

**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)

**OPENING COMMENTS OF ENVIRONMENTAL DEFENSE FUND ON RESIDENTIAL  
RATE DESIGN**

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**OPENING COMMENTS OF ENVIRONMENTAL DEFENSE FUND ON RESIDENTIAL RATE DESIGN**

**I. Introduction**

The Environmental Defense Fund ("EDF") thanks the California Public Utilities Commission ("Commission") for the opportunity to offer these opening comments on the residential rate design proposals submitted on May 29, 2013, pursuant to the March 3, 2013 Administrative Law Judge's Ruling Requesting Residential Rate Design Proposals ("ALJ Request for Proposals," schedule as finally amended by the June 24, 2013 Administrative Law Judge's Ruling Confirming E-Mail Ruling Amending Procedural Schedule). Fifteen proposals were filed by parties, including the Residential Rate Design Proposal of Environmental Defense Fund (the "EDF Proposal").<sup>1</sup>

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<sup>1</sup> Proposals were filed by EDF, Center for Accessible Technology ("CforAT") with the Greenlining Institute ("Greenlining"), Division of Ratepayer Advocates ("DRA"), Distributed Energy Consumer Advocates ("DECA"), Interstate Renewable Energy Council, California Large Energy Consumers Association ("CLECA"), Solar Energy Industries Association ("SEIA") with the Vote Solar Initiative ("Vote Solar"), San Diego Gas & Electric ("SDG&E"), Southern California Edison ("SCE"), Pacific Gas & Electric ("PG&E"), San Diego Consumers' Action Network ("SDCAN"), The Utility Reform Network ("TURN"), the National Resources Defense Council ("NRDC"), Sierra Club, Consumer Federation of California ("CFC") ( individually, a respective party "Proposal" or collectively, respective party "Proposals").

Based on the EDF Proposal and EDF’s review of the 14 other Proposals filed in this proceeding as further discussed below, EDF recommends that the Commission adopt a rate structure and associated policies that include: (1) the adoption of Time-Of-Use (“TOU”) rates<sup>2</sup> as widely recommended by the parties, (2) a thoughtful transition strategy, including an adaptive management approach grounded in data and metrics, and the requirement that specific metrics – including protections for customers enrolled in the California Alternate Rates for Energy Program (“CARE”) and others - be met in stages before the TOU transition is allowed to continue, (3) allowing the three investor-owned utilities (“IOUs”) to pursue different rate structure strategies within an overall rate framework adopted by the Commission, including enabling SDG&E to begin to unbundle rates, and (4) an approach to evidence in this proceeding that acknowledges the relative value and limitations of the bill calculators developed for this proceeding.

EDF also supports the issuance of a Commission staff (“Staff”) rate design proposal as a way to focus stakeholder discussion and to continue the momentum towards effective rate reform.

## **II. Default TOU Should be the Ultimate Rate Design Goal**

There is considerable stakeholder consensus that TOU rates can further California’s rate design goals and achieve State energy and environmental goals.<sup>3</sup> TOU rates, moreover demonstrably meet the Commission’s rate design objectives and principles.

In particular, as pointed out by the Division of Ratepayer Advocates (“DRA”) and other parties, TOU rates: (1) best reflect the Commission’s principles for rate design,<sup>4</sup> (2) would

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<sup>2</sup> TOU rates remain the same every day, with variation in time and season. EDF proposed a peak period from 4-7 in the afternoon in the EDF Proposal.

<sup>3</sup> These parties include DECA, CFC, Sierra Club, DRA, NRDC, CLECA, Vote Solar, SEIA and EDF. Although the IOUs don’t universally propose an immediate transition to default TOU rates, all of them acknowledge the cost-based benefits of time variant rates.

enable the IOUs to defer or avoid costly distribution, transmission, and generation upgrades (EDF estimates a total system cost savings in the range of \$500 million per year), (3) promote environmental benefits, including reductions in polluting air emissions and increased conservation, and (4) facilitate affordability. Likewise, concerns that a shift to time variant rates could cause short-term rate bill increases, particularly in the Central Valley, can be addressed through a well-crafted transition strategy that includes a data-driven management approach (specifically, clear metrics that must be met for the transition to continue) and provides ratepayers with easy access to education and enabling devices.

