

**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)

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

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

**I. Introduction**

The Environmental Defense Fund (“EDF”) respectfully submits to the California Public Utilities Commission (“Commission” or “CPUC”) these reply comments (“Reply 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).<sup>1</sup> EDF filed opening comments (“Opening Comments”) on July 12, 2013.<sup>2</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”).

<sup>2</sup> On July 12, 2013, Opening Comments were filed by several parties including EDF, DRA, Vote Solar, CFC, DECA, NRDC, the Interstate Renewable Energy Council, Greenlining/CforAT, Sierra Club, CLECA, 2013), Marin

In these Reply Comments, EDF reiterates its support for an expeditious and thoughtful transition to Time-of-Use (“TOU”) rates, and clarifies misinterpretations made by TURN of the EDF Proposal. Specifically, EDF: (1) further substantiates the cost savings and environmental benefits of TOU, including a near \$500 million savings in annual system costs and the potential avoidance of thirty-three 100 megawatt (“MW”) fossil fuel power plants in California, (2) urges that TOU tariffs be simple, internally revenue neutral and reflect limited fixed charges, (3) recommends metrics protocols and incentive-based penetration goals for the utilities and a move towards rate unbundling, (4) suggests that solar issues be fully addressed in the distributed generation proceeding<sup>3</sup> and (5) responds to TURN’s misinterpretations of EDF’s bill impact and CARE analyses.

## **II. EDF Supports an Expeditious and Thoughtful Move to Default TOU**

Through this proceeding, parties have identified the universe of evidence available to evaluate different rate structures’ ability to meet the CPUC’s key rate design principles.<sup>4</sup> After a comprehensive review of parties’ comments and proposals, EDF continues to strongly support a thoughtful and expeditious transition to default TOU rates.

TOU rate structures are so valuable because they effectively act to shift use off-peak and better match underlying cost of service than current rates do. These attributes of TOU are beneficial in several ways. TOU will, for example, result in reductions in utility expenses, to the benefit of ratepayers through increased affordability. This fact was stated by several parties in addition to EDF, notably DRA, and – as further discussed below – was acknowledged by

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Energy Authority, SDCAN, Alliance for Solar Choice, SCE, TURN, PG&E, SDG&E and Silicon Valley Leadership Group.

<sup>3</sup> See R.12-11-005, Rulemaking Regarding Policies Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program, and Other Distributed Generation Issues (the “DG Proceeding”).

<sup>4</sup> See A.L.J. Ruling Requesting Residential Rate Design Proposals, Attachment A (Mar. 19, 2013).

TURN.<sup>5</sup> In addition, TOU will induce conservation and other environmental benefits, including the avoidance of the use of fossil fuel power plants, also discussed below. Further, TOU price signals will empower third party service providers to participate in new and expanding services markets, increasing consumer choice.

TOU rates have been proposed by several parties,<sup>6</sup> and others, including the IOUs, express the value of TOU, including EDF's thoughts on timeline and transition. SCE, for example, generally endorses EDF's approach:

Although SCE prefers not to default customers to a TOU rate, EDF's proposal to transition customers to default TOU with bill limiters and an optional non -TOU rate within one to three years provides...a reasonable transition timetable...Furthermore, SCE agrees with EDF and others that vulnerable customers should be allowed to opt -out of a T OU rate, or not be transition to a TOU rate altogether.<sup>7</sup>

EDF notes that it does not propose a "3-tiered TOU structure," as SCE states in what is assumed to be a clerical error.<sup>8</sup> Instead, EDF proposes a three-part TOU structure. PG&E also salutes EDF's vision for rate reform, including TOU's value in furthering environmental goals.<sup>9</sup>

EDF appreciates the support of SCE, PG&E and others, and notes that several reasonable rate designs have been proposed in this proceeding. For example, EDF is open to time variant structures that have a ramping period, as proposed by DECA.<sup>10</sup> Also, as discussed in the EDF Opening Comments, EDF finds the DRA's transition to be reasonable. EDF believes that the

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<sup>5</sup> TURN Opening Comments at 38; DRA Proposal at D-4.

