BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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

OPENING BRIEF OF THE UTILITY REFORM NETWORK CONCERNING COMPLIANCE WITH SECTION 745 REQUIREMENTS FOR THE IMPLEMENTATION OF DEFAULT RESIDENTIAL TIME-OF-USE RATES

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- CARE/FERA customers in hot climate zones will see average summer monthly bill increases of $20-$40 under time-of-use (TOU) rates, and only about 5% of all CARE/FERA customers would see an annual bill reduction under TOU rates.
- The survey results show that CARE/FERA customers already suffer greater economic hardship and greater health hardship.
- While the survey results do not indicate any difference in the economic hardship of CARE/FERA customers on TOU versus control rates, the combination of the default effect and the perception bias created by the $200 incentive payment skew the hardship responses sufficiently to make such a differentiation difficult under the survey design.
- For economically vulnerable customers in hot climate zones, the combination of bill increases of $20-$40 per month, combined with significantly lower peak load reductions than for non-CARE customers, means that requiring such customers to switch to default TOU would constitute an unreasonable hardship, because the individual customers would suffer harm without providing the benefits of TOU pricing. TURN thus recommends that economically vulnerable customers be excluded from any future default TOU, either in the default TOU pilot or in any subsequent mass roll-out.
- Based on the pilot results, TURN cannot reach a conclusion that seniors in hot climate zones would face unreasonable hardship, but TURN recommends monitoring this group in future analyses based on the opt-in or default TOU pilots.
- Customers in SCE's Climate Zone (CZ) 10 should be considered located in a hot climate zone for purposes of the CARE/FERA exclusion, as the temperature characteristics of CZ 10 are much more similar to SCE's other hot climate zones than to its other moderate climate zone, and the structural bill impacts in CZ 10 are almost identical with the impacts in the other hot climate zones.
- The Commission should defer full-scale roll-out of default TOU[1] until the penetration level in the medical baseline program reaches at least 50%, since Section 745(c)(1) mandates excluding medical baseline customers from default TOU. The current medical baseline

[1] TURN does not recommend that the TOU Pilots, planned for 2018, need be deferred based on the recommended medical baseline penetration criterion.

penetration rate is less than 3%, but TURN preliminarily estimates that the eligible population is likely more than 10%. The Commission should order the utilities to use relevant databases, in consultation with health professionals, to estimate the potential population eligible for medical baseline.

- The Commission should defer full-scale roll-out of default TOU[2] until the penetration level in the Family Electric Rates Assistance (FERA) program reaches at least 50%. Like CARE customers, FERA customers are economically vulnerable customers protected by the requirements of Section 745(c)(2). TURN does not believe that the utility proposals to use propensity models to target customers for outreach and enrollment are adequate to address the very low participation rates in the FERA program.

[2] For practical reasons, TURN does not recommend that the Default TOU Pilots, planned for 2018, be deferred based on the recommended FERA penetration criterion, even though FERA customers are "economically vulnerable" customers.

OPENING BRIEF OF THE UTILITY REFORM NETWORK CONCERNING COMPLIANCE WITH SECTION 745 REQUIREMENTS FOR THE IMPLEMENTATION OF DEFAULT RESIDENTIAL TIME-OF-USE RATES

1 Introduction and Summary of Recommendations

1.1 The Commission Is Poised to Terminate Forty Years' of "Lifeline" Tiered Rates Which Promoted Affordability and Conservation

The Commission knows well the history of lifeline rates, mandated by the Legislature in 1976 both to ensure reasonable rates for essential energy service and to promote conservation by charging higher prices to those who use more electricity, a common-sense policy of "you pay more if you use more."[3] Tiered rates continued as State policy for over forty years, with certain modifications designed to address the potential negative bill volatility impacts caused when tier differentials got excessively high.[4] During all this time, California per capita consumption stayed relatively flat, as highlighted by the so-called Rosenfeld Curve.

Unfortunately, residential rates changed dramatically as a result of the energy crisis. After the Commission increased "frozen rates" due to the billions of dollars in excess energy costs resulting from deregulation and market failures, the Legislature in 2001 capped the rates of residential customers consuming less than 130% of baseline, and the Commission instituted four and five-tiered rates to collect the revenue increases.

In the debates ensuing after the energy crisis, many parties argued that if only retail rates were deregulated and time-variant, the market power of generators could have been averted through "price-responsive" demand response. The notion that economically efficient time-

[3] An excellent and succinct summary of the history of tiered rates in California is contained in Section 2.1.2 of daD.15-07-001, at pages 9-14.
[4] See, for example, D.15-07-001, p. 11. The "tier differential" is the difference (usually expressed as a ratio) between the rates applicable to different tiers.

varying rates would reduce supplier market power was part and parcel of the arguments by those who sought to defend deregulation and argue that the problem was that only "supply" had been deregulated, since retail rates were frozen.[5] Those arguments shifted towards emphasizing the economic efficiency and alleged environmental benefits of load shifting, demand response and time-variant rates.

TURN is often criticized for not endorsing time-varying rates, given the obvious economic argument that since wholesale prices are time-varying, it makes sense that retail rates should likewise vary with time, so as to provide a clear economic signal for customers to use less electricity when it is more expensive, and likely more polluting, to produce. Those criticisms ignore the fact that there are other methods, besides price discrimination, of reducing on-peak electricity consumption and the use of polluting peaker plants. Parties alleging economic (less generation capacity) and environmental (less emissions) benefits have consistently failed to explain how these benefits really accrue as a result of residential time-of-use (TOU) rates, given the actual drivers of new generation capacity in California and the operation of the WECC-wide wholesale energy market.[6]

So the push for residential TOU rates ultimately rests on the claim that TOU rates are more "cost-based," because wholesale energy prices are time-variant. TURN does not disagree with this claim, but merely points out that there are many other cross-subsidies inherent in residential and commercial utility rates besides just the time-differentiation of generation costs.

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[5] Ironically, retail rates were frozen at an artificially high level in order to allow utilities to recoup stranded costs.

[6] In D.15-07-001, in addressing both the economic and environmental benefits of TOU rates, the Commission essentially punted and requested that the utilities provide more information in the future, without reaching specific factual findings. See, D.15-07-001, Sec. 4.4, p. 76-82 ("In sum, none of the models evaluated by parties provides a sufficient basis for finding that GHG emissions will increase or decrease due to load shifts caused by TOU rates in California."); and Sec. 4.5, p. 82-84.

We do not, for example, charge rural customers more for distribution service, despite the fact that distribution costs to serve a rural customer are likely higher. While cost-causation is a valid rate design goal, it must be balanced with other goals, such as fairness, equity and affordability. There is no principled reason to focus exclusively on cost causation of generation costs, especially if the alleged economic and environmental benefits are speculative, and the impacts on customers may be negative.

After almost forty years of support for tiered rates, in 2013 the Legislature granted the Commission the discretion to adopt default TOU residential rates as soon as January 2018 (AB 327, Perea, 2013). However, in enacting Section 745 of the Public Utilities Code,[7] the Legislature imposed several requirements the Commission had to meet, including the requirement of Section 745(c)(2) that: "The commission shall ensure that any time-of-use rate schedule does not cause unreasonable hardship for senior citizens or economically vulnerable customers in hot climate zones."

The Legislature has long understood the importance of and need for air conditioning in certain inland portions of California, and has required that baseline amounts vary geographically by climate zone. The mandatory requirement of AB 327 that the Commission "shall ensure" there be no "unreasonable hardship" on seniors and economically vulnerable customers *in hot climate zones* is no passing whim, but rather reflects a long-standing concern about the impact of high electric rates on customers who require electricity to cool their homes and survive in climates where temperatures routinely exceed 100 degrees.

[7] All code references are to the Public Utilities Code, unless indicated otherwise. Also, TURN uses the shorthand "Section 745" to refer specifically to Section 745(c)(2). The full text of Section 745 is contained in Appendix A to D.15-07-001.

The Commission is now at a historic cross-road. It can view § 745(c)(2) as merely a bump in the road, requiring an administrative review process that will find no "unreasonable hardship" by easily dismissing complicated and ambiguous data. Or, the Commission can take seriously the fact that it is about to change one of the linchpins of California's clean energy history, and closely consider all available facts before reforming residential rates.

With this in mind, TURN hopes that the Commission will not simply rubber stamp the glidepath towards TOU adopted in D.15-07-001. Rather, the Commission should closely consider the evidence from the 2016 Opt-in Pilot, which tested TOU rates on about 40,000 customers, keeping in mind the California's historic commitment to rates that promote conservation and affordability and minimize the harmful impacts of volatile utility bills.[8] As summarized in Section 1.3, TURN believes that the data do show the potential for unreasonable hardship for low income customers enrolled on the California Alternate Rates for Energy (CARE) or the Family Electric Rate Assistance (FERA) programs. Those customers should be fully protected by exempting them from any future default TOU rates.

1.2 Commission Definition of Section 745 Terms and the 2016 Opt-In Pilot

In Decision 16-09-016 the Commission addressed several foundational definitional issues related to the implementation of Section 745 requirements. The Commission made the following findings to assist parties in evaluating the data from TOU pilot programs to reach recommendations concerning Section 745(c)(2):

[8] The 2016 Opt-in Pilot enrolled about 57,000 participants, with about 40,000 placed on TOU rates and about 17,000 as controls. Exh. PG&E-305, Tables 4.2-4, 5.2-4 and 6.2-3.

- The Commission defined "economically vulnerable customers" as all utility customers enrolled or eligible for the CARE or FERA programs. Identification of eligible customers is addressed in Section 4.2 of this brief;[9]
- The Commission defined "seniors" as any utility customer (i.e. household with an account) with a full-time permanent occupant who is over the age of 65;[10]
- The Commission defined "hot climate zones" based on a "consensus" proposal to include SCE Regions 13, 14 and 15; PG&E Regions P, R, S and W; and SDG&E Mountain and Desert Regions;[11]
- The Commission explained that "unreasonable hardship" includes both economic and health and safety impacts and should be evaluated by considering all available existing data as well as data from the opt-in pilot concerning energy insecurity, and that findings from the default TOU pilots could be incorporated at a later date;[12]

Similarly, the Commission made the following findings to assist parties in evaluating the data from TOU pilot programs to reach recommendations concerning Section 745(d), enacted pursuant to SB 1090 (Fuller, 2014):

- The Commission directed the TOU Working Group to examine additional data concerning summer temperatures in order to define "areas with hot summer weather." As

[9] D.16-09-016, p. 9. In this brief, TURN often uses the term "CARE/FERA customers" interchangeably with "economically vulnerable customers," based on the use of this term in the Pilot Report. However, TURN considers all CARE/FERA **eligible** customers as economically vulnerable customers, pursuant to the adopted definition.
[10] D.16-09-016, p. 10-11.
[11] D.16-09-016, p. 14. As discussed in Section 2.2.2 of this brief, TURN recommends that the Commission modify this definition to include SCE Climate Zone 10 as a hot climate zone for purposes of the Section 745(c)(2) analysis.
[12] D.16-09-016, p. 14-17.

explained in Section 2.2.2 of the brief, the resulting data demonstrate that SCE Climate Zone 10 is also an area with hot summer weather, and TURN recommends it be defined as a hot climate zone for purposes of Section 745(c)(2);[13]

- The Commission explained that bill volatility should be considered both on a monthly and a seasonal basis;[14] and
- The Commission explained that the hardship analysis is less expansive than "unreasonable hardship" and includes only financial hardship.[15]

In addition to the unreasonable hardship analysis under § 745(c)(2) and the structural bill volatility analysis under § 745(d), AB 327 imposed several additional conditions and limitations for the implementation of TOU rates, including:

- Section 745(c)(4) requires one-year of interval usage data prior to defaulting and bill protection for the first year. The implementation of Section 745(c)(4) is addressed in Section 4.1 of this brief;
- Section 745(c)(5) requires the utilities to provide customers with comparisons of bill impacts under different tariffs at least once a year; and
- Perhaps most importantly, Section 745(c)(1) mandates that customers on medical baseline and those who cannot be disconnected without an in-person visit must be excluded from default TOU.[16] TURN addresses the medical baseline exclusion in Section 3 of this brief.

[13] D.16-09-016, p. 18-19.
[14] D.16-09-016, p. 20.
[15] D.16-09-016, p. 23.
[16] D.16-09-016, p. 31.

