

I work for Washington State University´s Social and Economic Sciences Research Center and we´ve been selected by <IOU_ABBRNAME> to conduct this survey. If you would like to verify <IOU_ABBRNAME>'s sponsorship of this survey, please contact <IOU_ABBRNAME> at <IOU PHONE/EMAIL >.

Closing:

That is my last question. Thank you so much for taking the time to talk with me today. <IOU_ABBRNAME> will apply your $<SURVEY INCENTIVE AMOUNT> bill credit to one of your next two electricity bills. If you do not receive your bill credit within the next two billing cycles, please contact <IOU_ABBRNAME> at <IOU PHONE/EMAIL>.

C.3. 2017 Customer Survey Instrument

RIA, in collaboration with the TOU Working Group, developed a 57-question survey to answer the following key research questions:

- How satisfied are respondents with their study rate and their utility?
- Do respondents understand key elements of how their study rate works?
- Did customers experience issues with paying their bills because of their study rate?
- Did their study rate increase or enhance economic and/or health hardship?
- What actions did they take to shift or reduce use on their study rate, did they show persistence in taking action(s) over time, and what barriers prevented respondents from taking action(s)?
- Did respondents use study websites, apps, or tools help manage their electricity use?

The 2017 survey specifically assessed differences in responses between those customers on the control rate (Otherwise Applicable Tariff, OAT) and those on the TOU rates for winter and spring months of the pilot (December 2016 to June 2017). Several questions in the 2017 survey were also asked in the first customer survey (2016 survey), including the survey questions that address the key research questions listed above: the questions that comprise the economic index and health metrics, and questions about satisfaction, understanding rates, actions taken, and demographic and household characteristics.

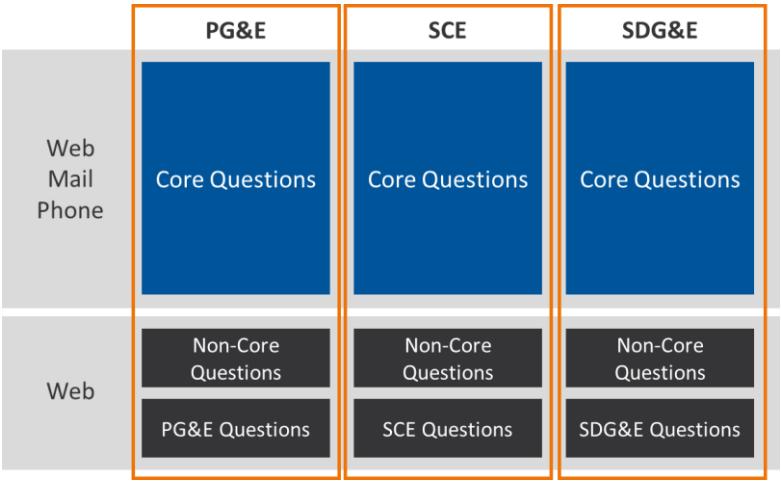
In addition to the survey questions addressing the key research questions listed above, the survey included most of the demographic and household characteristic questions from the first survey, and some new questions about:

- attitudes toward and awareness of demand response activities,
- understanding bill protection and summer vs. winter electricity rates,
- interest in and use of enabling technologies (e.g. smart thermostat, lighting, appliances, etc.), and
- SDG&E's smart phone app.

A few questions in the first customer survey were not asked again in the second survey, including questions about motivations to participate in the Pilot, the welcome packet materials sent to customers at the start of the Pilot, PG&E's smart phone app.

To manage survey length and respondent burden, the number of questions for mail and phone versions of the survey was limited compared to the web version (see Figure C-1). To determine which 57 questions to leave out of the mail and phone survey, the survey questions were divided into "core" and "non-core" questions. The 35 core questions contained all questions necessary to address regulatory requirements, including all the questions about hardship, rate, and utility satisfaction, understanding of the rate, actions taken in response to the rate and barriers to taking action, and enabling technologies. The 22 non-core items included IOU-specific questions, like those pertaining to IOUs' websites, smartphone applications, and customer outreach letters, and a few questions about demographic characteristics. All core questions were included in each survey mode and non-core questions were added to the web survey only. Because 76% of survey responses were completed via the web, the non-core questions were answered by the majority of respondents.