<sup>6</sup> These parties include DECA, CFC, Sierra Club, DRA, NRDC, CLECA, Vote Solar and SEIA. The IOUs, while not universally calling for the immediate transition to TOU, also acknowledge the cost-based benefits of time variant rates.

<sup>7</sup> SCE Opening Comments at 57, 58.

<sup>8</sup> SCE Opening Comments at 24.

<sup>9</sup> PG&E Opening Comments at 1, 2, 5, 12-13.

<sup>10</sup> Time-variant rates can, for example, be designed to help address ramping needs through cost-based price signals. For example, carefully crafted TOU rates could signal to PV installers to use tracking panels or, at least, to orient panels more toward the West to capture high-value late day generation.

proposals in this proceeding have yielded a meaningful consensus among the majority of parties that a transition to TOU is valuable for California.

a. TOU Can Save Californians Nearly \$500 Million a Year in System Costs, with Concomitant Lower Rates

EDF presented an analysis of the economic benefits of different TOU adoption rates in both the EDF Proposal and the EDF Opening Comments. There, EDF estimated that a TOU rate structure could save California nearly \$500 million a year in system costs.<sup>11</sup> The TURN Opening Comments expressed a number of concerns about this analysis, which will be addressed later in these Reply Comments. However, despite its critiques, even TURN acknowledged that TOU rates could induce "...potential benefits closer to \$223 million."<sup>12</sup> Even at the savings level acknowledged by TURN, system cost savings are significant, amounting to approximately half of PG&E's proposed revenue requirement increase in 2015.<sup>13</sup> Further, it is important to note that residential rates in PG&E's service territory have increased by 72 percent since the 2001 energy crises.<sup>14</sup> Such a rapid rise in prices threatens affordability for all Californians, particularly those that are not provided protection under existing bill subsidy programs. TOU represents the single best way to reduce escalating bill increases. Stated again, TOU is the mechanism to address California's escalating rates; absent TOU (or some other intervention), rates will continue to rise.

b. TOU Has the Potential to Avoid Fossil Fuel Plants and Associated Carbon Dioxide Emissions

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<sup>11</sup> EDF Proposal at 6 (May 29, 2013).

<sup>12</sup> TURN Opening Comments at 38.

<sup>13</sup> PG&E's web site on it 's 2014-2016 rate case, available at <http://www.grc2014facts.com/pges-general-rate-case-2014-2016/> (last accessed July 25, 2013).

<sup>14</sup> See PG&E Electric Rates, available at <http://www.pge.com/tariffs/electric.shtml> (last accessed July 23, 2013).

Critically, TOU has the potential to bring California dramatically closer to its environmental policy goals. The \$500 million in system savings estimated by EDF do not simply represent dollars. The savings reflect less efficient and polluting peak power plants that are not constructed or operated. TURN states that TOU’s environmental benefits are small and overstated. TURN is categorically incorrect. In response to TURN’s critique and as detailed in the table below, additional EDF analyses indicates that **if half of all ratepayers adopted TOU rates, upwards of thirty three 100-megawatt (MW) fossil fuel power plants would be avoided.**<sup>15</sup> In SCE’s service territory alone, an estimated almost 1,600 MW would be eschewed, two-thirds of the capacity of the now closed San Onofre Nuclear Generating Station. In addition, almost one-quarter of a million tons of carbon dioxide emissions would be avoided a year.<sup>16</sup>

**PEAK LOAD REDUCTIONS, EMISSIONS REDUCTIONS AND THE NUMBER OF FOSSIL FUEL PLANTS THAT CAN BE DEFERRED UNDER DIFFERENT TOU PENETRATIONS AND FOR THE SELECTED RATE STRUCTURE**

|  |                            | PG&E       | SCE    | SDG&E  |
|--|----------------------------|------------|--------|--------|
| <b>Proportion of Customers Moved to TOU Rates</b>        |                            | <b>50%</b> |        |        |
| Peak Load Reduction (MW)                                 | Current Voluntary TOU Rate | 617        | 1,572  | 18     |
|  | SCE Rate Structure         | 1,567      | 1,572  | 313    |
| Total CO2 Emissions Reduction (Tons)                     | Current Voluntary TOU Rate | 49,691     | 97,875 | 2,086  |
|  | SCE Rate Structure         | 96,644     | 97,875 | 26,763 |
| Number of 100 MW Fossil Fuel Plants That Can Be Deferred | Current Voluntary TOU Rate | 6          | 15     | 0      |
|  | SCE Rate Structure         | 15         | 15     | 3      |
| <b>Proportion of Customers Moved to TOU Rates</b>        |                            | <b>15%</b> |        |        |

<sup>15</sup> This analysis relies on the same data and analytical structure presented in EDF’s previous submissions.

