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Commissioner	:	Michael R. Peevey
Admin. Law Judge		Jeanne McKinney
	:	Timothy J. Sullivan
DRA Project Mgr.	:	D. Khoury; L. Tan
	:	

DIVISION OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION

DRA'S RESPONSES TO THE RESIDENTIAL RATE DESIGN OIR QUESTIONS

San Francisco, California
May 29, 2013

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MEMORANDUM

This report was prepared by the Division of Ratepayer Advocates ("DRA") of the California Public Utilities Commission ("Commission") in response to Administrative Law Judge's March 19, 2013 ruling requesting that parties submit residential rate design proposals. The ALJ's ruling was issued in the Commission's Order Instituting Rulemaking ("OIR") to conduct a comprehensive examination of investor owned electric utilities' ("IOU") residential rate structures, the transition to time varying rates ("TVR") and dynamic rates, and other statutory obligations.

In this report, DRA presents its rate design proposals as well as responses to the questions posed in Attachment A of the March 19, 2013 ALJ ruling. DRA recommends starting the process of moving residential customers to time-of-use ("TOU") rates. DRA's proposed end goal is a default cost-based TOU rate structure with a baseline credit and no customer charge. DRA endorses TOU rates because they are cost-based, produce environmental benefits, and should be easy for customers to understand. However, moving to this rate design too quickly could cause customer confusion and unacceptable bill impacts. Therefore, DRA recommends starting with a simple augmentation to the existing rate design. A summer on-peak surcharge and year-round off-peak credit would be added to the current default tiered rate design. The details of these rate design proposals are described in this report.

The report is organized as follows:

- Executive Summary
- DRA rate proposals and responses to ALJ questions
- Appendices A – D
- Appendix A: How DRA designed its end-state TOU rate
- Appendix B: Bill calculator model results for DRA's illustrative proposed rates for PG&E, SCE, and SDG&E
- Appendix C: Illustrative customer bill for an Introductory TOU rate

- Appendix D: Illustrative calculation of TOU rate benefits.

Dexter Khoury and Lee-Whei Tan served as DRA's project coordinators in this proceeding. Other contributing DRA team members include Robert Levin, Elise Torres, and, Dan Willis. Cherie Chan assisted in formatting the report. Greg Heiden is DRA's counsel. Chris Danforth (Program and Project Manager) and Mike Campbell (Program Manager) oversaw this project and the review of this report.

EXECUTIVE SUMMARY

DRA recommends starting the process of moving residential customers to time-of-use ("TOU") rates. DRA's end goal is a default cost-based TOU rate structure with a baseline credit and no customer charge. DRA endorses TOU rates because they will provide customers with a clear price signal that will help them reduce their bills by changing their behaviors in ways that allow utilities to defer costly generation and system upgrades.[1] Deferring the need for new peaking generation will lead to a long-term reduction in electric system costs, and hence in average rates. In addition, TOU rates benefit the environment by reducing greenhouse gas ("GHG") and other air emissions, and therefore align rate design with State environmental policy. Finally, TOU rates should be easy for customers to understand, and will give customers the ability to control their bills on a daily basis by deciding how and when to use energy in their homes.

Transitioning to a Cost-Based TOU Rate

How the utilities transition to this end goal is as important as the goal itself. Moving to this rate design too quickly could cause customer confusion and unacceptable bill impacts. Any transition plan must consider the fact that the bill impacts of a rate realignment are on top of any Commission-approved rate increases that will occur during the transition period. If there are substantial rate increases, rate structure changes should take this into consideration so that ratepayers will not encounter rate shock.

Accordingly, DRA recommends starting with a simple augmentation to the existing rate design. A summer on-peak surcharge and year-round off-peak credit would be added to the current default tiered rate design. Concurrently, the number of tiers would be reduced to three for all three utilities. This would be accomplished by combining the existing tier 2, which now covers the narrow range of 100% to 130% of baseline usage, with tier 3, thus creating a new tier 2 covering 100% to 200% of baseline.

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[1] In Appendix D, DRA shows that its cost-based TOU rate has the potential to reduce summer on peak-load about 2,400 megawatts, which is equivalent to the size of one nuclear power plant.

DRA calls this new default transitional rate, which has both tiers and TOU rate elements, an "Introductory TOU" rate. Illustrative transitional and end-state rates are shown in Table 4 and 5, respectively, at the end of DRA's response to Question #1. Implementing Introductory TOU and end-state TOU rates will require changes to PU Code Sections 739.9(a), 739.1(b)(2) and 745(d), as discussed in DRA's response to Question #8.

DRA's response to Question #7 presents a transition plan to a cost-based TOU rate. Over time, the rate differentials between the tiers can be decreased, and the number of tiers can be reduced by combining the top two tiers. At the same time, the on-peak surcharge and off-peak credits could be increased. Slowly, the TOU surcharges and credits could grow larger than the tier differentials and thus would dominate the bill. When this occurs, the transition to a pure TOU rate with a baseline credit could be made with fewer bill impacts. The gradual nature of DRA's proposed transition plan will help ease the impacts on net energy metered customers, as further described in DRA's response to Question #3.

To increase customer acceptance of this residential rate design reform, DRA proposes that customers have the opportunity to voluntarily select a three-tiered non-TOU rate design (with no surcharge or credit). Initially, the message to customers could be simplified by making the actual tiered rates in the Introductory TOU rate and the opt-in non-TOU tiered rate the same.[2] They would be rendered the same by making the TOU surcharge and credit revenue neutral with respect to each other. At some point, the two rates would be allowed to diverge from each other,[3] and each would be designed independently using the billing determinants of the participants on each rate. At that point, they would not necessarily be revenue neutral with respect to each other. After this

[2] It also is important to keep the tiered rates on both the default and opt-out schedules initially the same because the tier differentials currently are so high that not doing so would create an avenue for large users to bypass the upper tier rates, creating a revenue loss. This issue is further described in DRA's answer to Question #5.

[3] Such divergence is necessary to fully reflect the TOU differentials inherent in the underlying generation marginal costs used to design the rates. When the TOU surcharge and credit are constrained to be revenue neutral with respect to each other, the credit necessarily will be quite small because of the larger number of off-peak hours relative to the number of on-peak hours.

transition process, DRA's end state would be a default cost-based TOU rate, with the ability to opt-out to a simple non-TOU two-tiered rate.

DRA chose the Introductory TOU rate structure partly because it lends itself to a natural evolution from a tiered rate structure to a TOU structure. This is because the Introductory TOU rate is a simplified presentation of a five-period TOU rate that has tiers within the TOU periods, such as PG&E's Schedule E-6. In the Introductory TOU rate, the tiered rate without the TOU surcharge or credit essentially is the mid-peak rate in a schedule like E-6. Thus it can, at the appropriate time, easily be expanded to a presentation where the rates for each time period are shown explicitly. When the number of tiers is reduced to two, the tier structure itself can be collapsed to a baseline credit on a five-period TOU rate. There is no mathematical difference between these different presentations of the rate structure.

DRA also chose the Introductory TOU rate structure because adding the surcharge and credit to the tiered rate structure creates few bill impacts. The small on-peak surcharge would apply only for six hours per day during weekdays in the summer season. The off-peak credit would apply for the majority of remaining hours. The off-peak credit would apply to all weekend and holiday hours, and most evening hours. And the off-peak credit also would be in effect most of the winter season hours, as there are only mid-peak and off-peak hours in the winter. Thus, for PG&E, only nine percent of hours are on-peak, thirteen percent of hours are mid-peak (with no surcharge or credit), and seventy-eight percent of hours are off-peak[4]. Most of the annual bill impacts shown in DRA's Appendix B come from collapsing the tier structure, and not from the TOU surcharge and credit. However, the impact of the surcharge and credit predictably is worse in the summer months in the hot inland areas of the state. Thus, DRA would not want to push the transition to a cost-based TOU rate too quickly.

[4] SCE has a shorter summer season, which results in fewer on peak hours. For SCE six percent of hours are on-peak, thirty-three percent are mid-peak, and sixty-one percent are off-peak.

The Benefits of TOU Pricing

DRA sees a number of benefits associated with both its Introductory TOU rate and its end-goal of a cost-based TOU rate. With an effective customer outreach and education plan, DRA expects that time varying rates will be understandable to customers. Such rates will communicate to customers how their energy consumption behavior affects their overall bills.

Compared to current rates, TOU rates better achieve the Commission's rate design goals of preserving customer access to affordable energy services and of reflect marginal cost, cost causation, and economic efficiency principles. How the Introductory TOU and cost-based TOU rates meet the various goals are laid out in Tables 1 and 2 below. More detail is provided in DRA's response to Question #2. The goals are difficult to fulfill simultaneously, requiring tradeoffs in the rate designs. Tables 1 and 2 show how the Introductory TOU and end-state TOU rates are tailored to fulfill different goals. Appendix A explains how DRA's cost-based rate was developed using marginal cost principles.

DRA's proposed Introductory and end-goal cost-based TOU rates also would continue to provide baseline protection. Continuing to provide a baseline rate or credit will help to guarantee that the basic uses of electricity continue to be affordable to all customers. Baseline also serves as a useful platform on which to continue the discounts for low income customers on the California Alternative Energy Rates ("CARE") and the Family Energy Rate Assistance ("FERA") programs, as well as medical baseline allowances which help vulnerable customers with compromised medical conditions. These protections are necessary to reduce the number of disconnections for non-payment of utility bills, as DRA further articulates in its answer to Question #10. In addition to these protections, the Commission also should consider exempting certain vulnerable customer groups, which are less likely to be able to modify their consumption behavior, from being placed on default TOU rates. For example, in addition to medical baseline customers, "third party notification"[5] customers should remain on tier rates and be exempted from default TOU rates because they disproportionately might be burdened by high bills. DRA's discussion of the impact of this rate reform on vulnerable customers is discussed further in its answer to Question #4.

TOU rates have the advantage of providing higher summer on-peak rates that give incentives to customers to shift usage away from the on-peak period, avoiding the use of "dirtier" generation units that operate only during peak periods. This would help meet the Commission's goal of reducing GHG emissions from electricity generation. Because this rate design provides a predictable price signal over the entire roughly 600 summer season peak demand hours,[6] it should encourage investments in energy efficiency. It also would provide incentives for off-peak electric vehicle charging. Customers also could automate their responses to TOU rates with simple programmable thermostats, which are readily available, as described in DRA's response to Question #6.

