BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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

THE CONSUMER FEDERATION OF CALIFORNIA'S RATE DESIGN PROPOSAL FOR RULEMAKING 12-06-013.

A. INTRODUCTION

In accordance with the procedural schedule set forth in the Assigned Commissioner's Ruling ("Ruling") dated March 19, 2013, Consumer Federation of California (CFC) presents its rate design proposal for the examination of investor owned electric utilities' (IOUs) residential rate structures and the transition to time varying and dynamic rates. The proposal is set forth following the template format prepared by staff and provided in the ruling.

This proceeding affords the parties and the Commission an opportunity to discuss and decide on the appropriate allocation and rate design for the transition to time varying and dynamic rates. CFC proposes, as to the initial rollout, an opt-out "fixed" or "static" Time of Use (TOU) pricing model with an opt-out provision. Our proposal would later phase in optional Real Time Pricing (RTP) and option Critical Peak Pricing (CPP) Our proposal would maintain low-income and baseline medical assistance programs.

CFC also suggests maintaining the standard, baseline, inverted tier structure[1] for those who opt-out of smart meters and / or the other suggested rate structures.

Another option, for customers who opt-out of smart meter and / or the other suggested rate structures, would be to charge a customer specific, fixed monthly seasonal or annual prices, based on the expected cost to serve each individual customer and a risk premium to

[1] Inverted tier, or baseline, rates refer a rate structure that relies on rate tiers. For example, a utility may operate on a five tier system that ranges in price that increases with usage thresholds. Under this rate system, you are charged more if you use electricity above a minimum amount, or the baseline. And, as usage increases, the customer moves into higher priced tiers.

compensate the supplier (utility or third party) for bearing the risks incurred in making a fixed price commitment.

CFC will participate in any hearings scheduled to examine these and other parties' proposals and hope that parties will be able to assist the Commission in gaining an understanding of the issues presented by each. CFC will also discuss these and other proposals in Comments that are provided for in the schedule set forth in the March 19, 2013 Assigned Commissioner's Ruling ("ACR"). We respectfully urge the Commission to take the steps necessary to permit each Commissioner to understand the rationale and the impact of each of the many proposals likely to be presented.

B. RATE DESIGN PRINCIPALS

The proposal put forward by CFC is guided by the several principles outlined by the Commission's Ruling. As stated in its June 21, 2012 OIR, the Commission intends to transition residential consumers to a different rate structure while ensuring that rates remain both equitable and affordable with the dominant purpose being the need to promote conservation of electricity consumption through the implementation of time variant and dynamic pricing structures. CFC agrees with the Commission. CFC believes that promoting energy conservation by all customer classes should be a predominant factor in the establishment of any new rates. Any adopted rate structure should, before anything else, promote conservation among all consumers.

Guiding Principles:

1. Low-income and medical baseline customers should have access to enough electricity to ensure basic needs (such as health and comfort) are met at an affordable cost;
2. Rates should be based on marginal cost;
3. Rates should be based on cost-causation principles;
4. Rates should encourage conservation and energy efficiency;
5. Rates should encourage reduction of both coincident and non-coincident peak demand;
6. Rates should be stable and understandable and provide customer choice;

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

8. Incentives should be explicit and transparent;

9. Rates should encourage economically efficient decision making and

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.

The proceeding papers and parties' comments have also addressed the need to protect California's least fortunate citizens from the full impact of these rate structure changes. CFC agrees. It believes that the rate structure must not impede mandated low-income and baseline medical assistance programs like CARE and FERA, regardless of consumption level.

CFC understands that customers look both to the price for incremental consumption and to the total bill they receive for all consumption. Customers who are completely shielded from the rate change will not be affected and will not adjust consumption. They will have no particular incentive to conserve. Customers, for whom the rate change has relatively small impact, because much of their consumption is exempted, will not conserve aggressively, even if their marginal rate is increased substantially. If the Commission were to improperly limit the changes to one class, or to a group of customers within a class, for political reasons, it would risk sending a very poor conservation signal to such customers and it would risk both higher energy costs for specific groups of consumers and a potential failure meeting Renewable Portfolio Standards (RPS). Both rate design and revenue allocation are important factors in achieving conservation and neither should be ignored.

The Commission must "spread the pain" in an even-handed manner, considering the impact of these rate Increases on customers and, thus the state's economy, while conservation should be encouraged for all customers, some customers will have a very difficult time modifying their usage patterns and this creates the potential for a major negative ripple effect on the economy. While these and all customers should be encouraged to conserve through higher prices for on-peak consumption, excessive prices will only penalize some customers.

C. COMMISSION QUESTIONS

Question 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.

CFC recommends, the development of fixed, residential, three-period summer, two period winter TOU rate structure incorporating fixed low, medium, and high-cost time-periods, later phasing in optional RTP and CPP. CPP would be utilized on an as-needed basis 10 times a year.[2] CFC also recommends maintaining the current inverted tiered rate structure, or some other option, for those who opt-out of smart meter and / or the new rate structures.

A. TOU Time-periods

Our recommended TOU rate divides the day into time-periods. Each time-period has its own schedule of rates. Changes in price can be set to occur multiple times a day. As to the general, seasonal pricing periods, CFC suggests: two rate periods for winter, off-peak and partial-peak with no peak period, and three rate periods for summer, off-peak, partial-peak and peak. TOU rates would not apply on weekends and holidays. Summer peak period rates would be charged only on weekdays, from noon to 6 p.m., from May through October, only.

B. Fixed TOU Rates

CFC recommends fixed rate TOU. With fixed TOU rates the price is set well in advance (month or even years in advance) for the various daily time-periods. This is very straight-forward and should be easy for customers to understand. If the consumer knows energy will be more expensive at specific times during the day, the consumer can moderate energy consumption accordingly. CFC is mindful of customer rejection of these new pricing models. Starting with this straight-forward approach may make the transition easier for customers.

C. Variable TOU Rates

[2] Residential Time-of-Use with Critical Peak Pricing Pilot Program: Comparing Customer Response between Educate-Only and Technology-Assisted Pilot Segments. Jeff Erickson, Michael Ozog, Elaine Byant, Susan Ringhof. Available at http://nrriknowledgecommunities.org/documents/49445/3205494b-a500-48ab-8ab0-89f34fcc628a. p.2

Another option is a variable TOU rate structure. Under the variable TOU option rates within various time periods change from time to time. Where TOU rates vary based on real time pricing (RTP), the rates align with actual changes to wholesale prices. As the underlying cost of electricity varies over time, time-varying TOU rates, if properly designed, should produce rates that are closer to the actual cost of the energy being delivered.