Figure C-1: Breakdown of Survey Questions by Survey Mode



C.3.1. Notes

There are two types of questions:

1. CORE questions were asked in 2017 web, booklet, and phone versions. There are 36 CORE questions with 85 items.
2. NON-CORE questions were asked in 2017 web version of the survey only. There are 20 NON-CORE questions with 40 items.

The text in brackets [ ] are programmer instructions or form fields. Also included are references to question numbers of the same or similar questions in the 2016 version.

C.3.2. Opening Questions

[CORE: ASK ALL; Q37 in the 2016 version]

Q1. Is your name on the bill you receive from [IOU NAME]?

1. Yes
2. No
98. Don't know

[CORE: ASK ALL; Q2 in the 2016 version is similar]

Q2. According to our records, your household signed up with [IOU NAME] to participate in a rate study, called the [IOU STUDY NAME], that began last summer (2016) and ends this December (2017).

[DISPLAY IF CONTROL GROUP] As part of the study, your rate may have changed or stayed the same.

Which of the following best describes your participation in the study?

1. I am currently participating in the study

2. I did participate in this study, but I have recently unenrolled
3. I enrolled in this study but I don't know if I'm still participating
4. I do not recall participating in the study

C.3.3. Satisfaction with Rate

These next few questions ask about your understanding of and satisfaction with your current electricity rate.

[CORE: ASK ALL; Q3 in the 2016 version]

Q3. On a scale of 0 to 10, where 0 means not satisfied at all and 10 means extremely satisfied, how satisfied are you overall with the following? Please select one for each item.

Item	0 Not satisfied at all	1	2	3	4	5	6	7	8	9	10 Extremely Satisfied
Your current electricity rate plan											
[IOU NAME]											

[CORE: ASK ALL; Q4 in the 2016 version]

Q4. On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent would you agree with the following statements about your current study rate plan?

Item	0 Do not agree at all	1	2	3	4	5	6	7	8	9	10 Completely agree
The rate is easy to understand											
The rate is fair											
The rate provides me with opportunities to save money											
[ASK TO TREATMENT GROUPS] The new rate is better than my old rate											
The rate works with my household's schedule											
The rate is affordable											
My electricity bill is easy to understand											
[ASK TO TREATMENT GROUPS] My electricity bill helps me understand the time of day I'm spending the most money on electricity											

Item	0 Do not agree at all	1	2	3	4	5	6	7	8	9	10 Completely agree
[ASK TO TREATMENT GROUPS] The peak and off-peak time periods are easy to remember											
I would recommend my electricity rate plan to friends or family											
[ASK TO TREATMENT GROUPS] I want to stay on my new rate plan after this study ends											

C.3.4. Understanding of How Rates Work

[CORE: ASK ALL; Q9 in the 2016 version]

Q5. Please select all the statements below that describe the price of electricity for your rate as of June 2016, when your household enrolled in the rate study.

"Under my current study rate the price of electricity is different depending on… "

1. The time of day
2. The day of the week (weekdays versus weekends)
3. The season
4. The weather or temperature
5. The total amount of electricity you use
6. None of the above
98. Don't know

[CORE: ASK TO TREATMENT GROUPS, NOT CONTROL GROUP; Q10 in the 2016 version]

Q6. To the best of your knowledge, at what hours of the day on weekdays is electricity the most expensive to use based on your current study rate plan? Mark all the hours when electricity is most expensive to use.

AM	12 midnight	1	2	3	4	5	6	7	8	9	10	11
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

PM	12 noon	1	2	3	4	5	6	7	8	9	10	11
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

[CORE: ASK ALL; Not included in the 2016 version]

Q7. To the best of your knowledge, are electricity rates in the summer higher, lower, or the same as they are in the winter?

1. Higher in the summer
2. Lower in the summer
3. The same in the summer and winter
98. Don't know

[NON-CORE: ASK in WEB version ONLY; Q11 in the 2016 version]

Q8. To the best of your knowledge, why do you think [IOU] is changing to time of use rates? Select one response for each item.

	Yes	No	Don't know
To help customers save money on electricity bills	1	2	3
To improve the reliability of the electricity power grid and avoid power outages	1	2	3
To better align the price customers pay for electricity to the actual cost to produce and deliver electricity	1	2	3
To help reduce the need to build new power plants	1	2	3
To balance the electric grid due to the growing amount of renewable energy, like solar energy, generated in California	1	2	3
To give customers an incentive to reduce use at times when electricity use is high.	1	2	3
To help [IOU NAME] make more money	1	2	3
To help [IOU NAME] keep energy costs down	1	2	3

C.3.5. Which Customers Experience Issues with Paying Their Bills?