1.3 Summary of TURN's Recommendations

The primary purpose of this brief is to address whether the imposition of default TOU rates, either in the 2018 default pilot or in a mass roll-out of TOU default rates, would impose an unreasonable hardship on the vulnerable customers identified in Section 745. TURN bases its recommendations in this brief primarily on the factual data obtained through the 2016 Opt-In Pilot, as discussed in the "Pilot Report" prepared by Nexant and Research Into Action (RIA).[17] TURN's evaluation of the pilot results is contained in the testimonies of TURN experts Eric Borden, identified as Exhibit TURN-301, and Gabriela Sandoval, identified as Exhibit TURN-302. These witnesses justify the following primary findings and recommendations:

- CARE/FERA customers in hot climate zones will see *average* summer monthly bill increases of $20-$40 under TOU rates, and only about 5% of all CARE/FERA customers would see an annual bill reduction under TOU rates.
- The survey results show that CARE/FERA customers already suffer greater economic hardship and greater health hardship.
- While the survey results do not indicate any difference in the economic hardship of CARE/FERA customers on TOU versus control rates, the combination of the default effect and the perception bias created by the $200 incentive payment skew the hardship responses sufficiently to make such a differentiation difficult under the survey design.
- For economically vulnerable customers in hot climate zones, the combination of bill increases of $20-$40 per month, combined with significantly lower peak load reductions than for non-CARE customers, means that requiring such customers to switch to default TOU would constitute an unreasonable hardship, because the individual customers would suffer harm without providing the benefits allegedly due to TOU pricing. TURN thus recommends that economically vulnerable customers be excluded from any future default TOU, either in the default TOU pilot or in any subsequent mass roll-out.

[17] Nexant and Research into Action, "California Statewide Opt-in Time-of-Use Pricing Pilot, Interim Evaluation," April 11, 2017 ("Pilot Report"). A final report was distributed on April 11, 2017. The Pilot Report is identified as Exhibit PG&E-305 in the record.

- Based on the pilot results, TURN cannot reach a conclusion that seniors in hot climate zones would face unreasonable hardship, but TURN recommends monitoring this group in future analyses based on the opt-in or default TOU pilots.
- Customers in SCE's Climate Zone (CZ) 10 should be considered located in a hot climate zone for purposes of the CARE/FERA exclusion, as the temperature characteristics of CZ 10 are much more similar to SCE's other hot climate zones than to its other moderate climate zone, and the structural bill impacts in CZ 10 are almost identical with the impacts in other hot climate zones.
- The Commission should defer full-scale roll-out of default TOU[18] until the penetration level in the medical baseline program reaches at least 50%, since Section 745(c)(1) mandates excluding medical baseline customers from default TOU. The current medical baseline penetration rate is less than 3%, and TURN preliminarily estimates that the eligible population is likely more than 10%. The Commission should order the utilities to use relevant databases, in consultation with health professionals, to estimate the potential population eligible for medical baseline.
- The Commission should defer full-scale roll-out of default TOU[19] until the penetration level in the Family Electric Rates Assistance (FERA) program reaches at least 50%. Like CARE customers, FERA customers are economically vulnerable customers protected by the requirements of Section 745(c)(2). TURN does not believe that the utility proposals to use propensity models to target customers for outreach and enrollment are adequate to address the very low participation rates in the FERA program.

[18] TURN does not recommend that the TOU Pilots, planned for 2018, need be deferred based on the recommended medical baseline penetration criterion.
[19] For practical reasons, TURN does not recommend that the Default TOU Pilots, planned for 2018, be deferred based on the recommended FERA penetration criterion, even though FERA customers are "economically vulnerable" customers.

2 Evaluation of Unreasonable Hardship Pursuant to Sec. 745(c)(2)

2.1 The Results of the 2016 Opt-In TOU Pilot Demonstrate Significant Annual and Summer Bill Impacts for All Customers, but Especially for CARE/FERA Customers in Hot Climate Zones

2.1.1 Summary of Pilot Rates and Bill Impacts

The 2016 Opt-in Pilot put about 40,000 customers of SCE, PG&E and SDG&E on one of three TOU rates for each utility. These rates varied both the pricing during the different periods (peak, partial peak, off-peak) and the timing and length of the on-peak periods. The primary characteristics of each rate are summarized in Table 1 below.

Table 1. PG&E, SCE, and SDG&E Summer Opt-in Pilot TOU Rates[20]

	Utility	Peak Period (Hour Ending)	Peak Price (cents)	Off-peak Price (cents)	Super Off-Peak Price (cents)	Other Features
Rate 1	PG&E	4-9pm	42	32		
	SCE (2)	2-8pm	35	28	23	
	SDG&E	4-9pm	57	35	30	Super off-peak period on weekends much longer than during the week (1am-2pm versus 1am-6am).
Rate 2	PG&E (1)	6-9pm	44	30		Partial peak period 4pm-6pm.
	SCE (2)	5-8pm	53	29	17	
	SDG&E (1)	4-9pm	57	33		
Rate 3	PG&E	4-9pm	57	29		
	SCE (2), (3)	4-9pm	37	23	16	
	SDG&E (4)					

Notes:

(1) Weekday and weekend peaks that are the same price and hours.

(2) Given the difference in baseline credits between Rates 1 and 2 and Rate 3, it is not possible to directly compare prices in each rate period for SCE.

(3) Rate 3 does not have a baseline credit. Prices referred to as "Super On-Peak, On-peak, and off-peak by SCE, labeled in this table Peak, off-peak, and super off-peak, respectively.

(4) SDG&E did include a dynamic hourly rate option for rate 3 but recruitment did not begin until September.

[20] Exh. TURN-301, p. 3, Table 1. Based on Exh. PG&E-305, Sections 4.1, 5.1, 6.1.

It is not possible to directly compare the peak/off-peak price ratios[21] of the different rates due to the complicating nature of baseline credits. Nevertheless, most of the rates had on/off peak ratios of roughly ranging from about 1.3 to about 1.9.[22]

The TOU rates unequivocally increased summer utility bills for almost all customers. CARE/FERA customers in PG&E's and SCE's hot climate zones[23] suffered monthly average bill increases of $20-$40. These bill increases were not reduced by load shifting. On an annual basis, about 40% of customers experienced bill increases, about 50% saw bill changes of less than +/- $3, and about 10% saw bill decreases, except that about 70% of customers on SCE's Rate 3 were losers (saw bill increases). These data reflect the fact that TOU rates result in a shift of revenue requirements from the majority of customers to the small minority of about 10% who pay higher bills under existing tiered rates.

2.1.2 Structural Bill Impacts Show that About 90% of CARE/FERA Customers Will Pay the Same or Higher Bills on an Annual Basis, and that CARE/FERA Customers in Hot Climate Zones Will Pay $20-$40 More in Each Summer Month

The "structural bill impact" is the calculated difference in bills assuming a customer is switched from the regular tiered rate to a TOU rate and does not change their consumption pattern. In other words, the structural bill impact does not take into account any potential reduction or shift in peak period consumption due to the TOU price signal. However, as discussed in 2.1.3 below, the pilot study showed that most customers will not substantially decrease their bills due to peak load reduction, since the bill impacts due to behavioral changes

[21] The peak ratio refers to the difference (expressed as an absolute number or percentage change) between the on-peak and the off-peak price.
[22] Exh. TURN-301, p. 4:3-8.
[23] Due to the small number of customers in the hot climate zones of SDG&E's service territory, the Pilot did not test the impacts on specific subgroups (CARE/FERA, seniors) in SDG&E's hot climate zone.

were statistically insignificant. Thus, the structural bill impacts accurately depict the actual bill impacts of TOU rates as compared to the Otherwise Applicable Tariff (OAT) tiered rates in effect in 2016.

The structural bill impacts provide the evidence necessary to assess hardship as defined in Section 745(d)(2). Traditionally, customers who do better on TOU rates (bills go down) are called "structural winners," while those who do worse are called "structural losers."[24] The Pilot Report classifies these customers as "benefiters" or "non-benefiters,"[25] and classifies anyone with bill changes of less than three dollars per month (positive or negative) as "neutrals."[26]

2.1.2.1 Annual Impacts Demonstrate the Significant Cost Shift that Benefits Just 10% of Customers

The TOU rates were designed to be "revenue neutral," meaning that they would collect exactly the same total revenues from all customers on an annual basis, assuming no change in consumption. But TOU rates have a *distributional impact* – they will change how much different customers pay as compared to existing tiered rates. In general, tiered rates favor customers with lower than average monthly consumption; while TOU rates favor customers with better than average load profiles (lower on-peak consumption than average). The combined effect of moving from tiered to TOU rates is complex and difficult to predict without detailed bill impact analyses.

The Pilot Report conducted those detailed bill impact analyses, and the results are summarized *on an aggregate basis* in the following figures showing the percentage of customers who are winners, losers and neutrals *on an annual basis* for each of the tested rates for PG&E and SCE.

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[24] Structural winners have a better than average "load profile" even without any load shifting.
[25] Based on historical practice, this brief sometimes uses the terms "winners" and "losers" as synonymous with "benefiter" and "non-benefiter."
[26] Unfortunately, the Pilot Report does not identify how many neutrals were above or below zero. Many "neutrals" may, therefore, actually see a bill increase of up to $36 over the year.

Figure 1: PG&E Annual Structural Benefiter/Non-Benefiter Analysis[27]

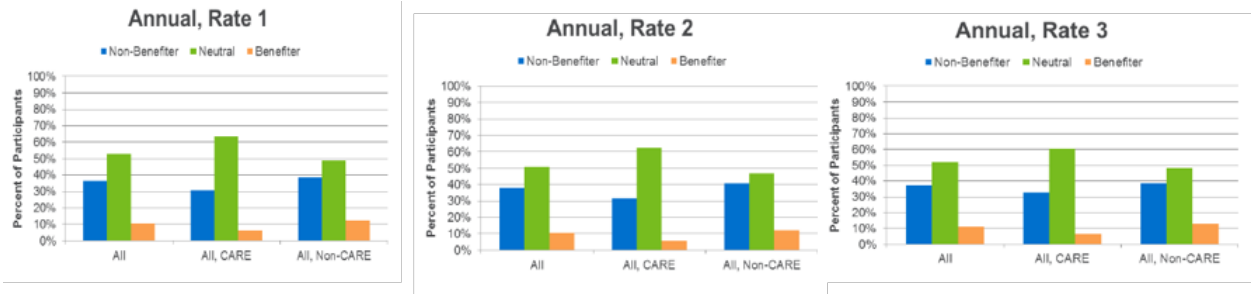
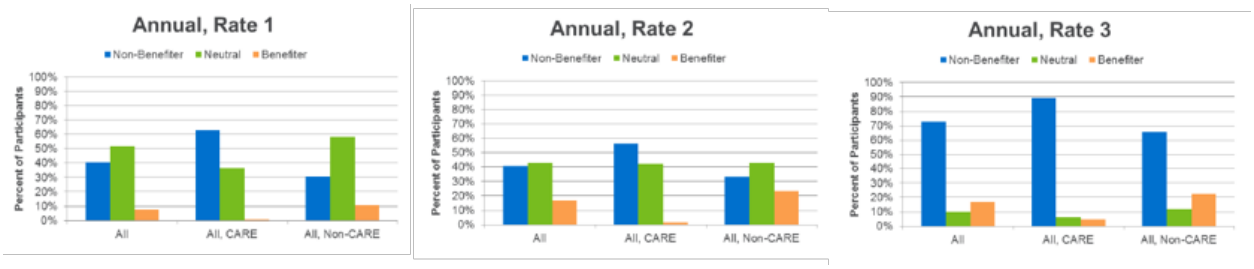


Figure 2: SCE Annual Structural Benefiter/Non-Benefiter Analysis[28]



These figures demonstrate that revenue neutrality *on an annual basis* for all customers is achieved by bill reductions for a small minority of customers (about 10% for PG&E, and about 5%-15% for SCE), bill neutrality[29] for about 50% of customers on PG&E rates and about 40-50% of SCE customers (except for SCE Rate 3), and bill increases for about 30-40% of customers, except for a much higher percentage of losers on SCE Rate 3. In other words, over 85% of customers are structural losers or neutrals, and around 10%-15% are winners. This means that the impact of moving from the 2016 tiered rates to TOU rates is to redistribute a portion of the utility's revenue requirement from less than 20% of customers (who pay less under TOU) to all other customers (who pay more).

[27] Report, Figures 4.4-1, 4.4-3, 4.4-5.
[28] Report, Figures 4.4-1, 4.4-3, 4.4-5.
[29] Though "neutrality" could mean monthly bill increases of up to $3.

Moreover, CARE customers fare worse on an annual basis than non-CARE customers, since only about 5% of CARE customers are structural "winners" on all six PG&E and SCE rates on an annual basis. For SDG&E there were very few winners in either the CARE or non-CARE category.[30] While the data do not allow actual correlations, the numbers suggest a transfer of wealth from lower income customers to higher income customers due to the rate change from tiered to TOU rates.

2.1.2.2 All Customers in Hot Climate Zones Experienced Summer Bill Increases of About $20 to $40 per Month under TOU Rates

The structural impact of TOU rates is much more severe in the summer period, when almost all customers (not just vulnerable populations) experience large monthly bill increases. The summer period is most relevant for assessing hardship because this is when electric use and bills are the highest, particularly due to the use of air conditioners in hot climate zones.[31] The summer period is when customers are likely to experience both financial and physical hardship due to hot weather. This is precisely why Section 745(d) was concerned about bill volatility during the summer, and why Section 745(c)(2) required the Commission to ensure that TOU rates do not cause unreasonable hardship for vulnerable customers "in hot climate zones."