<sup>16</sup> Results apply to Summer 2015 for the PG&E, SCE, and SDG&E service territories. The analysis assumes that peak load changes in the same manner as peak-period energy use; the generating facilities that can be deferred in 2015 are 100 MW fossil fuel plants; and computes the TOU off-peak rate such that the average TOU rate is equal to the average tiered rate.

|  |                            |        |        |       |
|--|----------------------------|--------|--------|-------|
| Peak Load Reduction (MW)                                 | Current Voluntary TOU Rate | 185    | 471    | 5     |
|  | SCE Rate Structure         | 470    | 471    | 94    |
| Total CO2 Emissions Reduction (Tons)                     | Current Voluntary TOU Rate | 14,907 | 29,363 | 626   |
|  | SCE Rate Structure         | 28,993 | 29,363 | 8,029 |
| Number of 100 MW Fossil Fuel Plants That Can Be Deferred | Current Voluntary TOU Rate | 1      | 4      | 0     |
|  | SCE Rate Structure         | 4      | 4      | 0     |

## INPUTS<sup>17</sup>

|   | Rate Structure         | PG&E    | SCE     | SDG&E   |
|---|------------------------|---------|---------|---------|
| <b>Elasticity of Substitution</b>           | All Rate Structures    | -0.054  | -0.054  | -0.054  |
| <b>Weekday Own Price Elasticity</b>         | All Rate Structures    | -0.129  | -0.129  | -0.129  |
| <b>CO2 Emissions Rate (lbs/MMBtu)</b>       | All Rate Structures    | 117.8   | 117.8   | 117.8   |
| <b>GHG Allowance Price (\$/Ton)</b>         | All Rate Structures    | \$14    | \$14    | \$14    |
| <b>Gas Plant Heat Rate (Btu/kWh)</b>        | All Rate Structures    | 7,855   | 7,855   | 7,855   |
| <b>Current Average Tiered Rate (\$/kWh)</b> | All Rate Structures    | \$0.190 | \$0.182 | \$0.192 |
| <b>TOU On-Peak Rate (\$/kWh)</b>            | Current Rate Structure | \$0.345 | \$0.506 | \$0.216 |
|   | SCE Rate Structure     | \$0.547 | \$0.506 | \$0.583 |
| <b>TOU Off-Peak Rate (\$/kWh)</b>           | Current Rate Structure | \$0.151 | \$0.093 | \$0.186 |
|   | SCE Rate Structure     | \$0.100 | \$0.093 | \$0.107 |

- c. TURN's Allegation that GHG Emissions May Rise with Shifts in Generation to Off-Peak Periods is Unsubstantiated

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<sup>17</sup> Charles River Associates, Impact Evaluation of the California Statewide Pricing Pilot (Mar. 16, 2005); SCE, MCCR Workpapers, A.11-06-007; PG&E, 2011 GRC Phase 2 Workpapers, A.10-03-014; SDG&E, 2012 GRC Phase 2 Workpapers, A.11-10-002; PG&E Electric Schedule EM-TOU; SDG&E Schedule DR; SDG&E Schedule DR-TOU; SCE Schedule TOU-D-1; SCE Schedule D; Cal. Energy Comm'n, *Cost of General Model* (2013); Cal. Energy Comm'n, *Thermal Efficiency of Gas Fired Generation in California: 2012 Update* (Mar. 2013).