Next, we have a few questions about your household's economic and health situation during the past six months.

[CORE: ASK ALL; Q12 in the 2016 version]

Q9. Since December 2016, how well do these statements describe you and your situation? Please select one for each statement.

	Not at all	Very little	Somewhat	Very well	Completely
Because of my money situation, I feel like I will never have the things I want in life	1	2	3	4	5
I am just getting by financially	1	2	3	4	5
I am concerned that the money I have won't last	1	2	3	4	5

[CORE: ASK ALL; Q13 in 2016 version]

Q10. How often does the following statements apply to you?

	Never	Rarely	Sometimes	Often	Always
I have money left over at the end of the month	1	2	3	4	5
My finances control my life	1	2	3	4	5

[CORE: ASK ALL; Q14 in the 2016 version; the third item was not included in the 2016 version]

Q11. Since December 2016, how many times, if at all, has your household had difficulty paying your bills? Please select one response for each type of bill.

	None	1 time	2 times	3 or more times	Not sure
Electricity bill	0	1	2	3	98
Bills for other basic needs such as food, housing, medicine, and other important bills	0	1	2	3	98
Medical bills like bill from visits to a doctor or therapist, medical treatments, or health insurance	0	1	2	3	98

[CORE: ASK ALL; Q15 in the 2016 version]

Q12. How did your household afford to pay electricity bills and/or other basic needs since December 2016? Select all that apply.

1. Use your household's current income
2. Use your household's savings or other investments
3. Cut back on non-essential spending for things your household wants
4. Reduce your household energy usage
5. Borrow money from family, friends, or peers
6. Borrow money using a short term loan
7. Use a credit card that you can't pay off right away
8. Leave rent/mortgage unpaid
9. Leave some household bills unpaid past the due date
10. Received emergency assistance from [IOU NAME]
11. Received emergency assistance from other city or regional programs
98. None of the above

[CORE: ASK ALL; Q18 in the 2016 version]

Q13. Since December 2016, has your household's electricity bills been high, lower, or about the same as you expected? [IF NEEDED FOR PHONE: Your best estimate is fine.]

1. Higher than you expected
2. About the same as you expected
3. Lower than you expected
4. Did not have any expectation
98. Don't know

C.3.6. Do TOU Rates Cause or Enhance Economic or Lifestyle Hardship?

[CORE: ASK ALL; Q16 in the 2016 version]

Q14. On warm days since December 2016, how often, if ever, were you or any members of your household uncomfortably hot inside your home because you were trying to save money on your electricity bill?

1. Never
2. Rarely
3. Sometimes
4. Most of the time
5. All the time
6. Not applicable, no warm days since December 2016
98. Don't know

[CORE: ASK ALL; Q17 in the 2016 version]

Q15. On warm days since December 2016, how often, if ever, did you or any members of your household need medical attention because it was too hot inside your home? Please select only one.

Never	1	2	3	4	5	6	7	8	9	10	More than 10 times	Don't know
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

[CORE: ASK ALL; Not included in the 2016 version]

Q16. On cold days since December 2016, how often, if ever, were you or any members of your household uncomfortably cold inside your home because you were trying to save money on your electricity bill?

1. Never
2. Rarely
3. Sometimes
4. Most of the time
5. All the time
6. Not applicable, no cold days since December 2016
98. Don't know

[CORE: ASK ALL; Not included in the 2016 version]

Q17. On cold days since December 2016, how often, if ever, did you or any members of your household need medical attention because it was too cold inside your home? Please select only one.

Never	1	2	3	4	5	6	7	8	9	10	More than 10 times	Don't know
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

[CORE: ASK ALL; Not included in the 2016 version]

Q18. Since December 2016, how often, if ever, was the health of you or any members of your household not good? Please select only one.

1. Never → SKIP TO Q21
2. Rarely
3. Sometimes
4. Most of the time
5. All the time
97. Don't know
98. Prefer not to say

[CORE: ASK IF Q18 ≠ 1; Not included in the 2016 version]

Q19. Since December 2016, how often, if ever, did the poor health of you or any members of your household keep you or them from doing usual activities, such as self-care, work, or recreation? Please select only one.