The TOU / RTP rate structure, as described, has been shown to serve a number of California energy policy objectives. For example, because TOU / RTP rates adhere more closely to cost-based pricing principles, as compared to inverted tiered rating based on averages and estimates, variable TOU / RTP helps meet the policy goals of fairness in rates. That is because, as opposed rates based upon averages and estimates, as TOU / RTP rates are pegged to actual wholesale prices, the danger of unfair rate discrimination is minimized. In other words, because the TOU / RTP rate are not based on averages and estimates, but are based on the actual cost of providing the electricity, the chances of the rates being unfairly discriminatory are minimized.

Another example pertains to the minimization of cross-subsidies which is another stated California policy goal. TOU / RTP minimizes the general cross-subsidy resulting from use of the inverted tier rate structure, which overcharges some customers and undercharges others. Because TOU / RTP rates are more closely aligned with actual costs, the general cross-subsidy inherent in tiered pricing structures, is minimized. This is another example of how TOU / RTP helps in meeting another stated policy goal.

However, as effective as variable TOU / RTP may be is in helping to meet various stated policy goals, CFC believes this rate structure is probably too complex for customers who have no experience with TOU pricing. CFC is mindful of the risk of residential customer rejection and wishes to avoid residential customer rejection to the greatest extent possible. Therefore we do not recommend this option be introduced during the initial rollout. Instead, this variable TOU / RTP option should be introduced one to two years into the future when customers are more experienced with TOU rating.

D. TOU with optional Critical Peak Pricing (CPP)

CPP standing alone produces good results in terms of curtailing peak demand, according to the results of California's Statewide Pricing Pilot.[3] Among the more specific findings:

- Residential CPP-F (fixed) rates reduced peak period demand on CPP days by more than 14%;
- Residential peak period impacts held steady from 2003 to 2004;
- Residential peak period impacts held steady throughout multiple day events;
- Small commercial customers (<20kW) reduced peak period demand on CPP days between 6% to 9%;
- Medium commercial customers (>20kW but < 200kW) reduced peak period demand on CPP days between 8% to 10%, and
- Impacts persist across multiple consecutive CPP days and across two years of the experiment.

In a white paper entitled *The Power of Experimentation: New Evidence on Residential Demand Response,* 2008, Ahmad Faruqui and Sanem Sergici studied the results of 14 "dynamic pricing experiments." The authors noted, that on average, customers with TOU rates reduced their peak period consumption by approximately 5%. However, when CPP was added to the TOU rate structure it increased the program's effectiveness, leading to peak load reductions in the order of 20% on CPP event days. So, TOU rates with a CPP overlay would seem to produce the best results, in terms of reduced consumption of electricity. However, this rate structure is complex and should only be phased in after the initial rollout.

Question 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.

[3] California's Statewide Pricing Pilot: Update of Results, Charles River Associates, January 7, 2005.

Question 2, Part 1: 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.

A. Principle Number One: Low-income and medical baseline customers should have access to enough electricity to ensure basic needs (such as health and comfort) are met at an affordable cost.

Customers should not be impacted by the CFC rate structure proposal in a way that impedes their access to enough energy to ensure basic needs. The promise of TOU, CPP and dynamic pricing in general is a more stable grid and more reliable electricity delivery for all California consumers. The success of these new pricing structures would, we would hope, help insure energy is readily available to low-income and medical baseline customers.

The CFC proposal does not impact established and mandated safety net programs like CARE and FERA, which are designed to protect those low-income and medical baseline customers. CFC supports these mandated programs and believes they are very important and help to insure energy is readily available to low-income and medical baseline customers. The CFC proposal should not have any impact on these safety net programs.

That said our proposal also incorporates "bill protection." This would mean that customers who do not opt-out, whose rates are time-variant, will be guaranteed that the total amount paid for electric service shall not exceed the amount that would have been due under the customer's previous rate schedule. (See: Cal. Pub. Util. Code § 745.)

Finally, as these new technologies come on line and peak time energy usage is reduced, and the grid becomes more stable,[4] the chances of events like rolling blackouts, or brownouts, which might have deleterious effects on medical baseline customers with life-support devices, should be reduced. In other words, if the promise of these new rating structures and new technologies comes to fruition, it would go a long way toward seeing to it that low-income and medical baseline customers have access to enough electricity to ensure basic needs.

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[4] See: Dynamic Pricing and the Stability of the Smart Grid by **David Latchman** 01/12/2011.

CFC is aware of concerns that due to the lack of demand elasticity[5] in the low-income segment, based upon the assumption that low-income customers are low energy users,[6] low-income customers may not benefit from TOU and dynamic rating structures when compared to higher income households. Some believe low-income customers may actually be harmed by implementation of a TOU and dynamic rating structures. However, at least one study found that low-income customers are responsive to dynamic rates and that many such customers can benefit even without shifting load.[7]

That said, at present there is no consensus regarding the benefit or harm to low-income customers subject to TOU and dynamic rating structures. As such, CFC recommends an opt-out option, where the customer can opt to remain in the current, inverted tier rate structure, or a rate structure that would be to charge a customer specific, fixed monthly seasonal or annual prices, based on the expected cost to serve each individual customer and a risk premium to compensate the supplier (utility or third party) for bearing the risks incurred in making a fixed price commitment. This opt-out option would be available to low-income and medical baseline customers. We would also recommend that issues relating to low-income, demand elasticity requires further study as empirical data becomes available once the new rate structures have been implemented.

There are also concerns that if low-income customers under a dynamic pricing regime who, for one reason or another, do not respond to price signals, might end up with bills so high they might not be able to pay them. While this scenario might be mitigated by the bill protection program discussed above a bill too expensive to pay in any given month, or months could have devastating consequences on low-income customers. Again, CFC recommends an opt-out option, to allow low-income customers to avoid the too expensive to pay bill scenario.

B. Principle Number Two: Rates should be based on marginal cost.

[5] By "demand elasticity" we are referring to the theory that low-income customers are low energy users who have fewer options in terms of shifting or reducing demand, because they have fewer appliances and electronic devises using electricity when compared to higher-income households. And because of this low-income users will not benefit commensurately with higher-income households who have more option in terms of shifting or reducing usage because the have more appliances and devices using electricity.

[6] See: Electricity Use and Income: A Review California Public Utilities Commission, June 21, 2012.