The structural summer bill impacts for PG&E and SCE rates are shown in Figure 3 and Figure 4:

[30] Report, Figures 5.4-1 (SCE Rate 1), 5.4-3 (SCE Rate 2). 5.4-5 (SCE Rate 3). Figures 6.4-1, 6.4-3 and 6.4-5 for SDG&E.

[31] While it is true that electric bills are lower in the winter, and may be lower under TOU rates, customers do not generally appreciate this reduction given that winter natural gas heating bills usually more than make up for the difference.

Figure 3: PG&E Summer TOU Bill Impacts (Structural) in Hot Climate Zones Vary from $17 to $39 per Month[32]

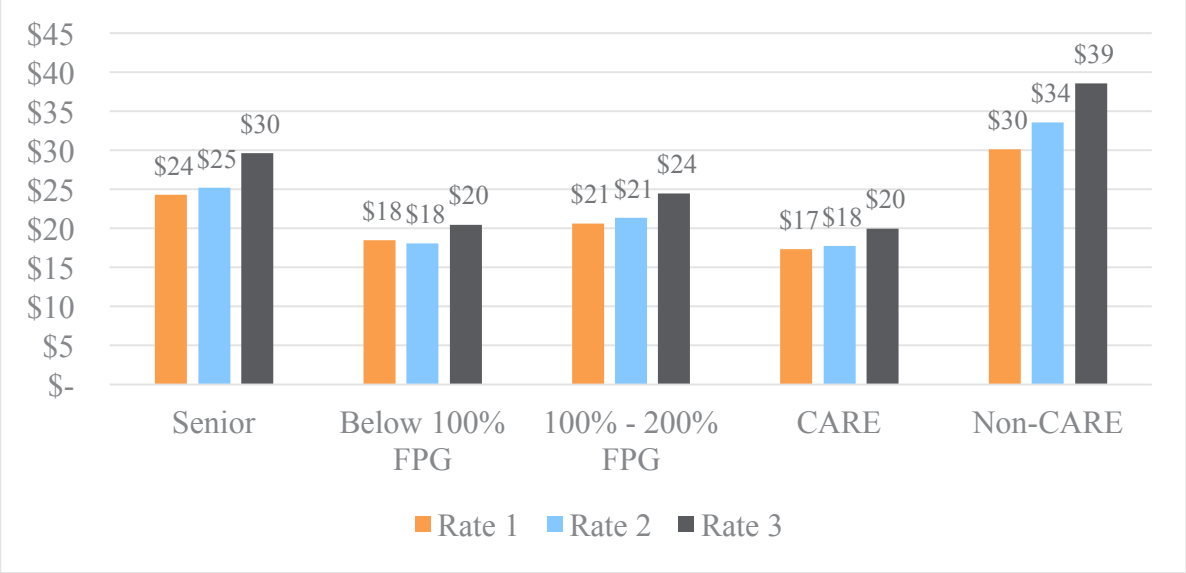


Figure 4: SCE Summer TOU Bill Impacts (Structural) in Hot Climate Zones Vary from $22 to $38 Per Month[33]

[32] Exh. PG&E-305, Pilot Report, Figures 4.4-14 (PG&E Rate 1), 4.4-16 (PG&E Rate 2) and 4.4-18 (PG&E Rate 3).
[33] Exh. PG&E-305, Pilot Report, Figures 5.4-14 (SCE Rate 1), 5.4-16 (SCE Rate 2) and 5.4-18 (SCE Rate 3).

On average over the summer period, monthly bill increases for vulnerable customers (CARE and seniors) ranged from a low of $17 to a high of $38, depending on the group and rate. For PG&E, CARE/FERA customers in hot climate zones paid an average of $18 more per month across all three pilot rates.[34] For groups that already have difficulty paying bills, such monthly bill increases create a significant financial strain.

These average bill increases demonstrate that vulnerable populations face increased hardship under TOU, but they also mask the fact that significant portions of the vulnerable populations will face bill increases much higher than the average, as illustrated in Figure 5 and Figure 6 below. For example, 38% of CARE customers in hot climates on PG&E's Rate 1 experienced monthly bill increases greater than $20. Under SCE's Rate 1, 57% of CARE customers in hot climates will see monthly bill increases greater than $20, and 12% will experience monthly bill increases over $40. Rate 1 under both utilities is not the steepest peak to off-peak ratio, making this analysis relatively conservative should the Commission in the future consider rates with steeper peak period prices.

[34] Exh. PG&E-301, p. 36:23-27.

Figure 5: PG&E Rate 1 Summer Bill Impact Distribution

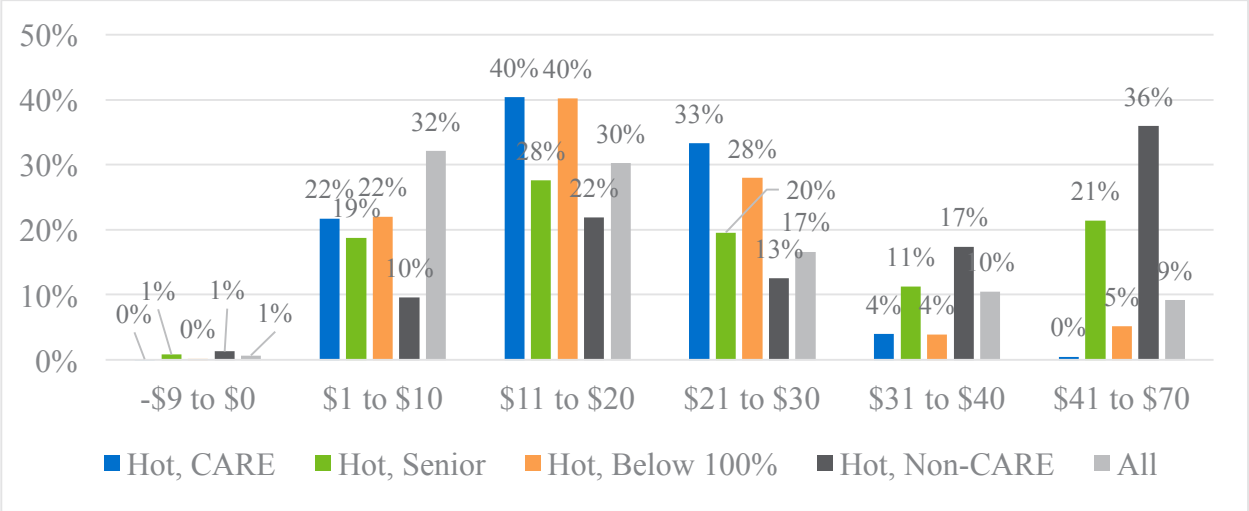
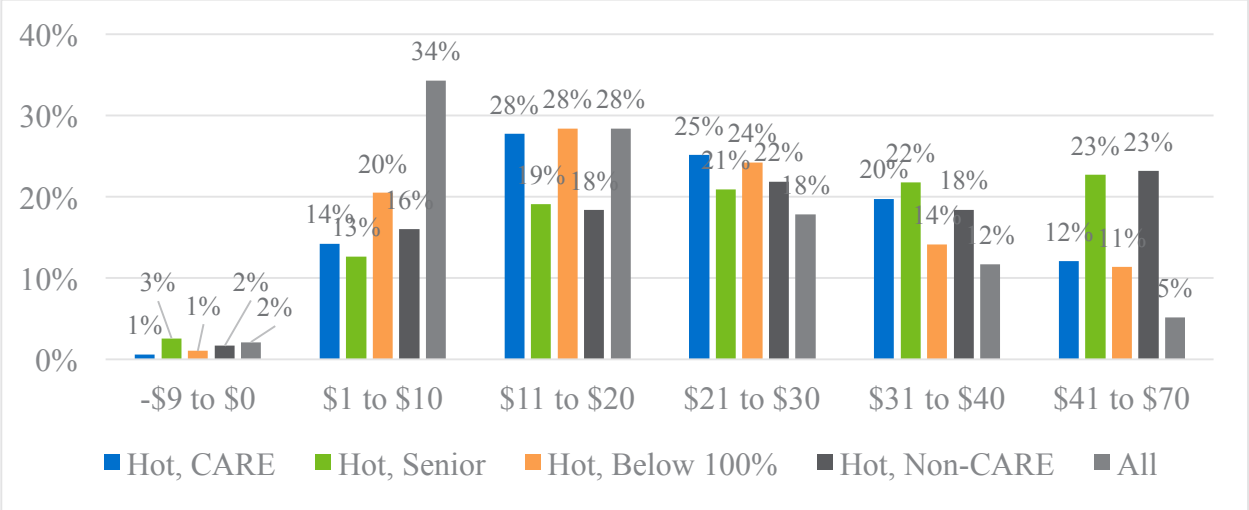


Figure 6: SCE Rate 1 Summer Bill Impact Distribution



2.1.3 Shifting or Reducing Load During Peak Periods in Response to TOU Rates Does Not Mitigate Bill Increases

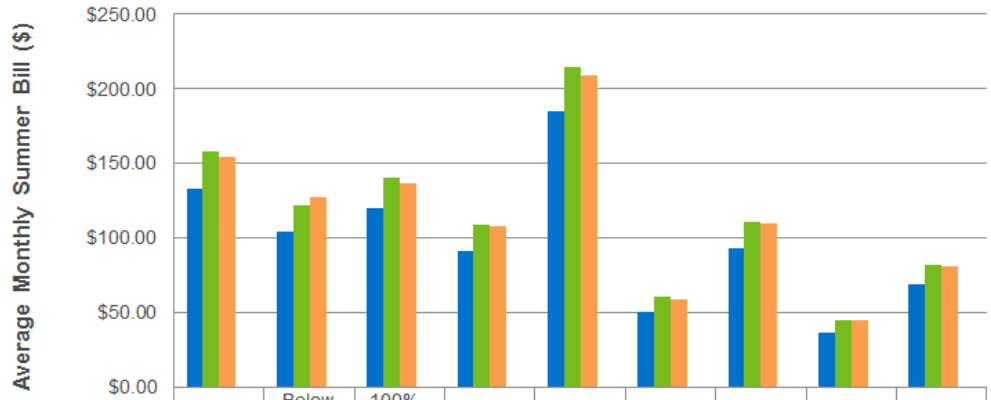
In the past, some parties had minimized the effect of potential bill increases due to TOU rates by claiming that customer response (i.e. peak load shifting or peak load reduction) to TOU

price signals could reduce the bills, at least in comparison to bills with unchanged consumption patterns.

However, the pilot results show that load reduction does not mitigate increased monthly bills. Although customers in the aggregate did exhibit statistically significant peak load reductions of about 3-6%, those load reductions were so small as to result in no statistically significant bill reductions for most customer groups. Even for sub-groups where reduced bills due to changes in behavior were statistically significant, the reductions were but a small portion of the structural bill increase.[35]

For example, the bill impacts of load shifting for PG&E's Rate 1 are shown in Figure 7:

Figure 7: Impact of Behavior Changes on Bills for PG&E Rate 1[36]



	Senior	Below 100% FPG	100% - 200% FPG	CARE	Non-CARE	CARE	Non-CARE	CARE	Non-CARE
	Hot					Moderate		Cool	
No Change in Behavior or Tariff	$133.23	$103.69	$119.80	$91.16	$184.43	$50.39	$93.25	$35.92	$68.99
No Change in Behavior, Change in Tariff	$157.49	$122.15	$140.42	$108.46	$214.55	$60.82	$110.46	$44.66	$81.80
With Change in Behavior and Tariff	$153.94	$127.48	$136.32	$107.67	$208.68	$58.67	$109.91	$44.96	$81.26
% of structural loss mitigated by change in behavior	14.7%*	-28.8%*	19.9%*	4.6%	19.5%*	20.7%*	3.2%	-3.5%	4.2%

* Indicates statistically significant result

[35] Exh. PG&E-305, Pilot Report, Sections 4.4.3-4.4.4 and 5.4.3-5.4.4. This result flows directly from the relative sizes of consumption and bills. For example, a 5% peak load reduction might reduce the bill by about 5%; but if the monthly bill increase is $20, the resulting behavioral change decreases the bill by only $1.

[36] Exh. PG&E-305, Figure 4.4-14.

The data in Figure 7 support the following conclusions:

- Only some of the results (marked with an asterisk) are statistically significant. Most of the rates had even fewer statistically significant results than PG&E's Rate 1. On an aggregate basis, non-CARE behavioral bill changes were statistically significant, but CARE impacts were not statistically significant.
- For at least a couple of CARE subgroups, the behavior changes anomalously results in higher, rather than lower, monthly bills (shown as a negative change in behavior).
- Even the most significant bill reduction for PG&E Rate 1 due to behavioral change (about 20% reduction for the Hot CARE 100-200% FPG), means that rather than a $20 monthly increase, the customer faces a $16 monthly bill increase. In other words, while a 5% load impact may produce significant aggregate load reductions, they do not result in very significant individual bill reductions. A 20% increase in the bill (from $100 to $120) followed by a 20% reduction in just the increase (i.e. a $4 reduction), still results in a 16% bill increase (from $100 to $116).

