

## PUBLIC ADVOCATES OFFICE

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The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits these comments in response to Energy Division’s request for stakeholder feedback following its presentation in the “Advanced DER & Demand Flexibility Management” Workshop on May 25, 2021. Energy Division staff held a virtual workshop to present its initial proposal to facilitate “widespread flexible demand management”<sup>1</sup> which is a demand-side solution called UNIDE. UNIDE stands for a signal that is unified, universal, dynamic, and economic. Energy Division plans on refining the proposal and requesting that the Commission open a rulemaking to improve demand-side resource management, leverage opportunities presented by long-term electrification and DER deployment and better address associated grid issues.

Cal Advocates supports the proposed rulemaking. The rulemaking would create a central place for more cohesive discussion for issues pertaining to demand-side resource management. Real time pricing (RTP) is one existing approach for achieving demand-side flexibility and the lessons learned from RTP rates are relevant to Energy Division’s UNIDE proposal. Currently, there are two existing RTP rates for Southern California Edison (SCE) and San Diego Gas & Electric Company (SDG&E) customers. The Commission is considering RTP proposals in SDG&E’s General Rate Case (GRC) Phase 2 proceeding and Pacific Gas & Electric Company has proposed pilots in two of its proceedings.

**Table 1: Summary of Existing or Pending RTP Programs**

Utility	Proceeding	Brief Summary of Program
SCE		RTP rate based on 7 pre-set prices which are triggered based on temperature, available for non-residential customers only
SDG&E	R.18-12-006	Vehicle Grid Integration (VGI) RTP rate (Power Your Drive) only for commercial electric vehicle (CEV) customers with SDG&E-owned charging equipment
SDG&E	A.19-03-002	RTP proposal in GRC Phase 2
PG&E	A.20-10-011	Day-Ahead Hourly RTP for Battery Electric Vehicles (DAHRTP-BEV) pilot
PG&E	A.19-11-019	RTP pilot for commercial and industrial (C&I) Customers and proposed study for residential and agricultural customer preferences in GRC Phase 2

<sup>1</sup> <https://www.cpuc.ca.gov/General.aspx?id=6442469050>

In addition to RTP, the utilities offer many other demand response (DR) programs to customers. Commercial and Industrial customers can participate in events-based programs like the Base Interruptible Program (BIP), the Capacity Bidding Program (CBP), direct air conditioning control programs, peak day pricing, and various other utility specific programs. Residential customers can participate in programs such as CBP, air conditioning load reduction programs, and peak day pricing programs. All customer classes can participate in the variety of programs operated by third party demand response providers procured through the Demand Response Auction Mechanism (DRAM).

### **Recommendations**

- Cal Advocates supports Energy Division’s proposal to request a rulemaking to discuss demand-side resource management and the potential implementation of a new concept like UNIDE.
- Cal Advocates recommends any information regarding the success or failures from existing RTP rates and DR programs be leveraged to inform the new proposal.
- Cal Advocates supports the use of the California Energy Commission’s (CEC) new MIDAS Rate Database to provide real-time pricing data to customers.
- Cal Advocates recommends that RTP proposals use hourly energy costs based on the California Independent System Operator’s (CAISO’s) day-ahead market (DAM) rather than CAISO’s day-of (DO) fifteen-minute market (FMM) or Real-Time Market (RTM).
- Cal Advocates recommends careful consideration when developing a methodology for hourly allocation of capacity costs. Specifically, Cal Advocates recommends that the various approaches presented in testimony, in A.19-11-019 and A.20-10-011, about how to allocate generation capacity costs to individual hours, be considered in the design of any more broadly applicable RTP programs.
- Cal Advocates recommends careful consideration of Energy Division’s proposal to introduce bi-directional prices given lessons learned about uneconomic cost shifting from the Net Energy Metering (NEM) tariffs.
- Cal Advocates recommends that Energy Division and any potential rulemaking scope consider additional areas not covered by the UNIDE proposal:
  - Energy Division should evaluate ratepayer interest and plan for implementation logistics.
  - Energy Division should consider potential interference with existing DR programs, customer education accompanying default TOU programs, and critical peak pricing (CPP) rate implementation.
  - Energy Division should also explore dynamic transmission rates in addition to distribution and generation components.