1. Never
2. Rarely
3. Sometimes
4. Most of the time
5. All the time
97. Don't know
98. Prefer not to say

[CORE: ASK IF Q18 ≠ 1; Not included in the 2016 version]

Q20. Since December 2016, how often, if ever, was the poor health of you or any members of your household at least partially caused by trying to manage your household's electricity usage or bills? Please select only one.

1. Never
2. Rarely
3. Sometimes
4. Most of the time
5. All the time
97. Don't know
98. Prefer not to say

C.3.7. Actions Taken

These next questions ask about what your household has done, if anything, to change when or how electricity is used in your home.

[CORE: ASK ALL; Q19 in the 2016 version]

Q21. Since December 2016, how often, if at all, did you take the following actions to reduce your household's electricity usage in the afternoon and evenings?

Item	Never	Rarely	Sometimes	Usually	Always	Not applicable
Reduced using or turned off your home's air conditioning in the warm afternoons and evenings	0	1	2	3	4	5
Reduced using or turned off your home's heating equipment in the cold afternoons and evenings	0	1	2	3	4	5
Avoided doing laundry during the afternoon and evenings	0	1	2	3	4	5
Avoided running the dishwasher during the afternoon and evenings	0	1	2	3	4	5
Avoided running my spa or pool pump during the afternoon or evenings	0	1	2	3	4	5
Avoided cooking during the afternoon or evenings	0	1	2	3	4	5
Turned off lights not in use during the afternoon and evening	0	1	2	3	4	5
Turned off office equipment (computer, printer, etc.) during the afternoon and evening	0	1	2	3	4	5
Turned off entertainment systems (TV, Nintendo, etc.) during the afternoon and evening	0	1	2	3	4	5
Pre-cooled the home by running air conditioning earlier in the day on warm days	0	1	2	3	4	5

[CORE: ASK ALL; Q20 in the 2016 version]

Q22. Since December 2016, how easy was it for you or members of your household to take any actions to reduce your electricity usage in the afternoon and evenings? Please use a 0 to 10 scale where 0 means not easy at all and 10 means extremely easy.

0 Not easy at all	1	2	3	4	5	6	7	8	9	10 Extremely easy
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

[CORE: ASK ALL; Q21 in the 2016 version]

Q23. Which of the following, if any, has kept you from reducing or shifting your electricity usage in the afternoon and evenings since December 2016? Please select all that apply.

1. Nothing keeps me from shifting my usage
2. I have done all I can do
3. My household already uses very little electricity
4. My home gets uncomfortable if I try to reduce electricity usage
5. Child(ren) in household make it difficult to change our routines
6. Disabled household member makes it difficult to change our routines
7. Elderly household member makes it difficult to change our routines
8. Working from or being at home most of the day makes it difficult to use less electricity

9. My schedule doesn't allow me to reduce my usage
10. I have old appliances that use a lot of energy
11. I don't know what actions to take to reduce or shift my electricity usage.

C.3.8. General Attitudes and Awareness Towards EE & DR

[CORE: ASK ALL; Q22 in the 2016 version]

Q24. Using a scale of 0 to 10 where 0 means do not agree at all, and 10 means completely agree, please tell me how much you agree with each statement.

Item	0 Do not agree at all	1	2	3	4	5	6	7	8	9	10 Completely agree
I often worry whether there is enough money to pay my electricity bill.											
I can better manage my electricity bill by changing when I use electricity.											
I can consistently plan my electricity use based on the time of day.											
I conserved electricity in my home over the past six months.											
If my electricity bill goes up, I feel like I must do something to reduce it.											

C.3.9. Demographic Characteristics

Now, we have a few questions about you and your household.

[NON-CORE: ask in Web version ONLY; Q24 in the 2016 version]

Q25. Which of the following best describes the highest level of education you completed?

1. Some high school or less
2. High school graduate or equivalent
3. Some college, no degree
4. Technical college degree or certificate
5. Two-year college degree
6. Four-year college degree
7. Graduate or professional degree

[CORE: ASK ALL; Q25 in the 2016 version]

Q26. Which of the following best describes your household's annual income in 2016, before taxes?

1. Less than $12,000

2. $12,000 to less than $17,000
3. $17,000 to less than $21,000
4. $21,000 to less than $25,000
5. $25,000 to less than $29,000
6. $29,000 to less than $33,000
7. $33,000 to less than $37,000
8. $37,000 to less than $41,000
9. $41,000 to less than $50,000
10. $50,000 to less than $100,000
11. $100,000 or more
98. Don't know

[CORE: ASK ALL; Q26 in the 2016 version]

Q27. What is your current employment status? Select all that apply.