#### A. TOU Rates Best Reflect the Commissions Principles for Rate Design

There is widespread agreement among the parties that time variant rate structures best meet the Commission's principles,<sup>5</sup> including:

2. Rates should be based on marginal cost: *TOU rates mirror marginal costs, which differ by time.*
3. Rates should be based on cost-causation principles: *TOU rates are directly linked to underlying service costs.*
5. Rates should encourage reduction of both coincident and non-coincident peak demand: *TOU rates explicitly address this principle.*
6. Rates should be stable and understandable and provide customer choice: *TOU rates apply to the same hours every day, allowing customers – many of whom are already aware of the importance of shifting – to do so and take advantage of lower cost electricity. Customers who choose not to participate can choose a rate other than TOU.*
7. Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals: *tiered rates' cross subsidies do not achieve state policy goals as effectively as non-subsidy-based TOU rate structures and other mechanisms.*
8. Incentives should be explicit and transparent: *see #6 above.*
9. Rates should encourage economically efficient decision-making: *time variant rates enable load shifting as a bill minimizing strategy and, in many respects, consumers are accustomed to this type of rate in markets and public policy, including time-variant pricing for bridge tolls, parking, airline tickets, sporting events, cell phones, and movie theaters (e.g., matinee discounts).*

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<sup>4</sup> See the DRA Proposal at 6, 9,10. CLECA and DECA state that current tiered rates suffer from flaws and that TOU can better serve rate design goals. See the CLECA Proposal at 14-22; See the DECA Proposal, 17, 18.

<sup>5</sup> See ALJ Request for Proposals at 10.

Although there is a broad consensus that TOU rates should be central to residential electricity pricing structures, parties offer a variety of pathways towards widespread adoption of TOU. Most of these pathways reflect shrinking the number of and distance between the current tiers in the short-run and transitioning ratepayers to time-variant rates through different opt-in or default mechanisms in the long-run. EDF comments on proposed transition strategies later in this document.

In addition, EDF, as discussed further below, believes that TOU rates facilitate affordability and address the following rate principle:

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.

Based on considerable peer-reviewed evidence supported by economic theory and behavior science, EDF concludes that all ratepayers, including low-income ratepayers, can benefit from TOU, both at the individual household level and collectively through lower system costs. As extensively detailed in the EDF Proposal, we advocate strategies that empower low income customers to take advantage of time variant rate structures in order to lower their bills, and protect customers who are less able to do so.<sup>6</sup> As part of this transition strategy, EDF recommends shifting CARE customers to default TOU rates only after certain metrics are met, while ensuring their access to these rates on an opt-in basis with appropriate education, outreach, and enabling devices.

EDF supports maintaining and even increasing the CARE discount. EDF suggests that in the first phase of a transition, CARE customers be given the opportunity to see TOU rates on an opt-in basis. Once into the transition, EDF recommends moving to opt-out TOU rates for CARE customers if certain agreed-upon metrics are met. As well, EDF recommends that CARE

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<sup>6</sup> EDF is supportive of special rates for medical baseline and third party notification customers as required by current law. See the EDF Proposal.

customers receive a “basket of goods and services”, such as set-it-forget-it thermostats, with dual goals of education and enablement that helps households reduce their energy bills through energy conservation and load shifting. Furthermore, as part of this “basket”, EDF would like to explore how the CARE subsidy could appear on customer’s bills to inspire economically efficient decisions. For example, the subsidy were delivered as a rebate or as a negative bill at the start of the month, it would provide affordability assistance while getting customers to consider how they could save more money by managing their electricity use.

EDF acknowledges that TURN, CforAT, and Greenlining prefer retention of tiered pricing as the dominant residential rate structure. As described in the EDF Proposal, as well as discussed below, there are compelling reasons to believe that TOU rate structures offer low-income households a better ability to manage their utility bills than tiered structures, while maintaining comfort and enhancing health and safety. Critically, time variant rates offer the single most effective method of taming steadily rising system costs, in turn keeping costs lower for all ratepayers. In addition, TOU rates can also reduce the disproportionate exposure of low-income Californians to emissions from these polluting resources.

#### B. TOU Rates Would Reduce System Costs

The Commission undertook this investigation of rate reform principally because existing tiered rate structures are inadequate to addressing changes in the state’s electricity system that will emerge over the next decade. These include, in particular, changes associated with the increasing importance that renewable energy sources will play in supplying power. Under the current rate structure, many ratepayers – including the working poor – are paying far more than their fair share of utility expenses. Moreover, because current rates are delinked from underlying service costs, the current rate structure fails to provide energy users with a price signal. Price

signals, relied on in virtually every other functioning commodity marketplace, are essential. They can show customers how what they pay is reflective of the associated costs of production. This linkage is essential to managing future electricity costs, and cannot be made under any of the tiered rate structures proffered in this proceeding.

