

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Assess  
Peak Electricity Usage Patterns and  
Consider Appropriate Time Periods for  
Future Time-of-Use Rates and Energy  
Resource Contract Payments.

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**ORDER INSTITUTING RULEMAKING TO ASSESS  
PEAK ELECTRICITY USAGE PATTERNS AND CONSIDER APPROPRIATE  
TIME PERIODS FOR FUTURE TIME-OF-USE RATES AND ENERGY  
RESOURCE CONTRACT PAYMENTS**

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**1. Summary**

This Order Instituting Rulemaking (Rulemaking) provides a venue for development of a framework for designing, implementing, and modifying time periods for use in future time-of-use (TOU) rates. This effort will include development of the principles, methodologies, and data sources needed to identify TOU periods that better reflect actual and near-term expected electricity supply and demand. A coordinated review of current and potential future peak electricity usage patterns for electric utilities throughout the state of California, as well as low usage periods when renewable energy may be curtailed, will be a fundamental part of this effort. Review of this information will assist the Commission in determining whether peak usage periods or periods during which electricity costs are especially high or especially low may be shifting to later in the day, as has been suggested by the California Independent System Operator (CAISO) and others.

If peak usage periods are found to be shifting, this review may inform the development of model TOU periods for consideration in future ratesetting proceedings. When applied in TOU rates and electricity contracts, properly defined TOU periods will provide incentives for customer use and development of future generation that better reflect the needs of the state's electric grid. This should assist in reaching state energy goals by minimizing costs, reducing greenhouse gas emissions, encouraging conservation, and increasing the supply of electricity at times that best serve the needs of the grid. We envision that the

information developed here would be used to define TOU periods for both residential and nonresidential rates.

This Rulemaking is focused on the analysis of long term trends in energy supply and demand, and is intended to inform the development of TOU periods as TOU rates become the default rates for most customers. As such, this proceeding is not intended to forestall either the consideration of new time period structures for optional TOU rates and pilots, or more immediate modifications to existing utility TOU tariffs, which may be considered in more traditional ratemaking proceedings or other active proceedings with TOU in their scope. We will coordinate this proceeding with other related activities and proceedings, including the working group that is examining residential TOU pilots as a part of Rulemaking 12-06-013. This proceeding is preliminarily categorized as ratesetting, and hearings may be necessary.

## **2. Purpose of this Proceeding**

Historically, electric rates have been viewed as a system of charges that were developed in order to collect the Commission-approved “revenue requirement” of each regulated utility in California. In simple terms, that revenue requirement is developed by determining the cost to serve each class of customers in the utility’s service territory (e.g., residential customers, commercial customers, industrial customers, and agricultural customers). Finally, even for individual customers within each broad category, those rates should collect the approximate amount of revenue that covers the cost of serving that customer. In this way, the rates also send a “price signal” to each customer, to encourage use of electricity in a manner that matches the needs of the overall electrical system.

For electric utilities, the basic cost to deliver electricity to a customer involves three types of investment, and, for larger non-residential customers, a

different type of rate is charged to collect each of these three costs. First, there are costs to connect the customer to the utility system and bill them for their usage (e.g., customer meters and the utility's administrative costs). These costs are sometimes collected by means of a monthly "fixed charge" that does not vary from month to month. Second, there are the costs to build the poles, wires, transformers, and substations that carry electricity to the customer's premises. These costs can vary depending on the size of the customer, and the amount of electricity required by the customer at any given time, i.e., the customer's "demand" on the system. For this reason, these types of charges are called "demand charges." A demand charge is a fixed amount per unit of demand (kilowatt (kW) or megawatt), but the total charge for a particular customer can vary depending on the time of day that customer uses energy, or depending on the overall usage of the system by all customers. Finally, the third type of cost to serve a customer is the cost of the electricity itself. These energy rates are usually "volumetric" so that the amount the customer pays will vary with usage.

In practice, utility rates have come to be much more complicated over time, as it became possible to more accurately calculate the "cost of service" over a given day, a given month, or seasonally throughout the year. Because actual costs vary widely within each of those periods, it is possible that system costs could be reduced if rates were designed to encourage customers to shift their usage away from periods that require additional investments or when power generation was expensive, to other periods when excess delivery capacity exists, or power generation was less expensive.

Time-of-use (TOU) pricing is the form of rate design that is most commonly used to communicate to the customer when system costs are high or low, or to create incentives for a customer to shift usage to times that are better

for the overall electric system. TOU pricing is a variable rate structure in which charges for energy depend on the time of day during which energy is used. Certain nonresidential demand charges also vary by TOU period, and certain demand response programs, such as critical peak pricing, may depend upon TOU period definitions. Under TOU rates, electricity prices are set in advance for specific blocks of time each day, with higher prices for electricity consumed during hours in which electricity demand or costs tend to be high. As a result, the bills of customers on TOU tariffs are determined by both how much electricity the customer uses and the times of day during which that energy is used. The price paid for energy consumed during each time period is established in advance.

In California, TOU rates have been used as a load management tool for several decades. In recent years, the Commission has expanded the application of TOU rates to different customer classes. The expansion of TOU rates to more customers and different customer classes has been intended to provide customers with an incentive to use less energy or draw less energy from the state power grid when demand is traditionally highest. Higher rates during peak periods have provided customers with an incentive to either reduce energy use or generate on-site energy using renewable or other technologies, by signaling to more customers that electricity is most valuable at certain times of day. In the past, TOU rates have had higher prices during weekday afternoons, reflecting that this is the time of highest daily demand for electricity. For this reason, traditional TOU rate periods have provided particular incentives for the installation of solar generation designed to provide the most electricity during these peak periods.