1. Employed full-time
2. Employed part-time
3. Seasonally employed
4. Employed, but working non-daytime shifts
5. Unemployed, looking for work
6. Unemployed, not looking for work
7. Homemaker
8. Student
9. Retired
10. Unable to work due to a disability

[CORE: ASK ALL; Q27 in the 2016 version]

Q28. Since December 2016, have you or other members of your household experienced any of the following? Select all that apply.

1. Lost a job or became unemployed
2. Had work hours or pay reduced
3. Cared for elderly or disabled household member
4. Became disabled or seriously ill
5. None of the above

[CORE: ASK ALL; Q28 in the 2016 version]

Q29. Do any of following apply to you or others in your household? Please check "Yes", "No", or "Don't Know" for each item.

	Yes	No	Don't know
Has a serious disability, respiratory condition, or other serious medical condition	1	2	98
Receives disability payments	1	2	98

[CORE: ASK ALL; Q29 in the 2016 version]

Q30. Does anyone in your household have a disability or serious medical condition that requires any of the following items? Please check "Yes," "No," or "Don't know" for each item.

	Yes	No	Don't know
Your home to be cooled on warm days	1	2	98
Your home to be heated on cool days	1	2	98
Someone to use more energy for medical equipment	1	2	98
Someone to be home most of the day	1	2	98

[CORE: ASK ALL; Q30 in the 2016 version]

Q31. How many people in each of the following age categories lived in your home since December 2016, including yourself?

	0 None	1	2	3	4	5	6	7 or more
Under 6 years old	0	1	2	3	4	5	6	7
Between 6 and 17 years old	0	1	2	3	4	5	6	7
Between 18 and 64 years old	0	1	2	3	4	5	6	7
Between 65 and 84 years old	0	1	2	3	4	5	6	7
85 years or older	0	1	2	3	4	5	6	7

[NON-core: ASK in web version ONLY; Q31 in the 2016 version]

Q32. Which categories describe you? Please select all that apply?

1. American Indian or Alaska Native (For example, Navajo Nation, Blackfeet Tribe, Mayan, Aztec, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, etc.)
2. Asian (For example, Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese, etc.)
3. Black or African American (For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc.)
4. Hispanic, Latino, or Spanish origin (For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadorian, Dominican, Colombian, etc.)
5. Native Hawaiian or Other Pacific Islander (For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.)
6. Middle Eastern or North African (For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc.)
7. White (For example, German, Irish, English, Italian, Polish, French, etc.)
8. Some other race, ethnicity, or origin

98. Don't know

C.3.10. Household Characteristics

[CORE: ASK ALL; Q32 in the 2016 version]

Q33. During the past six months, was there someone usually home during each of the following times on weekdays and weekends?

	Weekday				Weekend			
	Yes	No	Not sure	Decline to answer	Yes	No	Not sure	Decline to answer
Morning	1	2	98	99	1	2	98	99
Afternoon	1	2	98	99	1	2	98	99
Evening	1	2	98	99	1	2	98	99
Night	1	2	98	99	1	2	98	99

[Non-core: Ask in web version ONLY; Q33 in the 2016 version]

Q34. Do you or others in your household own your home, rent your home without subsidized housing assistance, or rent your home with subsidized housing assistance?

1. Owned by you or someone else in your household
2. Rented *without* subsidized housing assistance (such as Section 8)
3. Rented *with* subsidized housing assistance (such as Section 8)
98. Don't know

[Non-core: ask in web version ONLY; Q34 in the 2016 version]

Q35. What kind of house or building do you live in?

1. Single-family detached house
2. Duplex, triplex, or four-plex
3. Apartment or condo building
4. Townhome
5. Manufactured or mobile home
6. Boat, RV, van, camper, or other mobile unit
98. Don't know

[CORE: ASK ALL; similar to Q36 in the 2016 version]

Q36. a) Do you have the following items for cooling your home? Please mark Yes or No for each item.

b) For the items you have in your home, please mark how often you've used them to cool your home on warm or hot days since December 2016.