The EDF Proposal presents evidence demonstrating the ability of TOU rates to reduce system costs.<sup>7</sup> Based on the best available data, and the existing TOU rates offered by the IOUs, EDF found that peak demand could be reduced by upwards of 20 percent, depending on the price differentials between TOU periods, if half of residential ratepayers were placed on the rate. Citing a Brattle Group analysis, DRA similarly found that peak demand could be reduced by up to 16 percent, again depending on the price ratios between peak and off-peak periods and customer enrollment levels.<sup>8</sup>

Both analyses were based on short-term responses to TOU rates; in the long-run, with education, information, and enabling devices, peak load reductions could be much higher under TOU rates, cutting peak demand by upwards of one-third, according to evidence cited by DRA.<sup>9</sup>

As discussed in the EDF Proposal and workshop testimony,<sup>10</sup> EDF has significant reservations about the ability of the IOU's bill calculators to accurately capture the distributive implications of rate design Proposals. The calculators cannot reveal the marginal cost savings that widespread adoption of TOU rate structures would deliver. However, the dynamic implications of time-variant rates can be inferred using bill calculator outputs.

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<sup>7</sup> See the EDF Proposal, Exhibit A.1.

<sup>8</sup> See the DRA Proposal at Appendix D.

<sup>9</sup> As pointed out in the DECA Proposal, time variant rate structures could evolve over time to most effectively address system needs, including adding a "peak ramp" period to rate structures to reduce the costs associated with the steadily increasing need for flexible electricity management strategies, and the chaotic time period created when renewable energies supply production dips in the late-afternoon/early-evening. See, e.g. the DECA Proposal at 6.

<sup>10</sup> EDF was a presenter at the Commission's June 25 Workshop on Residential Rate Design.

In its appendices, DRA notes that under TOU rates, “About 29% could see bill reduction, 54% could see an increase between 0 and 10% and the remaining 17% could see bills increase between 10 and 20%.”<sup>11</sup> When these findings are adjusted to reflect the estimated system-wide cost savings of 20 percent, EDF concludes that it is quite feasible to achieve a Pareto efficient outcome - where no customers are made worse off by the change in rate structure - under time variant rate structures. That is, bill impacts to certain ratepayers can be mitigated by the cost savings generated by TOU.

Based on DRA’s analysis, without changing their behavior or garnering access to enabling devices, and with the utilities’ revenue requirement held constant, under a TOU rate structure some customers may see a 20% bill increase. However, through general rate case (“GRC”) processes, *TOU-enabled system cost savings will cause revenue requirements to decline*. Rates would in turn be lower than they otherwise would have been without TOU rates. Revenue requirement reductions would redound to all ratepayers, and could be used to address particularly adverse bill impacts, possibly to a zero net change.

Notably, many customers would experience substantial bill reductions directly as the result of adopting a TOU rate. These customers will shift their electricity use to less costly times, obtaining immediate savings, and along with all other ratepayers, enjoy rate reductions through the cost savings secured by TOU and ultimately as reflected through GRCs.

The concept that a rising tide raises all boats is intuitively familiar. Similarly, in the case of widespread migration of customers to TOU rates, declining system costs can lower all bills.

System cost reductions prompted by TOU and time variant rate structures would produce a cascading set of benefits, including increasing electricity affordability and reducing adverse environmental impacts created by the utility system. As noted in EDF’s analysis, the IOUs’

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<sup>11</sup> DRA Proposal at Appendix B, B-7.



existing voluntary TOU rates, if adopted by half of all ratepayers, could reduce system costs by a half-billion dollars every year. These are estimates of short-run cost savings associated with the IOUs' TOU rate structures with peak/off-peak price ratios ranging from minimal (SDG&E) to expansive (SCE), with PG&E in the middle. EDF believes, as stated in its proposal, that in the long-run, TOU and time variant rates, coupled with effective customer education and the use of enabling devices as discussed below, offer an essential tool to better manage California's increasingly diverse and dispersed electricity system. Without widespread implementation of this tariff structure, rates will be higher and environmental impacts larger.

The savings created through widespread adoption of time-variant TOU rates can and should be measured, and could be partially shared with the IOUs to incentivize them to effectively work toward broad adoption of TOU rates by residential customers, as well as adoption of attendant best practices (e.g., effective conservation, efficiency, and load-shifting practices).