The Importance of Education and Outreach

The concept of time varying rates is not a new concept to customers. They have experienced prices that vary by the time of the day in other areas of their lives. A variety of businesses charge different prices at different times of the day. For example, telephone pricing plans have charged by time of day in the past, and some cell phone plans continue to charge different rates at different times of the day.[7] Nevertheless, for this ambitious transition to TOU rates to be successful, a comprehensive education and outreach effort must be conducted.

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[5] Third party notification is described in Public Utilities Code section 779.1 (c) as a service for seniors, who are dependent adults. Under this program, the IOU would attempt to notify a person designated by the customer to receive notification when the customer's account is past due and subject to termination.

[6] In contrast, critical peak pricing affects only approximately 60 hours, and its timing cannot be predicted in advance.

[7] In addition to the telephone example, some restaurants, movie theatres, music venues, and toll bridges charge lower prices in off-peak periods and higher prices in peak periods

Such an outreach campaign would explain both the new TOU rate schedules and what the Commission aims to accomplish with TOU rates. The Commission must ensure that customers understand the new rate schedules, the goals of shifting usage away from summer on-peak periods and conserving energy usage, and what steps they can take to lower their bills under new rate schedules. According to a recent survey conducted by the IOUs, the majority of customers do not understand how they are currently billed for their electric consumption. Customer understanding of bills needs to improve for TOU rates to achieve the goals of encouraging changes in how customers use energy and to be deemed successful.

The introductory TOU rate design itself is a necessary part of this outreach and education plan. This rate design will educate customers that electricity costs are higher in on-peak periods. Initially, this message is communicated through a simple surcharge and credit on top of an already established rate design. Since the introductory TOU rate is based on the same three tiered rate design offered as the opt-out rate, it also would provide incentives to reduce overall energy use. Thus together, the tiers, surcharge, and credit send the message to consumers that "the more you use, the more it costs, and that energy used on-peak is more expensive."

<u>Conclusion</u>

DRA's proposes a cost-based TOU rate, preceded by an Introductory TOU rate, and an appropriate transition period, to meet a wide variety of objectives. DRA's end goal would be a cost-based rate that would work to meet important environmental goals such promoting conservation, providing incentives for electric vehicles, and reducing GHG. DRA's proposed Introductory TOU rate would minimize bill impacts, provide some customer choice, and would result in less customer dissatisfaction. An effective outreach and education campaign also would help achieve a smoother transition. Customers must understand and accept any new rate plans in order for them to be successful.

TABLE 1
SUMMARY OF HOW DRA'S INTRODUCTORY TOU RATE PROPOSAL MEETS THE RATE DESIGN GOALS

Principles	**How the Principles are Met**
1. Low-income and medical baseline customers should have access to enough electricity to ensure basic needs are met at an affordable cost	Retains the baseline rate and quantity at an affordable level. This will help ensure that low-income and medical baseline customers have access to enough electricity to ensure that basic needs (such as health and comfort) are met at an affordable cost.
4, 5 Rates should encourage conservation and energy efficiency; reduce coincident and non-coincident peak demand	Encourages energy conservation as well as reducing non-coincident demand by charging increased rates when one uses more energy ("the more you use, the more it costs"), and encourages energy efficiency as well as reducing coincident peak demand by charging a higher on-peak surcharge.
6. Rates should be stable and understandable and provide customer choice	Stability: Provides stability as the tiered rates are maintained. Understandability: Rates are understandable as they are similar to current rates and the on-peak surcharge and off-peak credit can be explained with proper education and outreach. Choice: Customers have some choice as they can opt-out to a three tier rate.
10. Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.	Helps the transition process of familiarizing customers with the concept of time of use rates. The combination of milder bill impacts, the ability to opt-out to a 3 tiered rate, and an effective outreach and education effort would help promote customer acceptance.

TABLE 2
SUMMARY OF HOW DRA'S LONG-TERM TOU RATE PROPOSAL MEETS THE RATE DESIGN GOALS

Principles	How the Principles are Met
1. Low-income and medical baseline customers should have access to enough electricity to ensure basic needs are met at an affordable cost	DRA's default rate proposal includes both a CARE discount for eligible customers and a credit for usage up to baseline.
2. Rates should be based on marginal cost	Cost-based TOU rates are developed based on the utility system marginal costs.
3. Rates should be based on cost-causation principles	Marginal cost-based TOU rates reflect cost-causation.
4. Rates should encourage conservation and energy efficiency	Cost-based TOU rates encourage energy efficiency by charging higher prices for energy use during peak demand periods.
5. Rates should encourage reduction of both coincident and non-coincident peak demand	A high summer-on peak rate will reduce coincident demand. Since non-coincident peak demand for most customer groups tend to occur either in peak of shoulder TOU periods, they would also often be reduced by implementation of TOU rates.
6. Rates should be stable and understandable and provide customer choice	Stability: TOU rates should be stable if they are phased in. But TOU rates would change to reflect changes in system load shapes and marginal costs. Understandability: The introductory TOU rates and the accompanied outreach and education effort will help make TOU energy rates familiar and understandable. Also, the TOU rate with a baseline credit is simpler than other options. Choice: Customers would be able to opt out to a non-TOU 2-tier rate with a smaller tier differential than currently exists. The rate would be designed using the billing determinants of those on the rate.
7., 9. Rates should generally avoid cross-subsidies, and encourage economically efficient decision making	Cost-based TOU rates are likely to reduce cross-subsidies. Since the proposed TOU rates are based on marginal cost, they will encourage economic efficiency.

DRA'S RESPONSES TO THE RESIDENTIAL RATE DESIGN OIR QUESTIONS

1. Please describe in detail an optimal residential rate design structure based on the principles listed above and the additional principles, if any, that you recommend. For purposes of this exercise, you may assume that there are no legislative restrictions. Support your proposal with evidence citing research conducted in California or other jurisdictions.

A. Introduction

DRA recommends starting the process of moving residential customers to Time of Use ("TOU") rates.[8] DRA's end goal is a cost-based TOU rate structure with a baseline credit and no customer charge. But the Commission should transition residential customers[9] to these TOU rates gradually because an immediate transition would cause large, unacceptable bill increases.

DRA proposes to make this transition in a number of steps. DRA recommends starting the transition period with a default introductory TOU rate composed of three tiers of inclining block rates along with an on-peak surcharge and an off-peak credit. Customers also could choose to opt-out to a three tier inclining block rate. These rate designs are discussed in detail below.

B. Long Run Optimal TOU Rate

As indicated above, DRA recommends a simple TOU rate with a baseline credit and no customer charge as the long run optimal rate design. DRA's proposed cost-based TOU rates are calculated using the marginal cost principles explained in Appendix A and in the response to Question #2. The TOU rates would be structured with three summer TOU periods (on-peak, shoulder-peak, and off-peak).[10] There would be two winter TOU

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[8] DRA proposes moving to TOU rates as part of this Residential Rate Design Rulemaking, R.12-06-013. If the Commission adopts DRA's proposals, DRA would make subsequent recommendations in the upcoming utility general rate cases.

[9] DRA makes this proposal for the electric residential customers of PG&E, SCE, and SDG&E.

[10] Summer peak hours occur on weekdays only; therefore, weekends have only shoulder-peak and off-peak rates.

periods (shoulder-peak, and off-peak). Baseline protection would continue to be provided through a baseline credit.[11] Table 1 below provides illustrative cost-based TOU rates.

C. Transition Plan Rates

DRA examined many rate design options using the bill calculator models developed by PG&E, SCE, and SDG&E. Several options, including a cost based rate design, would result in large bill increases, as further explained in Appendix B. DRA thus recommends that an appropriate transition period be approved to moderate bill impacts.

1) Introductory TOU Rate

Based on these concerns, DRA recommends that the Commission initiate this transition with a default Introductory TOU rate. DRA's proposed Introductory TOU rate has three tiers of inclining block rates, with an on-peak surcharge and an off-peak credit. DRA also proposes to restructure the tiers in this new rate design: Tier 1 would continue to be for usage up to the baseline quantity; Tier 2 would be expanded to include usage for 100% to 200% of baseline; and Tier 3 would be for usage above 200% of baseline.[12] Illustrative rates for the three utilities are shown in Table 2.

This rate design has fewer bill impacts than proceeding to a cost-based TOU rate directly. The comparative bill impacts of DRA's Introductory TOU rates versus its end goal cost-based TOU rate are shown in Figures 1 and 2 below. The Introductory TOU rate starts to educate customers that costs vary by time periods while maintaining inclining block rate tiers similar to the current rate design. It will familiarize customers with TOU pricing by applying mild TOU surcharges and credits on top of an already established rate design. The on-peak surcharges and off-peak credits on bills also should

[11] The baseline credit produces the equivalent of a two-tiered TOU rate with a uniform difference between the tiers for each TOU period.

[12] In the answer to Question # 8 below, DRA discusses what legislative changes would be needed to implement DRA's proposals.

be easy to understand. Appendix C provides an example of how the surcharge and credit would appear on a bill.

2) Three Tier Opt-Out Rate

DRA also proposes to allow customers to opt-out from the introductory TOU rate to a simple three tier inclining block rate design with no TOU surcharges or credits. The three tier rates would be identical to those of the introductory tier rates, but would not include the on-peak surcharges or off-peak credits. This rate design is similar to the current four tier inclining block rate structure, so it should be easy for customers to understand.

D. Exemptions from Default Rate Schedules

The Commission also should consider exempting some vulnerable customer groups from being placed on default TOU rates. For example, medical baseline customers and "third party Notification"[13] customers should be exempted. Other vulnerable groups that can be separately identified could also be exempted.

Many medical baseline customers are operating medical or life support equipment continuously. Also, these customers remain at home most of the time and are more likely to be at home during summer on-peak periods, and thus may require more air conditioning to maintain their health. DRA proposes to exempt these and vulnerable customers from default TOU rates to avoid endangering the lives or health of these customers.[14]

E. Baseline Protections

P. U. Code Section 739(d)(2) summarizes the intent of baseline as: "…electricity and gas services are necessities, for which a low affordable rate is desirable." DRA's

[13] Third party notification is described in Public Utilities Code section 779.1 (c) as a service for seniors, who are dependent adults. Under this program, the IOU would attempt to notify a person designated by the customer to receive notification when the customer's account is past due and subject to termination.