TURN suggests that GHG emissions may rise with a shift in generation from peak to off-peak periods, without analytic support.<sup>18</sup> While coal generation is used outside California in the Western Electricity Coordinating Council, these plants operate as baseload, and are at the back of the generation line in terms of having their output reduced as a result of shifts in the timing of electricity consumption. In the short term, should there be any increased generation off-peak due to shifting – and, as previously discussed by EDF, available evidence suggests that there should actually be small overall decreases – will come from existing gas-fired combined cycle plants that have seen their capacity factors decline over the last several years – not coal. In the mid to long term, increased renewables generation from wind, geothermal, and biomass will be built in accordance with State clean energy mandates to meet off-peak demand and less power will be purchased from higher-cost resources that might otherwise be built. TOU rates will also reduce emissions from higher emitting combustion turbines that are operated to meet peak loads and to follow midday fluctuations.

TURN states:

The biggest GHG reductions were attributable to adding clean, off-peak renewable generation in California – an impact comparable to reducing customer demand during off-peak hours.<sup>19</sup>

TURN is in error in this conclusion. In fact, the increase in off-peak clean energy capacity enhances the potential emissions benefits of shifting generation from peak to off-peak

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<sup>18</sup> TURN Opening Comments at 43, 44.

<sup>19</sup> *Id.* at 44.

hours.<sup>20</sup> In this, and as stated above, almost one-quarter of a million tons of carbon dioxide emissions would be avoided a year.

d. TOU Enables Third Party Service Providers

As discussed in EDF’s previous submissions, time variant rates also provide strong incentives for third party stakeholders to offer residential customers beneficial services. This is because TOU price signals unveil business opportunities for products and services that will enable utilities and ratepayers to better manage electricity production and consumption, including energy efficiency and demand response. This will spur innovation in the electricity markets – obscured by the existing rate structure – for clean, resilient and low-cost power in addition to “best-fit” energy services and products.

**III. TOU Tariffs Should Include Goals for Utilities, Embrace Simplicity, be Internally Revenue Neutral, and Avoid Fixed Charges**

Based on a review of the Opening Comments submitted by various parties, EDF reiterates that the Commission’s vision for TOU rates should include the following characteristics:

- The Commission should ensure that utilities have strong incentives and clear performance goals for residential TOU adoption, including that customers receive best practice education, marketing and enablement.
- TOU rates should be actionable and easy to understand. As pointed out by several parties, layering time variant rates on top of tiered structures would exacerbate existing customer confusion and act to muffle time-based pricing incentives. For example,

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<sup>20</sup> EDF also notes here that the statement, “efficient rate would thus be decreasing block tariffs rather than increasing,” was misstated. EDF Proposal at 15.

according to PG&E, “The simple point is that overlaying a time-of-use structure on top of multiple tiers only adds more complexity.”<sup>21</sup> Likewise, SCE “generally opposes tiered, TOU rate structures due to their complexity and customers’ ability to understand.”<sup>22</sup>

- Tariffs should be internally revenue neutral. System cost savings attained from customers enrolled in TOU rates should be shared principally with customers in that rate class.
- There should be no, or minimal, unavoidable fixed charges.
- Customers must be given assistance in understanding and acting on load shifting opportunities made available by TOU rates.

#### **IV. TOU Tariffs Are an Important First Step to Unbundling Rates**

EDF views TOU rates as a first, yet important, step toward unbundling rates. With the long term goal of a dynamic “menu” of tariff choices that meet the diverse needs of residential customers, EDF recognizes an important benefit of unbundling rates is an ability to isolate and price values, be they costs or benefits, on both sides of the meter. Customers should be offered tariff, technology, and energy management choices that meet their needs, and that induce system and environmental benefits.

As stated in our Opening Comments, in this context EDF generally supports SDG&E’s proposal to offer ratepayers unbundled rates. SDG&E states,

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>23</sup>

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<sup>21</sup> PG&E Opening Comments at 20, 21.

<sup>22</sup> SCE Opening Comments at 27.

<sup>23</sup> SDG&E Proposal at 2 (May 29, 2013).

SDG&E’s approach matches EDF’s proposal to ultimately offer ratepayers a menu of opt-in options in combination with default TOU. EDF envisions tariff diversification toward a customer-friendly “menu” being developed in several proceedings over time, including storage, electric vehicle, demand response and, of course, General Rate Cases.