### **Cal Advocates’ Comments on UNIDE**

In its proposal, Energy Division staff outline a 6-step process for its UNIDE proposal. Cal Advocates’ outlines each step below and provides comments and areas of concern.

***Step 1: Standardized, Universal Access to Current Electricity Prices through a CEC portal***

Cal Advocates agrees that the CEC’s new online portal (MIDAS Rate Database) should be used to provide real-time pricing data for customers. Based on the CEC’s presentation, the CEC has already developed the database and the platform should be available to the public this summer.<sup>2</sup> Cal Advocates supports the use of CEC’s rate database because it will likely reduce implementation costs for utilities that are looking to communicate prices to customers.

***Step 2: Introduce dynamic prices based on real-time, wholesale energy cost (opt-in)***

The Energy Division should provide specific information on the UNIDE rate design in its written proposal, including more details on how the rate would be constructed. Based on the presentation, Energy Division appears to be interested in including hourly real time locational price linked to CAISO markets.<sup>3</sup> Cal Advocates supports the use of hourly energy costs based on CAISO’s day-ahead market (DAM) rather than CAISO’s day-of (DO) fifteen-minute market (FMM) or Real-Time Market (RTM). CAISO’s DAM produces energy prices that more accurately represent utility marginal energy costs (MEC).<sup>4</sup> PG&E’s recent analysis in its GRC Phase 2 RTP Track shows that generation prices (energy + capacity prices) are much easier to accurately forecast when the capacity prices are determined DA rather than DO. PG&E’s analysis found that the DAM would provide the greatest potential cost savings for the utility by sending accurate cost signals to customers. Accurate cost signals can assist with decreasing energy consumption during the costliest hours of the day. Additionally, the DAM would be beneficial for customers by offering the best risk/reward ratio. The risk/reward ratio is in reference to the potential costs and inherent benefits associated with an RTP rate from the customer’s perspective. If a customer optimizes its usage during the least costly hours of a day, the customer is rewarded for shifting their load with a lower bill. However, customers on RTP rates also take on risk participating in an RTP rate. For instance, even if a customer does its best to respond to price signals, extreme grid conditions can result in an increased bill for RTP customers.

It is unclear if Energy Division is proposing to offer the same rate for all customer classes. Energy Division should clarify this issue in its proposal as well as how it proposes to address cost allocation and cost recovery.

In addition, Cal Advocates seeks clarification on the implementation logistics of steps 2 and 3. Specifically, would step 2 be implemented separately from step 3 or would the same rate be developed based on both step 2 and 3?

***Step 3: Modify prices per real-time, localized grid conditions (opt-in)***

**Hourly Allocation of Capacity Costs**

Cal Advocates supports a rate that is based on grid utilization. However, it is worth noting that the most difficult component an RTP rate schedule to design is the marginal generation capacity cost components. As discussed in step 2, the marginal energy cost portion of a RTP rate is relatively

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<sup>2</sup> <https://efiling.energy.ca.gov/GetDocument.aspx?tn=237439&DocumentContentId=70640>

<sup>3</sup> Presentation slides 28-30, available on the CPUC website at <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442469346>

<sup>4</sup> Chapter 3 “Analysis of Wholesale Markets” in PG&E’s Opening GRC Phase 2 Supplemental RTP Testimony filed March 29, 2021.

straightforward because it can be designed to reflect prices in the existing CAISO day-ahead hourly market. In contrast, conveying capacity costs in an hourly RTP rate is inherently more complex because the bulk of capacity procurement costs are not costs that the utility incurs on an hourly basis. Instead, fixed capacity contracts typically are procured a year or more in advance through the resource adequacy (RA) market and other procurement solicitations. Because real time procurement of capacity does not occur like it does for energy, it is challenging to allocate those capacity costs in a real-time manner in a meaningful way. Moreover, most capacity cost allocation approaches allocate almost all the capacity costs to a relatively small number of hours, which means that the hourly capacity prices assigned to those hours can be significantly higher than the marginal energy cost. Thus, a rate element that is difficult to design ends up contributing much to the overall volatility of the rate.

This dilemma is observed in the PG&E DAHRTP-BEV and PG&E GRC2 RTP track where parties are grappling with how to allocate generation capacity costs on an hourly basis. In these proceedings, parties discussed how to adjust the allocation mechanisms to reflect actual conditions. Parties have presented in testimony a number of proposals on how to allocate these costs. These include using PG&E's peak capacity allocation factor method, a loss of load probability framework, and combinations of these methods with and without critical peak pricing adders.