[14] Customers may be afraid to run medical equipment or use air conditioning during summer on-peak periods if they think the summer on-peak rates are too expensive.

proposed TOU rates would continue to provide a baseline rate or credit to help guarantee that the basic uses of electricity continue to be affordable to all customers.[15] Baseline also serves as a useful platform on which to continue discounts for low income customers under the California Alternative Rates for Energy ("CARE") and Family Energy Rate Assistance ("FERA") programs. DRA also recommends maintaining the medical baseline program as explained in the answer to question #4.

Baseline protections in the introductory TOU rates and opt-out tiered rates continue to be provided in the lower baseline or Tier 1 rates. To simplify the long- run TOU rates, DRA proposes to continue the baseline allowance through a baseline credit on the customer's bill rather than through a tiered TOU rate design.

F. Studies

DRA reviewed several studies and articles that support TOU rates and inclining block pricing. The following is a preliminary list of articles and studies.

1) "Inclining Toward Efficiency", by Ahmad Faruqui.[16]
2) How to Induce Customers to Consume Energy Efficiently: Rate Design Options and Methods by Adam Pollock and Evgenia Shumilkina of the National Regulatory Research Institute.[17]
3) "Energy Efficiency and Demand Side Management Program". This is a Brattle Group presentation by Ahmad Faruqui and Peter Fox-Penner on behalf of the World Bank.[18]
4) Charging for Distribution Utility Services: Issues in Rate Design, by Frederick Weston of the Regulatory Assistance Project.[19]

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[15] See Appendix A for more discussion of baseline.

[16] This August 2008 Article in Public Utilities Fortnightly cites instances where inclining block rate pricing has resulted in useful energy efficiency. The article also summarizes the short and long run elasticity values of residential customers that were available at that time.

[17] This paper discusses the value of TOU rates and inclining block rates towards reducing peak demand and overall consumption.

[18] This presentation supports inclining block rates to promote energy efficiency, and notes that this rate design can improve the economics of other efficiency technologies. It further mentions the potential value that in-home information displays can add value to AMI systems.

[19] This paper notes that fixed charges seldom can be imposed in competitive markets, and are usually only

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5) Time-Variant Pricing for California's Small Electric Consumers, by Robert Levin, May, 2011.[20]

6) Time-Varying and Dynamic Rate Design by the Brattle Group of Ahmad Faruqui, Ryan Hledik, and Jennifer Palmer.[21]

7) A Meta-Analysis of Dynamic Pricing Studies- Some Initial Findings, by Ahmad Faruqui, Sanem Sergici, and Eric Shultz.[22]

Most of these studies are further discussed in the body of these comments and in Appendices A and D.

G. Conclusion

DRA's proposes a cost-based TOU rate, preceded by an Introductory TOU rate, and an appropriate transition period, to meet a wide variety of objectives. DRA's end goal would be a cost-based rate that would promote important environmental goals such promoting conservation, providing incentives for electric vehicles, and reducing GHG. DRA's introductory TOU rate minimizes bill impacts and provides some customer choice and thus would result in less customer dissatisfaction. An effective outreach and education campaign also would help achieve a smoother transition. Customers must understand and accept any new rate plans in order for them to be successful.

Table 1 below shows Illustrative cost-based TOU Rates. Table 2 shows Illustrative Introductory TOU rates and Opt-out Tiered Rates. Figure 1 shows the bill impacts for PG&E's non-CARE customers. Figure 2 shows the bill impacts for PG&E's CARE customers.

(continued from previous page)
sustainable in markets where firms can exercise some degree of market power.

[20] This DRA White Paper provides a good explanation of why TOU pricing is superior to Critical Peak Pricing in meeting environmental goals.

[21] This study examines issues regarding the designing of TOU rates, seasonal and dynamic pricing rates.

[22] This 2012 Brattle Group study analyzes findings from 33 electricity pricing studies (containing 151 treatments) and constructs a regression equation relating percentage peak demand reduction to the ratio of peak to off-peak electricity prices. It finds that there is a significant relationship between price ratio and load drop, but with diminishing returns as the price ratio increases beyond the 2.5 to 1 embodied in DRA's proposed end-state cost-based TOU rate.

Table 1: Illustrative Cost-Based TOU Rates

	PG&E	SCE	SDG&E
Non-CARE	cents/kWh	cents/kWh	cents/kWh
Sum On-Peak	40.2	37.6	37.7
Sum Mid-Peak	28.7	28.2	23.4
Sum Off-Peak	16.9	15.7	17.6
Win Mid-Peak	28.7	27.6	23.0
Win Off-Peak	16.9	15.3	18.0
Baseline Credit (cents/kWh)	-5.0	-5.0	-5.0
Customer Charge $/Mo.		$0.9/Month	
Min Charge $/Mo.	$5.0/Month		$5.0/Month
CARE	cents/kWh		
Sum On-Peak	26.1	27.4	29.8
Sum Mid-Peak	18.7	20.3	17.1
Sum Off-Peak	11.0	10.9	11.9
Win Mid-Peak	18.7	19.8	16.7
Win Off-Peak	11.0	10.6	12.2
Baseline Credit (cents/kWh)	-3.3	-5.0	-4.5
Customer Charge $/Mo.		$0.7/Month	
Min Charge $/Mo.	$3.3/Month		$3.5/Month

Table 2: Illustrative Introductory TOU and Opt-out Tiered Rates

	PG&E			SCE			SDG&E[23]		
	Jan 2013 Rates	Intro. TOU	Opt-Out Rate	Jan 2013 Rates	Intro. TOU	Opt-Out Rate	Jan 2013 Rates	Intro. TOU	Opt-Out Rate
Non-CARE									
Tier1 (¢/kWh)	13.2	14.3	14.3	13.0	14.0	14.0	14.3	13.8	14.3
Tier 2 (¢/kWh)	15.0	22.9	22.9	16.0	22.4	22.4	16.5	21.6	22.1
Tier 3 (¢/kWh)	30.0	22.9	22.9	27.1	22.4	22.4	27.9	21.6	22.1
Tier 4 (¢/kWh)	34.0	29.1	29.1	31.1	28.0	28.0	29.9	29.9	30.4
Tier 5 (¢/kWh)	34.0	29.1	29.1	31.1	28.0	28.0	29.9	29.9	30.4
Customer Charge $/Mo.				0.9	0.9	0.9			
Min. Charge $/Mo.	4.5	5.0	5.0				5. 0	5. 0	5. 0
TOU On-Peak Surcharge.		4.0			4.0			4.0	
TOU Off-Peak Credit		0.6			0.6			0.9	
CARE									
Tier1 (¢/kWh)	8.3	9.0	9.0	8.5	9.0	9.0	9.9	9.2	9.8
Tier 2 (¢/kWh)	9.6	11.0	11.0	10.7	17.0	17.0	11.6	15.2	15.9
Tier 3 (¢/kWh)	14.0	11.0	11.0	20.7	17.0	17.0	17.5	15.2	15.9
Tier 4 (¢/kWh)	14.0	21.6	21.6	20.7	21.4	21.4	17.5	21.1	22.1
Tier 5 (¢/kWh)	14.0	21.6	21.6	20.7	21.4	21.4	17.5	21.1	22.1
Customer Charge $/Mo.				0.7	0.7	0.7			
Min. Charge $/Mo.	3.6	3.3	3.3				4.0	4.0	4.0
TOU On-Peak Surcharge.		4.0			4.0			3.1	
TOU Off-Peak Credit		0.6			0.63			0.7	

[23] SDG&E differentiated rates between summer and winter. The numbers in Table 2 are summer rates.

Figure 1: Illustrative Non-CARE Bill Impacts for PG&E

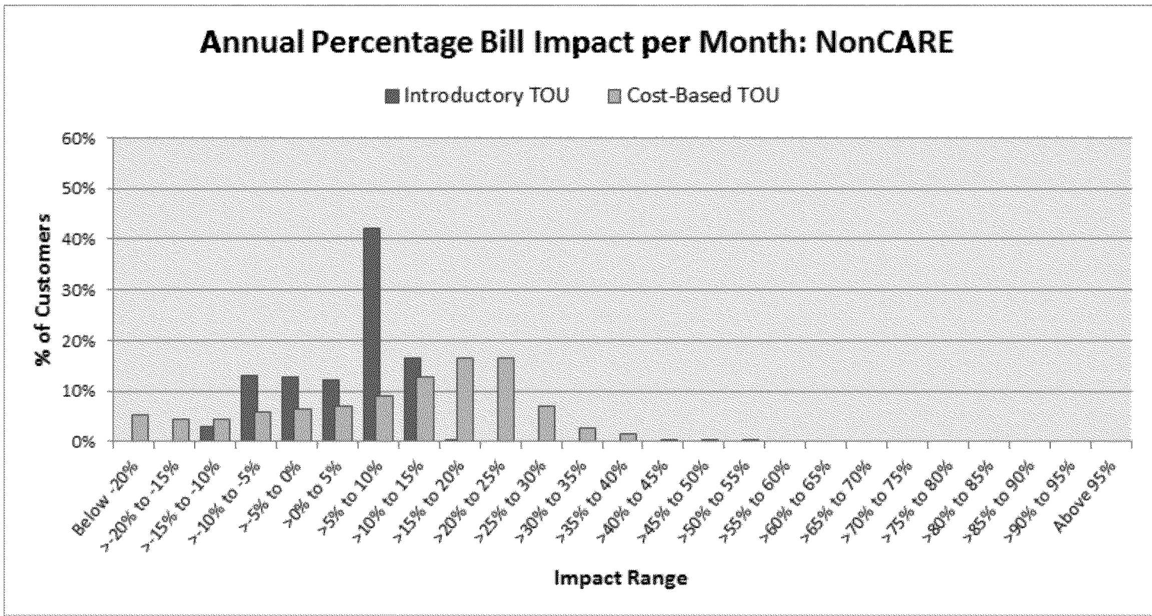
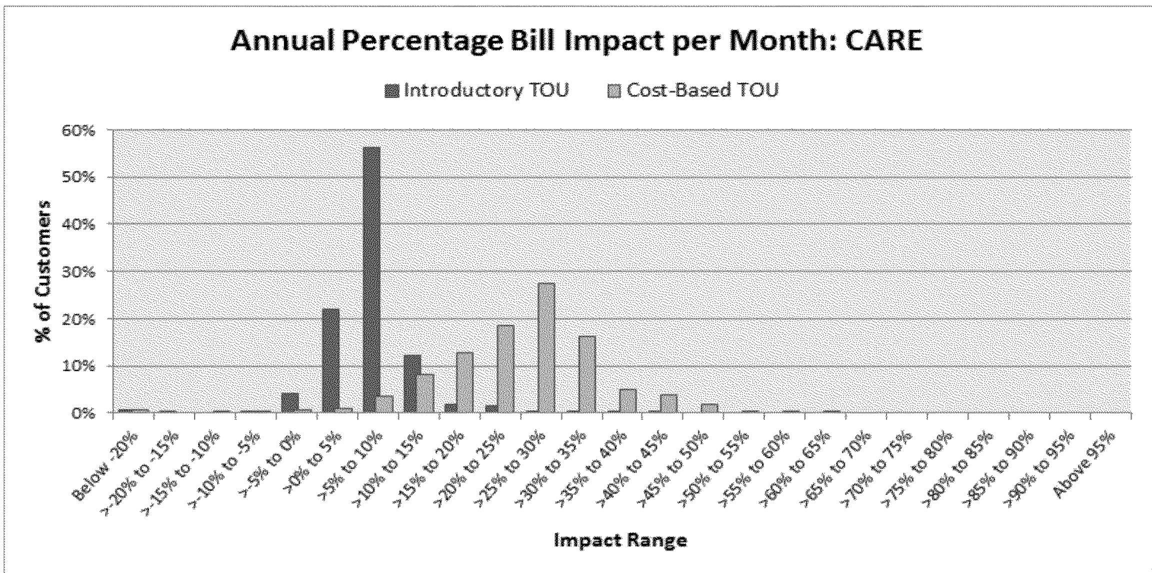