[7] The Impact of Dynamic Pricing on Low-income Customers, IEE Whitepaper, September 2010, Prepared by Ahmad Faruqui, Ph. D., Sanem Sergici, Ph. D Palmer, A.B.

Marginal costs are generally defined as the change in the cost to utilities brought on by small (e.g. 1 MW) increase in demand. Put another way, marginal costs, as opposed to embedded historical or accounting costs, measure the additional costs of providing the next unit of service. However, CFC assumes the term “marginal costs,” as used in the question, is somewhat synonymous with the actual costs of providing electricity.

Marginal costs do not include reimbursement for the sunk costs of investments made long ago, like plant construction costs. In this way pricing based on marginal costs diverges from traditional, rate of return rate models, where pricing boils down uses average cost, because these sunk costs have historically been a recognized as part of the total allowed cost under the average cost, rate of return, pricing structures.

Marginal cost principles recognize that the cost of electricity changes during the course of a day and that time-invariant rate structures, such as traditional, tiered rating, result in a mismatch between the price charged for electricity and the highly variable marginal cost of providing it. This mismatch occurs because, under the traditional average cost models, actual marginal costs during peak periods are well above the rates actually charged. And, actual marginal costs during off-peak periods are well below the rates actually charged.

Due to this mismatch, traditional tiered rate structures promote economically inefficient “overconsumption” of electricity during the peak periods and economically inefficient “under-consumption” during the off-peak, because the rate structure does not do enough (if anything) to incentivize customers to shift load and conserve energy. And, as a result, in order to meet demand during peak periods, high marginal cost peaker plants are used, which leads to additional GHG emissions.

Today this disconnect between prices charged and actual marginal costs is seen as a problem by many, especially in light of the advent of smart meters, which allow for time-variant, margin-based pricing. TOU marginal cost-based rates can and should be developed. The rates developed and implemented through our TOU rate structure should be calculated to reflect marginal costs and adhere to marginal cost principles.

TOU rates with a real-time pricing component could further mitigate the aforementioned disconnect by charging customers rates closer to marginal costs. That said, as stated above, while static TOU is fairly straightforward, TOU with a real time pricing component, is more complex and may not be embraced by consumers who do not wish to, or cannot, monitor fluctuations in price or wish to take the time to learn its proper operation. While CFC believes that rates should, where practicable, be based on marginal cost principles, we believe the complexities of RTP, as it relates to customer adoption, should be studied further as empirical data becomes available once static TOU has been implemented. Therefore, even though static TOU does not do as much to address marginal costs as TOU / RTP, CFC believes that initially customers should be offered the static TOU. Later, once consumers are more acclimated to TOU, RTP could be introduced, or phased in.

As to CPP, we would also note that some believe CPP has its own "disconnect," because the peak-time price is set artificially high, and as such, peak-period rates do not reflect real, hourly, wholesale costs. Therefore, it could be said, CPP rates are not based upon sound marginal cost principles. There is also a school of thought that maintains that CPP rates *may* be based upon reasonable marginal cost principles and may be set to recover a sizeable amount of marginal generation costs.[8]

CPP has been shown to be an effective tool in getting consumers to shift electricity usage, one of the end goals of this proceeding, thereby helping to meet stated conservation goals. However, if it is not true that CPP rates *may* be based upon reasonable marginal cost principles, this raises the issue of whether a trade-off need be made between CPP and sound marginal costs principles. It may not be wise to maximize the focus on conservation goals only to downplay the role of costs. CFC believes this issue demands further study.

While the jury is out on the question of whether CPP may be crafted to adhere to marginal cost principle, because CPP has proven effective in getting customers to alter consumption patterns, in furtherance of conservation goals, CFC believes that the Commissioner needs to consider a TOU / CPP rate structure being introduced on the consumer level, at some point in the future. And while rates should be based on marginal costs, strict adherence to marginal cost principles may not always be the best, or most practical, way to meet California energy and environmental policy goals.

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[8] See, Friedman, Lee S., The Importance of Marginal Cost Electricity Pricing to the Success of Greenhouse Gas Reduction Programs.

C. Principle Number Three: Rates should be based on cost-causation principles.

In general, cost-causation principles dictate that rate structures should strive to adhere to rate structures that ensure electricity consumers are not overcharged for services or charged for services from which they do not benefit.

As new technologies are introduced, California's electricity infrastructure[9] will have to be modified and updated. This will require capital expenditures. In calculating rates, allocations relating to these capital costs should be based on cost-causation principles. For example, renewable power, like large PV, will require expenditures relating to capital improvements to transmission infrastructure, needed to connect the renewable-power facility to the grid. By adhering to cost-causation principles, the methodology used to allocate costs relating to this new infrastructure should strive to make sure the costs of this new infrastructure are shared only by those ratepayers who benefit from the capital improvements.

Of course, because cost-causation principles also dictate that, to the extent a benefit is derived by a utility, as where a cost is avoided, that benefit to the utility should be factored into the rate. As an example, where excess solar power is moved back onto the grid, and as energy use is shifted to off-peak hours, the need for new peaker plants may be obviated. In this way the utility derives a benefit by avoiding the cost of building the new plant. In setting future rates, through application of cost-causation principles, the cost avoided benefits derived by utilities must be factored in.

We would note that there are some advocates who espouse deviating from cost-causation principles by spreading the cost of renewable energy transmission to customers who may not directly benefit from the build-out of the new infrastructure. This, it is thought by some, will enhance and accelerate the development and deployment of renewable energy sources. CFC takes no position on this theory at this time but suggests this deviation from cost-causation demands further study.

Of course the application of cost-causation principles can arise in a variety of ways and in a variety of contexts. While our proposal does not delve into the intricacies of allocation of

[9] California's electric infrastructure, both in terms of transmission and generation, will need substantial upgrades as technological advancements like information technology, smart metering, improved sensing mechanisms, and improved communications, and control are introduced.

costs in ratemaking, or into the complexities of deviation from cost-causation principles, at the present time, CFC supports, in general, a rate structure based upon cost-causation principles.

D. Principle Number Four: Rates should encourage conservation and energy efficiency. As is discussed in great detail below, CFC's proposal encourages conservation and energy efficiency by encouraging the use of TOU and dynamic pricing models that have been shown to promote conservation and efficient electricity usage.