Currently, most non-residential customers are subject to default or mandatory TOU rates, and our recent decision in Rulemaking (R.) 12-06-013, Decision (D.) 15-07-001, contemplates expanding default TOU to residential customers, potentially as soon as 2019.<sup>1</sup> As more customers are enrolled in TOU rate schedules, it is increasingly important that the time periods and corresponding prices defined in TOU rates provide accurate incentives for energy generation, storage,<sup>2</sup> and use at appropriate times throughout each day.

This Rulemaking is timely because as the proportion of California's energy generated by renewable resources has increased, solar energy is growing to offset or supply a larger proportion of demand during the traditional times of peak energy use. According to the California Independent System Operator (CAISO), which manages the electric grid to ensure reliability, this increase in intermittent, non-dispatchable energy from renewable sources, combined with the availability of electricity from existing baseload generation from fossil sources, is expected to result in the availability of plentiful electricity during early afternoon hours in which demand has traditionally been higher and more expensive to serve. CAISO refers to total electric demand minus the amounts supplied by solar and wind generation as "net load," and predicts that net load (and with it, the cost of electricity) will increase rapidly in evenings, as demand remains high but solar power is no longer available after sundown. As a result, several utilities have begun to propose changes to their TOU time periods to

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<sup>1</sup> D.15-07-001 at Ordering Paragraph 9.

<sup>2</sup> Storage has been suggested as a means to integrate renewables, particularly rooftop solar. By charging low prices when solar energy is abundant, and high prices as solar energy declines, TOU rates can provide an incentive for customers to store solar energy during the early afternoon hours for use during the later afternoon and early evening peak hours.

reflect changes in the times when electricity is the most expensive. We open this proceeding to evaluate these shifts and their implications, and to consider the possibility of modifying TOU periods. Addressing these issues for Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) in a single proceeding is expected to facilitate CAISO participation, as well as ensuring that all parties have the opportunity to provide input on the data and policies supporting a potential change to TOU peak periods.

The history and evolution of TOU rates is discussed in Section 3, below. Section 4 discusses recent developments that suggest the need to reevaluate the times currently defined as “peak” and “non-peak” to consider the impact of the “net load,” and to ensure that TOU periods provide incentives to shift energy use to times that would be most helpful to the California power grid. Section 5 and Section 6 below, establish the preliminary scope and schedule for this proceeding, respectively.

### **3. The History of TOU Rates in California**

#### **3.1. Implementation and Evolution of Time of Use Rates**

TOU electric rates have been in use in California for many years. The Commission’s first detailed exploration of TOU rates took place in 1974. In Case Number 9804, the Commission conducted a comprehensive review of Investor-Owned Utilities’ (IOUs) rates for all customer classes, with the intention of restructuring rates to promote conservation.

That proceeding was opened in response to a request from the state legislature in Assembly Concurrent Resolution 192 (Resolution 192). Resolution 192 noted that most then-existing electric utility rate schedules used



declining block rate structures, under which customers that used more energy paid less per unit consumed. This rate design did not encourage conservation. Resolution 192 instructed the Commission to explore several specific potential rate structures to encourage conservation, including, among other options, implementation of increasing block rates and TOU rates.

A contemporaneous General Rate Case (GRC) decision, D.84902, recognized that the declining block rate structure had been considered reasonable because, “[i]n the past, the cost of generating a kilowatt-hour of electricity had gone down with higher volumes.”<sup>3</sup> However, by the mid-1970s, the Commission acknowledged that “[n]ew sources of power are far more expensive than the average cost of existing sources.”<sup>4</sup> In the context of high inflation, increasing costs, and potential energy shortages, the California Public Utilities Commission (Commission) explored alternative rate structures, including time of use rates. This restructuring exercise resulted in D.85559, issued in 1976. That decision ordered that IOUs develop rate schedules under which “[t]ime-of-day [TOU] pricing... reflects the costs of producing electricity at daily demand peaks...” for large customers, defined as those with demand of over 500kW.<sup>5</sup>

Over the next several years, TOU rates were applied to large Commercial and Industrial (C&I) customers of the major electric utilities, as well as a few thousand smaller commercial and residential customers who volunteered for

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<sup>3</sup> D.84902 at 147.

[ftp://ftp2.cpuc.ca.gov/LegacyCPUCDecisionsAndResolutions/Decisions/Decisions\\_D73751\\_to\\_D86500/D84902\\_19750916\\_A54279.pdf](ftp://ftp2.cpuc.ca.gov/LegacyCPUCDecisionsAndResolutions/Decisions/Decisions_D73751_to_D86500/D84902_19750916_A54279.pdf).

<sup>4</sup> D.84902 at 147.

<sup>5</sup> 1976 Cal. PUC LEXIS 1308. (Cal. PUC 1976)

.these rates. The appropriate time periods for higher “peak” and intermediate “partial peak” rates were set based on an examination of utilities’ daily load shapes, with “peak” rates that corresponded to the times of highest electricity demand.<sup>6</sup> In general, these peak periods covered weekday afternoons. For example, D.86632 set peak times lasting from 12:30 to 6:30 p.m., with lower partial peak rates from 8:30 a.m. to 12:30 p.m. and 6:30 p.m. to 10:30 p.m.<sup>7</sup> Since that time, the utilities have maintained TOU rates with “peak” periods that begin in late morning or early afternoon (usually between 11 a.m. and 1 p.m., but sometimes starting as early as 10 a.m.) and end in the late afternoon or early evening (generally between 6 and 8 p.m.).