**V. Bill Impacts Should be Addressed Directly with a Structured Adaptive Management Strategy Including a Robust Metrics Protocol and Further Study**

Various parties have recommended proposed transition pathways – including offering effective education and enabling devices alongside new rate structures – that will help address the potential for adverse bill impacts. The best of these concepts, in which rate structures are delinked from mitigation measures – for example, subsidies provided through efficiency investments, enabling devices, or, if dollar amounts, rebated separately from tariff prices – should be adopted by the Commission as part of a move to default TOU rates. As recommended in its previous submissions, EDF recommends that the CPUC adopt an adaptive, metrics-driven approach, to implementing time variant rates, which will enable the utilities to effectively respond to challenges as they emerge, including the potential for some ratepayers to experience unacceptably high bill increases.<sup>24</sup>

**VI. TOU Rates and Unbundling Promote Solar – Additional Incentives Should be Addressed in DG Proceeding.**

EDF is pleased that solar PV’s appeal is widening and deepening, and has a keen interest in continuing momentum in solar PV adoption rates. Recent CSI program data indicates fast growth in multi-family and lower-income household installations. This has no doubt been

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<sup>24</sup> Bill increases could also be capped, to ensure that they do not exceed with the Commission believes to be efficient and equitable.

spurred, in part, by the emerging dominance of leasing options that make rooftop PV accessible to those with limited cash. In addition, the minimum credit score for households to be eligible from leasing contracts continues to fall, thereby expanding the pool of eligible customers.<sup>25</sup>

EDF supports rate structures, such as TOU, that can be designed to enable rooftop PV and other distributed generation to achieve unprecedented penetration levels. Some stakeholders have expressed concerns that rate redesign may undermine the value propositions that are spurring clean energy investments.<sup>26</sup> These parties want to preserve price incentives associated with Net Energy Metering for solar PV self-generation, and avoid fixed charges. EDF believes that time variant rates can appropriately create value for rooftop PV. Indeed, the majority of solar industry stakeholders support an end state of default TOU rates.<sup>27</sup>

EDF is eager to participate with other stakeholders in the DG Proceeding, which is specifically aimed at revisiting the value proposition for clean self-generation.<sup>28</sup> Specific rate options for solar PV customers should be identified in the DG Proceeding, rather than in this one.

## **VII. TURN's Critiques of EDF's Bill Impact and CARE Customer Load are Misplaced and Unsubstantiated**

In addition to TURN's misinterpretations discussed above, TURN also provides critiques of EDF's bill impact data (and conclusions), CARE customer load, and GHG impact analysis. EDF respectfully notes that these critiques are misplaced and at times unsubstantiated. EDF responds to these critiques of the EDF Proposal made by TURN below.

### **a. TURN Misinterpreted EDF's Bill Impact Analysis**

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<sup>25</sup> Communication between EDF and Sanjay Ranchos, Solar City (July 17, 2013).

<sup>26</sup> See NRDC Opening Comments; See Sierra Club Opening Comments.

<sup>27</sup> See SEIA/Vote Solar Proposal (May 29, 2013); See DECA Proposal (May 29, 2013); See Alliance for Solar Choice Opening Comments.

<sup>28</sup> See R.12-11-005.

In its Opening Comments, TURN provides a critique of bill impact analyses presented in the EDF Proposal. It appears, however, that TURN has misinterpreted the graphs presented in EDF's submission, specifically Figures 3a and 3b in Exhibit A.2 (and attached again here as Attachment A). TURN then makes an incorrect representation.<sup>29</sup> As indicated in the figures, and unlike TURN's interpretation, **EDF's analysis suggests that there would be no bill increases for the average consumer for most peak price ratios.**

Figure 3a demonstrates the bill impacts in percentages on the vertical axis, and the peak price ratio on the horizontal axis. TURN interprets the graph incorrectly to mean "the average customer would see a bill decrease of between 0 and -15% for any peak price ratio less than about 2.0, and a bill increase of between 0 and 10% for peak price ratios between 1.3 and 2.7."<sup>30</sup> Examining one possible scenario – a peak price ratio of three- and a four-hour peak time window – TURN claims that "EDF's analysis shows that an average customer would see a bill increase of about 17%." This is a misinterpretation.

In fact, the graph shows that **a 5% shift in consumer behavior, for any four-hour peak price ratio between 1.3 and 2.7, decreases average bills slightly** (up to 2%). For peak ratios above 2.7, increases in bills are less than 4%.