Figure 2: Illustrative CARE Bill Impacts for PG&E



2. Explain how your proposed rate design meets each principle and compare the performance of your rate design in meeting each principle to current rate design. Please discuss any cross-subsidies potentially resulting from the proposed rate design, including cross-subsidies due to geographic location (such as among climate zones), income, and load profile. Are any such cross-subsidies appropriate based on policy principles? Where trade-offs were made among the principles, explain how you prioritized the principles.

DRA's end goal, for the residential default rate design, is a simple TOU rate structure with a baseline credit. DRA also recommends an Introductory TOU rate structure as a transitional rate prior to moving customers to a simple TOU rate to mitigate large bill impacts. DRA answers Question 2 separately for these two different rate designs. The answers are summarized in Tables 4 and 5 at the end of this section.[24]

A. Affordable basic energy for low-income and medical baseline customers

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

DRA's proposed three-tier Introductory TOU rate has an affordable rate for baseline usage. The companion Introductory TOU CARE has the same basic structure as this non-CARE rate, but it has discounted rate levels. Maintaining a baseline rate and reduced upper tier rates both help provide low-income and medical baseline customers adequate access to affordable energy to meet their basic energy needs.

2) End Target: Default TOU with a baseline credit

DRA's long-term default TOU rate proposal includes both a 30% to 35% CARE discount[25] for eligible customers and a 5 cents per kWh credit for usage up to the baseline allowance. Thus it has many of the same protections as does the Introductory TOU rate.

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[24] The rate design principles, as they are expressed in the March 19, 2013 administrative law judge ruling, are reproduced verbatim in Tables 3 and 4. They are briefly paraphrased in the headings in this section.

[25] DRA's end-state illustrative rates are calculated with a CARE discount for PG&E at no less than 35%, which is a lower CARE discount than currently exists. A 30% CARE discount is calculated for SCE and SDG&E which is closer to their current CARE discount levels.

B. Rates should be based on marginal cost

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

The Introductory TOU rates are based on the IOUs' current residential rates, which were designed in general rate cases ("GRCs"). Since the Commission uses marginal costs for revenue allocation and rate design, the Introductory TOU rates roughly reflect marginal costs. The rate design process used in GRCs is discussed in more detail in DRA's discussion of Rate Design Principle #2 for its end-state TOU rate.

The current tiered rates, however, do not reflect the marginal costs by time period. The Introductory TOU rate improves the price signals by adding a summer on-peak surcharge and an off-peak credit.

2) End Target: Default TOU with a baseline credit

TOU rates attempt to capture the predictable time-variations in marginal cost[26] with a minimum of complexity. DRA has designed its end-state TOU rate using marginal cost principles employed in GRC Phase 2 proceedings.[27] The residential class share of the IOU revenue requirement is determined using separate Equal Percentage of Marginal Cost ("EPMC") allocations for generation and distribution, combined with Commission-adopted methodologies for allocating public purpose program and other miscellaneous costs. Thus, the residential share of the IOU revenue requirement is partly, but not entirely, determined based on marginal costs. In the IOU's rate design models, the resulting TOU period marginal generation costs are scaled by EPMC to achieve the residential share of the IOU's generation revenue requirement[28].

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[26] TOU rates are designed to collect the residential class share of the IOU revenue requirement while reflecting predictable variations in marginal generation costs by season, day type (weekend/holiday versus weekday), and time of day. Rather than present 8,760 hourly marginal energy costs, utilities typically group similar hours together into two or three periods per season when they present marginal energy cost results in GRC Phase 2 filings. In addition, utilities assign marginal generation capacity costs primarily to the summer peak-demand periods.

[27] The specific process that DRA used to create its end-state TOU rate is described in Appendix A.

[28] Marginal distribution and customer costs are separately scaled to match the residential share of the IOU distribution revenue requirement. California IOUs differ on the feasibility and desirability of time-

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The total residential TOU rate is the sum of time-differentiated generation rates, non-time-differentiated distribution rates, and miscellaneous rate components. These rates are further altered to provide a 30% -35% CARE discount and a 5-cent baseline credit.

The result is rates that loosely reflect marginal costs. For example, for PG&E, the proposed summer on-peak rates range from about 23 cents per kWh to about 40 cents,[29] while the marginal cost is about 32 cents. Such divergence from marginal cost is unavoidable because rates are designed to meet multiple conflicting objectives.

C. Rates should be based on cost-causation principles

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

The January 31, 2013 ALJ ruling in this proceeding defines "cost-causation" as the method of allocating costs (e.g., generation, transmission, distribution) and designing rates to assign costs to the customers who cause the costs to be incurred.[30] As explained in #2 above, costs are allocated and rates are designed using marginal costs. The intent in doing so is to reflect how costs are caused by changes in load at the margin. Since the Introductory TOU rates are developed using marginal costs, they reflect cost causation principles.

2) End Target: Default TOU with a baseline credit

Cost-based TOU rates should be developed based on cost-causation principles, that is, by assigning costs to the customers who cause the costs to be incurred. For example, investments in new generation capacity historically have been caused by growing summer peak-hour demands. Thus, cost causation principles dictate that

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differentiating distribution costs. DRA has chosen not to do so in the interest of avoiding additional complexity.

[29] The summer peak rate for above-baseline usage is about 40 cents. However, baseline usage receives a 5 cent discount; and CARE users receive a 30% - 35% discount. The lowest summer peak rate would be about 23 cents, for baseline usage by CARE customers.

[30] January 31, 2013 ACR, attachment "Defined Terms".

generation capacity costs be mainly assigned to customers in proportion to their summer peak demands. Therefore, in developing TOU rates, marginal generation capacity costs are assigned primarily to summer peak-hour demand periods. Ideally, allocation factors should represent the degree to which demand in each TOU period causes the need for generation capacity.[31]

Marginal energy costs, which are derived from market data or simulations of electric generator dispatch, generally vary by hour and reflect cost causation. The IOUs typically group similar hours with similar marginal energy costs into two or three TOU periods per season. Generation-level TOU rates are constructed by adding together the TOU-period energy and capacity costs, and dividing by TOU period usage.[32] As such, they are designed to reflect significant and predictable time variations in the energy and capacity costs caused by an additional kWh of customer demand.

D. Rates should encourage conservation and energy efficiency.

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

The tiered rate structure in the Introductory TOU rate encourages both conservation and energy efficiency because customers will pay more per unit when they use more energy. The summer on-peak surcharge also will encourage a relatively greater amount of conservation and energy efficiency during the peak hours when the value of load reduction is the highest.

[31] Historically, this allocation was done on the basis of the loss of load probability, and resulted in the large majority of capacity costs being allocated to summer peak season demands.

[32] For distribution, cause causation is less straightforward because distribution planning occurs on a local level and is driven by local demand peaks which are not necessarily coincident with system peaks. The impact of non-coincident demand varies among the IOUs. For example, PG&E often time-differentiates its distribution costs, while SCE and SDG&E decline to do so allegedly because their distribution costs are caused by non-coincident demands. DRA has chosen not to time differentiate the distribution component of its proposed end-state TOU rate to avoid added complexity. While the end-result TOU rate design need not be more complex, the process of time differentiating distribution costs would add complexity to the calculation of the rates. It would also be necessary to explain why PG&E's distribution rates are time-differentiated while SCE's are not. While DRA does not propose TOU distribution rates here, DRA neither opposes nor supports time-differentiated distribution rates at this time.

The Introductory TOU rates employ the tiered rate structure in the current rates. There is support for the use of tiered pricing to promote conservation and energy efficiency in the academic literature. Dr. Faruqui, in a paper published in Public Utilities Fortnightly, suggested that the inclining block rate can be very effective in promoting energy efficiency if it is applied as the default rate. He concluded, based on empirical estimates of price elasticity from a number of different sources, that "inclining block rates can provide energy consumption savings in the range of 0.5 to 6 percent range over a few years and even higher savings over the long run."[33] An NRRI literature survey confirms that the long-run effect is likely to be greater than the short-run effect, and identified electricity demand elasticity is about 0.7 in the long run and 0.2 in the short run.[34]

Dr. Faruqui further observes that the availability of new technologies such as in-home displays, enabled by AMI or smart-grid functionalities, would further enhance the appeal of inclining block rates and magnify the energy and bill savings.[35, 36]

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[33] This was the result that Dr. Faruqui estimated for a two-block rate design where the Block 2 rate was about 2.4 times higher than the Block 1 rate. At the other end of the range, he calculated a 0.5% energy savings for a two-block rate design where the Block 2 rate was about 4 cent/kWh higher than the Block 1 rate. Dr. Faruqui's used price elasticities for the Block 2 rate that were about double those that he used for the Block 1 rate. He states that "Generally (but not always) Block 1 price elasticities might be expected to be lower than Block 2 price elasticities."

[34] How to Induce Customers to Consume Energy Efficiently: Rate Design Options and Methods, p.63, by Adam Pollock and Evgenia Shumilkina of the National Regulatory Research Institute.

[35] "Inclining Toward Efficiency Is electricity price-elastic enough for rate designs to matter?" By Ahmad Faruqui, August 2008, Public Utilities Fortnightly.