During the Energy Crisis in 2000-2001, legislation provided funding for the installation of time interval meters for more customers. Such meters are necessary for the implementation of TOU or other time-varying prices such as critical peak pricing. The broader availability of such meters enabled the Commission to create TOU rate schedules for mid-sized C&I customers, those with loads greater than 200kW. This requirement was adopted in D.01-05-064, which also adopted new rates in response to costs incurred during the energy crisis. Around this same time, the Commission also started signaling a preference to move towards real-time pricing (RTP), if and when obstacles to RTP implementation, including the availability of electricity prices in real time, could be overcome.

More recently, TOU rates were expanded to smaller C&I and other non-residential customers, and the Commission explored RTP and other

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<sup>6</sup> 1976 Cal. PUC LEXIS 931. (Cal. PUC 1976.)

<sup>7</sup> 1976 Cal. PUC LEXIS 931. (Cal. PUC 1976.)

dynamic rate systems. In 2005, D.05-11-009 required the major electric utilities to propose TOU and/or other time varying rates. D.08-07-045 provided more specific guidance for moving more customers towards time-varying rates. For example, timelines for implementing TOU rates for medium and small C&I customers were adopted in D.12-12-004 for SDG&E, D.13-03-031 for SCE, and D.11-11-008 for PG&E. TOU and other dynamic rates are only available to customers who have TOU-capable meters. Because of this, the implementation of advanced metering infrastructure (AMI) for PG&E, SCE, and SDG&E greatly facilitated the expansion of these rates to small customers (both residential and non-residential).<sup>8</sup>

The design of time of use rates for these customers, including the time period definitions and specific rate differentials between peak and non-peak periods, were generally deferred to the companies' regular rate design proceeding, including General Rate Case Phase 2 proceedings and (if appropriate) Rate Design Windows (RDWs).

### **3.2. Recent Procedural History**

Over the last two years, PG&E, SDG&E, and SCE have all proposed moving the peak periods under their TOU rates to reflect the increased supply of electricity in afternoons from renewable resources, most notably solar, and the potential for oversupply during certain times, particularly weekday afternoons. All three utilities filed their requests in the context of so-called "rate design window" applications. The Commission created RDWs in 1989 in order to provide a mechanism for the Commission to address electric rate design more

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<sup>8</sup> Before the installation of AMI for all customers, those that wanted to access TOU rates were required to pay for a new meter.

often than the usual once-every-three-year GRC proceedings. The three recent RDW proceedings were highly contested, with several consumer advocates and customer groups opposing the proposed changes or requesting that customers already enrolled in TOU tariffs have the opportunity to keep their existing TOU period definitions. These recent proceedings are described below.

### **3.2.1. SCE RDW, A.13-12-015**

On December 24, 2013, SCE filed Application (A.) 13-12-015, its *Application of Southern California Edison Company for Approval of its 2013 Rate Design Window Proposals* (SCE RDW).<sup>9</sup> In this application, SCE requested approval of several changes to its TOU tariffs. Among other proposals, SCE proposed opening a new TOU-D tariff with a peak period later in the day (from noon to 6 p.m. previously to 2 p.m. to 8 p.m.). SCE also proposed closing its whole-house TOU residential electric vehicle tariff (Schedule TOU-TEV), and moving customers on that rate to one of the tariff options available under TOU-D. In addition, SCE recommended closing a different optional residential tariff that included tiered rates, allowing those customers to move to TOU-D. Most of the rate proposals in A.13-12-015 focused on residential customers, and the case resulted in a settlement between SCE and the majority of the participating intervenors.<sup>10</sup>

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<sup>9</sup> In D.07-07-004, the Commission adopted a modified Rate Case Plan, which includes a procedure for SCE and other investor-owned utilities to request rate design changes in years other than those covered by the rate design portions of their General Rate Cases (GRCs). Specifically, the Rate Case Plan provides that SCE may make a Rate Design Window (RDW) filing between December 20 and December 26 prior to an attrition year.

<sup>10</sup> The Office of Ratepayers Advocates (ORA), Solar Energy Industries Association (SEIA), California Solar Energy Industries Association, and Nature Resources Defense Council participated in this proceeding.

Under the settlement adopted in D.14-12-048, SCE created a new TOU-D with later time periods, transitioned customers from Schedule TOU-TEV to the new schedule TOU-D, and left open schedule TOU-D-T implementation of 2018 GRC Phase 2 rates become effective. This outcome allowed SCE to shift its peak period to later in the day for residential customers, but did not address changing the time periods for TOU rates applicable to C&I customers, the remainder of which are moving to mandatory TOU rates.

### **3.2.2. SDG&E RDW, A.14-01-027**

On January 31, 2014, SDG&E filed A.14-01-027, its *Application of San Diego Gas & Electric Company for Authority to Update Electric Rate Design Effective on January 1, 2015* (SDG&E RDW).<sup>11</sup> The main issue in that application was a proposal by SDG&E to change its TOU time periods, shifting its “peak” period to later in the day, and adding a “super off-peak” period for all of its existing TOU rates. Rather than a peak period of 11 a.m. to 6 p.m., with off-peak rates for all other hours, SDG&E proposed a new peak period of 2 p.m. to 9 p.m. in the summer and 5 p.m. to 9 p.m. in the winter, with a super off-peak period daily from midnight to 6 a.m. year round.