There is no obvious explanation for the fact that the CARE 0-100% FPG and the CARE 100-200% FPG subgroups appear to have opposite behavioral responses in bills due to TOU pricing. This result was true for PG&E's Rates 1 and 2, but not for Rate 3. On average, however, CARE customers in hot climate zones did not reduce their bills with behavioral changes to any significant degree, as shown in the Table below:

Table 1: Behavioral Impact on Bills of CARE Customers in Hot Climate Zones[37]

		CARE Hot		
IOU	Rate	% Change due to Behavior	Statistically Significant?	Table Reference
PG&E	1	4.60	N	4.4-14
	2	-5.30	N	4.4-16
	3	-3.90	N	4.4-18
SCE	1	-2.00	N	5.4-14
	2	8.40	Y	5.4-16
	3	-3.50	N	5.4-18

The Pilot Report bill impact analyses demonstrate that default TOU pricing will have an overwhelmingly negative effect on CARE/FERA customer bills (i.e. bills will increase), particularly during the summer period, and that customers will not be able to avoid these severe bill impacts with load shifting or load reduction.

2.2 The Load Impact Analyses Demonstrate Several Important Results Regarding Customer Behavior, Though the Results May be Skewed by a Misclassification of SCE Climate Zone 10. Most Importantly, the Results Show that CARE/FERA Customers Contribute Much Less to Peak Load Reduction Than Other Customers.

2.2.1 The Load Impact Results Demonstrate Several Important Customer Behaviors That May Be Relevant to Future TOU Rate Design

One of the ostensible goals of implementing TOU versus tiered rates is to shift load away from high cost "peak" periods to lower cost "off-peak" periods, thus promoting economic efficiency. The economic and environmental benefits of such load shifting were debated intensely during the litigation leading up to D.15-07-001, and the results were inconclusive. The

[37] SDG&E did not include any customers in hot climate zones. The CARE bills for cool/moderate were not significantly increased as a result of TOU rates. Table references are to Exh. PG&E-305. Positive percentage changes signify a reduction in bills due to behavioral response to TOU rates, while negative changes signify an increase in bills.

opt-in TOU pilot was supposed to demonstrate the potential impacts on load shifting of TOU rates with different on/off peak ratios, different lengths of the on-peak period, and peak periods shifted towards the later afternoon than had been previously tested.

Several results of the Opt-In Pilot are worth emphasizing as they may be important for designing future TOU rates, even though they are not directly relevant to the Section 745 analysis.

2.2.1.1 Aggregate Peak Reduction Was Consistent with Prior Studies, Even with a Later Peak in the TOU Pilot

The pilot participants provided aggregate peak load reductions due to TOU rates of 3%-6%. Such a response is consistent with multiple prior studies, even though most of those utilized a peak period generally ending by 7:00 p.m., while the Opt-In Pilot tested rates with peak periods occurring through 9:00 p.m. Thus, there seems to be little difference in the *aggregate* residential customer response due to later peak periods, though there is no information on the granular contributions from different types of customers, aside from the four groupings intended to determine the impact on seniors and economically vulnerable customers. Some prior studies, such as the seminal California Pricing Pilot, showed that load reductions are correlated with factors such as house size, education level and income.[38]

2.2.1.2 The On/Off Peak Price Ratios Did Not Result in Significantly Different Customer Response

Surprisingly, peak period load reductions did not appear to be strongly correlated with the peak to off-peak price ratio or the actual on-peak prices. For example, PG&E saw slightly *lower* peak load reductions for Rate 3, which had higher peak prices and higher approximate on/off peak ratios than Rate 1 or 2. This was also true for SCE and SDG&E. This indicates there may

[38] Exh. TURN-301, p. 24 and fn. 34.

be a "ceiling" to the amount of summer load shifting that can be accomplished through price signals, though steeper price differentials than what were included in the study may produce different results. Such a ceiling is consistent with prior dynamic pricing studies, which show a flattening of the "arc of response" with higher on/off peak differentials.[39] This result should be further investigated in the default TOU pilot, as it could have significant ramifications for the design of any future default TOU rate.

2.2.1.3 No Conclusions Can Be Reached Concerning Conservation Impacts Based on Summer Results

The Pilot Report claims conservation effects due to TOU, where over the three-month period a "small but statistically significant reduction in daily electricity use"[40] was found. Such a conclusion is premature, as additional evidence is needed before any conclusions can be made regarding the conservation impacts of TOU rates in effect over a longer time period. Studies conducted over longer periods, such as the Ontario default TOU study, found that "evidence on energy conservation due to the TOU rates is limited, being very small or zero."[41] Likewise, the California Statewide Pricing Pilot found no net conservation impacts on an annual basis.[42] TURN anticipates that more information will be provided regarding net conservation impacts in upcoming pilot evaluations produced by Nexant.

[39] D.15-07-001, p. 92 and fn. 201.
[40] See, for instance, Pilot Report, p. 184 (PG&E), etc.
[41] Report prepared for Ontario Power Authority, *Impact Evaluation of Ontario's Time-of-use Rates: First Year Analysis*, November 26, 2013, p. vi. See, Exh. TURN-301, p. 8.
[42] Charles River Associates, SPP Final Report, March 16, 2005, Sec. 4.5, p. 85.

2.2.2 SCE's Anomalous Load Impact Results Are Likely Due to a Misclassification of Climate Zone 10 as a Moderate Zone

Another surprising result of the pilot was that customers in SCE's moderate and cool climate regions had higher load reductions than those in the hot climate region.[43] This result is counterintuitive, since load in the summer is directly driven by air-conditioning use. The result also contrasts with PG&E's results and with prior studies, which demonstrated greater reductions from customers in hot climate zones. SCE postulated that the difference is due to hotter weather and longer "high price" periods:

> SCE's reference loads are roughly 25% higher in the hot region compared with PG&E's reference loads. The higher loads combined with many more hot days suggest greater use of air conditioning in SCE's hot region compared with PG&E's hot region. The need for greater air conditioning use combined with the fact that higher prices are in effect from 8 AM until 10 PM might mean that SCE's Rate 1 customers weren't willing to adjust their thermostats to a higher level over such a long time period as PG&E's customers were willing to do for the much shorter, high-priced period.[44]

As TURN witness Borden explained, this *ad hoc* explanation seems to combine the "off-peak" rate period with "peak" rate period, stating these are "higher prices," thus ignoring the fact that SCE's rates have similar peak period lengths as PG&E's. Nevertheless, if one accepts SCE's argument, the potential conclusions from this finding are that: 1) customers are more willing to shift load for shorter rather than longer peak periods; and 2) load reductions due to TOU during the highest summer peaks may be limited because very hot weather will result in less willingness to shift air-conditioning load to earlier or later in the day. Direct load control like air-

[43] The only exception was Rate 3 where the hot region showed slightly higher average load reductions than the moderate zone. Both were relatively small at 2.4% and 1.4%, respectively.
[44] Pilot Report, p. 213.

conditioning cycling programs may therefore be better vehicles to deliver load reductions during peak demand, in contrast with "passive" pricing structures like TOU.[45]

However, an alternative explanation is that SCE's results are simply an artifact of incorrectly classifying Climate Zone 10 as a "moderate" zone, thus skewing upward the load reductions in "moderate" climate zones. Though the Commission adopted the recommendation of the TOU Working Group to classify SCE's Climate Zone 10 as a moderate zone for purposes of Section 745(c)(2) analysis, that recommendation was not based on any data analysis.[46] Subsequently, based on the Commission's directive in D.16-09-016 to further evaluate "areas with hot summer weather," TURN reviewed the following data provided by SCE to the TOU Working Group:

[45] TURN notes that for purposes of resource planning and the procurement of new generation capacity, it is the actual response during the system or local peak period that counts.
[46] It should be noted that historically the question of which baseline territories aggregate into a "hot climate zone" has not been a relevant issue for utility ratemaking or rate design. While TURN did not object to the proposed classification, we also did not have an opportunity to review any data in the TOU Working Group prior to the adoption of D.16-09-016.

Figure 8: SCE Climate Zone Temperature Data[47]

745(d) – SCE Climate Zones with Hot Summer Weather

Existing Hot Zones: 13, 14 and 15

New Hot Zone Identified based on: Hot summer weather (more than 10 days above 98 degrees in 3 consecutive years)

Number of Hot Days (> 98 Deg F) – Population Weighted Averages

Category	Climate Zone	2013	2014	2015	Population
Cool	6	0	0	0	
Cool	8	0	3	1	
Cool	16	0	0	0	
Moderate	9	4	4	6	
Moderate	10	29	25	44	869,949
Hot	*13*	*35*	*44*	*52*	160,279
Hot	*14*	*25*	*25*	*27*	314,541
Hot	*15*	*99*	*104*	*99*	131,787

Category	Climate Zone	Monthly Avg of Weighted Daily Max Temp											
		2013				2014				2015			
		Jun	Jul	Aug	Sep	Jun	Jul	Aug	Sep	Jun	Jul	Aug	Sep
Cool	6	73.3	75.9	75.9	78.8	72.5	77.7	78.2	80.8	73.0	74.8	80.5	81.3
Cool	8	75.7	79.2	80.0	82.5	76.6	82.0	82.9	85.7	76.6	79.5	84.0	85.4
Cool	16	78.7	83.3	80.6	75.9	76.0	81.1	77.4	76.4	78.0	76.4	81.8	76.2
Moderate	9	81.6	85.7	86.5	86.9	82.3	87.6	88.2	89.1	83.2	85.2	89.7	88.4
Moderate	10	88.9	93.9	94.4	91.0	89.0	94.3	93.4	93.6	93.4	92.4	98.0	94.9
Hot	13	92.3	99.8	94.8	89.6	94.2	98.6	97.0	93.0	99.6	97.6	96.1	92.4
Hot	14	93.1	97.2	94.1	87.4	91.3	96.5	92.7	90.8	93.3	90.9	97.1	89.4
Hot	15	103.5	104.4	103.2	99.4	102.6	105.0	101.9	100.7	103.0	101.7	107.2	100.0

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These data show that CZ 10 had the same or more days above 98 degrees than CZ 14 (a "hot" zone) in each year from 2013-2015; and that CZ 10 had higher average temperatures than CZ 14 in eight out of the twelve summer months (June-Sep) over those three years. In other words, CZ 10 appears to be more similar to other hot climate zones than to the other moderate climate zone (CZ 9) based on temperature data from 2013-2015.

[47] Exh. TURN-301, Attachment 3, p. 36. This figure reproduces the data provided by SCE to the TOU Working Group.

Moreover, the structural bill impact analyses provided by SCE in supplemental testimony demonstrate that CZ 10 has structural bill impacts much more similar to those in other hot climate zones, and is substantively different from bill impacts in moderate zones. For example, on an annual basis, average structural bill increases on TOU are $6 for CARE customers in CZ 10, and $7 for CARE customers in hot climate zones. In contrast, the monthly CARE bill increase is $4 in the "moderate" zones.[48] Furthermore, as shown in Table 2, CZ 10 usage and related bills under TOU are more similar in the other "hot" climate zones than in "moderate" zones.

Table 2: Consumption and Bills in Climate Zone 10 Are Similar to Those in Other Hot Climate Zones[49]

	Average Monthly kWh	Average Monthly TOU Bill (All)	Average Monthly TOU Bill (CARE)
Moderate	572	$114	$63
Zone 10	626	$123	$81
Hot	652	$125	$87

These data demonstrate that CZ 10 should be included as a hot climate zone, and that the anomalous results regarding load impacts might reflect the misclassification of CZ 10 as moderate. TURN strongly recommends that the classification adopted in D.16-09-016 be modified for purposes of the 745(c)(2) evaluation, and that SCE's load and bill impacts be re-analyzed with CZ 10 as a hot climate zone.

[48] Exh. SCE-302, pp. A-15, A-13 and A-11.
[49] Exh. SCE-302, pp. A-4, A-5, A-6, A-11, A-13, A-15.

2.2.3 The Load Impact Results Demonstrate that CARE/FERA Customers Provide Much Smaller Load Reductions During Peak Periods, But Seniors As a Whole Do Not Respond Differently

The Opt-in Pilot load impact results give an indication of whether, and how much, each specified group of customers is likely to shift or reduce peak period load due to default TOU during the summer months. The load impacts associated with various vulnerable groups measure their contribution to the "benefits" of TOU rates, and are thus relevant to the Section 745 analysis. Table 3 below presents average peak period reductions from all groups and climate zones (the first column); versus peak load reductions for all groups in the hot climate zone combined and separated, for the three rates tested by PG&E and SCE. Vulnerable populations in hot climate zones can be compared with the non-CARE population in hot climate zones and to the general population (all groups/all zones) for a sense of relative load-shifting behavior.