The intent of EDF's bill impact analysis was, as indicated in Figure 3b, to demonstrate three things regarding TOU as applied to the current state of the grid:

- There is a tradeoff between the number of peak hours and peak pricing; having more peak hours facilitates a lower peak price ratio, which can help to alleviate concerns about excessively high peak pricing.

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<sup>29</sup> See TURN Opening Comments at 14.

<sup>30</sup> *Id.*

- A short peak window would not produce required revenue for the utility.
- Under current conditions, a short (two- or three-hour) peak window, consumers would have little incentive to shift consumption to off-peak times, leading to reduced overall system benefits.

Importantly, EDF's analysis allows parties to understand how much shifting behavior consumers would need to engage in to reduce bill impacts and system costs. These figures demonstrate that the more shifting occurs, the more consumers save. Education, outreach and enabling technologies can help consumers reach the optimal level of shifting to ensure that revenue requirements are met and system load is flattened.

Further, as pointed out by TURN, EDF modeled six-hour peak periods in our economic benefits analysis (see below), rather than two- or three. This six-hour period is illustrative, showing the potential of a TOU tariff structure to secure ratepayer savings under various scenarios. Likewise, current peak time is closer to a six-hour band; in the future the evening ramp may be a much shorter time period, perhaps only one hour.

b. Price Elasticities Used in the EDF Proposal Are Accurate

TURN criticized EDF for using TOU price elasticities from the Statewide Pilot Project (SPP). These elasticities are representative of the broad range of literature on short-term shifting behavior. The table below compares the elasticities used by EDF to the elasticities included in the three bill calculators, and the range of short-run elasticities found in a 2006 literature survey conducted by Lawrence Berkeley National Laboratory for the U.S. Department of Energy.<sup>31</sup>

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<sup>31</sup> U.S. Dep't of Energy, *Benefits of Demand Response in Electricity Markets and Recommendations for Achieving Them* (2006).

While the SPP elasticity of substitution was just above the range from the various studies, the own price elasticity was below the reported average. The EDF model, which was provided to TURN, included the range of elasticities from the SPP study. According to the DOE survey, the range of short term cost and bill savings could be much larger than reported by EDF.<sup>32</sup>

| Comparison of Elasticity Assumptions |       |       |       |       | DOE Survey (10 Studies) |       |
|--------------------------------------|-------|-------|-------|-------|-------------------------|-------|
| Sponsor or Source                    | EDF   | PG&E  | SCE   | SDG&E | Low                     | High  |
| Elasticity of Substitution           | -0.05 | -0.20 | 0     | 0     | -0.21                   | -0.07 |
| Own Price Elasticity                 | -0.13 | -0.04 | 0     | 0     | -0.07                   | -0.22 |
| Non-TOU Price Elasticity             |       | -0.20 | -0.20 | 0     |                         |       |

Notably, all of the TOU study elasticities cited by EDF and in the bill calculators are for *short-run* responses. Yet once a TOU structure is introduced, ratepayers will be making *long-run* investments to further facilitate their responses. These include rescheduling activities that are more difficult to adapt in the short run, weatherization, and changes in equipment controls and characteristics. Typically, long-run elasticities are two to three times greater than short-run estimates.<sup>33</sup> This empirical outcome has been repeated over and over across many price elasticity studies and commodities.<sup>34</sup> The Commission can, therefore, expect larger cost savings than put forward in EDF’s Opening Comments, not lower.

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<sup>32</sup> As indicated in the table, only PG&E appears to include any time of price elasticity in its bill calculator. Both SCE and SDG&E appear to use elasticities of zero for peak periods. Because SCE protected all of the cells in its spreadsheet model, it is impossible to determine and confirm the true elasticity assumptions embedded in it. In fact, this feature makes SCE’s model unusable for the types of studies that EDF believes should be conducted in this proceeding, because key underlying assumptions cannot be changed or tested.

<sup>33</sup> Carol A. Dahl, *A Global Survey of Electricity Demand Elasticities*, 34th IAEE International Conference (2011).