Intervenors responded with a variety of arguments against adopting the SDG&E proposal. These concerns ranged from procedural objections about whether a RDW proceeding is the appropriate venue in which to make far-reaching structural rate changes, to substantive concerns about the analysis on

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<sup>11</sup> In D.89-01-040, the Commission adopted a modified Rate Case Plan, which includes a procedure for SDG&E and other investor-owned utilities to request rate design changes in years other than those covered by the rate design portions of their GRCs. Specifically, the Rate Case Plan provides that SDG&E may make an RDW filing between November 20 and 25 of a year

*Footnote continued on next page*

which the recommendation was based. In particular, some parties, including local agencies such as municipal governments and school districts, argued that by changing the time periods used in planning their solar investments, the recommended changes would unfairly reduce the value of those investments.

Unlike in the SCE RDW described above and the PG&E RDW discussed below, SDG&E's proposed time period changes were intended to apply to all TOU customers, rather than just one or two customer classes. The proposals in this proceeding were also relatively complex, containing both a change to existing peak times and the addition of a "super off-peak" time period. This proposed was not consistent with the finding in D.15-07-001 that customers prefer less complex rates.<sup>12</sup> Ultimately, the Commission found in D.15-08-040 that SDG&E had failed to meet its burden of proof that load projections warranted a change to TOU periods for all customers, and denied the request without prejudice. That decision specified that the issue should be addressed in a future proceeding, potentially either a Phase 2 GRC proceeding for SDG&E or an Order Instituting Rulemaking (OIR) that would utilities apply to all of the major utilities.<sup>13</sup>

### **3.2.3. PG&E RDW, A.14-11-014**

On November 25, 2014, PG&E filed A.14-11-014, its *Application of Pacific Gas & Electric Company for Approval of its 2015 Rate Design Window Proposals*. PG&E requested several changes to its residential TOU tariffs, including a

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prior to an attrition year. SDG&E received permission to file this application on January 31, 2014 by means of two extensions in time granted by the Commission's Executive Director.

<sup>12</sup> D.15-07-001 at Finding of Fact 68.

<sup>13</sup> D15-08-040 at 16 and Footnote 24.

reduction in the summer season under the tariff from six months, May through October, to four months, June through September, and implementation of a new peak period of 4 to 9 p.m., rather than the existing period of 1:00 pm to 7:00 pm. As in the SCE case, above, intervening parties entered into a settlement with the utility to resolve the issues.<sup>14</sup> Under the settlement, PG&E would implement two new TOU rate options, E-TOU-A, which would have a daily peak period of 3 p.m. to 8 p.m., and E-TOU-B, with a daily peak period of 4 p.m. to 9 p.m. The settlement, adopted by the Commission in D.15-11-013, also provides a schedule that would allow customers on current optional TOU rates to remain on their existing tariff for a time, and transition to one of the new rate options within the next five years.

#### **4. Discussion**

The CAISO manages the majority of the electric grid in California, and operates California's wholesale electricity market. According to an analysis produced by CAISO earlier this year,<sup>15</sup> recent increases in the availability of solar generation in the early afternoons have resulted in the creation of a great deal of electricity during weekday early afternoon hours, even creating a potential for oversupply at some times of day during specific seasons. However, the CAISO analysis estimates these resources produce less electricity during some evening hours when electricity demand may remain high. This analysis is based on supply and demand data from 2013 and 2014, and projections of supply and

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<sup>14</sup> The settlement was signed by PG&E, ORA, and SEIA. The other active parties to the proceeding (SCE, The Utility Reform Network, CAISO, and California Farm Bureau Federation) either supported or did not oppose the settlement.

<sup>15</sup> See, [http://www.aiso.com/Documents/CaliforniaISO\\_Time\\_UsePeriodAnalysis.pdf](http://www.aiso.com/Documents/CaliforniaISO_Time_UsePeriodAnalysis.pdf).

demand into the future. Based on this analysis, CAISO expects an increasing mismatch between current design of TOU rates, which encourage a reduction in demand during afternoons in favor of evening usage, and the likely availability of electricity over the coming years.<sup>16</sup> According to CAISO, this mismatch, in which high energy demand persists at a time when fewer renewables are available, could threaten reliability. As a result, CAISO has published a proposal (see Attachment 1) to change the existing TOU time periods in order to discourage electricity use during those periods when supplies may be lower, such as weekday late afternoons in the spring and fall or to encourage the use of renewable distributed generation at those times.<sup>17</sup> Based on its analysis, CAISO recommends a TOU rate structure with seasonal variations in the times for peak rates. Specifically CAISO proposes the following TOU period structure:

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<sup>16</sup> [http://www.aiso.com/Documents/CaliforniaISO\\_Time\\_UsePeriodAnalysis.pdf](http://www.aiso.com/Documents/CaliforniaISO_Time_UsePeriodAnalysis.pdf).

<sup>17</sup> <https://www.aiso.com/Documents/MatchingTimeOfUsePeriodsWithGridConditions-FastFacts.pdf>.