E. Principle Number Five: Rates should encourage reduction of both, coincident and non-coincident peak demand.

We interpret the term "coincident peak demand" as used in principle number five as meaning the aggregate peak demand of all individual customers coinciding (in time) with the peak demand of the whole system. We interpret the term "non-coincident peak demand" as meaning the peak demand of all individual customers occurring at any time other than at peak demand hours. Put another way, as used in principle number five, coincident peak demand would be said to measures the capacity to meet a customer's maximum usage that is coincident with peak demand hours. Non-coincident demand would refer to the capacity to meet a customer's maximum usage at any time other than peak demand hours.

CFC believes its proposed rate design structure will encourage reduction of both coincident and non-coincident peak demand. Our rate design, and the attendant outreach and educational initiatives, encourage reduction of both coincident and non-coincident peak demand. TOU pricing and CPP are designed to reduce usage at during peak demand. This shifting, it is logical to conclude, would increase usage during non-coincident periods as customer shift load to non-coincident periods. However, demand response and energy efficiency program modeling show a reduction of non-coincident summer peak demand.[10] CFC will conduct further research and study as to how demand response and energy efficiency programs help reduce coincident and non-coincident peak demand.

F. Principle Number Six: Rates should be stable and understandable and provide customer choice.

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[10] Assessment of Achievable Potential for Energy Efficiency and Demand Response in the U.S. (2010 – 2030) Ingrid Rohmund and Greg Wikler, Global Energy Partners, LLC Ahmad Faruqui, The Brattle Group Omar Siddiqui, Electric Power Research Institute Rick Tempchin, Edison Electric Institute.

Stability and predictability of the rates charged consumers is a traditional guiding principle in electricity ratemaking. While predictability cannot be ignored, the realities of modern electricity ratemaking may require some trade-offs relating to traditional "stability" as new technologies begin to proliferate.

As to choice, CFC's proposal provides choice by allowing customers to opt-out of smart meter installation and rely instead on inverted tier pricing or an alternative fixed monthly seasonal or annual rate, based on the expected cost to serve each individual customer. Regarding traditional inverted tier pricing, it is easy to understand and given that rates are set in advance, the rates should be considered stable. Fixed monthly seasonal or annual prices, based on the expected cost to serve each individual customer, are also set in advance and should be considered quite stable.

As to TOU pricing, where the rates are set well in advance, fixed TOU pricing also provides price stability. As to understandability, the premise of TOU is not difficult to understand, and since the rates are set well in advance it should be considered stable.

In the future, our proposal will enhance choice by allowing customers to choose variable TOU with real time pricing and / or CPP.

As to stability, TOU with RTP may be seen as creating volatility rather than enhancing stability because the price is based on the real cost of energy and varies over time.

However, many believe this rate structure enhances economic and environmental efficiencies which must be balanced against perceived volatility. Put another way, as a policy matter, if TOU with real time pricing and / or CPP is allowed, some believe it would require a trade-off between traditional price stability in favor of other environmental and economic goals. The issue becomes whether it is wiser to focus on the goal of maximizing conservation by minimizing the focus on traditional stability, or vice versa?[11]

However, it may be possible to mitigate volatility under TOU with RTP and CPP rate structures. These rate structures may include a guarantee that prices will not exceed a specific

[11] See IEEE Transactions on Power Systems, Vol. X, No. Y, Month 2012, Volatility of Power Grids under Real-Time Pricing, Mardavij Roozbehani, Member, IEEE,, Munther A. Dahleh, Fellow, IEEE, and Sanjoy K Mitter, Life Fellow, IEEE.

amount, also known as a “price cap.” The rate structure could include “floors” and “ceilings” otherwise known as “price collars.” And, the rate structures could also allow customers to buy some portion of future energy at a set rate, otherwise known as a “price hedge.”

CFC believes further study regarding how TOU with RTP and CPP rate structures impact traditional price stability, is warranted, as empirical data becomes available once TOU has been implemented.

Regarding understandability, CFC is mindful that as the rate structures become more sophisticated and complex they will not be as easy to understand as traditional rate structures, like inverted tiers. In other words, the more sophisticated the rate structure, the more difficult it may be for customers to understand and to use properly. This may be mitigated by consumer outreach and education, but CFC believes that a real danger exists in customer rejection if these programs are perceived by the public as being to complex. Therefore, in addition to consumer outreach and education, CFC believes it would be wise to phase in some of the more sophisticated options, over time, after allowing the public to acclimate to the new rating structures, starting with static TOU.

G. Principle Number Seven: Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals.

CFC agrees cross-subsidies should be, to the extent possible, avoided. Our proposal addresses this principle in detail in the answer to Question 2, Part 2, below.

H. Principle Number Eight: Incentives should be explicit and transparent

Numerous incentive-based, demand response pilot programs have established that rate incentives encouraging energy efficiency and demand response actually result in lower electricity usage, at least at certain times under certain circumstances. It has also been shown that explicit and transparent incentives positively impact demand response.

Explicit incentives and price transparency aid customers in understanding the rates they are being charged and the amount of energy they are using. Rates, or the rate structure, must be such that the customers can readily see and understand price and rate information, in a timeframe and format that enables the customer to make price-response decisions. Explicit incentives and price transparency are important in term of incentivizing customers. In general, any rate structure should strive to encourage customer energy efficiency. Increases in transparency, or visibility, of prices such as billing statement enhancements, and on-line access to cost data, in home devices, cell phone message and text messaging, must be part of any modern rate structure.

Our proposal allows for an opt-out, inverted tiered rating structure, where the incentives are quite explicit and transparent. The customer's energy usage determines the tier. Lower tiers are cheaper, higher tiers charge higher rates. By conserving energy the customer can stay in the lower tier and save money. The incentive is very straight forward and explicit. Rate should be available on line and certainly in the monthly billing.

We are also suggesting the possibility of a customer specific, fixed monthly seasonal or annual prices, based on the expected cost. However, this structure lacks incentives.

Our proposal also offers a fixed TOU rate structure. Because the rates are set well in advance, fixed TOU should be viewed as explicit and transparent. As to explicit, the concept is fairly simple: The price you pay for electricity is dependent, directly, on when you use the electricity. As to transparency, the schedule of rates is set well in advance and should be readily available on-line and / or in monthly billing statements.

Our proposal would phase in TOU with RTP. This rate structure may actually make rate incentives more explicit and transparent than fixed TOU rates through the use of new technology where efficient pricing signals are communicated to the customer on a real-time or close to real-time basis. Where the rates are communicated directly to the customer they should be considered readily available, transparent and explicit.