Item	Yes	No	Don't know		Daily	Several days a week	Several days a month	Never	Not applicable, no warm days
Central air-conditioning system	☐	☐	☐	→	○	○	○	○	○
Room air conditioning unit that is portable or attached to your window	☐	☐	☐	→	○	○	○	○	○
Ceiling or portable fan(s)	☐	☐	☐	→	○	○	○	○	○
Other cooling equipment	☐	☐	☐	→	○	○	○	○	○

[CORE: ASK ALL; not included in the 2016 version]

Q37. a) Do you have the following items for heating your home? Please mark Yes or No for each item.

b) For the items you have in your home, please mark how often you've used them to heat your home on cool or cold days since December 2016.

Item	Yes	No	Don't know		Daily	Several days a week	Several days a month	Never	Not applicable, no cold days
Electric furnace	☐	☐	☐	→	○	○	○	○	○
Gas furnace	☐	☐	☐	→	○	○	○	○	○
Baseboard heating	☐	☐	☐	→	○	○	○	○	○
Wall or cadet heater	☐	☐	☐	→	○	○	○	○	○
Portable or space heater	☐	☐	☐	→	○	○	○	○	○
Other heating equipment	☐	☐	☐	→	○	○	○	○	○

[CORE: ASK ALL; Q38 in the 2016 version]

Q38. Does your home have a thermostat to control your cooling and/or heating equipment?

1. Yes, a thermostat that turns on and off my *heating* system only
2. Yes, a thermostat that turns on and off my *cooling* system only
3. Yes, a thermostat that turns on and off *both* my heating and cooling systems
4. No thermostat → SKIP TO Q41
98. Don't know → SKIP TO Q41

[CORE: IF Q38=1, 2, OR 3, HAS THERMOSTAT; similar to Q39 in the 2016 version]

Q39. Is your thermostat programmable? A programmable thermostat does not have to be adjusted manually and can be automatically set to different temperatures at different times of the day, and also includes "smart" thermostats.

1. Yes
2. No

98. Don't know

[CORE: IF Q38=1, 2, OR 3, HAS THERMOSTAT; similar to Q40 in the 2016 version]

Q40. What temperature do you typically set your thermostat at in late afternoon and evening times on cold weekdays and weekends? Please select one for weekdays and one for weekends. [IF NEEDED FOR PHONE: Your best estimate is fine.]

	Weekdays	Weekends
Off	1	1
65 F and below	2	2
66 F to 68 F	3	3
69 F to 71 F	4	4
72 F to 74 F	5	5
75 F to 76 F	6	6
77 F or higher	7	7

C.3.11. Outreach, Website, App, & Technologies

These last few questions ask about information you may have received from [IOU] and about energy-related technologies you may have in your home.

[NON-CORE: ASK IN WEB ONLY IF IOU=SCE OR SDG&E AND TO TREATMENT GROUPS, NOT CONTROL GROUP; not included in the 2016 version]

Q41. [IOU] provided bill protection for 12 months to those participating in the [IOU STUDY NAME]. Bill protection means that, over the course of the year, if the total amount you paid on your current study rate plan is more than you would have paid on the standard rate plan, you will be credited the difference on an upcoming electricity bill. Do you understand what bill protection means?

1. Yes
2. No

[NON-CORE: ASK IN WEB ONLY IF IOU=PG&E AND TO TREATMENT GROUPS, NOT CONTROL GROUP; not included in the 2016 version]

Q42. PG&E provided bill protection for 12 months to those participating in the Electric Rates Study. Please select which of the following describes what **bill protection** means. (Select all that apply.)

[RANDOMIZE OPTIONS 1-3; KEEP OPTION 4 AS LAST OPTION]

1. I *don't have to pay* for electricity while I'm covered by Bill Protection the first year.
2. PG&E will credit me the difference *after the first year* if my total electricity bill for the year were higher than it would have been on the standard rate plan.
3. For the first year, I will receive a bill credit *every month* my electricity bill is higher than what it would have been on the standard rate plan.

4. I don't understand bill protection.

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP; not included in the 2016 version]

Q43. Did you receive a letter in the past few weeks from [IOU] [IF IOU=SDG&E OR PG&E, INSERT: that mentioned when your bill protection is ending, OR IF IOU= SCE, INSERT: about your bill protection]?

1. Yes
2. No
98. Don't know

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP; not included in the 2016 version]

Q44. Are you aware that your bill protection [IF IOU=SDG&E OR SCE, INSERT: ends in June or July 2017, OR IF IOU=PG&E, INSERT: ended in June 2017]?