**WEEKDAYS**



**WEEKENDS**



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Under this proposed TOU period structure, the daily peak period on both weekdays and weekends would be from 4 p.m. to 9 p.m. daily. In summer months, July and August only, electricity during these hours on weekdays

<sup>18</sup> Excerpted from [http://www.caiso.com/Documents/CaliforniaISO\\_Time\\_UsePeriodAnalysis.pdf](http://www.caiso.com/Documents/CaliforniaISO_Time_UsePeriodAnalysis.pdf).

would be at an even higher, “super peak” rate, with the peak rate charged for usage between 11 a.m. and 4 p.m. weekdays during those months. The remaining time would be split between an off-peak rate applicable during nights and mornings, and a super-off-peak rate available during weekend and certain spring weekday afternoon. This would result in relatively lower rates during early afternoons, with higher rates during late afternoon and early evening hours. Such a rate structure could provide incentives for development of more west-facing solar systems, in contrast to the south-facing systems that are currently more common.

Though CAISO has not yet proposed this rate structure in the context of a formal Commission proceeding, CAISO has stated its support for moving peak times to later in the day on the record in the PG&E RDW case, in comments filed in support of the settlement in that case.<sup>19</sup> CAISO has also participated in activities related to the residential rate design proceeding, including the ongoing TOU working groups.

In general, these CAISO recommendations are consistent with recent utility proposals to modify TOU periods. However, the data and methodology underlying the CAISO analysis has not been described in detail, and parties representing the likely-affected customer groups have not yet had an opportunity to thoroughly review the data or assumptions on which the analysis is based. Within the SDG&E proceeding, the Commission found that SDG&E had not met its burden of proof to show that the proposed change is warranted, in part because its proposal relied on load data for only a portion of 2013, with

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<sup>19</sup> CAISO comments on PG&E settlement.

estimated load numbers provided for [future years].<sup>20</sup> As noted in that decision, additional information covering 2014 and possibly 2015 may now be available, and if so could allow development of a more complete record in a future proceeding focused on these issues. The SCE and PG&E RDW cases, in which new, later peak periods have been approved, differ from the SDG&E RDW in at least two respects: 1) SDG&E proposed changes applicable to all customers, whereas the SCE and PG&E proposals were limited only to some customer classes, and 2) the SCE and PG&E RDWs resulted in unopposed settlements, which are subject to a different standard of approval than fully litigated cases. Though it is not the intention of the Commission that this proceeding disturb existing settlements in the near term, it is appropriate for the Commission to address these issues on a forward-looking basis in a single formal proceeding, both because the settlements do not have precedential value, and because the settlements are limited to specific rate schedules or customer classes.

This proceeding will identify the specific types of data and analysis that should be required for the consideration of changes to TOU time periods. With CAISO participation, as well as the many parties actively engaged in this issue in recent years, we expect this proceeding will provide a venue for development of a robust record to determine whether electric load and supply trends indicate changes to the “target” time periods during which it would be helpful to the California power grid for customers to modify their level of energy use. If changes are found, this proceeding will serve as a venue to develop a framework for modifying TOU periods to better reflect the target time periods. This

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<sup>20</sup> SDG&E D.15-08-040.

proceeding may also evaluate whether specific TOU period proposals are consistent with applicable Commission rate design principles, and if possible, will develop one or more TOU rate structures consistent with these principles and relevant supply and usage data, for further consideration in future utility-specific rate design proceeding.

It is reasonable to examine relevant data for PG&E, SCE, and SDG&E and develop potential TOU periods in one, single proceeding, rather than separately for each utility through various GRC or other ratesetting proceedings. First, this proceeding will increase efficiency for the CAISO, parties, and the Commission. All parties with an interest in TOU time periods will have an opportunity to participate in a single proceeding, which should allow for a complete and robust record not only of data, but also comments on policy implications of potential changes. In addition, addressing TOU time periods for all utilities in one proceeding will provide an opportunity to compare relevant load, usage, cost, and other data statewide and across different utility jurisdictions. This could facilitate the determination of whether TOU periods should be consistent for different utilities and customer classes.

## **5. Preliminary Scoping Memo**

This proceeding will be narrowly focused on the gathering and analysis of relevant data on load, net load, cost, expected “shape” of solar generation and other electric supply, and other factors. This analysis is intended to inform the identification of target time periods during which customers, generators, and providers of energy services should be encouraged to modify usage and supply. This Rulemaking is focused on the analysis of long term trends in energy supply and demand, and is intended to inform the development of TOU periods as TOU rates become the default rates for most customers. Specific rate structures

for current or future TOU rates, including peak/ non-peak rate differentials, will not be addressed in this proceeding, though the length of peak periods will likely affect the magnitude of the rate differentials across time periods.

Though the TOU periods applicable to specific utility tariffs will not be adopted in this proceeding, preliminary determinations may be made in this proceeding about whether on a going forward basis TOU periods should be consistent across different geographic regions and customer classes, or whether multiple time period options should be made available to particular customers to provide flexibility. We anticipate that the determinations made in this proceeding will then be used in the context of future utility GRCs and other rate design proceedings in the development of future longer-term TOU rate structures. In addition, the time periods identified in this proceeding may be considered in future proceedings to update time-of-delivery (TOD) factors applied in the IOUs' resource evaluation criteria and power purchase agreements (PPA), including renewable resource standard contracts.<sup>21</sup>

The scope of this proceeding encompasses any and all information necessary to develop one or more sets of TOU periods for consideration in future utility rate setting proceedings. To accomplish this goal, our review will address, but may not be limited to, the following questions:

1. What data, assumptions, and analytical methods should be used to determine the "target" time periods during which it would be

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<sup>21</sup> For example, the Commission adopts TOD factors for the IOUs' Renewables Portfolio Standard procurement activities. TOD factors are used as part of the least-cost, best-fit resource evaluation process, and are included in PPA to determine how much a generator is paid in each hour of delivery. Though the terms of existing contracts will remain in place, this proceeding may inform the terms of new PPAs.