Our proposal would also phase in a CPP layer over the TOU / RTP structure. Like TOU with RTP, through the use of technology, CPP rates should be explicit and transparent as set in advance. And, as the CPP price increases are pre-determined, this should be seen as a stabilizing aspect. However, what is not predetermined are the days on which the critical peak price is actually charged. However, since the customer is noticed directly regarding the advent of a critical peak event, this aspect of CPP should be viewed as explicit and transparent.

I. Principle Number Nine: Rates should encourage economically efficient decision making.

To some degree, inverted tier pricing encourages customers to make economically smart decisions as long as they are aware that increases in usage may result in being charged higher rates in the more expensive tiers. TOU and CPP rates are designed specifically to incentivize customers to make smart and economically efficient decisions relating to energy usage. As an example, under the TOU rate structure, the customer will know that using energy during certain times of the day is more expensive. The customer is incentivized by the rate structure to not use power during peak times, which is economically efficient for the customer. CPP rate designed offers a similar incentive through the rate. The customer will be notified that a critical peak event is coming, or is occurring, and that there will be a price differential. Should the customer reduce usage accordingly, the customer would be making a decision that is economically efficient for the customer.

That said, CFC is aware that the term “economic efficiency” is also used in the context of electricity ratemaking to mean something other that economically efficient decisions made by the customer. In this other context “economic efficiency” is used in the context of economically efficient pricing, which means that the price charged better reflects the actual, or marginal, cost of the energy being supplied.

As an example, static TOU prices are designed to reflect differences in the average costs of generating and delivering power during particular time-periods, thus providing appropriate price signals to customers that are designed to reflect actual costs. Price signals that better reflect the actual cost of the energy being delivered are considered to be economically efficient. Our proposal contains TOU pricing which is considered economically efficient because it is designed to better reflect the actual cost of the energy being delivered as compared to average pricing.

TOU with RTP should be viewed as even more economically efficient when compared to TOU alone, in that, in theory RTP is supposed reflect, even more efficiently that static TOU the real-time price of the energy being delivered.

The term economic efficiency can also be used in another context relating to CPP rates. By way of explanation, where economic efficiency means the price is reflective of the actual cost of the energy delivered, CPP rates are thought by some to be so inflated in relation to the actual cost that they cannot be considered economically efficient. However, to the extent a

CPP rate structure results in less energy usage during peak periods, it is considered by some to economically efficient in terms of the efficiency of generation and distribution.

In yet another context, cross-subsidies are viewed by many as economically inefficient. To the extent our various proposals reduce cross-subsidies, as is discussed in detail below, our rating structure should be considered economically efficient in this context.

J. Principle Number Ten: 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.

CFC cannot emphasize enough customer education and outreach to help customers learn about and adopt the new rating options and using all means at our disposal to encourage acceptance of new rating structures. In our opinion:

- All consumers at all levels should be contacted and made aware of new rate structures, new technologies and new rate structures to come, well in advance of implementation;
- All forms of "social media" (FaceBook, Twitter, LinkedIn, Tumblr) should be employed to educate and inform customers;
- Television, radio and traditional print media should be employed;
- Incentive programs outside the rating structure could be employed. Aside from saving on their bill by curtailing energy use customers might also be incentivized and more eager to learn about a new rate structure if there was some kind of point system, like cash rewards for use of a credit card, where points are awarded for curtailing usage.
- Comprehensive customer communication is imperative. Utilities should create "outreach departments" whose primary task is to reach out to the public.

Question 2, Part 2: 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.

Traditionally, and for the most part today, in terms of residential rates, most utilities charge rates for electricity that do not vary with the demand that the customer places on the system. A customer pays the same amount for electricity no matter when that electricity is used. For instance, there is no differential for peak-time, when energy costs are highest. Nor do traditional rate structures reflect the lessened cost of off-peak electricity.

This traditional rate structure creates cross-subsidies among customers. Those who use a lot of energy during peak periods are paying less than the cost of electricity. This is subsidized by other rate payers who actually pay more than the electricity costs during non-peak time.

There is a growing school of thought that argues these generalized cross-subsidies are unfair and economically inefficient. This school of thought believes time-invariant rates involve unwarranted and unfair subsidies and should be eliminated. Following this line of thinking, emerging rate structures should stress cost causality and marginal costs in rate design and look to eliminate, to the extent possible, the kind of generalized cross-subsidy. As is stated throughout this document, TOU, TOU / RPT and TOU / CPP are designed to eliminate this general cross-subsidy.

Again, along the same lines, the general cross-subsidization described above is considered by some to be not transparent or "hidden" because the customer does not really understand where and how the cross-subsidization takes place. Many believe that emerging rate structures should strive to make cross-subsidies more transparent, especially where cross-subsidies serve a societal purpose and are allowed or mandated. TOU and RTP make unavoidable cross-subsidies more transparent, and quantifiable, because the customer will know that certain sectors are being subsidized, like low income customers. In the future, hidden surcharges and cross-subsidies, resulting from traditional rate structures, may be eliminated.

TOU and RTP may do much to lessen cross-subsidies, by more closely aligning the price charged for electricity to the cost associated with delivering it. In other words, instead of traditional below cost and above cost pricing with, its attendant averaging, which creates cross-subsidies, almost all customers' electricity rates will reflect, more closely, the cost actually paid, or something closer to the cost actually paid, for delivering the electricity.

A. Cross-subsidies Due to Geographic Location

Traditional rate design does not differentiate between customers within a geographic region. This, in and of itself, creates cross-subsidies. These regions can be very large and may include urban as well a rural locations, and pursuant to these rate structures, the price of service is the same if the end-user is located in an urban or rural area. These rate structures do not consider higher system costs in congested urban areas and higher maintenance costs in remote rural areas.

Geographically differentiated tariffs should be considered where market conditions lead to real, identifiable, differential costs between customer groupings because of geographic location. This could diminish geographic cross-subsidization typical of traditional pricing models. As reducing cross-subsidies due to geographic location is one of the principles upon which the rating structure is to be based, a rate structure that considers geographic differentiation should result in more cost-reflective rates and reduced cross-subsidization.

Geographically differentiated tariffs can be said to be fair and reasonable where differential costs due to geographic location can be established. This should lead to better cost-reflectivity and greater economic efficiencies.

However, this could also result in increased complexities for utilities, such as complexities involved in determining the segregated cost of service for the various territories, cost allocations and other price related issues.

B. Cross-Subsidies Based on Income

A total rejection of all cross-subsidization may conflict with the requirement that low-income customers have enough access to electricity. CFC believes safety net programs like CARE and FERA, designed to protect low-income people, which are cross-subsidies, should remain in place. CFC supports these initiatives, and believes they are very important and sees no reason why these programs should be discontinued.