[36] In a Brattle Group presentation, Dr. Faruqui and Dr. Fox-Penner noted that there are numerous reasons to use inclining block rates to promote energy efficiency:

- It is a low-cost option - Does not require incentive or rebate payments since the incentive comes in the form of lower unit rates when one conserves.
- It improves the economics of other efficiency technologies – Increased intrinsic value of in-home information displays and faster payback on rooftop solar installations
- It is customer-friendly and can be universally deployed – Simplicity is key in generating customer response.

"Energy Efficiency and Demand Side Management Program," The Brattle Group, by Ahmad Faruqui & Peter Fox-Penner, July 14, 2012, on behalf of The World Bank.

2) End Target: Default TOU with a baseline credit

Cost-based TOU rates encourage conservation and energy efficiency by charging higher prices for energy use during higher cost, on-peak periods when the value of that conservation is the highest. While tiered rates generally cause high use customers to conserve in all hours, TOU rates send this price signal to all customers during the hours when those savings are associated with the highest marginal costs.[37] TOU rates confer both short-run and longer-term conservation benefits, as explained below.

The short-run[38] (behavioral) conservation benefits stem from the price elasticity of residential consumers; they respond, as a group, to higher peak-hour prices by reducing their peak period usage.[39] While some of the peak-hour usage is shifted to non-peak periods, some net reduction in electricity use can be expected. Even where use is shifted, the shift occurs to hours in which the marginal generation is more efficient than the marginal generation on peak.[40] Thus there is conservation in the use of natural gas in generating electricity.

The longer-term conservation benefits of cost-based TOU rates occur by encouraging investments in high-value customer-owned energy efficiency, renewable generation, and storage. Such investment-related conservation may be at least as significant, over time, as the behavioral conservation. It is generally accepted that

[37] Targeting only high use customers with higher rates can result in an overall usage reduction if the price elasticities in the tail blocks are higher than those on the first block. Indeed, this is the assumption contained in Dr. Faruqui's study discussed above. Dr. Faruqui, however, acknowledges that this difference in elasticities may not always be the case. More empirical studies are required to determine the relative difference price elasticities for the different blocks in inclining block rates.

[38] Economists distinguish between short-run and long run elasticities. The latter are generally greater and reflect changes over time to the stock of energy consuming appliances. Thus, the short-run effects of TOU-prices would be limited to changes in energy use given no change in appliances, while in the longer-term appliance upgrades would contribute additional conservation.

[39] See DRA response to Goal #5, below.

[40] For example, a kWh shifted from 3:00 PM, when the marginal heat rate is 10,000 Btu per kWh, to say, 9:00 PM, when the marginal heat rate is 7,000 Btu per kWh, conserves 3,000 Btu of natural gas, and avoids the corresponding GHG emissions that would otherwise occur. Recent PG&E "Effective Market Heat Rate" data provided in its workpapers to its 2014 GRC confirm that such large differences in the marginal heatrate within a summer weekday are typical. An illustrative example is provided in Appendix D.

summer peak demands are largely driven by residential and commercial air conditioning demands. TOU rates make it expensive for customers to own inefficient air conditioners and poorly insulated houses. Therefore, they decrease the payback period[41] for air conditioner and building shell efficiency upgrades, making such investments more attractive.[42]

TOU rates also carry longer-term benefits with respect to renewable integration, electric vehicles, and energy storage. The flip side of high summer afternoon rates is low overnight rates. Since, in California, the wind most often blows at night, increased overnight usage due to load shifting from peak hours and residential response to lower prices can increase the uptake of wind energy, and increase the value of wind generation. The availability of low off-peak rates is a key factor in encouraging investments in electric vehicles[43]. Finally, TOU rates provide the correct economic signal for customers to invest in energy storage.[44]

In summary, while TOU rates conserve electric energy, they also conserve natural gas and gasoline, assist in renewable integration, and serve to reduce GHG emissions. They generally do so better than does critical peak pricing ("CPP") because the latter operates over too few hours to make investments in energy efficiency upgrades, electric

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[41] That is, TOU rates generally increase the dollar value of the energy cost savings that a customer can realize by investing in air conditioning and building shell energy efficiency, thus shortening the time required for such investments to be profitable.

[42] A similar investment-related benefit exists with respect to investments in residential rooftop solar photovoltaic generation. TOU rates generally decrease the payback period for such investments, whether the customer is net-metered or not. In fact, the benefit exists even if the customer never exports energy to the grid.

[43] For example, a 10-cent per kWh nighttime electric rate would be the rough equivalent of $0.75 per gallon of gasoline.

[44] For example, relatively low-value morning hour solar energy could be stored until the evening hours when it would have a significantly higher value. On-site energy storage could assist both with intermittency and over generation problems, as well as address concerns about the timing mismatch between solar generation and loads, and the need for rapid ramping.

storage, or solar generation cost effective.[45] The relative efficacy of TOU and CPP are discussed in DRA's White Paper.[46]

E. Rates should encourage reduction of both coincident and non-coincident peak demand;

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

The January 31, 2013 ALJ ruling in this proceeding defines coincident peak demand as "…the level of demand of a customer or customer class at the time of **system peak** demand."[47] DRA's Introductory TOU rate imposes a summer on-peak surcharge when overall coincident demand on energy is higher.

The same ALJ ruling defined non-coincident peak demand as "…the maximum demand of a customer or customer class during a specific time period, regardless of when the system peak occurs."[48] Inclining block or inclining tiered rates encourage a reduction of non-coincident peak demand since the higher rates that come from increased usage encourage customers to reduce their own demand regardless of when it occurs.

2) End Target: Default TOU with a baseline credit

Cost-based TOU rates reduce coincident peak demand by charging a higher price for energy use during peak demand periods. Both the NRRI survey cited above, and the 2012 Brattle Group "Meta-Analysis,"[49] show that residential consumers do in fact reduce their peak demands in response to higher electricity prices. Therefore, the proposed relatively high TOU summer on-peak rate would induce customers to reduce coincident peak demand.

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[45] DRA does not oppose CPP as an optional (opt-in) residential rate design, provided it is found to be cost-effective as a demand response program, according to the same criteria used to evaluate other DR programs. However DRA finds CPP unsuitable as a default rate design for residential customers.

[46] Time-Variant Pricing for California's Small Electric Consumers, by Robert Levin, May, 2011. This DRA white paper is available on DRA's website: http://www.dra.ca.gov/general.aspx?id=239

[47] January 31, 2013 ACR, attachment "Defined Terms".

[48] January 31, 2013 ACR, attachment "Defined Terms".

TOU rates may reduce non-coincident peak demands on the distribution system as well. For most customer groups, non-coincident peak demands tend to occur either in peak or shoulder TOU periods. To the extent that such demands occur in peak or partial TOU periods, they also would be reduced by implementation of TOU rates.[50]

However, some ***increased*** non-coincident peak demand may be environmentally beneficial in some cases. DRA noted earlier that TOU rates will provide incentives for off-peak EV charging. If EV market penetration proceeds successfully, future non-coincident peak demands from residential EV charging could occur in off-peak periods. The environmental benefits of EVs displacing carbon-intensive liquid fuels with low-carbon electric generation would be large enough that it would not make sense to encourage a reduction in the off-peak non-coincident demands caused by EV charging. But, TOU rates would decrease non-coincident peak demands in other time periods.

F. Rates should be stable and understandable and provide customer choice

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

Stability: As demonstrated in Appendix B, DRA designed the Introductory TOU to maintain the current tier structure during the transition period to moderate bill impacts. Therefore, it provides rate stability and a smooth evolution from the current rate structure to a pure TOU rate.

Understandability: For people who already understand the current tier rate structure,[51] the Introductory TOU will be easy to understand since it retains the same basic tier

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[49]Study #7 cited in DRA's response to Q.1

[50] If distribution costs were time differentiated, this could further contribute to reducing non-coincident demand. But utility marginal cost studies not in agreement on issue of whether distribution should be time-differentiated.

[51] Based on PG&E's residential customer survey by Hiner and partners, it appears that many customers do not understand their current rate. Thus, whatever rate options are adopted, creative solutions will be required to improve customer awareness about how to intelligently use electricity.

structure. PG&E's survey[52] also indicated that many customers have a general sense that the cost of energy varies by time period, and they understood that shifting usage can reduce costs. Therefore, the TOU surcharge and credit on the Introductory TOU rate should not be too difficult to communicate.

DRA also notes that it chose the Introductory TOU rate structure because it is a simplified and more understandable presentation of a tiered-TOU rate such as PG&E's Schedule E-6 tariff. In essence, the tiered rate without the surcharge or credit is the mid-peak rate. The on-peak rate is that rate plus the surcharge, and the off-peak rate is that rate less the credit. Table 3 below shows how DRA's Introductory TOU rate for PG&E conceptually can be expanded to something that is structured more like PG&E's E-6 rate. Thus, the basic rate structure embedded in the Introductory TOU rate is a "shorthand" version of a much more complex rate schedule. This simplification of a complex rate structure should make the Introductory TOU rate more understandable to customers than had they been presented a rate such as that shown in Table 3.

Table 3: DRA's Introductory TOU Rate

	Summer Period			Winter Period	
	On-Peak	Shoulder-Peak	Off-Peak	Shoulder-Peak	Off-Peak
Tier 1	18.3	14.3	13.7	14.3	13.7
Tier 2	26.9	22.9	22.3	22.9	22.3
Tier 3	33.1	29.1	28.5	29.1	28.5

Choice: Customer choice would be provided because DRA would allow customers to opt out to a number of different rate options. In addition to providing an opt-in three-tiered non-TOU rate, DRA would retain all the existing optional rate schedules during the

[52] Residential Rate Design OIR Customer Survey, April 16, 2013. Hiner & Partners, Inc., Residential Rate Design OIR Customer Survey Key Findings, Final Draft, April 16, 2013.

transition period. These include existing TOU options, critical peak or "smart" rates, and electric vehicle rates.

2) End Target: Default TOU with a baseline credit

Stability: TOU rates would be stable between GRCs, but would change over time to reflect changes in system load shapes and marginal costs. Usually such changes would be small and incremental.[53] If large changes to loads and costs occur, the changes in rate design would have to be phased in.