- helpful to the California power grid for customers to modify their level of energy use?
2. Based on current and forecasted supply, load, and other relevant data, during what times of day would it be helpful to the California power grid for customers to modify their level of energy use? Do these times of day vary by season or other predictable factors? If so, how?
  3. Are any TOU periods currently in use well-matched with the target periods identified in Question 1? If so, please reference the TOU period and explain why it is a good match.
  4. What principles or factors should the Commission use in determining whether to change existing TOU periods and, if a change is needed, in setting the new TOU periods? Possible principles and factors may include, but may not be limited to, those included in the Residential Rates Design OIR.<sup>22</sup>
  5. Should TOU periods remain fixed for some period of time before they can be modified? If so, what is a reasonable timeframe? Once established, how often and in what type of proceeding should TOU periods be evaluated? Explain your rationale, including how it is consistent with the data, ratemaking principles or factors, and existing law<sup>23</sup> identified in this proceeding.
  6. Is the CAISO proposal (see Attachment 1) for new TOU periods reasonable, either as proposed or with modifications? Specifically, is it supported by relevant supply and load data, and is it consistent with the ratemaking principles identified in this and other Commission proceedings?
  7. If TOU periods change in the future, should customers served on existing TOU schedules be able to remain on those TOU periods for a set amount of time? If so, for how long? Should customers

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<sup>22</sup> See D.14-04-029 at 12-13, and Ordering Paragraph 4, and D.15-07-001 at 27-28.

<sup>23</sup> We note, for example, that Public Utilities Code Section 745(c)(3) directs the Commission to “strive for time-of-use rate schedules that utilize time periods that are appropriate at least the following five years.”

- currently enrolled in TOU rates be required to change if new TOU periods are adopted?
8. Should TOU period options be available to any or all customers, or should there be a single set of TOU periods?
  9. Should TOU periods be consistent across different utilities, or should they be utility specific? Should TOU periods differ by geographic areas? Should TOU periods differ by customer class?
  10. Should TOU periods used for rate setting purposes be the same as time-of-delivery factors used to evaluate and pay resources? Please explain your response.

In order to address these questions, we anticipate collecting and analyzing the following types of data:

1. Hourly metered load, net load, and usage data, disaggregated by location, customer class.
2. Hourly wholesale supply data, disaggregated by location, customer class, and type of generation.
3. Estimated hourly load and supply for years through 2020.
4. Wholesale price data, by location and time, and estimates for the future.
5. Bill impact data for various customer classes.
6. Data on customer engagement with and understanding of various TOU structures.

In particular, in order to evaluate the CAISO recommendation in Attachment 1, we request that CAISO provide parties with a detailed explanation of the data, assumptions, and analytical methods supporting the analysis provided in Attachment 1.

Parties are asked to file comments on the preliminary scope and schedule of initial activities contained in this rulemaking, including the appropriateness of the questions and the validity of the data sources identified in this section. Parties are also encouraged to recommend additional questions or data that that

may facilitate the review of the CAISO proposal and the resolution of the issues within the scope of this proceeding. Section 6, below, establishes a schedule for these initial activities.

### **5.1. Coordination with Other Proceedings**

The identification of appropriate TOU periods has been raised within several Commission proceedings in recent years, including the RROIR and various GRC and RDW proceedings. This proceeding is not intended to forestall either the consideration of new time period structures for optional TOU rates and pilots, or more immediate modifications to existing utility TOU tariffs, which may be considered in more traditional ratemaking proceedings. Rather, this proceeding is focused on data and long-term trends. In order to ensure efficient participation in this and other proceedings, we will carefully coordinate this proceeding with other ongoing efforts. Specifically, we recognize that the following proceedings are addressing related issues:

- Water-Energy Nexus: Matinee Pricing Pilots (R.13-12-011)
- RROIR: Residential TOU Pilots (R.12-06-013)
- The Electric Vehicle Rulemaking (R.13-11-007)
- Ongoing GRC Proceedings, including A.15-04-012: Interim changes to existing TOU tariffs

In addition, parties are encouraged to include in their comments on this OIR a list of any additional proceedings that may be addressing related issues, and a discussion of potential areas of overlap among those proceedings.

## **6. Schedule**

The following initial schedule is adopted, and may be revised by the assigned Commissioner or Administrative Law Judge as required to promote the efficient and fair resolution of the rulemaking:



OIR Adopted	December 17, 2015
Comments on the OIR scope filed and served	January 15, 2016
CAISO to file and serve an explanation of the data, assumptions, and analytical methods supporting Attachment 1.	January 22, 2016
Comments on CAISO's explanation of the data, assumptions, and analytical methods supporting Attachment 1 filed and served.	February 12, 2016
Workshop on CAISO Analysis	February/March 2016
Prehearing Conference (PHC)	February/March 2016
Scoping Memo issued	Within 60 days of PHC
Additional Activities	To be determined.

We are scheduling an early workshop in this proceeding so that parties can develop a common understanding of the data and assumptions underlying the CAISO analysis. The prehearing conference will be held after the initial workshop so that parties and Commission staff will have a clearer sense of how the proceeding should be scoped to fulfill the objectives of this proceeding. It is our hope to complete this rulemaking by the end of 2016, so that the principles, methodologies, data sources, and other guidance developed here may be

considered in utility GRCs and (if appropriate) other related ratemaking proceedings beginning in 2017.