C. Cross-subsidies Due To Load Profile

"Load profile," in general, refers to a customer profile created using measurements of a customer's electricity use at regular intervals, in order to provide accurate representation of a customer's usage pattern over time. However, for the purpose of the analysis in this section, it is assumed that “load profile” means customer electricity usage or voltage level within a specific tariff.

Today, different customer voltage usage sometimes results in the use of different parts of the electricity infrastructure with different associated costs. Lower voltage customers generally make more extensive use of network infrastructure (e.g., transformers and transmission / distribution lines) when compared with larger industrial users. And, industrial customers use more of the high voltage transmission system. So, while industrial customers are responsible for a larger portion of fixed costs as compared to residential consumers, given the large quantity of consumption, it costs less to serve industrial customers, on an average cost basis, than residential customers.

Because average cost pricing of the rates paid by large industrial customers does not reflect the fact that the costs associated with serving large industrial customers are lower than those associated with low-voltage residential users and because the rates paid by low-voltage residential users do not reflect the higher costs associated with serving low-voltage users, large industrial subsidizes low voltage residential.

To address this cross-subsidy consumer electricity charges could be differentiated on the basis of voltage levels. However, presumably, this would require some of the cost of the high voltage infrastructure to be born by residential customers who would receive no direct benefit. This approach might alleviate some of the cross-subsidies, but it may also violate cost-causation principles.

CFC has no recommendation on how the rate structure should address the low-voltage subsidy of high voltage users but CFC believes further study is warranted.

Question 2, Part 3: Where trade-offs were made among the principles, explain how you prioritized the principles.

CFC has no comment on this portion of the question as CFC has not recommended any specific trade-offs but has only commented on where they may occur.

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

By “net energy metered facilities” the following analysis assumes the question is referring to the policy whereby customers who install small solar, wind, biogas, and fuel cell generation facilities, are generating renewable energy in excess of what they are using and transmitting the “net” energy back on to the grid and are be compensated for doing so.

For residential customers with distributed generation electricity, exports will sometimes merely offset their consumption but at other times these renewable energy sources will produce a bill credit. Under NEM tariffs, customers receive a bill credit based on the full retail rate for any excess generation that is exported back to the grid.

CFC suggests the net consumption be computed by time-period, and that the bill credit be based on the full retail rate at the time the energy is exported. It is unclear whether this suggested approach impacts the value of residential net energy facilities.

CFC strongly supports NEM facilities and believes the program should be sustained if not expanded. That said CFC is unaware of any impact our proposed rate structure would have on NEM facilities.

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

A recent white paper[12] examined the results of several pilot programs, one full blown roll-out, and California’s State-wide Pricing Pilot, and ultimately concluded that low-income customers are responsive to dynamic rates. This same study concluded that low-income customers benefit from and are not harmed by time-variant and dynamic pricing. In fact, many low-income customers can benefit even without shifting load. However, concerns remain about whether or not low-income customers do not have the ability to shift load as readily as others.

With that said, special consideration should be given to CPP as it relates to low-income customers and customers with medical needs. Even if studies purport to show low-come customers respond to dynamic pricing, there is the possibility that failure to respond could result in monthly bills simply too expensive to pay. This possibility needs to be considered.

[12] The Impact of Dynamic Pricing on Low-income Customers, IEE Whitepaper September 2010, Prepared by Ahmad Faruqui, Ph. D. Sanem Sergici, Ph. D. Jennifer Palmer, A.B.

Also in regard to CPP, special consideration should also be given to persons with medical needs who may be unable to respond if in-home medical devices cannot be cycled down during peak time. Again, CPP under certain circumstances could pose a real threat of serious financial hardship for medical baseline customers.

For certain classes of vulnerable customer groups, special efforts should be undertaken to ensure that they understand TOU rates and bill impacts as well as what support programs are available to mitigate any detrimental impacts. With low-income, CARE, FERA customers, and those with medical needs, bill stabilization and bill protection should be offered.

Question 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?

Where customers do not properly understand how the rate structure works a real possibility exists for higher energy costs and the potential for very much higher electricity bills.

It has been theorized that large-scale changes in electricity usage for current peak periods will cause utilities to adjust peak times. While this is logical to assume, if it does occur it could cause confusion in the marketplace and may undermine TOU and dynamic pricing by making these structures too difficult to manage.

Similarly a large scale shift in usage during non-peak periods could put a dangerous strain on the grid.

And it has been theorized that new rate structures might cause utilities to fall into what has been referred to as a "Death Spiral:" As more customers move to distributed generation the utilities will have to raise rates to cover fixed costs prompting more customers to move to distributed generation.

Finally, no one can say what the long term effects of decentralized generation will be or how the infrastructure will be maintained as traditional utilities become less and less relevant.

Question 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. Types of Energy Efficiency Programs and Strategies

In evaluating real-time pricing programs, there are reported benefits in communicating real time wholesale and retail prices to participating customers individually.[13] Customers are able to keep track of their energy usage, manage their usage, conserve, and shift their consumption from peak to off peak times.[14] Customers participating in real-time pricing programs reap the benefit of increased savings on their electricity bill.[15] In addition, a dynamic pricing program benefits all customers because "a relatively small fraction of price responsive demand can have sizeable impacts on market-wide price spikes and electric system efficiency."[16] This idealized pricing approach essentially represents an extension of the actual current pricing practice of competitive energy providers. Individualized pricing minimizes the danger of losing customers whose cost to serve is lower than average and would face a higher bill under prices that apply to a broader class of customers and would reduce utilities' risk of revenue loss that they currently face from offering efficient pricing to broad classes of customers.

B. Enabling Technologies: Costs, and Benefits

A static TOU-only rate (minus the CPP component) does not necessarily require substantial communication with customers. Adding the CPP component, however, means that the utilities must somehow communicate with participants when a CPP time-period is called. Utilities can employ methods currently in use including email, smart phone, phone calls, texts, twitter, facebook, and personal customer website notifications, to notify participants and provide suggestions for actions they could take to reduce demand in high and CPP periods.[17] CFC has reviewed a number of dynamic pricing response technologies developed and tested in various pilot programs. Among those most successful are the automated demand response technologies which include:

[13] Ameren Illinois Utilities Annual Report 2009 at 33; ConEd Utilities Annual Report 2009 at 3-21.
[14] Ameren Illinois Utilities Annual Report 2009 at 9.
[15] Ameren Illinois Utilities Annual Report 2009 at 3.
[16] Ameren Illinois Utilities Annual Report 2009 at 10.
[17] Residential Time-of-Use with Critical Peak Pricing Pilot Program: Comparing Customer Response between Educate-Only and Technology-Assisted Pilot Segments. Jeff Erickson, Michael Ozog, Elaine Byant, Susan Ringhof.