1. Yes
2. No

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP; not included in the 2016 version]

Q45. Since December 2016, [IOU] has sent you seasonal newsletters with seasonal tips to help you manage your electricity use. Do you remember receiving any of these newsletters?

1. Yes
2. No

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP; Q42 in the 2016 version]

Q46. Since December 2016, have you visited the following websites? Please select all that you have visited.

1. [IF IOU=SDG&E] Your rate plan study website (sdge.com/Whenergy)
2. [IF IOU=SDG&E] The SDG&E My Account website
3. [IF IOU=PG&E AND IF RCTGROUP=1] Your rate plan study website (pgestudy4to9pm.com)
4. [IF IOU=PG&E AND IF RCTGROUP=2] Your rate plan study website (pgestudy6to9pm.com)
5. [IF IOU=PG&E AND IF RCTGROUP=3] Your rate plan study website (pgestudythreeseasons.com)
6. [IF IOU=PG&E] The PG&E My Account website
7. [IF IOU=SCE AND IF RCTGROUP=1] Your rate plan study website (on.sce.com/tousave)
8. [IF IOU=SCE AND IF RCTGROUP=2] Your rate plan study website (on.sce.com/toushift)
9. [IF IOU=SCE AND IF RCTGROUP=3] Your rate plan study website (on.sce.com/touseason)
10. [IF IOU=SCE] The SCE My Account website
98. None of the above

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP, AND IF Q45=YES OR Q46=1 to 10; Q43 in the 2016 version]

Q47. For each of the sources of information you used, please rate how useful you found the information in managing your electricity use, where 0 is not useful at all and 10 is extremely useful.

Item	0 Not useful at all	1	2	3	4	5	6	7	8	9	10 Extremely useful	Don't know
[IF Q45=YES] Seasonal newsletter												
[PIPE IN SELECTED FROM Q46]												

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP; Q45 in the 2016 version]

Q48. Thinking about all the things that [IOU] has done to communicate with you about your new rate, including your bills, seasonal newsletters, other mailings and emails, and the website, how satisfied are you with [IOU]'s communications overall?

0 Not satisfied at all	1	2	3	4	5	6	7	8	9	10 Extremely satisfied	Don't know

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP, AND if IOU = SDG&E; not included in the 2016 version]

Q49. When your rate changed last summer (2016), SD&E invited you to download a smartphone app that notifies customers like you of when electricity rates change during the day. It also allows you to check your electricity usage. Have you heard about and downloaded the app?

1. Heard about and downloaded the app
2. Heard about and tried to download the app but couldn't make it work → SKIP TO Q53
3. Heard about but didn't download the app → SKIP TO Q53
4. Have not heard about or downloaded the app → SKIP TO Q53

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP, AND IF Q49=1 (DOWNLOADED APP), AND IF IOU = SDG&E; not included in the 2016 version]

Q50. Have you used SDG&E's smartphone app?

1. Yes
2. No → SKIP TO Q53

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP, AND IF Q50=1 (USED APP), AND IF IOU=SDG&E; similar to Q48 in the 2016 version]

Q51. Please indicate whether or not you have used each of the following features of the app. For each feature you have used, please indicate how helpful you find this feature on a scale of 0 to 10, where 0 means not helpful at all and 10 means extremely helpful.

Item	Used		0 Not helpful at all	1	2	3	4	5	6	7	8	9	10 Extremely helpful
Alerts during the day that the electricity rates have changed		→											
Access to your monthly projected bill amount		→											
Summary of monthly usage by peak period		→											
Access to more detailed information about your household energy use patterns		→											

[NON-CORE: ASK IN WEB VERSION ONLY TO TREATMENT GROUPS, NOT CONTROL GROUP, AND IF Q50=1 (USED APP), AND IF IOU = SDG&E; similar to Q49 in the 2016 version]

Q52. On a scale of 0 to 10, where 0 means do not agree at all and 10 means completely agree, to what extent do you agree with the following statements about the app?