Table 3: Average Peak Period Load Impacts[50]

	Rate 1					
	All Groups/ Zones	**All Hot**	**Hot 100% FPG**	**Hot Seniors**	**Hot CARE**	**Hot Non-CARE**
PG&E	5.8%	6.7%	0%	6.95%	3.2%	8.7%
SCE	4.4%	1.3%	2.9%	0%	1.8%	1.10%

	Rate 2[51] (Weekday, Weekend PG&E)					
	All Groups/ Zones	**All Hot**	**Hot 100% FPG**	**Hot Seniors**	**Hot CARE**	**Hot Non-CARE**
PG&E	6.1%, 5.4%	6.8%, 6.2%	0%, 0%	5.7%, 4.8%	2.8%, 2%	9%, 8.5%
SCE	4.2%	3.1%	3.1%	4.1%	3.5%	2.9%

	Rate 3					
	All Groups/ Zones	**All Hot**	**Hot 100% FPG**	**Hot Seniors**	**Hot CARE**	**Hot Non-CARE**
PG&E	5.5%	6.8%	2.5%	5.1%	1.9%	9.50%
SCE	2.7%	2.4%	3.7%	0%	1.4%	2.9%

Table 3 shows that while vulnerable populations in hot climate zones did provide statistically significant load shifting, it was lower than the general population (all groups in all climate zones) and lower than the non-CARE group in hot climate zones, aside from the anomalous results for SCE Rates 1 and 2.

[50] Exh. TURN-301, p. 24-25, Table 7 (Sourced from Exh. PG&E-305, Pilot Report, from various Figures and Tables in Sections 4.3 (PG&E) and 5.3 (SCE)). Positive values represent average statistically significant load reductions, 0% represents result not statistically significant.
[51] Two results are presented for PG&E's rate 2 because this rate has a peak period during the week as well as the weekend.

The CARE hot climate zone group shifted significantly less load than the average result for all populations ("all groups/zones"). The following Table 4 provides the ratios (of percentages) between CARE in the hot zone versus the entire population.

Table 4: CARE Customers in Hot Climate Zones Provide 35%-55% of the Peak Load Reduction as the General Population

Rate/	All Groups	non-CARE Hot	CARE Hot	CARE Hot/ All Groups
PG&E 1	5.8	8.7	3.2	55%
SCE 1	4.4	1.1	1.8	41%
PG&E 2	6.1	9.0	2.8	46%
SCE 2	4.2	2.9	3.5	83%
PG&E 3	5.5	9.5	1.9	35%
SCE 3	2.7	2.9	1.4	52%

Excluding the anomalous result for SCE Rate 2, CARE customers in hot climate zones provided from 35% to 55% of the average load reduction from all groups in all climate zones. The difference was especially stark between CARE and non-CARE customers in PG&E's pilot, where non-CARE customers in hot zones shifted load almost three times as much (on a percentage basis, but also in absolute kW amounts) as CARE customers in hot zones.[52] In SCE's territory CARE population load shifting was less than the general population in each instance, but slightly exceeded non-CARE in hot zones for rates 1 and 2. However, as discussed above, SCE's anomalous results need to be examined to determine whether they were caused by the misclassification of CZ 10.

Given the results from PG&E's pilot, the fact that hot climate zone load impacts were very low in SCE's territory, and that CARE customers still shifted less than the population as a

[52] See, for example, Exh. PG&E-305, Pilot Report, p. 77 (Table 4.3-3) and p. 80 (Figure 4.3-3) (Results for PG&E Rate 1).

whole in SCE's territory, the general trend is fairly clear that CARE customers in hot climate zones will not contribute as much to load shifting benefits of TOU as other groups.

The results are more mixed for seniors. In PG&E's pilot the senior group behaved much like the general population (even exceeding for PG&E's Rate 1), but seniors did not show statistically significant load shifting under SCE's Rate 1 and 3. This result may simply reflect the anomalous fact that overall load shifting from customers in SCE's hot climate zone was very low, as discussed above. SCE's Rate 2 looked more like PG&E's results whereby seniors shifted load at a similar percentage as the population as a whole. The general trend indicates that seniors in hot climate zones behave like the general population, with the caveat that results are mixed between the two utilities. This is an important result assuages TURN's long-standing concern regarding the impacts of TOU rates on stay-at-home seniors. It appears that the income of a customer has significantly more effect on their ability to shift load than their status as a senior.

2.3 The Results of the Survey Demonstrate Significant Financial and Health Hardship for CARE/FERA Customers, but the Economic Index Scores Are Inconsistent with Common Sense and Are Not Reliable Due to Default Bias and the Effect of the $200 "Pay-to-Play" Incentive

Research Into Action (RIA) developed a survey designed to measure the level of economic and health hardship experienced by a customer as a result of paying utility bills.[53] RIA completed 44,558 survey interviews, of which 36,275 were done online.

Answers concerning economic or financial effects were compiled into an "economic index score," developed especially for this pilot by RIA. The economic index score attempts to measure customers' economic hardship so as to facilitate a comparison of the results between customers on the OAT (the control group) versus on TOU pilot rates. The economic index score is a useful attempt to quantify survey results from a large population.

[53] See, Exh. PG&E-305, p. 40-46.

The results of the health index showed that CARE/FERA customers already experience more health issues due to heat than the general population. The results also showed that TOU rates may have adverse health effects on CARE/FERA customers in hot climate zones in SCE's service territory.

The economic index score results corroborated multiple prior findings that low-income customers on CARE/FERA tariffs face significant financial hardships and already have difficulties paying their electric bills. However, the index results suggest that customers on pilot TOU rates did not face more economic hardship than customers on OAT rates, aside from SCE's TOU Rate 3, despite bill increases due to TOU rates of $20-$40 in each of the three pilot months. TURN believes that the participation payment of $200 likely created sufficient bias to overwhelm the incremental economic hardship resulting from TOU rates. Thus, while the survey results are relevant and contain much useful information, they should not be considered dispositive of the question of whether the bill increases specifically due to TOU rates cause increased financial hardship to low-income customers.

2.3.1 The Survey Results Show Increased Health Hardship for CARE/FERA Customers in SCE's Service Territory

In order to assess medical or health hardship due to TOU rates, the survey used one question that asked "the number of times a customer sought medical attention because it was too hot in their home."[54] This question was targeted at customers with air conditioning who identified a disability that required home cooling. The survey also asked customers whether they were uncomfortably hot due to trying to save on electricity bills.

The survey demonstrated a significant difference between low-income customers and the general population, with CARE/FERA customers much more likely to need medical attention

[54] Exh. PG&E-305, Nexant Pilot Report, p. 40.

due to heat than other population segments. In hot climate zones, 21% to 26% of CARE/FERA customers reported seeking medical attention due to heat, as compared to 12% to 16% of non-CARE customers.[55]

The results of the pilot were mixed in showing any differences in response between TOU versus OAT customers. As shown in Table 5, the survey results show increased health hardship for the CARE/FERA population in hot climate zones due to SCE's Rate 1 and 3. The Pilot Report concluded that "at SCE, about 10% more Rate 1 and Rate 3 CARE/FERA customers reported seeking medical attention due to excessive heat when compared with control customers."[56] Likewise, about 5% more CARE/FERA customers on SCE's Rate 3 reported being uncomfortably hot compared to customers on the OAT.[57] SCE's Rates 1 and 3 have a longer on-peak period (six hours and five hours respectively) than Rate 2 (three hours), but the Pilot Report does not reach any conclusions concerning the impact of the peak period length on the health index results.

Table 5: CARE/FERA Customers on SCE's Rates 2 and 3 Experienced Increased Health Hardship Compared to the Control Group

	Rate 1	Rate 2	Rate 3
PG&E	No	No	No
SCE	Hot CARE/FERA	No	Hot CARE/FERA

These results indicate that TOU rates may have adverse health effects on CARE/FERA customers in hot climate zones, at least in SCE's service territory. They further demonstrate that,

[55] Exh. PG&E-305, pp. 126, 270.
[56] Exh. PG&E-305, Pilot Report, p. 327, Table 5.6-1. See, also, Exh. SCE-301, p. 15-16 and p. 20:4-12.
[57] Exh. PG&E-305, Pilot Report, p. 300, Table 5.5-32.

just as CARE/FERA customers experience disproportionate economic hardship, they also experience more health issues due to heat than the general population.

2.3.2 The Economic Hardship Survey Results Demonstrate that Low-Income Customers Experience Significantly More Hardship Due to Utility Bills Than Other Customers, But the Results Do Not Show Differential Impacts for Seniors

The survey assessed financial or economic hardship with an "economic index score," developed using a range of metrics intended to determine relative financial hardship of customers on TOU versus tiered (OAT) rates.[58]

As explained in the testimony of Dr. Sandoval, the survey design is insufficient to compare financial hardship on TOU versus control rates due to the presence of default bias and perception bias. However, the survey results do capture important aspects of the various groups' situations irrespective of whether they are on a tiered or TOU rate. In combination with bill and load impact data, the survey can provide a "baseline" measurement of groups' financial and health situation to inform our assessment of hardship. TURN highlights some of the key findings below.

CARE/FERA customers reported significantly higher average economic index scores, representing greater economic hardship, as illustrated in Table 6 using the PG&E data.

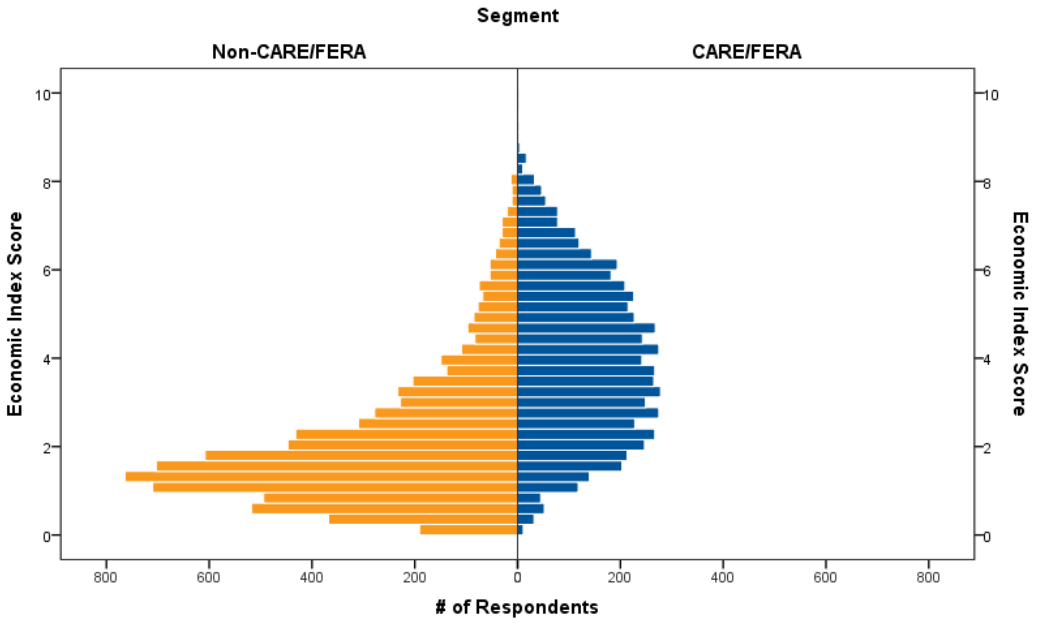
[58] A reading of the Pilot Report concerning the Economic Index Metric at pages 47-52 illustrates that the metric was developed using sophisticated statistical techniques to aggregate a large amount of survey data. TURN certainly hopes that the wealth of data obtained by RIA will be shared with academia to provide substance for at least a few doctorate dissertations.

Table 6: CARE/FERA Customers Have Higher Economic Index Scores

Statistic	All PG&E Sample	Non-CARE/FERA	CARE/FERA
Mean	2.94	2.14	3.98
25th Percentile	1.42	1.05	2.56
Median	2.49	1.70	3.89
75th Percentile	4.24	2.82	5.32

CARE/FERA customers also exhibited a different distribution of economic index scores, as illustrated in Figure 9.

Figure 9: Distribution of CARE/FERA Economic Index Scores versus Non-CARE/FERA



This pattern of higher economic index scores was not seen for the senior population, which had a similar distribution of economic index scores as non-seniors.

Low income customers also experienced greater difficulty in paying bills, with about 70% of CARE/FERA customers reporting difficulty paying bills, while only about 30% of non-CARE customers (still a significant portion) reporting such difficulties, as illustrated in Table 8 and Table 7.