### C. Time-Variant Rates Would Produce Environmental Benefits

Many parties agree that time variant rates can effectively shift load off of peak and create both conservation and energy efficiency benefits.<sup>12</sup> Likewise, in addition to EDF, a number of parties present specific evidence demonstrating that TOU rates would encourage “conservation and energy efficiency” and “reduction of both coincident and non-coincident peak demand” as required by the Commission's rate principles.<sup>13</sup>

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<sup>12</sup> See the DRA Proposal; See the TURN Proposal at 10; See the PG&E Proposal at 53, 54; See the SCE Proposal at 11. See the SDGE Proposal at 43 (May 29, 2013); See the CLECA Proposal at 5; See the DECA's Proposal at 10, 11; See the SEIA & Vote Solar Proposal at 5; See the CFC Proposal at 16; See the Sierra Club Proposal at 4 (attributes conservation and DG incentive to IBR); See the NRDC Proposal at 53 (attributes conservation effect to IBR); See the SDCAN Proposal at 15 (attributes conservation effect to IBR); See the Greenlining/CforAT Proposal at v recognizes that TOU may reduce peak demand).

<sup>13</sup> See the DRA Proposal at 24, 26 (May 29, 2013); See the PG&E Proposal, Attachment 1, at 53, 54, 76, 77; See the SCE Proposal at 53; See the EDF Proposal, 12, 13, A-4, A-5; See the SDG&E Proposal at 30, 31; See the CLECA Proposal at 19.

For example, the DRA states that its proposed summer on-peak surcharge

“...will encourage a relatively greater amount of conservation and energy efficiency during peak hours when the value of load reduction is highest”

and,

“...TOU benefits the environment by reducing greenhouse gas (“GHG”) and other air emissions, and therefore align rate design with state environmental policy.”<sup>14</sup>

Likewise, the Solar Energy Industries Association (“SEIA”) and Vote Solar state that properly constructed TOU rates

“...can help integrate renewables by signaling customers when it is optimal to consume power from or to place power onto the grid, thus enabling customers to understand and to change the hourly profile of their energy usage in ways that reduce demand on the grid.”<sup>15</sup>

Further, the Sierra Club states that, “TOU rates create important incentives for load shifting and more efficient air conditioning...”<sup>16</sup>

Based on our extensive review of the literature, EDF respectfully disagrees with parties that support a long-term end-state rate design that combines tiers with TOU rates based on the belief that it will provide the most effective incentives for conservation and energy efficiency.<sup>17</sup> EDF also notes that there is almost universal consensus – including by TURN – that there should be fewer tiers with less extreme pricing jumps between them.

Available studies indicate that TOU rates effectively induce conservation.<sup>18</sup> The evidence shows that TOU rates are significantly superior to tiered rates in achieving conservation and energy efficiency benefits. For example:

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<sup>14</sup> DRA Proposal at 3,22.

<sup>15</sup> SEIA Proposal at 5.

<sup>16</sup> Sierra Club Proposal at 3.

<sup>17</sup> See TURN Proposal at 36, 37; See NRDC Proposal at 5; See Sierra Club Proposal at 4; See SDCAN Proposal at 15.

<sup>18</sup> See, e.g., Department of Energy, *Benefits of Demand Response in Electricity Markets and Recommendations for Achieving Them*, February 2006.

- As demonstrated by the SMUD Smart Pricing Options Pilot described in the EDF Proposal, time variant rate structures can secure significant efficiency, conservation, and load shifting benefits from air conditioning, heating, and plug load.<sup>19</sup> Likewise, SMUD’s results indicate that price elasticity of demand is two percentage points higher for customers with an in-home display.<sup>20</sup> A recent Energy Institute at Haas study determined that the price elasticity of demand is 13 percentage points higher for residential customers who are fully informed about real-time energy use compared to uninformed customers;<sup>21</sup> and a study of Public Service Enterprise Group’s Critical Peak Pricing Pilot Program concluded that elasticity is 5.2 percentage points greater with an in-home display.<sup>22</sup>
- Ratepayers are almost certainly responding to bills, rather than tiers, under the current rate structure.<sup>23</sup> Recent studies have shown that customers view tiered and average flat rates as indistinguishable.<sup>24</sup>
- As pointed out by PG&E, existing tiered structures shield lower energy users from increasing their appliance efficiencies, significantly muting any potential conservation benefit from the rates. While appliances that are always on, such as refrigerators and freezers, are susceptible to overall bill levels under virtually any rate structure, other

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<sup>19</sup> See the EDF Proposal, Exhibit C.2 (May 29, 2013). Although the pilot included a two-tiered rate structure, analyses centered on the role time-based pricing periods had on reducing electricity use during those periods.