## **7. Preliminary Categorization and Need for Hearing**

Rule 7.1(d) of Commission's Rules of Practice and Procedure (Rules) provides that the OIR "shall preliminarily determine the category and need for hearing..."<sup>24</sup> This rulemaking is preliminarily determined to be ratesetting, as that term is defined in Rule 1.3(e), due to the technical nature of the activities contemplated in this docket and the anticipated effect of this proceeding's findings future utility rates. This preliminary determination is not appealable, but shall be confirmed or changed by assigned Commissioner's ruling. The assigned Commissioner's determination as to category is subject to appeal pursuant to Rules 7.3 and 7.6. Also, because we anticipate exploring technical and factual issues in this proceeding, we find that hearings may be required.

Any person who objects to the preliminary hearing determination shall state the objections in their comments on this OIR, described in Section 6, below. The assigned Commissioner will determine the need for hearing in the Scoping Ruling issued following a PHC.

## **8. Service of OIR**

This OIR shall be served on the official service lists for the following proceedings:

- Rulemaking 12-06-013 *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.*

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<sup>24</sup> All rules cited are contained in the Commission's Rules of Practice and Procedure.

- Rulemaking 14-07-002 *Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs, Pursuant to Public Utilities Code Section 2827.1, and to Address Other Issues Related to Net Energy Metering.*
- Rulemaking 15-02-020 *Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development of, California Renewables Portfolio Standard Program.*
- Rulemaking 12-11-005 *Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.*
- Rulemaking 13-12-011 *Order Instituting Rulemaking into Policies to Promote a Partnership Framework between Energy Investor Owned Utilities and the Water Sector to Promote Water-Energy Nexus Programs.*
- Rulemaking 13-11-007 *Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies.*
- Application 13-12-015, SCE RDW
- Application 14-01-027, SDG&E RDW
- Application 14-11-014, PG&E RDW
- Application 13-11-003, SCE GRC Phase 1
- Application 15-04-012, SDG&E GRC Phase 2
- Application 13-04-012, PG&E GRC Phase 2
- Application 14-06-014, SCE GRC Phase 2

Service of this OIR does not confer party status or place a person who has received such service on the Official Service List for this proceeding.

#### **9. Addition to Official Service List and Party Status**

Addition to the official service list is governed by Rule 1.9(f) of the Commission's Rules of Practice and Procedure (Rules).

Any person will be added to the "Information Only" category of the official service list upon request, for electronic service of all documents in the

proceeding, and should do so promptly in order to ensure timely service of comments and other documents and correspondence in the proceeding. (See Rule 1.9(f).) The request must be sent to the Process Office by e-mail ([process\\_office@cpuc.ca.gov](mailto:process_office@cpuc.ca.gov)) or letter (Process Office, California Public Utilities Commission, 505 Van Ness Avenue, San Francisco, California 94102). Please include the Docket Number of this Rulemaking in the request.

Persons who file responsive comments thereby become parties to the proceeding (*see* Rule 1.4(a)(2)) and will be added to the “Parties” category of the official service list upon such filing. In order to assure service of comments and other documents and correspondence in advance of obtaining party status, persons should promptly request addition to the “Information Only” category as described above; they will be removed from that category upon obtaining party status.

#### **10. Subscription Service**

Persons may monitor the proceeding by subscribing to receive electronic copies of documents in this proceeding that are published on the Commission’s website. There is no need to be on the official service list in order to use the subscription service. Instructions for enrolling in the subscription service are available on the Commission’s website at <http://subscribecpuc.cpuc.ca.gov/>.

#### **11. Filing and Service of Comments and Other Documents**

Filing and service of comments and other documents in the proceeding are governed by the rules contained in Article 1 of the Commission’s Rules of Practice and Procedure. (*See* particularly Rules 1.5 through 1.10 and 1.13.)

If you have questions about the Commission’s filing and service procedures, contact the Docket Office.

## **12. Public Advisor**

Any person or entity interested in participating in this Rulemaking who is unfamiliar with the Commission's procedures should contact the Commission's Public Advisor's office in San Francisco at (415) 703-2074 or (866) 849-8390 or e-mail [public.advisor@cpuc.ca.gov](mailto:public.advisor@cpuc.ca.gov). The TTY number is (866) 836-7825.

## **13. Intervenor Compensation**

Any party that expects to claim intervenor compensation for its participation in this Rulemaking must file its notice of intent to claim intervenor compensation within 30 days of the PHC for this proceeding. (*See* Rule 17.1(a)(2).)

# **O R D E R**

**IT IS ORDERED** that:

1. The Commission institutes this Rulemaking on its own motion to assess peak electricity usage patterns and consider appropriate time periods for future time-of-use rates and energy resource contracts.
2. The Executive Director will serve this Order on the service lists for Rulemakings (R.) 12-06-013, R.12-11-005, R.14-07-002, R.15-02-020, R.13-12-011, and R.13-11-007; and the service lists for Applications (A.) 13-12-015, A.13-11-003, A.13-04-012, A.14-01-027, A.14-11-014, A.14-06-014, and A.15-04-012.
3. This Rulemaking is preliminarily determined to be ratesetting. It is preliminarily determined that evidentiary hearings may be needed in this proceeding.
4. Any person may file opening comments on the preliminary scope and schedule of initial activities contained in this rulemaking, including the appropriateness of the questions and the validity of the data sources identified in

this section. Parties are also encouraged to recommend additional questions or data that that may facilitate the review of the California Independent System Operator proposal and the resolution of the issues within the scope of this proceeding. Comments shall be filed and served by January 15, 2016.