Item	0 Do not agree at all	1	2	3	4	5	6	7	8	9	10 Completely agree
The app is easy to use	0	1	2	3	4	5	6	7	8	9	10
The alerts have helped me reduce my electricity use during peak periods	0	1	2	3	4	5	6	7	8	9	10
The app does not provide enough information about my household's usage for me to take action	0	1	2	3	4	5	6	7	8	9	10
There are too many alerts	0	1	2	3	4	5	6	7	8	9	10
I would recommend this app to friends and family	0	1	2	3	4	5	6	7	8	9	10

[NON-CORE: ASK IN WEB VERSION ONLY; not included in the 2016 version]

Q53. "Smart" devices and appliances are now available that connect to your home's Wi-Fi and have advanced features, like the ability to remotely control it from a smartphone or tablet, and to automatically turn off or adjust when no one is home, when not in use, and/or when electricity

prices are highest. Does your home any of the following "smart" devices or appliances? Select all that are in your home.

1. [IF Q38=1,2 OR 3, HAS THERMOSTAT] Smart thermostat to control heating and/or cooling, like the Nest or Ecobee
2. Smart light bulbs, like Philips Hue, GE Link, or LIFX
3. Smart refrigerator
4. [IF Q21c<>5, HAS LAUNDRY MACHINES] Smart clothes washer or dryer
5. [IF Q21d<>5 HAS DISHWASHER] Smart dishwasher
6. Smart water heater and/or water heater controller
7. None of the above

[NON-CORE: ASK IN WEB VERSION ONLY AND IF ANY ITEM IN Q53 EXCEPT "NONE OF ABOVE" IS SELECTED; not included in the 2016 version]

Q54. On a scale of 0 to 10, where 0 means not satisfied at all and 10 means extremely satisfied, how satisfied are you with your smart devices or appliances?

	0 Not satisfied at all	1	2	3	4	5	6	7	8	9	10 Extremely satisfied
[PIPE IN ITEMS SELECTED IN Q53]											

[NON-CORE: ASK IN WEB VERSION ONLY AND IF ANY ITEM IN Q53 EXCEPT "NONE OF ABOVE" IS SELECTED; not included in the 2016 version]

Q55. On a scale of 0 to 10, where 0 means not useful at all and 10 means extremely useful, how useful are your smart devices or appliances at helping your household reduce or shift your energy usage?

	0 Not useful at all	1	2	3	4	5	6	7	8	9	10 Extremely useful
[PIPE IN ITEMS SELECTED IN Q53]											

[NON-CORE: ASK IN WEB VERSION ONLY AND IF ANY ITEM IN Q53 EXCEPT "NONE OF ABOVE" IS NOT SELECTED; not included in the 2016 version]

Q56. On a scale of 0 to 10 where 0 is not interested at all to 10 extremely interested, how interested are you or members of your household in having these smart devices or appliances in your home?

	0 Not interested at all	1	2	3	4	5	6	7	8	9	10 Extremely interested	Not applicable
[PIPE IN ITEMS NOT SELECTED IN Q53]												

C.3.12. Contact for Further Questions

[NON-CORE: ASK IN WEB VERSION ONLY; Q53 in the 2016 version]

Q57. We want to make sure we fully understand your experience with this study. If needed, can we contact you to ask a few more in-depth questions? You would receive an additional incentive for participating.

1. Yes
2. No

Appendix D. Economic Index Dashboard

See the attached Excel file that contains an interactive dashboard demonstrating how the economic index scores are calculated. The file is named *Appendix D - TOU Customer Survey Economic Index Dashboard.xlsx*.

Appendix E. Detailed Statistics of Key 2017 Customer Survey Results

See the attached Excel files E.1 to E.3 that include more statistical details for the key findings tables in the survey results sections for each IOU in second interim report. The files are named:

- *Appendix E.1 – PG&E 2017 TOU Customer Survey Result Tables Statistical Details.xlsx*
- *Appendix E.2 – SCE 2017 TOU Customer Survey Result Tables Statistical Details.xlsx*
- *Appendix E.3 – SDG&E 2017 TOU Customer Survey Result Tables Statistical Details.xlsx*

Appendix F. Statistical Results of 2017 TOU Customer Survey Questions

See the attached Excel files F.1 to F.3 that include the statistical results of each question in the 2017 customer survey, by IOU, climate region, and customer segment. The files are named:

- *Appendix F.1 – PG&E 2017 TOU Customer Survey Question-Level Results.xlsx*
- *Appendix F.2 – SCE 2017 TOU Customer Survey Question-Level Results.xlsx*
- *Appendix F.3 – SDG&E 2017 TOU Customer Survey Question-Level Results.xlsx*