<sup>34</sup> See, e.g., Carol A. Dahl, by Department of Mineral Economics, Colorado School of Mines, U.S. Department of Energy, *A Survey of Energy Demand Elasticities in Support of the NEMS* (1993); See, e.g., Carol A. Dahl, *Gasoline Demand Survey*, Energy Journal 7, 67-82 (1986); See, e.g., B. Dziegielewski, E. Opitz, & G. Henfling, Planning and Management Consultants, Metropolitan Water District of Southern California, *Municipal and Industrial Water Use in the Metropolitan Water District Service Area: Interim Report No. 4*, (1991); See, e.g., David L. Mitchell, W. Michael Hanemann, M.Cubed, &University of California, Berkeley, *The California Urban Water Conservation*



c. TURN's Generalized Critique of EDF's Marginal Cost Inputs and Information Effect are Completely Unsubstantiated

TURN states:

There are other aspects of EDF's analysis (marginal cost inputs, information effect) that TURN believes are either incorrect or unsupported, but we have not had time to closely analyze these factors.<sup>35</sup>

TURN suggests above that the EDF analysis is incorrect, without providing any substantiation whatsoever. The Commission should disregard the statement accordingly, and not consider it as evidence. That said, EDF notes that we have relied on cost assumptions drawn from the utilities' rate case filings that are consistent with those offered by other parties.

In addition, EDF notes that we have referred to the latest studies that demonstrate the value of information technology in enhancing the effect of TOU pricing. These findings are not surprising. Consumers respond in real time to changes in publicly-posted prices at gasoline stations by searching out a lower-priced station – in the short-run – and more efficient vehicles or transportation alternatives in the long-run. EDF believes the majority of electricity consumers can and will do the same – shift in the short term and buy energy-friendly thermostats and appliances in the longer term. Those who cannot should either be offered financial or technological assistance or be able to opt-out.

d. TOU Offers All Ratepayers an Ability to Enjoy Lower Costs

TURN expresses concern that TOU rates structures will disproportionately impact customers with significant air conditioning load in the Central Valley. TURN cites the DRA

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Council, *Setting Urban Water Rates for Efficiency and Conservation: A Discussion of Issues*, (1994); See, e.g., Phil Goodwin, Joyce Dargay & Mark Hanly, *Elasticities of Road Traffic and Fuel Consumption with Respect to Price and Income: A Review*, *Transport Reviews*, Vol. 24, No. 3, 275–292 (May 2004); See, e.g., *Id.*

<sup>35</sup> TURN Opening Comments at 42.

Rates Proposal finding that a TOU rate with a tier differential of about 2.4 will cause 93% of Bakersfield's non-CARE customers to pay \$10 or more in each summer month. EDF expresses that, guided by sound policy, these effects can be mitigated.

PG&E pointed out that the tiered structures currently in place penalize high energy use in any given month, and can similarly induce large bill spikes as a result of AC load.<sup>36</sup>

Moreover, a TOU rate structure will produce overall system cost savings, by inspiring ratepayers to shift their demand to less expensive energy periods and, invest in energy efficient and shifting technologies, such as advanced thermostats (CARE and other PUC/IOU program resources can and should be deployed to further enable effective load management strategies, as discussed below). Critically, the system cost savings from customers making choices that lower peak-demand is not included in the utility bill calculators. Once this benefit is added to the calculus of bill impacts, EDF is confident that the vast majority of households can enjoy lowered bills as a result of TOU rates. While a TOU rate structure may result in near-term bill impacts for some customers, these can be addressed through bill limiters as well as other policies.

e. The TURN and DRA Critique of EDF's Analysis of CARE Use Rates is Misplaced

EDF supports maintaining and even increasing the CARE discount, and believes that CARE will go farther in reducing ratepayers' bills if it is paired with means to enable conservation and – for households that choose TOU rates – shifting. The amount of energy use amongst CARE households, in absolute terms and relative to non-CARE homes – indicates an opportunity to improve electricity consumption in these households through targeted energy efficiency investments and education about best practices.

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<sup>36</sup> PG&E Proposal, Attachment 1 at 77 (May 29, 2013).