1. Advanced Electric Meter (AMI): An electric meter, new or appropriately retrofitted, which Is capable of measuring and recording usage data in time differentiated registers, including hourly or at such intervals as is specified by regulatory authorities, that allows electric consumers, suppliers and service providers to participate in all types of price-based demand response programs, providing other data and functionality addressing power quality and other electricity service issues.

2. In Home Display: A digital display that allows consumers to closely track their electricity consumption and receive messages or alerts from their utility provider

3. Smart Thermostat: A digital device that provides the user with the capability to monitor HVAC energy consumption, respond to fluctuations in electricity prices and manage energy loads. The user can dictate how the thermostat should behave in the presence of various price time-variant price differentials. These devises also allow for pre-set household heating and cooling levels for different times of the day.

4. Web Based Consumer Portal: A browser-based Internet portal that enables the user to monitor, manage and control the energy consumption and each of the smart devices in customer's home. It allows the user to receive information and pricing signals from the utility and compare usage to neighbors.

5. Smart plug / Smart Appliance: An electrical outlet and / or appliance designed to allow the user to measure and control the energy consumption of the appliance plugged into an outlet.[18] [19]

It is clear from the pilot programs that enabling technologies are a main driver of successful load reductions, especially on super peak event days and for the high consumption customers. CFC is not, however, in a position to make a determination on which enabling technology or climate control system is or would be best. CFC does feel that the consistency of technology and compatibility between and among the State's participating utilities is essential.

[18] Dynamic Pricing Tariffs for DTE's Residential Electricity Customers
[19] Household Response to Dynamic Pricing of Electricity—A Survey of the Experimental Evidence. Faruqui, Ahmad and Sanem Sergici. 1/10/13. Available at http://www.hks.harvard.edu/hepg/Papers/2009/The%20Power%20of%20Experimentation%20_01-11-09_.pdf

Ultimately, "customers might be receptive to a packaged, rather than piecemeal, approach to managing their energy usage. And greater customer willingness could translate into higher market penetration for programs and capture energy savings and customer bill reduction opportunities that might otherwise be lost."[20] There seems to be consensus that the manner in which pricing is communicated, through whatever technologies the Commission supports, will be instrumental in achieving goals that are most relevant to consumers: managing energy usage and saving money on electricity bills.

C. Costs and Benefits of these Technologies

The obvious costs of these technologies is the real cost of the actual items and the cost of their dissemination to the ratepayers. It is important these costs be divided evenly and fairly between different classes of customers and the utilities.

Consumers may not change their behavior when faced with dynamic electricity pricing where it is too difficult to keep track of fluctuating prices and to identify how to effectively reduce consumption. These technologies provide the benefit of helping to overcome this barrier to dynamic pricing programs by automating customer behavior change.[21]

Customers who have already received the necessary metering equipment should be defaulted to TOU rates during non peak hours unless they have proactively chosen to opt-out of the Smart Meter Program. Fixed TOU pricing would then become the default tariff for all customers on smart meters at some point in the future. [22]

Question 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

[20] Coordination of Energy Efficiency and Demand Response. Charles Goldman, Michael Reid, Roger Levy, and Alison Silverstein.

[21] Dynamic Pricing Tariffs for DTE's Residential Electricity Customers. Arie Jongejan, Brian Katzman, Thomas Leahy, and Mark Michelin. April 2010. P.17.

[22] Another option used by NV Energy, a Nevada based power company, offers a Guaranteed Lowest Rate in which, if after the first 12-month period, the customer has spent more on the TOU Rate than they would have spent on the standard rate, they will refund the difference and restore them to the standard rate (if the customer chooses). In order to receive the annual savings associated with being on the TOU rate, the customer must remain on the program for a full 12 months.

out to benefit from a cross-subsidy they would not enjoy under the optimal rate.

Question 7, Part 1: Describe how you would transition to this rate structure in a manner that promotes customer acceptance, including plans for outreach and education.

A. Transition

The Utilities should transition residential consumers from flat to TOU and later dynamic rates by: (1) beginning with education, informing the public about the benefits of dynamic pricing; (2) then start rolling out smart prices with smart meters, but under the umbrella of full-bill protection at initial rollout, i.e., customers would pay the lower of the flat-rate bill and the dynamic pricing bill; (3) bill protection would then be phased out over a three- to five-year period to TOU, phased in TOU / RTP and finally a phased in CPP overlay.

B. Outreach and Education

One message that is consistent throughout the studies and pilots is the importance of educating customers about the programs and the steps that each can take to reduce consumption. Education and marketing are essential in encouraging successful change. Customers typically cannot decipher what leads to increases or decreases in consumption simply by reading a typical electric bill and so may be inclined to think that they cannot reduce their own use or shift their own demand. Education about strategies for demand shift and use reduction is, therefore, essential to the success of any rate structure employing TOU, RTP, or CPP.

Numerous successful pilots have had marketing and educational components geared toward signing-up customers and then educating them about the rate structures they will face as well as about strategies they can use to reduce demand. Some programs and pilots used financial incentives to encourage involvement and many of the pilots involved free installation of the enabling technology. For the 2008 PG&E CPP, customers were offered $50 Visa cards to sign up, and they were presented with a welcome packet as well as directions on how to save energy. Further, PG&E's program guaranteed its customers that they would not see a bill increase, at least for the near term.[23] [24]

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[23] George, S. and J. Bode. 2008. *2008 Ex Post Load Impact Evaluation for Pacific Gas and Electric Company's Smart Rate Tariff.* Freeman, Sullivan & Co.: 9.

Pricing and events can be communicated and reinforced by numerous information channels available to the consumer, including discrete display devices, cable TV, websites, phone applications, text messaging, etc., as well as more traditional means such as utility bill-stuffers and outreach programs. In addition to secure online accounts, the CFC advocates for the installation of features where customers receive communication via text message, emails, or phone that alerts them not only to their energy usage but when their electric use exceeds the projected dollar amount they established in their secure account profile.[25] [26] This will increase consumer's ability to control their consumption while reducing alarm when consumers receive a bill that exceeds their expected dollar amount.[27]

Question 7, Part 2: 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.