<sup>20</sup> Jennifer Potter, SMUD and Stephen George, Freeman-Sullivan, 2013, “Interim Results from SMUD’s Smart Pricing Options Pilot.” CRRRI Conference, June 20, 2013.

<sup>21</sup> Katrina Jessoe and David Rapson, “Knowledge is (Less) Power: Experimental Evidence from Residential Energy Use,” April 2003.

<sup>22</sup> Jeff Erickson, Michael Ozog and Elaine Bryant, “Residential Time-of-Use with Critical Peak Pricing Pilot Program: Comparing Customer Response Between Educate-Only and Technology-Assisted Pilot Segments”.

<sup>23</sup> Parties could argue that by enabling ratepayers to lower their bills through shifting, time variant rates concomitantly reduce conservation and efficiency incentives. However, given that TOU rates are far more cost-based than tiered rates, and that load shifting induces significant economic and environmental benefits to utility systems and ratepayers, it is both efficient and equitable to support customers’ ability to better manage their electricity use. To assert differently would essentially be to support a punitive rate structure that’s delinked from underlying cost of service.

<sup>24</sup> For example, see Koichiro Ito, “Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing,” Energy Institute at Haas, WP210, revised October 31, 2012, available at [http://ei.haas.berkeley.edu/pdf/working\\_papers/WP210.pdf](http://ei.haas.berkeley.edu/pdf/working_papers/WP210.pdf).

residential electricity uses – such as clothes drying, cooking, and washing – could be shifted to lower cost periods under time variant rates, thereby creating peak load reduction benefits.

D. TOU Rates Directly and Indirectly Facilitate Affordability

EDF believes that affordable access to electricity for low-income customers is essential.<sup>25</sup> As described in EDF’s proposal, there are compelling reasons to believe that a TOU rate structure offers low-incomes households a better ability to manage their utility bills than tiered structures. Available evidence suggests that most customers – including low income households – will experience lower bills under time variant rate structures even if they take no action,<sup>26</sup> while all ratepayers will be able to engage in load shifting as a strategy to manage monthly bills. Over the long term, savings from TOU will be revealed as reduced system costs, with concomitantly lower rates.

In the short term, reductions in peak demand lower reliance on expensive older peaker plants, as well as pressure to invest in additional distribution, transmission and generation resources, avoiding the otherwise concomitant adverse environmental outcomes. In the long run, the addition of a ramping period could similarly serve to avoid having to add more flexible, fossil fuel resources, and generally reduce the need to oversize the grid to address short periods of peak demand, relieving rate pressure. As stated by DECA,

...there is a very real possibility that the most expensive electricity consumed during the year will be during periods of high ramp rates with relatively low energy usage levels...nothing in the Commission’s quiver of programs and rates is capable of addressing this issue now, but very soon these issues will have to be dealt with...it is essential that rate programs be re-oriented to help address this issue or at a minimum, not exacerbate the problem.<sup>27</sup>

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<sup>25</sup> EDF also believes that medical baseline and third party notification customers should get special protections and supports customized rate structures for these customer.

<sup>26</sup> See the EDF Proposal, 6, Exhibit A.1.

<sup>27</sup> DECA Proposal at 5.

The EDF Proposal pointed to evidence indicating that many low-income households would either be “structural winners” under a time variant rate structure, or be able to significantly lower their bills through behavioral changes. For reasons we state in our proposal, which are summarized again below, specific bill impacts were not presented.

DRA did use the utilities’ calculators to examine potential bill impacts associated with its proposals. DRA found that a purely cost-based TOU rate design would produce bill savings for a significant number of ratepayers, but could also result in large bill increases for many others.<sup>28</sup> This analysis, however, assumed: (1) that households would not change their electricity use practices in response to price signals that would be both salient and actionable, (2) would not be provided with or purchase cost-effective enabling devices to help them take advantage of time variant rates, and (3) did not account for the system-wide cost savings secured by time-variant rates, which would ultimately be reflected in rates.

EDF strongly recommends that the Commission ensure that ratepayers placed on TOU rates be provided with education, enabling devices, and capture a part of the cost savings TOU rates deliver to the system. These steps would serve to significantly ameliorate the potential for adverse bill impacts visited on those who adopt time variant rate structures.

EDF readily acknowledges that initially some customers could experience higher bills under a TOU rate structure while others would have lower bills. As such, a robust transition strategy and commitment to adaptive management is required, as discussed below, as well as

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<sup>28</sup> See DRA Proposal, Appendix B.

active use of “shadow bills” and bill limiters for at least the first year of a rate reform roll-out.<sup>29</sup>

Ultimately, TOU rates will facilitate electricity affordability, conservation and efficiency.