Table 7: Percentage of Respondents Reporting Difficulty Paying Bills (PG&E)[59]

Climate Region	Segment	C	R1		R2		R3	
Hot	Non-CARE/FERA	31%	30%	▼	33%	▲	29%	▼
	CARE/FERA	75%	74%	▼	73%	▼	78%	▲
	Below 100% FPG	75%	74%	▼	-		-	
	100 to 200% FPG	65%	66%	▲	-		-	
	Senior	40%	39%	▼	-		-	
Moderate	Non-CARE/FERA	20%	19%	▼	16%	▼	18%	▼
	CARE/FERA	66%	64%	▼	63%	▼	61%	▼
Cool	Non-CARE/FERA	21%	17%	▼	19%	▼	21%	▼
	CARE/FERA	61%	60%	▼	61%	▲	59%	▼

[59] Exh. PG&E-305, Pilot Report, p. 141, Table 4.5-13.

Table 8: Percentage of Respondents Reporting Difficulty Paying Bills (SCE)[60]

Climate Region	Segment	C	R2		R1		R3	
Hot	Non-CARE/FERA	30%	31%	▲	29%	▼	33%	▲
	CARE/FERA	70%	72%	▲	70%	▲	73%	▲
	Below 100% FPG	69%	65%	▼	-		-	
	100 to 200% FPG	56%	62%	▲	-		-	
	Senior	40%	39%	▼	-		-	
Moderate	Non-CARE/FERA	29%	27%	▼	29%	▼	30%	▲
	CARE/FERA	67%	65%	▼	62%	▼	64%	▼
Cool	Non-CARE/FERA	25%	26%	▲	21%	▼	25%	▲
	CARE/FERA	67%	68%	▲	66%	▼	65%	▼

These data reinforce the unsurprising conclusion that CARE/FERA customers experience significantly higher levels of financial hardship as a result of paying their utility bills, whether on tiered rates or TOU rates. This conclusion appears to hold true across different climate zones, and likely reflects the fact that even with the extremely valuable CARE discount, average utility rates and resulting bills are high in California.

2.3.3 The Survey Results Comparing TOU and Tiered Rate Financial Hardship Impacts Showed Some Differences for SCE Rates 2 and 3, but the Economic Index Results Likely Underestimate Financial Hardship Due to Default and Perception Biases Inherent in the Study Design

2.3.3.1 The Economic Index Scores Show Some Increased Hardship Due to SCE Rates 2 and 3

The Pilot Study used the survey results to determine whether there were differences in the financial hardship experienced by customers as a result of TOU rates by comparing the economic index scores of participants on TOU versus OAT rates. The results did not show a statistically significant difference in index scores for PG&E or SDG&E participants. The results showed a statistically significant increase in the economic index score for 1) CARE/FERA customers in

[60] Exh. PG&E-305, Pilot Report, p. 288, Table 5.5-13.

hot climate zones with incomes of 100%-200% of the FPG on SCE's TOU Pilot Rate 2,[61] and 2) all SCE CARE/FERA customers in hot climate zones on SCE's TOU Pilot Rate 3.[62] The difference in the economic index score of about 0.3 for SCE Rate 3 is approximately equivalent to having difficulty paying one extra bill during the summer, or using one extra non-income based method of payment to cover household bills.[63] Having difficulty paying one bill seems quite significant for a study that spanned three months.

The fact that the data do not show an increase in the economic index scores for CARE/FERA participants on PG&E's rates or on SCE's Rate 1 is somewhat inconsistent with the analyses showing significant summer bill impacts for all of these customers, and with common sense observations regarding the financial impacts on low income customers of monthly bill increases of about $20 to $40. TURN suggests that one of the key unanswered questions is why the economic index scores did not show much difference in financial hardship for low-income customers on TOU rates, except for SCE's Rate 3.

2.3.3.2 The Pilot Design Could Not Eliminate Default and Perception Biases Which Likely Skewed the Survey Results Sufficiently to Mask Relative Economic Hardship Differences Between Participants on Different Rates

The attempt to compare the relative economic hardship of CARE/FERA customers on the pilot TOU rates versus the OAT tiered rates suffers from significant design flaws and must be read with an understanding that in all likelihood the 2016 Opt-in Pilot underestimates the economic hardship that will be faced by medically and economically vulnerable populations.

As explained by Dr. Sandoval in Exhibit TURN-302, two design elements of the 2016 Opt-in Pilot are of particular concern: the default effect and the effects of the monetary incentive.

[61] Exh. PG&E-305, Pilot Report, p. 281, Table 5.5-6.
[62] Exh. PG&E-305, Pilot Report, p. 283, Table 5.5-8.
[63] Exh. SCE-301, p. 16 and fn. 24.

Behavioral economists and other cognitive researchers have documented well the deeply entrenched inertia of the "default effect." The default effect is the increased likelihood that a person will always stay with the "default option" when choosing another option takes time or energy. There is no reliable way to re-create the default effect when actors, or in this case, pilot participants, must opt in to the TOU pilot in order to participate. The CPUC must therefore assume that once ratepayers are defaulted into TOU rates, the presence of a default effect will produce somewhat different effects than those demonstrated by the 2016 Opt-in Pilot. In most prior pilots testing time-varying rates, the primary focus of the default effect has been the observation that load response is significantly higher from opt-in participants than from the general population, often by a factor of two or three times. [64] In all likelihood those default effects also act to increase the perception of economic hardship under a default TOU tariff beyond what was present in the pilot.

Perhaps more importantly, the 2016 Opt-in Pilot used a significant financial incentive in order to both increase penetration rates and to overcome some of the bias inherent in the default effect by creating a simulated subset of pilot participants that could be comparable to a default TOU's "complacent" participants. Complacent participants are unengaged and unaware and are therefore the least likely to change their behavior, thus creating a dampening effect upon the magnitude of load shifting behavior. By providing participants a $200 incentive to participate in the 2016 Opt-in Pilot, the researchers created a simulated subset of "complacents," thus attempting to offset the self-selection bias that would skew load response numbers higher in the opt-in pilot. While this "pay-to-play" feature may have offset some of the self-selection bias,

[64] Exh. TURN-302, p. 11 and fn. 15 (discussing the SMUD Pricing Options Pilot and the Ontario TOU roll-out, which both found significantly lower average load shifting from the "default" enrollment group). See, also, D.15-07-001, p. 89-90 (5.8% peak load reduction in SMUD default pilot versus 12% in the SMUD opt-in pilot).

incentives have been shown to create other types of bias by affecting both the composition of people who choose to participate and the behavior of the participants who choose to opt-in.[65]

It is very plausible that the perception of economic hardship under opt-in TOU rates was inhibited by and underreported due to both the positive feeling of "money in hand" created by the large monetary incentive and the assurance of bill protection. Since the pilot lasted only three months, the $200 incentive more than offset any negative bill impacts, even if bills increased by $40 each month.

PG&E's expert reached a similar conclusion, stating that "in order to minimize these selection effects the Opt-in Pilot participants received a bill credit, which will not be available to those customers who are ultimately defaulted to TOU, that helped offset their summer bills and could have muted the financial impact of TOU rates during the summer."[66] PG&E's testimony agrees with TURN's position that these two design elements reduce the potential validity of the economic index score as the sole descriptor of financial hardship.

The Commission should find that hardship could be much higher in a default scenario than what was measured with the 2016 Opt-in Pilot survey instrument using the sophisticated economic index modeling, and that in any case, the Opt-in survey results are not dispositive regarding the impact of TOU rates on financial hardship.

2.4 TURN Concludes that CARE/FERA Customers in Hot Climate Zones Would Experience Unreasonable Hardship on TOU Rates and Should be Excluded from the Default Pilot and Default TOU Rates

The Legislature did not define the term "unreasonable hardship," and thus left the Commission considerable discretion to evaluate the impacts of TOU rates as required by Section 745. The Commission held that "unreasonable hardship" under § 745(c)(2) encompasses both

[65] Exh. TURN-302, p. 12:1 – 13:4.
[66] Exh. PG&E-301, p. 26:4-22.

economic hardship as well as non-economic health impacts, and that the nature of economic hardship should be evaluated using all available data concerning bill impacts, energy burdens, and load-shifting behavior.[67]

It would be easy to rely solely on the economic index "scores," assuming that sophisticated statistical methods must produce truth, and conclude that similar hardship exists for CARE/FERA customers under either the OAT or TOU. However, as discussed above, the Commission should recognize that survey responses are likely tainted the $200 payment which more than made up for the increases in monthly bills under TOU rates. Moreover, even those results showed that TOU rates could result in an inability to pay one bill for low income customers on two out of SCE's three pilot rates.

TURN assessed all results from the opt-in pilot – the survey results, bill impacts, and load impacts - to reach conclusions regarding "unreasonable hardship."

The survey data demonstrate CARE/FERA customers experience health hardship at a greater rate than other customer groups. There was a statistically significant increase in the health hardship for CARE/FERA customers on two of the three SCE pilot TOU rates.

The bill impact data demonstrate that about 95% of CARE/FERA customers will pay higher bills *on an annual basis*, and CARE/FERA customers in hot climate zones will pay about $20 to $40 more during each summer month.

The load impact data demonstrate that while TOU pricing stimulates modest load reductions of 3%-6% during peak periods, CARE/FERA customers in hot zones provide about one-third of the load reduction of non-CARE customers in hot zones, and about one-half of the load reduction from the entire population in all zones. CARE/FERA customers will not be able to mitigate summer bill impacts by shifting load when switching from tiered rates to TOU.

[67] D.16-09-016, p. 14-17.

The hardship impacts on CARE/FERA customers contrast with impacts on the population of seniors, which does not (at least according to the survey) experience greater health or financial hardship than other customer groups. Further, the senior group shifts load in line with the general population.

Looking at all of this data as a whole, TURN concludes that CARE/FERA-eligible customers *in hot climate zones*, which includes the 100% FPG sub-group, *will experience unreasonable hardship on TOU rates*. We reach this conclusion based on the fact that these customers will experience significant bill increases but will provide much lower "benefits" due to lower load shifting response. There seems little reason to expose CARE/FERA to higher and more volatile electric bills when there is less benefit to the State's energy goals. The Commission should not find it "reasonable" to default these customers onto TOU rates; nor should the Commission knowingly increase health and financial hardship on a group of customers if this is unnecessary to achieve state goals.

2.5 Utility Arguments Regarding Unreasonable Hardship Support the Recommendation for a CARE/FERA Exclusion in Hot Climate Zones

2.5.1 PG&E Concludes that CARE/FERA Customers Should be Excluded from the Default Pilot Due to Bill Impacts

While PG&E's witness did not conclude that CARE/FERA customers necessarily experience "unreasonable" hardship on TOU rates, he agreed with TURN that CARE/FERA customers experience significant bill impacts and provide much less load reduction:

> First, as discussed further below, the interim research findings from the Opt-in TOU Pilot survey shows that, broadly speaking, CARE/FERA-eligible customers experience greater general economic vulnerability than non-CARE/FERA customers (meaning economic challenges that are present independent of the introduction of a TOU rate, which can be measured relative to the Opt-in Pilot's control group). Second, also discussed further below is that CARE/FERA-eligible customers in hot climates also have high structural summer bill impacts which, combined with their lack of observed load shifting behaviors to mitigate these impacts, suggests that defaulting PG&E's CARE/FERA-eligible

> customers in hot areas onto a TOU rate could cause some of them to be stressed with an additional financial burden while providing minimal peak load reduction.[68]

As a result of these observations, PG&E recommended that "for policy reasons" the Commission should exclude CARE/FERA customers in hot climate zones from the upcoming Default Pilot due to the effect of higher summer TOU rates on the energy burden of these customers.[69] PG&E apparently believes that this exclusion could apply for the future mass roll-out of default TOU, though it concludes in testimony that "[p]ending additional research or findings from the other IOU's Default Pilots, PG&E is open to including CARE/FERA-eligible customers in hot climates, in later waves of default TOU implementation, should the CPUC conclude that is warranted."[70]

2.5.2 SCE's Arguments Against Excluding CARE/FERA Customers Actually Reinforce TURN's Conclusions

SCE rebuts TURN's recommendation to exclude CARE/FERA customers with a couple of arguments. Neither one is persuasive, and both actually support TURN's contentions.

First, SCE claims that the incentive payment did not influence survey responses. SCE emphasizes that the results of the pilot demonstrate that all CARE/FERA customers experience significant hardship paying utility bills, and that this hardship is not exacerbated by TOU rates. TURN does not disagree with SCE that CARE/FERA customers are experiencing significant hardship already due to high utility bills; however, TURN disagrees with SCE's illogical conclusion that the $200 payment for participation did not influence the survey respondents' answers. SCE claims that because the survey respondents expressed the same difficulty in paying bills, whether on the control group or on the TOU rate, this means that "the pay-to-play incentive

[68] Exh. PG&E-301, p. 33:23 -34:1; See, also, Exh. PG&E-301, p. 36:15-22.
[69] Exh. PG&E-301, p. 33:14-19.
[70] Exh. PG&E-301, p. 34:16-19.

does not appear to have reduced customers' perceptions of bills."[71] But SCE's conclusion is just one of two logical possibilities, given that all CARE/FERA respondents showed significant financial hardship. One could conclude none were influenced by the payment, or one could conclude, as explained by TURN witness Sandoval, that the $200 participation incentive likely influenced the hardship perception of all low-income participants who obtained the payment, whether on TOU or not. Thus, the payment likely skewed downward the "hardship" responses of all customers and masked any differential impacts of TOU rates, especially given the relatively small number of questions regarding economic hardship in the survey.