Commenters shall include in their opening comments any objections regarding the category, need for hearing, issues to be considered, or schedule.

5. The California Independent System Operator (CAISO) is requested to file and serve an explanation of the data, assumptions, and analytical methods supporting Attachment 1 by January 22, 2016. Parties may file and serve comments on the CAISO's January 22 filing no later than February 12, 2016.

6. Any party that expects to claim intervenor compensation for its participation in this Rulemaking must file its notice of intent to claim intervenor compensation within 30 days of a prehearing conference in this proceeding. (*See* Rule 17.1(a)(2).)

7. The preliminary scope of this proceeding is as set forth in Section 5, above.

8. The preliminary schedule for this proceeding is as set forth in Section 6, above.

9. The assigned Commissioner or assigned Administrative Law Judge may revise the scope and schedule, as required to promote the efficient and fair resolution of the rulemaking.

This order is effective today.

Dated December 17, 2015, at San Francisco, California.

MICHAEL PICKER

President

MICHEL PETER FLORIO

CATHERINE J.K. SANDOVAL

CARLA J. PETERMAN

LIANE M. RANDOLPH

Commissioners

R.15-12-012 ALJ/AYK/lil/ar9

# **ATTACHMENT 1**





## MATCHING TIME-OF-USE RATE PERIODS WITH GRID CONDITIONS MAXIMIZES USE OF RENEWABLE RESOURCES

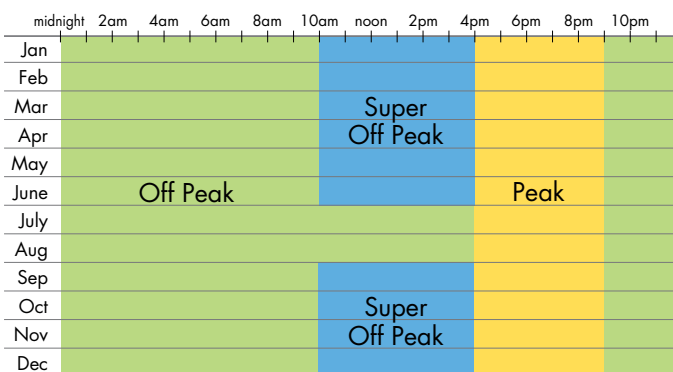
During certain times of the day, energy production in California can outpace demand, potentially throwing the supply and demand off balance. Since there is limited ability to store this excess power, it must be curtailed to maintain electric reliability. The state policy has driven investment in several approaches to maximize use of the renewable resources and support greenhouse gas reduction goals. Among these mechanisms is price signals to consumers when there's surplus and constrained supplies, so they can make decisions on use based on cost. Historically, time-variant pricing focused on the "peak" periods, the times when electric supply was scarce. Critical peak pricing signals higher energy prices to customers, encouraging them to conserve during those times, which can avoid the need to invest in additional generation and help keep electric costs down. Now, in this era of plentiful electricity from renewable sources, we need to alert customers not only to times when supply is constrained, but also when there is a surplus, to provide incentives to consumers to take advantage of low-cost electricity.

The California Independent System Operator (ISO), the operator of 80 percent of the state's electric grid, performed an analysis to determine when surplus and limited supplies might occur. Using data from 2013 and 2014, the study identified trends in renewable generation compared to electric demand on the system. The ISO also gathered data from the California Public Utilities Commission's 2024 long-term procurement planning process and 2021 wind and solar projections, as well as demand forecast for 2021 and 2024 produced by the California Energy Commission. From this data, the ISO created projections of future load curves of anticipated electricity needs and net load curves, calculated by subtracting solar and wind output from the overall demand. The ISO then created time blocks comparing the load to the 5-minute distribution of net load. The ISO observed patterns in the data that resulted in the recommended price periods as for weekdays and weekends through the year.

### WEEKDAYS



### WEEKENDS



The analysis showed that throughout the year, on both weekdays and weekends, supply is expected to be constrained during the peak hours from 4 p.m. to 9 p.m. when the sun is setting and solar output is declining. During the months of July and August, the supplies are even more limited during peak hours, and higher demand begins as early as noon.

More interesting, however, is the amount of time that supply is expected to be plentiful or in surplus. With the exception of July and August, on the weekends, supply surplus is expected to occur during “super off-peak” hours from 10 a.m. to 4 p.m. when solar generation is at its highest. Similarly, surplus conditions are expected during this same time period on March and April weekdays, when weather is mild and air conditioning use is at a minimum. Additionally, supply is projected to be generally plentiful starting at 9 p.m. through the next morning or afternoon, depending on the month.

With this information, time-of-use rates could be developed using lower prices and incentives to drive consumers to shift electric consumption to these off-peak or super off-peak periods. It will also be important to examine current time-of-use structures and re-align the pricing to be consistent with the expectations of available electric supply. Once customers understand the times the cost of electricity is at its lowest and cleanest, it is anticipated they will change their behavior to realize this benefit.

While this is only one of many strategies available to maximize use of renewable resources and reduce greenhouse gases, it is a valuable one. In addition to direct customer benefits, by using supply when it is ample and reducing use when electricity is limited, less investment will be needed, reducing costs for all consumers.

(End of Attachment 1)