### **III. A Thoughtful Transition to Default TOU is Essential**

All parties in this proceeding, including EDF, recommended that new rate structures be adopted through a thoughtful transition period that includes items such as: (1) policing against the potential for strong bill impacts, (2) ensuring access to affordable electricity supplies, and (3) the provision of education and enabling technologies. As outlined in the EDF Proposal<sup>30</sup> and discussed below, these policy goals can best be achieved by Commission adoption of an adaptive management approach that includes robust metrics, tracking mechanisms, and pilots. In addition, EDF reiterates that new rate structures must be paired with robust customer education and the provision of enabling devices.

#### **A. The Commission Should Adopt an Adaptive Management Framework**

As indicated in the EDF Proposal, ratepayers will be best protected – and the IOUs and the Commission will be most able to adopt needed new policies and programs – if key outcomes emerging from the rate reform process are continually monitored and evaluated. By implementing a robust research and tracking framework, decision makers will be able to adaptively manage the transition. This framework should include the establishment of mechanisms and metrics to monitor positive and negative impacts from the adoption of time-variant rates, as well as the success of associated education and enablement programs.

As EDF discussed in our proposal, the CPUC should start planning now for the collection of data that will enable the IOUs, Commission, and other stakeholders to evaluate the efficacy of

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<sup>29</sup> Such a strategy has been used by PG&E as part of the roll-out of TOU in the agricultural class, where the cost implications of the new rates was carefully tracked under a framework that if bill impacts were overly adverse the transition would be delayed.

<sup>30</sup> EDF’s Residential Rate Design Proposal at 32.

rate structures and to modify policies and programs as needed. The refinement of TOU and, indeed, all rates and associated programs, should be an ongoing, adaptive process. This process should include specific, measurable, time-specified objectives, appropriate metrics to evaluate progress, and a clear game plan for adjustments. In this respect, some pilots are merited, such as but not limited to examining area-based rate structures and replacing cash subsidies with enhanced management tools and efficiency measures. Pilots, however, should not slow down full conversion to TOU unless clearly specified goal metrics are not being met.

As more fully discussed in the EDF Proposal,<sup>31</sup> EDF recommends that the Commission adopt the following metrics and evaluation approaches to help track, among other things, the environmental benefits of time variant rates:

- Changes in load shapes and bills, along with underlying household characteristics;
- Changes in generation mix emissions intensity; and
- Changes in the quality and level of services and technologies that aid in conservation and shifting.

These metrics should provide the analytical basis to develop new rate options for customers that go beyond the rate structures that emerge from this proceeding. They should also provide cost-based options for ratepayers who choose to opt-out of TOU tariffs. Ultimately, a menu of rates, including those reflecting flat unit prices and dynamism, should be offered that match underlying system costs.<sup>32</sup>

#### B. DRA Position is a Reasonable Transition Approach

As noted by DRA, while EDF recommends that the Commission's goal should be full implementation of time variant rates for all customers,

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<sup>31</sup> The EDF Proposal at 32.

<sup>32</sup> The EDF Proposal at 31.

“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.”<sup>33</sup>

In this context, EDF is generally supportive of DRA’s concept of moving residential customers to time variant structures, through an “Introductory TOU” rate, with an end goal of a default TOU rate structure. Under this approach, as championed by a large number of parties, the number of tiers would be reduced, as would the differentials between tiers. A summer on-peak surcharge and year-round off-peak credit would be adopted. The ultimate goal would be a default cost-based TOU rate – which reflects the benefits such a rate provides to the utility system – with an opt-out non-TOU rate that reflects the system costs associated with a flat, or minimally tiered, rate.

EDF believes DRA offers a reasonable approach to transitioning to TOU rates, and we encourage the Commission to move as briskly as possible to default TOU rates, along with a viable set of other cost-based rate options. Swift action is essential to stabilize carbon levels in the atmosphere. Likewise, achieving state greenhouse gas and energy efficiency goals depends on the adoption of pricing structures that effectively induce conservation and associated emission reductions.

Other notable benefits would accrue as a result of widespread adoption of time-variant rates, including job creation in the clean energy sector by increasing its value and catalyzing clean energy innovation. Customers need to be educated and empowered now to be more price responsive; the grid will only get more expensive and harder to manage in upcoming years.