Understandability: As indicated above, PG&E's residential customer survey indicated that many customers have a general sense of the time of peak energy use and understand that shifting usage could potentially save on their energy bill.[54] Therefore, the proposed TOU rates should be easily understood by customers. In addition, presenting the baseline allowance on the bill as a baseline credit is simpler and more understandable than presenting a two-tiered TOU rate. As explained in DRA's response to Question #7, a baseline credit produces the mathematical equivalent of a two-tiered TOU rate design.

Choice: Customers would be able to opt out to a non-TOU two-tier rate with a smaller tier differential than currently exists. The rate would be designed using the billing determinants of those on the rate.

G. Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

DRA's Introductory TOU rate provides a smooth transition to gradually reduce the subsidies to low usage and low load factor customers. Over time, the Introductory TOU

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[53] For example, as solar penetration increases, the hour of system peak net demand will shift later in the day. The on-peak TOU period may need to be gradually extended into the evening hours, to accommodate such a shift in hourly demands.

[54] For example, older customers will remember TOU long-distance phone bills; those that cross the Bay Bridge have been exposed to TOU bridge tolls. Customers who fly regularly know that fares at peak travel times tend to be expensive.

rate will evolve to be more cost-based than is the current rate. It begins that evolution by combining the usage for the current Tiers 2 and tier 3 and creating a new Tier 2. It also introduces a modest TOU surcharge and credit to begin reflecting the variation in marginal costs by TOU period. Both of these changes reduce cross-subsidies relative to current levels.

2) End Target: Default TOU with a baseline credit

TOU rates based on marginal cost should reflect cost causation and therefore are likely to reduce cross-subsidy. However, explicit state policy goals of affordability and low income assistance require subsidies from high usage customers to low usage customers (through baseline allowances), and subsidies from non-CARE customers (residential and nonresidential) to CARE customers.

DRA emphasizes that these subsidies serve explicit state policy goals and should be continued. The presence of a baseline credit in DRA's end-state TOU rate design primarily is to provide, to all Californians, access to an essential service at an affordable rate. This was the premise underlying the Warren-Miller Energy Lifeline Act of 1976, which required the Commission to designate a baseline quantity of gas and electricity, necessary to supply a significant portion of the reasonable energy needs of the average residential customer, at affordable rates below average cost.

H. <u>Incentives should be explicit and transparent;</u>

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

Introductory TOU sends explicit and clear signals to the customers that, the more they use energy, the more they must pay for electricity per unit. It also sends the signal that customers will pay more for energy used during the higher cost summer on-peak period.

2) End Target: Default TOU with a baseline credit

Cost-based TOU rates are intended to reflect rates based on cost causation, hence, the incentive should be explicit and transparent.

I. Rates should encourage economically efficient decision making.

1) Transition Period: Default Introductory TOU and opt-in to three-tiered rate

DRA's Introductory TOU rate initiates the process of transitioning to TOU rates. TOU rates overall will encourage economically efficient decision making. DRA believes that economic efficiency should be viewed from a societal perspective where the environmental externalities of energy use are internalized by reflecting them in rates. In Section b to question #9 below, DRA discusses this issue further.

A caveat, however, must be made about the level of economic efficiency that can be promoted by properly designed utility rates. The effective efficiency of both DRA's Introductory TOU and end-state TOU rates is reduced to the extent that customers do not understand their bills. Indeed, many customers do not appear to understand the relationship between the bill and how they use electricity. This is partly because the energy bill is a small fraction of the average household's expenditures, and thus customers do not spend much time figuring out how the bill is calculated. Thus customer education and outreach will be required to improve customer awareness of how their bills are calculated, and how their behavior factors into their charges, as discussed below.

2) End Target: Default TOU with a baseline credit

To the extent that TOU rates are based on marginal cost, they will encourage economic efficiency. Rates based on marginal cost provide a signal to customers and in theory should yield a consumption level that is efficient for society. Paraphrasing a recent paper by Severin Borenstein[55]:

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[55] Regional and Income Distribution Effects of Alternative Retail Electricity Tariffs" Severin Borenstein October 2011. The full, unparaphrased quote follows:

"Many energy consultants advocate use of IBP on the argument that raising marginal rates reduces consumption. While this may be true, it will depend on where the marginal rate increases occur and how customers respond to more complex non-linear rates,... More importantly, the goal is not to simply reduce consumption, but to do so to the optimal extent. If consumers face marginal rates that are above the true social marginal cost of supplying power, they will inefficiently over-conserve on electricity. That is almost certainly the case in California for customers on the higher tiers of the IBP tariffs."

...the goal [of economically efficient rate design] is not to simply reduce consumption, but to do so to the optimal extent. If consumers face marginal rates that differ from the true social marginal cost of supplying power, they will inefficiently over-consume or over-conserve on electricity.

However, it is critical, from an environmental perspective, that the cost to society of the environmental impacts of energy use be included in energy prices. In theory, under cap and trade, the price of allowances will be captured in the marginal energy cost and thus in rates. However, uncertainties remain as to whether environmental costs will be fully captured, and it is probably better from a societal economic efficiency perspective, for volumetric rates to err on the high side, as long as low-income and baseline protections are sustained, even if over-conservation should result. Accordingly, DRA joins with most of the environmental parties in opposing proposals to include a customer charge in rates. Since customer charges would reduce customer's incentives to conserve, DRA does not include a customer charge in either its Introductory TOU or end-stage TOU rate.

Finally, it is important to note that the impact of TOU rates extends beyond short-run consumption decisions. They also are a major factor in achieving economically efficient investments in energy efficiency, electric transportation, and renewable distributed generation.

J. Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.

As DRA explains in its response to Question #1, moving to the cost-based rate design too quickly could cause customer confusion and unacceptable bill impacts. Accordingly, DRA recommends starting with the Introductory TOU rate. To ensure the success of the new structure, the utilities must apply effective outreach and education to help customers understand the new rate schedules and what steps they can take to lower their bills under new rate schedules. Customers must receive education on the State policy goals of shifting usage away from the summer on-peak periods and of conserving energy usage.

DRA's response to Question #7 below elaborates on DRA's transition plan and its specific outreach and education recommendations.

Tables 4 and 5 below summarize how each of DRA's two rate options accomplishes the ten rate design objectives. Together, the two rate options meet most of the rate design principles in the March 19, 2013 ruling.

TABLE 4: SUMMARY OF HOW DRA'S TRANSITION PERIOD PROPOSAL MEETS THE RATE DESIGN GOALS

Principles	**Transition Period:** Default Introductory TOU, customers can opt out to 3-tiered rate.
1. Low-income and medical baseline customers should have access to enough electricity to ensure basic needs are met at an affordable cost;	Retains the baseline rate and quantity at an affordable rate level.
2. Rates should be based on marginal cost;	Introductory TOU provides some cost-based price signal by making customers pay more for high usage and on-peak usage, and offering a reduced rate for off-peak usage.
3. Rates should be based on cost-causation principles;	See above.
4. Rates should encourage conservation and energy efficiency;	Introductory TOU encourages conservation by charging increased rates when one uses more as well as encouraging energy efficiency by charging higher price when one use energy during higher cost hours.
5. Rates should encourage reduction of both coincident and non-coincident peak demand;	Higher tiered rates encourage a reduction of non-coincident peak demand while on-peak surcharge encourages reduction of coincident peak demand.
6. Rates should be stable and understandable and provide customer choice;	Stability: Introductory TOU provides rate stability and smooth transition from the current rate structure. Understandability: With proper education and outreach, the Introductory TOU should be understandable. Choice: Customers can opt out to a number of rate options.
7. Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;	Introductory TOU provides a smooth transition to gradually eliminate the subsidies to low load factor customers
8. Incentives should be explicit and transparent;	Introductory TOU sends explicit and clear signals to the customers that the more one uses energy, the more one has to pay as well as one will pay more for energy use during higher cost period.
9. Rates should encourage economically efficient decision making;	See above
10. Transitions to new rate structures should emphasize customer education &outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.	The Introductory TOU rate introduces customers the concept of TOU rates and has substantially fewer bill increases than other options considered. It should be combined with an effective outreach and education campaign to explain the new rates and the goals the Commission wants to accomplish.

TABLE 5: SUMMARY OF HOW DRA'S END-TARGET TOU PROPOSAL MEETS THE RATE DESIGN GOALS

Principles	**End Target:** Default TOU with a baseline credit.
1. Low-income and medical baseline customers should have access to enough electricity to ensure basic needs are met at an affordable cost;	DRA's default rate proposal includes both a CARE discount for eligible customers and a credit for usage up to baseline.
2. Rates should be based on marginal cost;	Cost-based TOU rates are developed based on the utility system marginal costs.
3. Rates should be based on cost-causation principles;	Marginal cost-based TOU rates reflect cost-causation.
4. Rates should encourage conservation and energy efficiency;	Cost-based TOU rates encourage energy efficiency by charging higher prices for energy use during peak demand periods.
5. Rates should encourage reduction of both coincident and non-coincident peak demand;	A high summer-on peak rate will reduce coincident demand. Since non-coincident peak demand for most customer groups tend to occur either in peak or shoulder TOU periods, they would also often be reduced by implementation of TOU rates.
6. Rates should be stable and understandable and provide customer choice;	<u>Stability</u>: TOU rates should be stable if they are phased in. But TOU rates would change to reflect changes in system load shapes and marginal costs. <u>Understandability</u>: The introductory TOU rates and the accompanied outreach and education effort will help make TOU energy rates familiar and understandable. Also, the TOU rate with a baseline credit is simpler than other options. <u>Choice</u>: Customers would be able to opt out to a non-TOU 2-tier rate with a smaller tier differential than currently exists[56].
7. Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;	Cost-based TOU rates are likely to reduce cross-subsidies.
8. Incentives should be explicit and transparent;	Cost-based TOU rates are designed to reflect cost causation, hence, the rates should provide explicit and transparent incentives.
9. Rates should encourage economically efficient decision making;	Since the proposed TOU rates are based on marginal cost, they will encourage economic efficiency.
10. Transitions to new rate structures should emphasize customer education & outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.	Directly changing from tiered rates to non-tiered TOU will cause large rate shock. Thus a gradual transition is required.

[56] Both the long-term TOU rates and the non-TOU opt-out alternative rate would be designed using the billing determinants of those on the rate.

3. How would your proposed rate design affect the value of net energy metered facilities for participants and non-participants compared to current rates?

The January 31, 2013 ALJ ruling notes that it would be difficult to assess net energy metering ("NEM") in this Residential Rate Design OIR because of the limited empirical data currently available for the NEM program. The ACR further states that the next NEM rulemaking would be the best ratemaking forum in which to refine NEM and to develop alternative NEM rate structures.