Second, SCE alleges that TURN's arguments about "hardship" based on the 2016 Opt-In TOU Pilot are simply inapplicable to the future, because "those opt-in rates differ significantly from the default TOU rates SCE proposed in Default TOU Pilot Advice Letter E-3531-E and 3531–E-A," and "the calculated summer bill impacts for SCE's proposed Default TOU Pilot rates are significantly less than the summer bill impacts of the Opt in TOU Pilot Rate 1 or 2."[72] In its testimony, SCE documents extensively how the structural bill impacts forecast from the default TOU rates will be much lower than from the opt-in TOU rates.

On the witness stand, SCE's expert Ramirez explained that the reduced bill impact is due to the fact that the proposed default TOU rates are "milder" than the opt-in pilot rates.[73] Mr. Ramirez agreed that SCE proposed milder rates out of concern for bill impacts,[74] and further explained:

[71] Exh. SCE-303, p. 13:6-14.
[72] Exh. SCE-303, p. 6.
[73] 28 RT 4208:11-24 (SCE/Ramirez).
[74] 28 RT 4209:12-17 (SCE/Ramirez).

> But from a default standpoint Edison believes that rates should be mild to move all customers that are going to be eligible in order to -- in order to in our view create rates and an experience for customers that will be acceptable and will encourage customers to be satisfied with the transition generally and to retain or be retained on the TOU rates.[75]

Indeed, all of the utilities have proposed default pilot rate that have "significantly milder on-peak to off-peak price differentials than the rates studied in the opt-in pilots" in order to mitigate negative bill impacts.[76]

TURN is gratified that the utilities have modified the default TOU rates to reduce bill impacts, and TURN strongly supports this change. However, the utilities' perspective simply mirrors the Commission's directive for milder "TOU-Lite" rates during the transition period.[77] There is absolutely no guarantee that after this "transition period," future TOU rates will not look more like the opt-in TOU rates, or have even greater on/off peak differentials. Indeed, the Commission expected that "the shift toward more fully cost-based price differentials may be made later,"[78] and SCE is not recommending that the Commission never move toward more cost-based rates.[79]

There are thus two potential alternatives. Either the Commission issues findings concerning Section 745(c)(2) hardship analysis based on the Opt-in Pilot results, including TURN's proposal for an exclusion for CARE/FERA customers in hot climate zones; or the Commission issues findings that ignore the opt-in results and are based on the anticipated milder impacts from the default "TOU-lite" tariffs. In the latter case, the Commission must revisit the

[75] 28 RT 4211:27 – 4212:7 (SCE/Ramirez).
[76] 28 RT 4227:19 – 4228:18 (statement of PG&E attorney Slocum). The utilities provided detailed bill impacts due to their proposed default pilot TOU rates. See, for example, Exh. PG&E-301, p. 17-24.
[77] D.15-07-001, p. 135-136; Finding of Fact 109, p. 317.
[78] D.15-07-001, p. 136.
[79] 28 RT 4215:8-13 (SCE/Ramirez).

Section 745 unreasonable hardship question if and when any future TOU rates are changed to be less mild than the proposed TOU default rates.

TURN suggests that the more practical and more reasonable alternative is to decide at this time to exclude all CARE/FERA customers in hot climate zones from default TOU, thus adequately protecting vulnerable customers against the hardship of bill increases due to TOU rates no matter how they are changed in the future.

3 The Commission Should Require Greater Participation Rates in the Medical Baseline Program Prior to Any Full-Scale Default TOU Roll-out In Order to Promote Compliance with Section 745(c)(1)

Section 745(c)(1) categorically prohibits defaulting utility customers receiving a medical baseline allowance onto TOU rates.[80] In order for Section 745(c)(1) to protect medically vulnerable populations, people eligible for a medical baseline allowance must be enrolled in the Medical Baseline program.

In implementing Section 745(c)(2), the Commission has determined that CARE/FERA-eligible customers qualify as economically vulnerable customers. Indeed, the Commission has already established a target penetration rate for the CARE program, and the utilities annually submit estimates of the CARE-eligible population and the actual CARE enrolled population within their service territories.[81] The estimated penetration rate of a program provides an important indicator of the extent to which the population intended to benefit from the program is in fact receiving the program benefits. TURN is not aware of any analysis of medical baseline

[80] Section 745(c)(1) of the Public Utilities Code requires that "residential customers receiving a medical baseline allowance . . . shall not be subject to default time-of-use rates without their affirmative consent,"

[81] PG&E, Southern California Gas Company, SDG&E, and SCE submitted their most recent estimates on February 10, 2017, in proceeding A.14-11-007 et al., providing estimated CARE penetration rates as of December 31, 2016.

eligibility or penetration rates.

TURN recommends that the Commission not order the roll-out of mass default TOU[82] until it is certain that at least 50% of the eligible population meant to be protected by Section 745(c)(1) are in fact enrolled in the medical baseline program. Low penetration rates of customers eligible for a medical baseline allowance are an important signal the Commission should not ignore.

3.1 The Penetration Rate of Medical Baseline Is Very Low

The medical baseline program provides various benefits, including an additional baseline allowance to lower utility bills, advance notice of power outages, and mandatory exclusion from default TOU (without the customer's affirmative consent) under Section 745(c)(1). If medically vulnerable households are not enrolled in the medical baseline program, despite meeting the eligibility requirements, the utilities cannot identify them for exclusion from default TOU, even though they would be excluded if they were enrolled.

In 2016, only 2.8% of all PG&E, SCE and SDG&E accounts received a medical baseline allowance, as shown in Table 9.

Table 9: Medical Baseline Participation (2016)[83]

IOU	Average Number of Accounts	Average Number of Accounts With Medical Baseline Allowance	Percent of Accounts with Medical Baseline Allowance
PG&E	5,451,347	185,359	3.4%
SCE	4,353,680	87,247	2.0%

[82] TURN's recommendation regarding the Medical Baseline and FERA penetration rates applies only to the eventual mass roll-out of default TOU. Unlike the 745(c)(2) exclusion of CARE/FERA customers in hot climate zones, which applies to any default TOU, TURN does not recommend that the default TOU Pilots scheduled for 2018 be delayed based on achieving the recommended MB and FERA penetration rates.

[83] Exh. TURN-302, p. 4. Based on end of 2016 utility data from Quarterly Disconnection Data Reports filed in R.10-02-005.

IOU	Average Number of Accounts	Average Number of Accounts With Medical Baseline Allowance	Percent of Accounts with Medical Baseline Allowance
SDG&E	1,350,527	43,738	3.2%
TOTAL	**11,155,554**	**316,344**	**2.8%**

TURN witness Gabriela Sandoval roughly estimated the potential population eligible for medical baseline based on the prevalence of certain medical conditions, the use of eligible devices, and by communicating with relevant health care providers to obtain their estimates. Eligibility for the medical baseline program is based on a qualifying medical condition or use of "life support equipment," which refers to equipment that uses mechanical or artificial means to sustain, restore, or supplant a vital function, or mechanical equipment that is relied upon for mobility within and outside of buildings.[84] For instance, patients with various spinal cord injuries, multiple sclerosis patients, and scleroderma patients qualify for the medical baseline program by virtue of their medical condition. Dr. Sandoval calculated that based on the national prevalence of these three medical conditions, almost 1% of California households would qualify for medical baseline, thus already representing one-third of the enrolled population.[85]

Additionally, Dr. Sandoval considered that the one percent figure does not include any households who might qualify based on using one of the sixteen medical devices that also make customers eligible for a medical baseline allowance. It also does not include any households who might qualify for the medical baseline allowance due to other medical conditions, such as those who are being treated for a "life threatening illness" or who "have a compromised immune system." Dr. Sandoval thus concluded that the population eligible for medical baseline is significantly larger than the 2.8% presently enrolled.

[84] Exh. TURN-302, p. 6:2-5.
[85] Exh. TURN-302, p. 6:6-14.

To further test her supposition, Dr. Sandoval questioned over one hundred advocates, public health professionals and social service providers in the course of conducting numerous trainings for health care professionals and CBO staff.[86] Most of the public health professionals estimated that the number of California residents eligible to receive a medical baseline allowance is likely about 20%.[87]

Based on these observations, and because the verbal information was based on approximations from people with different levels of expertise, Dr. Sandoval conservatively estimated that 10% of utility households are eligible for the medical baseline program. If true, then the current enrollment of 2.8% represents a penetration rate of 28%.

TURN is not claiming that 10% or 20% is an accurate estimate of the eligible population; rather TURN is claiming that the potential eligible population is more likely to be about 10%, rather than in the range of 2-3%, as is currently enrolled. Indeed, TURN's estimate is supported by the utilities' supplemental testimonies, showing that increased outreach has already increased medical baseline enrollment. For example, PG&E testified that:

> [S]ince PG&E's incremental outreach on Medical Baseline Allowances began in late 2016, PG&E's enrollments in Medical Baseline have increased from 185,693 to 195,177. This represents an increase, in PG&E's Medical Baseline Program, of 9,484, or 5.1 percent, during the previous six months. When compared with the enrollment increase of 4,652, during the same time period a year ago (2015-2016), PG&E's incremental outreach in 2017 has approximately doubled the rate of enrollment—a significant increase.[88]

SDG&E's testimony similarly concludes that enrollment has increased dramatically due to increased outreach:

[86] Exh. TURN-302, p. 5:11-13; 28 RT 4191:22-4192:5 (TURN/Sandoval).
[87] Exh. TURN-302, p. 7:15-17; 28 RT 4194:14-4195:15 (TURN/Sandoval).
[88] Exh. PG&E-310, p. 4:9-18 (footnotes omitted).

> In summary, SDG&E has seen a 44% increase in its Medical Baseline participation since June 2015. SDG&E attributes the increase in Medical Baseline enrollments to its efforts to leverage its communications with customers on rate reform and CARE eligibility and to leverage our community outreach via the Energy Solutions Partner Network, engagement at Customer Tailgates and other community events, as further discussed in my rebuttal testimony.[89]

SCE's testimony and data are less clear. SCE testified that it had increased outreach starting in about December 2016. Its enrollment figures increased by 884 in one quarter (from end of year 2016 to Q1 2017), versus annual increases of 2,806 and 3,147 in 2016 and 2015. SCE's medical baseline enrollment is at about 90,000 customers, while PG&E's enrollment is at about 195,000 customers; however, this large difference may at least in part reflect the fact that PG&E is a dual-fuel utility, so customers requiring additional heating would request medical baseline enrollment with SoCalGas.

As further explained below, based on all this information, TURN recommends that the Commission order the utilities to provide a more accurate estimate of the eligible population and achieve at least a 50% penetration rate prior to implementing the roll-out of full-scale default TOU.[90]

3.2 TURN Recommends That Mass Roll-Out of Default TOU Be Delayed Until Medical Baseline Penetration Rates Are At Least 50%

Section 745(c)(1) cannot provide protection for medically vulnerable populations unless those households are registered to receive a medical baseline allowance. Otherwise, the utilities will not know to exclude such customers from default TOU. Medically vulnerable populations are particularly susceptible to hardship under TOU rates because shifting usage to off-peak periods may not be feasible. The Legislature mandated excluding medical baseline customer

[89] Exh. SDG&E-305, p. 4:10-14 (footnotes omitted).
[90] For example, if the actual eligible population turns out to be 10% of utility customers, and the utilities achieve a 5% penetration rate, then TURN's proposed criterion would be satisfied.

from default TOU. As such, it is TURN's recommendation that no mass roll-out of default TOU should occur until such time as penetration rates for Medical Baseline are at least 50%.

TURN recommends that the CPUC require the IOUs to prepare reliable statewide estimates of California's population eligible for a medical baseline allowance. While Dr. Sandoval assumed a potential eligible population of 10%, she did not claim that this was an accurate figure. TURN recommends that the Commission require the IOUs to consult with qualified professionals and use relevant medical datasets to estimate the eligible population. The Commission should then order the IOUs to achieve a benchmark medical baseline penetration rate of 50% before defaulting ratepayers into a TOU rate structure.[91] Finally, the Commission should increase this 50% benchmark annually once it is achieved in order to ensure full protections for medically vulnerable populations in their service territories.