During the transition, in addition to collapsing existing tiered rates and imposing peak/off-peak surcharges and credits, the utilities should more enthusiastically and effectively market their existing voluntary TOU rates. This effort could include specific TOU penetration

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<sup>33</sup> DRA Proposal at 3.



targets, with performance-based incentives provided to the utilities that pivot off actual system savings realized through load-shifting, net of marketing efforts. This re-energized effort should include providing all ratepayers with tailored communication about the specific benefits to them of opting into a TOU rate, providing no-cost enabling devices to all low-income customers who choose these rates, and low-cost enabling devices universally to other energy users who volunteer for the rate.

EDF also supports transition elements offered by other parties in this proceeding, for example,

- Similar to EDF's endorsement of the adoption of an ongoing, measurement-based, management framework, DECA calls for an explicit mechanism by which rates will change over time, and clear and understandable descriptions of how and why.<sup>34</sup>
- NRDC proposal to segment rate reform by customer size has merit, particularly related to targeted approaches to providing enabling devices and sophisticated customer education treatments.<sup>35</sup>

C. Robust Customer Education, with Focus on Enabling Technology, is Needed

Although the precise characteristics vary, there is universal agreement among all parties that changes in rate structures should be accompanied by state-of-the-art consumer education and engagement. As noted above, EDF is particularly supportive of providing ratepayers – especially low-income households – with enabling devices; and believes that properly structured incentive programs (e.g., based on actual realized utility savings) could play an important role, both immediately, with existing voluntary rates, and as part of a transition strategy.

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<sup>34</sup> See DECA Proposal at 6.

<sup>35</sup> See NRDC's Proposal at 57.

## V. EDF Supports SDG&E's Rate Unbundling Approach

EDF believes that all three of the IOUs should not necessarily be compelled to follow identical approaches to rate design reform. Although the Commission should create goals and an associated framework for rate structures, transition periods, and adaptive management and measurement practices – as recommended in EDF's proposal and discussed above – each of the utilities should be given the opportunity to develop an approach that best matches their customers, system needs, and institutional characteristics.

In this context EDF generally supports SDG&E's proposal to offer ratepayers unbundled rates. As stated by the utility,

“Unbundling rates for residential customers will transform rate design from the “all-in” rate structure currently in place to a transparent and understandable rate design that promotes and supports customer choice in new emission-reducing technologies without unduly shifting costs to other customers.”<sup>36</sup>

SDG&E's approach matches EDF proposal to ultimately offer ratepayers a menu of options as alternatives to default TOU. This would serve to provide customers with choices that will meet their needs, while inducing system and environmental benefits. Likewise, in the context of the research framework discussed above, once they are tested by SDG&E and proven effective, elements of that utility's unbundled rate structure could be adopted, in full or in part, by PG&E and SCE.

At the same time, the Commission should move cautiously towards widespread adoption of fixed charges. As demonstrated by analyses presented by NRDC and Sierra Club,<sup>37</sup> fixed charges that exceed a few dollars per month can act to dissuade households from undertaking otherwise cost-effective conservation and efficiency investments by significantly extending

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<sup>36</sup> SDG&E Proposal at 2.

<sup>37</sup> See Sierra Club Proposal at 3, Attachment 1, at 13, 21, 22, 26, 27.

energy efficiency and self-generation payback periods.<sup>38</sup> Other parties, including Greenlining/CforAT, also oppose the introduction or the increase of fixed customer charges that apply to all customers irrespective of usage.<sup>39</sup>

Likewise, any demand charges must be carefully calibrated to be transparent to consumers, leverage-able by innovators, and clearly and precisely tied to system and environmental costs. Fixed (and demand) charges ought to be avoidable by customers who use best practices and make clean energy investments that do not cause system costs. Likewise, customers that add significant value through practices and investments ought to be compensated for doing so in a fair and timely manner. Finally, EDF believes that fixed charges should not be an end goal, but rather a stepping stone toward unbundled, dynamic rates and a diversity of rate options appropriate to match the diversity of customer interests.

## **VI. Bill Calculators do not Fully Capture Ratepayer Impacts**

The IOU's bill calculators provide a method to calculate revenue neutral rates, and to compare the distribution of customer bill impacts of pairs of rate structures. Unfortunately, the calculators are limited in several ways that makes them difficult to understand, insufficiently flexible to represent key design attributes, incapable of representing unique customer groups – such as net energy metering customers who self-generate electricity – and unable to calculate a variety of important potential rate design impacts.<sup>40</sup> As such, and for reasons further discussed below, EDF cautions the Commission to avoid overemphasis on bill calculators as tools for providing evidence in this proceeding.