EDF supports utilizing and expanding programs designed to improve efficiency in low-income households, noting that if investments come from the CARE subsidy itself they should ensure a dollar-for-dollar (or better) return to the consumer. For example, CARE customers could elect to have a portion of their CARE subsidy go towards a reduced cost procurement program for energy saving appliances and other items that they would not otherwise qualify for. Additionally, as noted in our earlier comments, we suggest that the Commission and stakeholders consider ways to present the CARE subsidy so that it encourages consumers to conserve. For example, it could appear as a rebate at the start the month as a negative bill.

TURN alleges that EDF's analysis that CARE customers use more electricity than non-CARE customers is deficient. TURN notes that EDF did not account for the skewing of average CARE customer usage due to the presence of a small number of "super-users."<sup>37</sup> Based on PG&E reported load and revenue data, EDF estimates that the current CARE subsidy for the utility's service territory is \$32 per CARE household per month. In the Central Valley during the summer months, the subsidy is certain to be considerably larger, because energy use is greater and the subsidy amount is applied on volumetric basis (i.e., per kilowatt hour rate discount).

The dataset provided from PG&E to develop this analysis is a reasonable apples-to-apples comparison. Perhaps TURN is suggesting that there is a lower proportion of "super-users" amongst CARE households than non-CARE households. That may be the case, but it certainly isn't the important point.

A variety of factors may "bias" PG&E's data, including the occurrence of super-users. In its analyses EDF examined possible data weaknesses, explored potential bias, and noted that the

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<sup>37</sup> TURN Opening Comments at 47.

“number of CARE customers is low in zones V, Y and Z, and a small number of homes are likely to be skewing the averages.”<sup>38</sup>

TURN suggests that EDF’s analysis will give the Commission a misimpression that “CARE customer usage is generally higher than non-CARE usage or more concentrated in the upper tiers” and that CARE customer electricity usage is below average by other measures. Similarly, DRA objected to EDF’s conclusion, noting evidence suggesting that CARE customers conserve more than non-CARE customers. EDF respectfully disagrees; based on the data made available to EDF we draw the reasonable conclusion that CARE households do consume more electricity, on average, than non-CARE households in PG&E’s service territory. As EDF discusses in Exhibit C-1 of the EDF Proposal, this finding is supported by evidence from several sources.<sup>39</sup>

In any event, whether CARE customers use more energy than non-CARE customers isn’t as important as providing opportunities for them to choose to have CARE and other assistance programs delivered in ways that improve their ability to manage their electricity use and lower their bills.

## **VIII. Conclusion**

EDF thanks the Commission for this opportunity to develop its proposal and participate in this rulemaking. EDF believes that there is consensus among the parties that TOU rates are best for California. The evidence has shown that TOU rates, empowered by the state’s smart grid investments, can begin to transform California’s rate structure to one that meets the

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<sup>38</sup> EDF Proposal at C-7.

<sup>39</sup> See KEMA, Cal. Energy Comm’n, *2009 California Residential Appliance Saturation Study, Vol. 2 Results* (October 2010); U.S Energy Info. Admin., U.S Dep’t of Energy, *2009 RECS Survey Data* (last visited May 25, 2013), <http://www.eia.gov/consumption/residential/data/2009/>.

Commission's rate principles and the State's energy policy goals. This includes, as demonstrated by EDF, enormous potential for cost savings and environmental benefits, equaling \$500 in annual system costs. These savings can mean lower rates and the avoidance of up to thirty-three 10 MW power plants. Such benefits can be achieved while protecting ratepayers, including the vulnerable, by identifying and mitigating negative impacts as discussed above.

TOU can also help increase third party participation in energy markets, enhancing California's economy and the development of new products and services that will further lower electricity costs and rates in the state. All of these benefits, however, can only occur with a transition to TOU.

Put simply, California can't afford to ignore, abandon or defer the value of TOU. As agreed by a consensus of the parties to this proceeding, the economic and environmental benefits of TOU present a vast improvement over the current rate structure. **Analysis of TOU has shown that current rates and costs, when compared to TOU, are unreasonably and unnecessarily high.** Several reasonable approaches have been proposed, by EDF and other parties, to light the way forward. EDF asks that the Commission consider the value of TOU as described above and put California on the path towards an expeditious and thoughtful transition to TOU.

*[Signature Page Follows]*

Respectfully signed and submitted on July 26, 2013

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