SCE also argues that as a practical matter, it does not have information to reliably determine how many more customers, in addition to those already enrolled in medical baseline, are eligible for medical baseline service.[92] While this is unfortunate, TURN does not claim that SCE must have such information in its possession. Rather, TURN recommends that the Commission order the utilities to utilize available external health and demographic databases, and consult with relevant health care professionals, in order to obtain the information that would allow it to make the necessary determination.

[91] Because the statute only prescribes defaulting "enrolled" medical baseline customers, TURN does not recommend that the Default TOU Pilot be delayed based on this penetration rate target. Rather, TURN only recommends that any ultimate mass roll-out of default TOU be delayed.
[92] Exh. SCE-303, p. 16:19-21.

3.3 The Commission Should Adopt the Medical Baseline Penetration Criterion as a Matter of Policy to Fulfill the Legislative Intent of the Medical Baseline Exclusion in § 745(c)(1)

In their rebuttal testimonies, the utilities point out that the statute only requires the utilities to exclude customers *enrolled* in medical baseline, so that TURN's recommendation regarding ensuring a 50% penetration rate is not required by law and creates a new and arbitrary hurdle for the implementation of TOU rates.[93] SCE also claims that since "issues of eligibility for CARE or FERA" are outside the scope of this proceeding, TURN's proposal is outside the scope. None of these arguments are directly relevant to TURN's recommendation.

TURN does claim that our recommendation is required by law. Rather, TURN suggests that the Commission should, as a matter of policy, ensure that at least half of the people who are eligible for medical baseline be enrolled on those programs. This criterion is necessary in order to ensure that the underlying legislative mandate – that medical baseline customers be excluded from default TOU – can be effectively implemented. The simple truth, as with any other attempt to implement a benefits program, is that if eligible customers are not adequately notified of a program and subsequently enrolled in the program, the program benefits are in practice meaningless.

TURN is not recommending any changes to eligibility guidelines. Indeed, our proposal is squarely in scope in *this proceeding,* since TURN is arguing that as a matter of policy the Commission should link the practical ability to fully promote the requirement of Section 745(c)(1) with the utilities' penetration levels in the medical baseline program. This is an issue directly related to Section 745, and independent of any other proceedings that may seek to improve medical baseline outreach and program enrollment.

[93] For example, Exh. SCE-303, p. 14-16.

Adopting a target for medical baseline program participation in order to fulfill the legislative mandate of 745(c)(1) and 745(c)(2) is analogous to the penetration goals the Commission has pursued for the CARE program. For 15 years, the Commission has relied on a CARE program penetration goal as part of its duty to ensure that eligible customers receive the benefits of the CARE program. The Commission first established a penetration goal for the CARE program in 2002, pursuant to SBX2-2. In D.02-07-033, the Commission concluded:

> Simply put, our goal is to reach 100% of low-income customers who are eligible for, and desire to participate in, the CARE program. The utilities report that over one million low-income customers meet the CARE eligibility criteria but are not currently participating in the program. Our goal is to enroll each and every one of these customers who wants to participate.[94]

The Commission also recognized that the pace of achieving the new goal would differ among utilities and established "minimum benchmarks" for each utility ranging from 63% to 93%.[95] These minimum benchmarks were intended to "represent substantial improvements over the 2001 penetration rates achieved by these utilities and move each of them at a meaningful pace towards our goal of 100% penetration."[96]

Six years later, in D.08-011-031, the Commission reduced the CARE penetration goal to 90% for all large IOUs for the 2009-2011 program period. At that time, in 2008, the estimated CARE penetration rate between 70% and 79.6%.[97] The Commission explained:

> Given that we believe a CARE penetration goal of 100% to be exceedingly expensive and difficult to meet, we set a new CARE penetration goal

[94] D.02-07-033, *Interim Decision: Status of Rapid Deployment, CARE Penetration Goals, Automatic Enrollment and Related Program Planning Issues,* issued in R.01-08-027, p. 4.
[95] D.02-07-033, p. 5. The Commission also addressed methodological issues associated with calculating penetration rates at pages 19-26.
[96] D.02-07-033, p. 5.
[97] D.08-011-031, p. 181.

> of 90% for all large IOUs. We base this goal on the KEMA Report's estimate that 10% of low income customers are unwilling or unlikely to participate in CARE. Over the next budget cycle, the utilities should strive to meet this standard penetration goal.[98]

The Commission indicated that it might "reconsider this penetration goal in future decisions, in case barriers to enrollment are removed that make the 100% penetration rate more feasible."[99]

Most recently, in D.12-08-044, the Commission again addressed the CARE program penetration goal. The Commission found that there had been "incredible progress" over the 2009-2011 program cycle based on "the IOUs' showings of very high penetration rates," reaching, more or less, the 90% CARE penetration goal set in D.08-11-031 by the Commission."[100] The Commission attributed this remarkable success to "the commitment and cooperation amongst the IOUs and all of the stakeholders who, together, streamlined … the screening, eligibility, and retention of participants in the CARE Program without substantial increase in the CARE outreach budget in the last budget cycle."[101] The Commission concluded that it should retain the 90% CARE penetration target, while directing the utilities to increase their focus on eligibility verification and also addressing the various causes of attrition.[102]

While TURN acknowledges that the Legislature provided guidance for the Commission to develop penetration targets for CARE, the actual numerical targets and the additional outreach

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[98] D.08-11-031, *Decision on Large Investor-Owned Utilities' 2009-2011 Low Income Energy Efficiency (LIEE) and California Alternate Rates for Energy (CARE) Applications,* issued in A.08-05-022 et al., p. 187 (referring to the KEMA Final Report on Phase II Low Income Needs Assessment, published by the Commission on September 7, 2007).
[99] D.08-11-031, p. 187.
[100] D.12-08-044, *Decision on Large Investor-Owned Utilities' 2012-2014 Energy Savings Assistance (ESA) (Formerly Referred to As Low Income Energy Efficiency or LIEE) and California Alternate Rates for Energy (CARE) Applications*, issued in A.11-05-017 et al., Finding of Fact 98.
[101] D.12-08-044, pp. 22-23. *See also,* Finding of Fact 102.
[102] D.12-08-044, pp. 15, 23.

and reporting requirements were all administratively set by the Commission. TURN recommends that the Commission adopt the same approach for medical baseline, with the added condition that default TOU should not be rolled out until the penetration target is reached.

4 Operational and Implementation Issues for Compliance with Other Statutory Provisions of Section 745

As explained in the Amended Scoping Memo of January 23, 2017, there are a number of operational and implementation issues necessary to comply with other provisions of Section 745.[103] TURN provides limited recommendations on these issues.

4.1 Bill Protection

Section 745(c)(4) requires that a customer get twelve months' of interval usage data and, subsequently, be provided with no less than one year's worth of bill protection compared to "that customer's previous rate schedule," prior to being defaulted onto TOU. Implementation of this section requires certain decisions regarding timing, with the key question being when exactly does the default TOU rate become the "standard" rate, such that any "new customer"[104] gets put on the default rate without the need to provide prior interval usage data or bill protection for a future year. The Amended Scoping Memo suggested that the transition period would be defined as the twelve-month period starting when the utilities being migrating customers onto the TOU rate.[105]

[103] Amended Scoping Memo, January 23, 2017, pp. 6-7, 9-10.
[104] Utilities consider a new account to be a "new customer," even though the person could be a new utility customer or a previous customer who has changed residences or becomes the account holder for the first time at a residence where they have already been.
[105] SCE proposes a different definition due to its proposal for migrating customers in Wave 1 and Wave 2. See, Exh. SCE-301, p. 25-26.

PG&E recommends that the TOU rate become the standard rate for all new customers as soon as the TOU migration period starts.[106] Thus, bill protection would not apply to any new customers after the start of TOU migration. In contrast, TURN, similarly to SCE, recommends that the default TOU rate would become the "standard" rate only at the end of the 12-month initial default TOU migration period. Thus, customers who apply for utility service during the transition period would be placed on a tiered rate, would be defaulted only after receiving twelve months' worth of interval data, and would obtain bill protection after they are transitioned to a TOU rate.

TURN does not take a position at this time on certain other implementation details, but TURN may respond to the proposals of other parties.

4.2 Identification of Customers Eligible for Exclusion

As detailed in Section 2 of this brief, TURN recommends that economically vulnerable customers in hot climate zones be excluded from default TOU rates. The Commission defined economically vulnerable customers as including all CARE/FERA *eligible* customers. The operational question is *if* the Commission does adopt the recommendation to exclude economically vulnerable customers in hot climate zones from default TOU, how should the utilities identify CARE/FERA-eligible customers in order to exclude them from the default TOU migration or the default TOU pilot, and thus ensure them the protection mandated by Section 745(c)(2).

PG&E has proposed an exclusion process in its Advice Letter 4979-E-B to ensure those customers are not defaulted without their "affirmative consent."[107] PG&E plans to use its propensity model to identify eligible customers, to exclude customers in the top two deciles, and

[106] Exh. PG&E-301, p. 46. See, also, 28 RT 4217-4218, Statement read by Counsel for SCE.
[107] Exh. PG&E-301, p. 43.

to notify other customers of potential eligibility.[108] Similarly, SCE explains that it will enact a targeted outreach campaign to increase CARE/FERA enrollment and then track customers who enroll in CARE/FERA for potential exclusion.[109]

Unfortunately, while both PG&E and SCE consistently refer to excluding CARE/FERA customers, the propensity models used by the utilities are designed specifically "to identify customers who are likely to be eligible for CARE."[110] While the income limits for CARE and FERA are similar, the FERA program is open to customers with incomes up to 250% of the federal poverty guidelines, depending on household size. It is precisely those higher income customers with bigger households that TURN is concerned about. TURN does not believe that the utility outreach proposals targeting CARE customers are sufficient to ensure the exclusion of all FERA-eligible customers.

CARE penetration rates for PG&E, SDG&E and SCE are between 80 and 90%.[111] This penetration rate was achieved based on significant progress after legislation directed the Commission and the utilities to increase penetration rates. However, the FERA penetration rates estimated by the utilities lag significantly behind at about 13%, as illustrated in Table 10.

[108] PG&E AL 4979-E-B, February 24, 2017, Attachment 1, p. 7-9.
[109] Exh. SCE-301, p. 21:18 – 22:7. TURN notes that SCE claims in its testimony that its outreach campaigns are "trying to attain a CPUC aspirational target of enrolling 90% of eligible households in the **programs**," thus implying there is a 90% target for the CARE and FERA programs. As discussed in Section 3.3, the 90% target only applies to CARE, and there is no CPUC-adopted target for FERA. However, TURN does not object to adopting a 90% penetration target for FERA, rather than the 50% target TURN is proposing.
[110] PG&E AL 4979-E-B, February 24, 2017, Attachment 1, p. 8.
[111] Exh. TURN-302, p. 9.

Table 10: IOU Estimates of FERA Penetration Rates[112]

IOU	FERA Eligible Households	FERA Participating Households	Penetration Rate
PG&E	168,011	30,114	18%
SDG&E	47,109	5,799	12%
SCE	211,625	19,838	9%
TOTAL	**426,745**	**55,751**	**13%**

As a practical matter, TURN appreciates the difficulty in excluding customers who are "eligible" for the CARE and FERA programs. Given the high penetration rate of the CARE program, TURN does not object to the utility proposals to move forward with default TOU while targeting customers for outreach and enrollment in CARE based on the propensity modeling. However, TURN cannot support the utility proposals as adequate to ensure that "FERA-eligible" customers are provided with proper protection if the Commission determines they should be excluded from default TOU.

Instead, as detailed in the testimony of Dr. Sandoval,[113] TURN recommends that the Commission not authorize any full-scale TOU default of customers in hot climate zones onto TOU rates until the FERA penetration rate reaches 50% for the utility.[114] TURN's 50% FERA penetration rate proposal helps to mitigate some of the risk of under-identifying FERA-eligible customers, by increasing the "known" eligible population (enrolled). TURN believes that such a requirement would better support the statutory goal of protecting economically vulnerable customers than the soft "outreach to CARE-eligible customers" proposal of the utilities.

[112] Exh. TURN-302, p. 9. Data as of December 2015.
[113] Exh. TURN-302, p. 9-10.
[114] As a practical matter, TURN does not oppose moving forward with the default TOU pilot prior to achieving the recommended penetration rate.

4.3 Additional Section 745 Considerations

Section 745(c)(5) requires the utilities to provide customers with a summary of available tariff options and "a calculation of expected annual bill impacts under each available tariff." Section 745(c)(6) allows customers to opt-out of TOU rates without paying any additional charges or premiums.

The Commission has already addressed certain implementation issues concerning the annual bill summary requirement. TURN believes that providing residential customers with clear, effective and understandable bill comparisons; ensuring that customers know their full range of tariff choices; and providing customers with a range of easy methods to exercise those choices will be essential to ensuring the best possible customer experience and customer acceptance of residential rate reform. TURN will continue to advocate for effective customer choice in tariffs in the coming months and years.

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Respectfully submitted,

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