For customers who want the simplicity and certainty of a flat price, customer-specific monthly seasonal or annual prices could be offered, which would be based on the expected cost to serve each individual customer (e.g., based on each customer's historical usage pattern), and would include a risk premium to compensate the supplier (utility or third party) for bearing the risks incurred in making a fixed price commitment. Customers could also be offered fixed-bill products with an appropriate risk premium. The ultimate approach, which is feasible after installation of AMI systems, is customized pricing of the type described above. That is, each customer would face prices for generation services that reflect their actual or anticipated usage pattern (based on historical metered usage). The default rate could be hourly pricing, with optional fixed prices of various types which reflect an appropriate risk premium for any price guarantees. If individualized pricing were deemed too expensive, then multiple categories of prices could be established based upon features of customers' usage patterns, such as ranges of the percentage of usage in the on-peak period. With customized

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[24] Faruqui, A. and S. Sergici. 2009. *Household Response to Dynamic Pricing of Electricity – A Survey of Experimental Evidence.* The Brattle Group: 30.

[25] http://www.bluebonnetelectric.coop/news/newsdetail.aspx?itemID=55

[26] This projected dollar amount can be established by the amount the customer was billed in prior months.

[27] CFC recognizes the some utilities have an alert system in place, where a customer can receive alerts when they are about to move to a higher tier. Even though a customer receives an alert about their tier, the customer does not receive notification of how much their bill is going to cost as result of this move into a higher tier. Customers still have to assume the task of calculating cost of their usage. Although this is not an obstacle of insurmountable proportions, it is nevertheless, an unnecessary hurdle, given the cost-effectiveness of installing such a feature.

pricing, cross-subsidization is kept to a minimum, and there is no issue of revenue loss from customers choosing any voluntary rate or switching from one rate to another.

There may also the option of bill protection. A typical bill protection program will refund any customers whose electricity bills rise under a demand response tariff over a 12-month commitment period. After an initial period, the customer typically is no longer eligible for bill protection refunds.[28][29] With low-income, CARE, and FERA customers for whom dynamic rates are objectionable, bill stabilization and bill protection could be offered as insurance against higher bills.

Customers should also have the option of opting out to a standard, tiered, rate structure.

Question 7, Part 3: 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.

Unfortunately, allowing an opt-out option can make dynamic rates unattractive to very responsive customers who "give up the substantial cross-subsidies from customers with flatter load shapes when they switch" to what, in his dissertation, Robert Letzer refers to as a "naive dynamic rate." Naive dynamic rates, he explains, are dynamic rates that fail to account for regional variations in load shapes. For example, a "naive" dynamic rate for a hot region might yield revenue identical to the time invariant rate for a customer with the statewide average load shape. Adjusting dynamic rates for regions within each utility's service territory can make customers in peaky regions more likely to save relative to the alternative, time invariant rate and more likely to participate. Thus, it is crucial to take these cross-subsidies into consideration when designing a rate structure that allows responsive customers to save.[30] Within his analysis, Mr. Letzer offers solutions. CFC does support one solution over another at the present time.

Question 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,

[28] Southern California Edison. 2007. "Automated Demand Response Fact Sheet," Southern California Edison, http://www.sce.com/NR/rdonlyres/08EBB404-C15D-4FD1-ABBDE364A82C2A57/0/2008_0201_AutoDRFactSheet.pdf.
[29] San Diego Gas and Electric. 2008. "GNF Research Center Gets Energy Savings Down to a Science," San Diego Gas & Electric, *http://www.sdge.com/documents/business/savings/casestudies/NovartisCaseStudy.pdf.*
[30] "Implementing Opt-in, Residential, Dynamic Electricity Pricing: Insights from Economics and Psychology." Letzer, Robert James. 2007. Available at http://www.allorama.org/rl/letzler_dissertation.pdf.

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.

CFC is unaware of any legal barriers to the implementation of the proposed rate structure design options.

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

Question 9, Part 1: Changing Load Shapes

Regarding individual customers, load shapes have been shown to change in response to TOU and dynamic pricing. Our proposal gives customers an incentive to reduce peak usage by curtailing and/or shifting usage to off-peak periods.

Customers whose load shapes reflect higher usage during peak hours who do not shift their load with have higher bills. Customers with average load shapes that do not shift their load will experience lower bills. We believe our proposed rate structure will result in significant demand response and reduced bills. If the individual customer shifts load, that customer's load shape would change.

However, we assume the question actually goes to how demand response impacts aggregated load shapes at the distribution level and how our proposed rate design would adapt to those changing load shapes at the distribution level.

Our proposal does not specifically address adapting to changing load shapes at the distribution level. However, we are aware that as load shapes at the distribution level flatten out, the timing of peak-hours for TOU rates may have to be revisited. And if, as some studies suggest, TOU and dynamic pricing flatten the load shapes at the distribution level, this will put downward pressure on rates. We would suggest, that if it is the case that demand response impacts the cost of providing electricity, base rates will have be reviewed in the future.

Question 9, Part 2: Changing Marginal Electricity Costs

The question seems to assume that as TOU and dynamic pricing proliferate it will result in a lowering of long-term marginal electricity costs. It has been shown that application of TOU and dynamic pricing lowers peak time usage. In theory, as demand response grows, application of TOU and dynamic pricing will obviate the need to fire-up peaker plants, thereby lowering the marginal cost. Demand response, by simply lowering the amount of electricity consumed may also put downward pressure on the wholesale price of electricity and, in this way, lower marginal costs. And, as demand response grows (and renewable source of energy are added into the mix) the need to build new generation is lessened, thereby lowering marginal costs.

While our proposal does not address changing marginal costs directly, we would suggest that if demand response lowers marginal costs, this would have to be factored into the base rates, and base rates will have to be reviewed in the future.

Question 9, Part 3: Changing Customer Response

Our proposal contains opt-out static TOU and various options we wish to phase in. This phasing in approach is focused on customer adoption of TOU, TOU / RTP and finally dynamic pricing. In this way, our proposal deals with changing customer response directly. As customer response increases and customers become acclimated to TOU and dynamic pricing it will be easier and more efficient to introduce more complex rating structures.

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

CFC is currently aware of no safety issues relating to its design proposal.

D. Conclusion

We sincerely hope the Commission will consider our concerns and suggestions and we thank the Commission of the opportunity to submit these comments.

Respectfully Submitted May 29, 2013

________/s/______________,
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