Nevertheless, DRA's Introductory TOU rate is designed to avoid major bill impacts. It does so by maintaining a three-tiered rate structure that is very similar to today's four-tiered rates, while gradually introducing TOU rate elements. Thus, the impact on current NEM customers from transitioning to Introductory TOU rates should, for the most part, be mild.[57] Further, many current NEM customers are already on tiered TOU rates. Given that DRA proposes to retain those rate options at least for a transitional period, NEM customers will have minimal bill impacts from the Introductory TOU rate.

DRA also has proposed a gradual transition from its Introductory TOU rate to a simpler TOU rate with a baseline credit. The gradual nature of the transition hopefully will mitigate any rate shock to NEM participants and to non-participants. DRA's end-state TOU rates will bring rates closer to marginal cost, and thus they will signal more accurately the value of customer-sited generation.

[57] The utilities' rate design models do not appear to have the capability to accurately determine bill impacts on NEM customers at this time. SCE has provided supplemental bill impact histogram in its bill calculator model to examine the bill impacts of tiered rates on a sample of NEM customers. However, according to SCE the impacts of TOU rates are not available as one full year of interval data is not available on a significant subset of these customers. Neither PG&E nor SDG&E provided model capability to analyze bill impacts on NEM customers.

4. How would your proposed rate design structure meet basic electricity needs of low-income customers and customers with medical needs?

A. <u>Low Income Customers</u>

DRA proposes to maintain the California Alternate Rates for Energy ("CARE") program that provides discounts for low-income residential customers. CARE discounts can be provided for both TOU and tiered rates. DRA's proposed rates also make gradual and moderate increases to non-CARE and CARE Tier 1 rates.

DRA also proposes to maintain baseline protections. Initially, the baseline protection would continue as a lower priced Tier 1 rate. When full TOU rates are implemented, DRA proposes to retain baseline protections through a baseline credit on a customer's bill. The baseline credit is envisioned to provide baseline protections similar to what currently exist for the average residential customer with an average load shape (e.g. for a customer with an average amount of on-peak usage). Maintaining the baseline program would help to make basic uses of energy affordable to all customers, and is also useful in structuring CARE and medical baseline benefits.

B. <u>Medical Needs Customers</u>

DRA proposes to maintain the medical baseline program. Medical baseline customers pay lower rates through an increased baseline allowance. Medical baseline is designed to assist customers on life support equipment and for specified medical conditions defined in P.U. Code Section 739 (c). Since the medical baseline program is built on top of the baseline program,[58] maintaining the baseline program facilitates the continued provision of assistance to customers with medical needs. P.U. Code Section 739 (c) (6) offers the most general description of medical conditions that qualify for an increased medical baseline allowance. The Commission may want to consider offering medical baseline allowances for more medical conditions that would require the need for more heating or cooling, as well as for new medical equipment.

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[58] Customers who qualify for the Medical Baseline program receive an incremental medical baseline allowance.

5. What unintended consequences may arise as a result of your proposed rate structure and how could the risk of those unintended consequences be minimized?

Depending on what rate options are offered to customers, and how the rates are structured, there is the potential for revenue shortfalls if customers self-select the options that give them the lowest bills. For example, small users could choose tiered rates and only pay the lower tiered prices. Similarly, users with large on-peak loads might chose tiered rates to avoid the higher rates during the on-peak period. Tiered rates with large tier differentials, or TOU rates with large TOU differentials, also could encourage large users to bypass the IOU generation system by investing in solar or distributed generation.

Therefore, making a variety of rate options available to customers could result in different kinds of revenue shortfalls, at least in the short run. Some of these revenue shortfalls come from customers seeking rates on which they are structural benefiters, and some come from economic and non-economic bypass.[59] These shortfalls would decrease over time if rates are redesigned using the billing determinants of those customers who are on these rates.

DRA has paid special attention to the potential revenue shortfall when designing its recommended rates. To minimize revenue losses, DRA proposes that its voluntary non-TOU tiered rate structure have the same rates for each tier as does its default Introductory TOU rate, at least initially. The proposed TOU surcharges and credits initially would be very moderate so as not to encourage peaky customers to opt out to the non-TOU version of the three-tier rate structure. As the transition to a cost-based TOU rate proceeds, the default and opt-out rates should be examined simultaneously, and continued efforts should be made to minimize revenue shortfalls.

[59] Economic bypass occurs when customers are able to obtain or self-provide services normally provided by the utility, at a cost below the utility's marginal cost. A typical example could be self-generation However, not all bypass is economic: if rates rise well above the utility's marginal cost, a customer might save money via uneconomic bypass by installing self-generation at a cost which is below the customer's rate but above the utility's marginal cost. While both types of bypass can lead to revenue shortfalls; economic bypass confers societal benefits while uneconomic bypass results in an inefficient use of resources.

After a reasonable transition period, rates should be set using the billing determinants of those customers on that rate to mitigate revenue losses. At that point, it may no longer be necessary to set the tiered rate components of the default TOU and optional non-TOU rates at the same levels. As the tiered rate components for the TOU and non-TOU rates diverge, it is likely that the average non-TOU tiered rate would be greater than the average TOU rate. This is because the high TOU surcharges may cause peaky customers, who are more expensive to serve, to move onto the optional non-TOU tiered rate.

6. For your proposed rate structure, what types of innovative technologies and services are available that can help customers reduce consumption or shift consumption to a lower cost time period? What are the costs and benefits of these technologies and services?

A major advantage of making the default rate a time-of-use rate rather than a dynamic rate is that it requires nothing more than a programmable thermostat for a customer to optimally adapt to the rate by shifting usage to lower cost times. Since the rate and TOU periods are fixed by the tariff, the utility does not need to communicate to the customer electronically when critical peak events occur.

Programmable thermostats are currently affordable and readily available. They range in price from as little as $27, for a Honeywell thermostat on the Home Depot website, to $249, for a thermostat made by Nest. Many options are available at the lower end of the range. The Honeywell thermostat can be programmed for up to four time periods in a day and with separate settings for weekends. The more sophisticated Nest thermostat "learns" a customer's schedule over the first week of manual programming and adjusts the heating or cooling accordingly. An online platform and mobile application allow users to set temperatures when away, receive monthly reports with energy saving tips, and to view their energy savings, which average around 20%.[60]

[60] For those on Time of Use and dynamic rates, Nest is also introducing a Rush Hour Rewards Program by which the thermostat will limit participating customers' AC usage during peak times by shifting to the hours prior, recognizing when the customer is not home, etc. In addition, the Seasonal Savings Program can slowly adjust a customer's heating/cooling schedule at the beginning of a new season. Recognizing

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In addition to programmable thermostats, many online energy management and budgeting tools are available that can benefit customers on both tiered and time varying rates. Opower and others provide IOU customers with hourly energy usage data that can be compared with that of similar homes and with the customer's own consumption in previous months or years. Customers can utilize various account management tools like setting energy reduction goals or receiving usage reduction tips based on home characteristics. For customers on a tiered rate structure, PG&E offers an Energy Alerts Program by which customers can be notified by phone, text or email at the point in the month when they are moving into a higher tier. The Energy Alerts Program can be used in conjunction with account management and budgeting tools. These existing tools should be better advertised on the IOUs' customer account pages and through Customer Service Representatives.

All customers can benefit from other technologies such as in-home displays that provide real-time energy consumption data through communication directly with the smart meter. But they are not necessary to automate the response to TOU rates. Those on optional CPP (or Smart Rates) also can benefit from programmable communicating thermostats. These are less available now than they will be in the future when the Smart Energy Profile 2.0 communications protocol is fully implemented. Finally, PG&E currently offers free devices to customers enrolled in its SmartAC Program that could be used to automate the response to critical peak events.

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that the cost of its product may prevent some customers from adopting it, the company has partnered with IOUs to offer rebates to customers who purchase thermostats. Many customers are able to install the thermostat themselves, but Nest offers installation services for $119. (See http://www.reuters.com/article/2013/04/22/idUS312420294320130422 and www.nest.com.)

7. Describe how you would transition to this rate structure in a manner that promotes customer acceptance, including plans for outreach and education. Should customers be able to opt to another rate design other than the optimal rate design you propose? If so, briefly describe the other rate or rates that should be available. Discuss whether the other rate(s) would enable customers opting out to benefit from a cross-subsidy they would not enjoy under the optimal rate.

A. Transition and Customer Acceptance

DRA proposes a transitional Introductory TOU rate partially because it would result in a smooth transition from current rates.

The Introductory TOU rate can start to familiarize customers with the concept that electricity costs more to provide during the summer on-peak period, and costs less to provide it at night. This fact is communicated through a simple surcharge and credit. DRA also chose this rate structure because it has substantially fewer bill increases than other options considered. The reason for why the bill impacts are less is because it is merely an augmentation of a rate structure that already exists. The launch of the Introductory TOU rate must be accompanied by an effective outreach and education campaign designed to clearly explain the new rates and the goals the Commission wants to accomplish.

DRA notes that it chose the introductory TOU rate structure because it lends itself to a natural evolution from a tiered rate structure to a TOU structure. As noted in Table 3 above, the Introductory TOU rate is a simplified presentation of a three-tier TOU rate. Thus, the Introductory TOU rate can evolve to the end-state TOU rate shown in Table 1 in DRA's answer to Question #1.

But there would be several steps in the transition to the end-state TOU rate. Sometime during the transition period, the number of tiers would be reduced from three to two, and the tier differential in that two-tier rate eventually would be reduced to whatever the baseline credit would be in the end-state TOU rate. DRA has used, for illustration, a 5-cent per kWh baseline credit. Simultaneously, the tiered rates for the introductory TOU rate would be allowed to diverge from those of optional (opt-out) non-TOU two-tiered rate design. While these rates would be calculated separately, attention still should be given to minimizing revenue shortfalls. The surcharges and credits themselves would also grow until they reflected the TOU differentials in a cost-based TOU rate.

DRA's end state TOU rate would emerge after all the changes to the Introductory TOU rate described above. Table 6 shows DRA's illustrative cost based TOU rate for PG&E expressed in the same form as the Introductory TOU rate.[61] As explained below, this rate is equivalent to the more traditional TOU rate, with an added baseline credit that is shown in Table 7.