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<sup>38</sup> See NRDC Proposal at 31; See Sierra Club Proposal at 3, Attachment 1, at 13, 21, 22, 26, 27.

<sup>39</sup> See the Greenlining/CforAT Proposal at 32.

<sup>40</sup> EDF is not alone in noting the limitations of the bill calculators, with SDG&E and SCE, among others, also stressing the limitations of the analyses they allows.

The models estimate static distributive impacts (i.e., based on existing use patterns whose bill would go up, and whose would go down), which is problematic for several reasons. First, the calculators do not capture dynamic responses by consumers, nor do they allow specification of elasticities. Elasticities are assumed by the IOUs, but are not transparent in the calculator, and they cannot be manipulated. This is unfortunate, as many different interventions could potentially influence customer response, which in turn would change overall bill impacts, as well as the distribution of impacts across different household types.

Second, the calculators do not capture third-party distributed energy resource (“DER”) providers, or the system itself. EDF would like to see modeled DER providers’ responses to changing rate structures, as TOU rates influence incentives for third parties to promote DER. Similarly, with TOU rates net energy metering (“NEM”) customers may adjust their solar panels to face west – rather than south – in order to maximize solar yield at peak price times; adaptive behavior that is not captured in the calculator. Likewise, the calculators do not reflect the availability of DER subsidies provided outside tariffs that could influence ratepayer behavior, and help mitigate adverse impacts. Use of the IOUs’ models alone masks the environmental benefits associated with different rate designs, and would lead to suboptimal rate design choices by the CPUC.

Third, the calculators are unable to estimate bill impacts across different seasons or months. The calculators only estimate average yearly bill impacts, hindering their ability to elucidate what would happen given an exogenous increase in demand or peakiness. Moreover, given the pre-set tier quantities, users are unable to distinguish bill impacts for peaky users or high load customers.

Four, the bill calculators do not allow changes to the peak window in the TOU calculations. EDF's analysis demonstrated that there is a trade-off between peak window and peak price. Namely, the higher the peak price, the smaller the peak window needs to be in order to maintain revenue neutral. Yet the calculator does not allow the user to specify or adjust the peak window time period or hours within the peak period.

Furthermore, the analysis of different groups of individuals, such as NEM or CARE customers, is not feasible with the bill calculators. Some of the NEM customer limitations are detailed above; others include an inability to exclude NEM customers from the analysis, or estimate bill impacts separately for this group. For CARE customers, the calculators are also problematic: different calculators present different CARE discounts which are unchangeable within the calculator. This not only limits the ability to compare across different calculators, but prevents the user from understanding whether calculated bill impacts are caused by design change or alterations in CARE customer class subsidies.

Several parties to this proceeding also found the calculators to be limiting or lacking. The parties who attempted to use these calculators mentioned some of the limitations detailed above,<sup>41</sup> while also arguing that they are too difficult to use,<sup>42</sup> too computer memory intensive, and have slow computation speeds.<sup>43</sup>

For these reasons, EDF declined to exercise the bill calculators. EDF asks the Commission to consider these limitations of the bill calculators, and others as described by the parties, when evaluating rate Proposals and examining evidence provided in this proceeding.

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<sup>41</sup> TURN stated, "All of the calculators provide only average annual bill impacts in the outputs... The bill calculators have pre-set tier quantities... The different models calculate the "discount" to the CARE rate differently... does not readily calculate the shifts in the amount of the CARE subsidy between rate classes..." TURN Proposal at 62-63. DRA stated, "Neither PG&E nor SDG&E provided model capability to analyze bill impacts on NEM customers." DRA Proposal at 36.

<sup>42</sup> SDCAN Proposal at 3.

<sup>43</sup> TURN Proposal at 63.

## **VIII. Conclusion**

EDF firmly believes that the adoption of TOU rates, as supported by the majority of the parties to this proceeding, best meets the Commission's rate principles. EDF has also determined that TOU rates can save Californians an estimated \$500 million dollars a year. The implementation of TOU is necessary if California's smart grid promise to ratepayers is to be met. This transition can and should happen while empowering and protecting ratepayers, including the most vulnerable. What is essential, however, is a thoughtful transition and the adoption of robust metrics and other adaptive management protocols as proposed by EDF. The utilities should be empowered to unbundle rates, as suggested by SDG&E, although fixed charges should be avoided.

EDF urges the Commission to adopt these policies as discussed above while acknowledging the limitations of the bill calculators. Further, EDF looks forward to the development of Staff proposals on the implementation of dynamic and time variant rates, including TOU.

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Respectfully signed and submitted on July 12, 2013

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