Table 6: Two-Tier Long-Term TOU Rate

Tier 1	23.7
Tier 2	28.7
Summer On-Peak Surcharge	11.5
Off-Peak Credit	11.8

As a last step in the transition process, the presentation of the rate could be changed so that it looks like the rates in Table 7. Thus, rather than the TOU elements of the rate being shown as surcharges and credit, the actual rates for the on-peak, mid-peak, and off-peak rates would be shown, and the tier differential would be expressed as a baseline credit:

[61] The comparable rate table for DRA's illustrative cost based rates for SDG&E would be somewhat more complicated because separate tiered rates would need to be shown for the summer and winter.

Table 7: TOU Rate with Baseline Credit

Summer Period			Winter Period	
On-Peak	Shoulder-Peak	Off-P eak	Shoulder-Peak	Off-Peak
40.2	28.7	16.9	28.7	16.9
Baseline Credit = 5.0 cents/kWh				

The fact that the Introductory TOU rate easily can be converted to a form that resembles a standard TOU rate with a baseline credit, with no change in the customers' bills, makes it suitable for seamlessly transitioning customers from the current rate design to this different design. DRA suspects that it might be easier for customers to understand if the end-state rate were expressed as a TOU rate with a baseline credit. But there are many options for how the rate could be presented. Another alternative is a flat rate with TOU surcharges and credits plus a baseline credit. When the end of the transition period approaches, the utilities should conduct focus groups to determine which presentation of the rate would be most understandable for customers.

DRA stresses that the transition plan that it envisions could change as real world conditions evolve. The number of TOU periods, and the hours which they cover, could change. When designing rates in the future, current information should also be evaluated such as the current cost information, increases in revenue requirements for the residential class, changes in load shape, changes in resource-demand balances, and customer reactions and opinions about the new rates. DRA expects that its end-state TOU rate would always have a baseline credit, though its actual magnitude also should be revisited at the end of the transition period.

B. <u>Outreach and Education</u>

As DRA explained earlier, many residential customers may not be willing to spend time monitoring their energy usage and taking actions to modify their usage patterns. Also, the Survey of Residential Customers by the IOUs found that a large number of customers do not understand the electric rates they pay.[62] One reason that customers may not understand their electric rates is that there was little or no education and outreach after the Commission instituted a five tier inclining block rate design. The Commission should learn from this omission and promote effective outreach and education on TOU rates.

Outreach and education solutions need to be creative and leverage on multiple benefits. DRA offers the following examples for outreach and education aimed at increasing overall customer awareness of energy consumption and bill impacts:

- The IOUs should launch a comprehensive awareness campaign to encourage customers to shift energy usage to off-peak hours and to reduce overall usage to reduce customers' bills and to help address climate change issues.
- When customers call the utility seeking bill assistance, the customer contact staff automatically should take the opportunity to educate customers about the Introductory TOU rate, possible bill impacts, and available energy efficiency (EE) and demand response (DR) programs to mitigate bill impacts.
- The IOUs should initiate direct contacts with largest energy users to inform them about available energy audit tools. The IOUs have received funding from the Commission to develop such tools. PG&E describes its Progressive energy audit tool (PEAT) as an interactive tool that will provide customers information about their energy usage and recommended energy usage changes, including demand side management (DSM) technology recommendations.[63]
- The IOUs should partner with other venues such as schools to encourage customers sign up on "my account" for event call notification (for those on dynamic rates), energy usage alerts, and energy budget threshold alerts. Signups could be encouraged by giving financial incentives, such as by promoting drawings for prizes (such as a I-pads and gift cards).
- The IOUs and the Commission should attempt to engage the traditional media and social media in helping to publicize and talk about TOU rates,

[62] Residential Rate Design OIR Customer Survey, April 16, 2013. Hiner & Partners, Inc., Residential Rate Design OIR Customer Survey Key Findings, Final Draft, April 16, 2013, slide 42.

[63] In response to Decision 09-09-047, ordering paragraph 33, at p.381.

shifting usage away from the summer on-peak period, conserving energy, and what steps customers can make to lower their electric bills.

- The Commission and the IOUs should continue to improve customer bills and the information on customer bills. DRA shows an example of a customer bill in Appendix C. This bill shows how easily DRA's proposed introductory TOU rate can be displayed on bills.
- The IOUs could partner with vocational schools to provide incentives to install programmable thermostats for residents in hot climate zones, especially in low-income housing.

C. <u>Opt out options and subsidy equity</u>

As mentioned above, customers should have the ability to opt-out to other rate schedules such as tiered rates, tiered TOU rates, CPP rates, and EV rates. During the transition period, the default rate would be the Introductory TOU rate. Many likely will remain on the default rate, but some may opt out to a 3-tiered rate that is not time-varying. As both the default and opt-out rate would have the same tier structure, customers would benefit from comparable baseline protection. When transitioning to a non-tiered TOU rate with a baseline credit, the baseline credit should be designed to provide a level of benefit to the average customer compatible to that provided by a two-tiered rate.

8. Are there any legal barriers that would hinder the implementation of your proposed rate design? If there are legal barriers, provide specific suggested edits to the pertinent sections of the Public Utilities Code. If there are legal barriers, describe how the transition to your proposed rate design would work in light of the need to obtain legislative or other regulatory changes and upcoming general rate cases.

DRA's proposed rate design structure would require modifications to the following three Public Utilities Code ("P.U. Code") provisions: §739.9(a), §739.1(b)(2) and §745(d). These P.U. Code provisions, drafted in response to the 2001 energy crisis and subsequently revised in 2009, are no longer necessary in their current form.

P.U. Code §739.9(a) pertains to residential rates for customers who are not on the California Alternate Rates for Energy ("CARE") Program. This section limits increases to rates for non-CARE customers, for usage up to 130% of the baseline quantities, to the annual percentage change in the Consumer Price Index from the prior year plus 1%. This Section requires rate increases to be at least 3% but not more than 5% per year. P.U. Code §739.9(a) would need to be modified to allow higher rate increases for the baseline rate. DRA also recommends combining the current Tiers 2 and 3. In order to accomplish this, the provision of P.U. Code §739.9(a) pertaining to rate increases for 101% to 130% of baseline usage also must be modified. DRA recommends maintaining some limitations on the annual increase to the baseline rate.

The CARE program provides low-income individuals and families with discounted energy rates. P.U. Code §739.1(b)(2) pertains to customers who are on this program. This section limits increases to rates, for usage up to 130% of baseline quantities, to the annual percentage increase in benefits under the CalWORKs program and limits. It also limits such increases to 3% per year. This Section would need to be modified to allow CARE baseline rates to increase by inflation or some other measure because the benefits in the CalWORKs program have only seen very minor increases over the past several years. This protection for CARE customers could be modified to allow more flexibility for rate increases for usage from 100% to 130% of baseline usage. DRA recommends that some kind of cap on the annual rate increases be maintained. This cap should remain low, around 3% or 4%, for baseline usage. Rates for usage between 101% and 130% of baseline usage could be given a higher cap.

In order to implement DRA's rate design proposal, P.U. Code §745(d) also would need to be amended. P.U. Code §745(d) applies to time variant pricing rates and mandates that the use of default time-variant pricing must be consistent with Part 1 (i.e., §§201 - 2119) of the P.U. Code. Part 1 of the P.U. Code includes the provisions discussed above, §739.9(a) and §739.1(b)(2), and these would need to be modified to implement DRA's proposal. A possible modification to §745(d) could be replacing "consistent with Part 1 of the P.U. Code" with "consistent with baseline protections." This would ensure that some rate increase protections remain for low-usage customers after the transition to a default Introductory tiered TOU rate.

DRA recommends the above modifications to the P.U. Code to give the relevant P.U. Code sections the requisite flexibility to allow for the implementation of DRA's rate design proposal – a default introductory tiered TOU rate.

9. How would your proposed rate design adapt over time to changing load shapes, changing marginal electricity costs, and to changing customer response?

GRCs occur every three years. They encompass updating the load shapes and marginal costs used in designing rates. Therefore, the GRCs are the best forum to assess customer responses to the new rate structures and associated impacts to the utility's system operation. This information may provide further guidance about how the rate structure should be fine-tuned and whether to speed up or slow down the transition to a default non-tiered TOU rate.

Rate design windows can occur every year between GRC proceedings. Minor rate proposal changes can be made in rate design windows to allow a more gradual transition of rate structures and to avoid rate shocks.

In general, during the transition period, DRA recommends using the GRC cycles to institute structural changes to rates (such as collapsing tiers, or moving to a TOU default regime), and consider using the rate design windows to make incremental changes in the rates themselves (such as minor modifications to the tier rates, and small adjustments TOU differentials).

10. How would your proposed rate design structure impact the safety of electric patrons, employees, and the public?

The primary safety impact associated with DRA's non-tiered time-of-use (TOU) rate is the risk of increased service disconnections. However, DRA's rate design proposal slowly transitions customers to such a TOU rate. Initially, DRA's Introductory TOU rate would help mitigate bill impacts that could lead to more service disconnections. Bill impacts should be examined before modifying that rate to reflect a greater level of time differentiation. A gradual transition will give customers time to adjust to the new rates and to learn how their energy usage affects their energy costs, which should reduce negative bill impacts. Consequently, service disconnections issues can be mitigated, which is a very important issue to DRA because CARE customers experience utility service disconnections at a greater rate than non-CARE customers.[64] The California State Legislature and the Commission established that energy services are essential[65] and that interruption of those services cannot be taken lightly. DRA agrees with the Legislature and Commission on this point, and our rate design transition plan makes every effort to ensure service disconnections are minimized, especially for low-income customers who are the most vulnerable to losing access to utility services.

Utility service disconnections can be costly and dangerous. When customers' access to electric service is terminated, they often resort to unsafe lighting and cooking resources such as candles and fires. This can lead to their homes catching fire, jeopardizing their safety and that of their neighbors. Service disconnections also can result in customers not having access to cooling resources, which can cause serious health problems such as heat stroke. The reconnection process also is costly, which can be prohibitive for some low-income customers. The costs imposed by service reconnections can substantially erode the CARE discount.[66] One way to potentially reduce the disproportionate impact of service disconnections on low-income customers is to provide CARE customers a higher baseline credit than non-CARE customers, which would decrease negative bill impacts on CARE customers.

[64] DRA, Status of Energy Utility Service Disconnections in California, November 2009, page 6, figure 3.

[65] In AB 1X the Legislature declared: "The furnishing of reliable reasonably priced electric service is essential for the safety, health, and well-being of the people of California." Cited in D.02-02-051, finding of fact 1.

[66] DRA, Status of Energy Utility Service Disconnections in California, p.13.