Allocating capacity costs to individual hours, when capacity is not contracted for on an hourly basis, is critical to making RTP work without creating large revenue over- and under-collections. UNIDE appears to be based on the design used in SCE's EPIC (2016-2019) Pilot.<sup>5</sup> Cal Advocates would like to see more details and support for the scarcity pricing functions and grid conditions that were used to determine the delivery, generation and flexible prices shown in the presentation. Specifically, were actual weather patterns, hydrological conditions, grid operational issues (forced outages, transmission constraints, etc.) and economic conditions taken into consideration? Cal Advocates recommends Energy Division study and compare the methodological differences between SCE's EPIC Pilot and the proposals for PG&E's pilot RTP rates.

The second alternative example presented by Energy Division is SDG&E's Power Your Drive (PYD) Rate. SDG&E's PYD program is comprised of a flat base energy rate, CAISO hourly energy price (based on CAISO's DAM), and two critical peak pricing components. The two critical peak pricing components are a circuit-level locational price signal and a system-level capacity price signal. Cal Advocates primary concern in this instance is whether there is sufficient variation from existing tariff options to generate customer interest.<sup>6</sup>

As proposed, UNIDE would be based on the long-run marginal costs of adding new capacity, but the exact approach is not clear. Cal Advocates would like more information on whether the "Price Machine" component would be based on marginal costs which are litigated in the utility General Rate Case Phase 2 proceedings or whether they would be based on some other function. It

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<sup>5</sup> Presentation slide 38, available on the CPUC website at <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442469346>

<sup>6</sup> See Chapter 7 on Demand Charges by Christopher Danforth in A. 19-03-002 Public Advocates Office Prepared Testimony on SDGE 2019 GRC Phase 2

would be difficult to develop separate and different valuations of distribution and generation if they are not based on marginal cost.

Additionally, if the long-run generation marginal costs approach is based on the existing Commission preferred 6-year approach,<sup>7</sup> Cal Advocates has some concern. The six-year approach may not be suitable for an RTP, which is inherently very short term. However, if a different MGCC is used for an RTP, then the rate would be dependent on a revenue neutral adder (such as in PG&E's proposed RTP pilot) to ensure that RTP recovers the same revenue requirement as other rate designs. Energy Division should consider this type of revenue neutral rate adder in its UNIDE proposal. Cal Advocates notes that there are unanswered questions regarding whether the revenue neutral adder itself double charges RTP customers for capacity in that capacity shortfalls are recovered twice: once through RTP capacity component and once through amortization of general under-collections in the Energy Resource Recovery Account (ERRA) following a dry year that impact the System Average Rate, which is the numerator of the revenue neutral adder.<sup>8</sup> This issue would require further discussion.

#### Fixed Distribution Costs

Energy Division proposes to include fixed distribution grid costs in the UNIDE rate.<sup>9</sup> It is worth noting that time-differentiation of distribution costs for purposes of relatively simpler TOU pricing, is still in its formative stage. The utilities have all proposed very different approaches, and there is no consensus on what works best. The proposed PG&E RTP pilots and RTP rates in the SDG&E GRC Phase 2 do not include a distribution element because many believe it is premature to do so. The only version of an RTP program that includes a distribution element is the SDG&E VGI rates, and there the distribution element is a simple CPP where the price is the same in each hour during the 200 CPP event hours that can be called.

#### ***Step 4: Transition to bi-directional prices (allow for export at the price)***

Energy Division proposes to eventually transition UNIDE to include bi-directional prices for consumption and export. Cal Advocates recommends this component be designed with caution based on the lessons from the NEM tariffs. NEM exports have been overly subsidized and the costs that NEM customers avoid paying for have been passed on to non-participants, creating an increasing cost burden that impacts the affordability of electricity.<sup>10</sup> Therefore, a bi-directional price, as described, could lead to a cost burden that increases rates for non-participants if it does not ensure fair recovery of costs. Of particular concern are low-income customers who would be negatively impacted because they do not have the same level of ability to purchase and set up automation equipment to

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<sup>7</sup> The Commission has expressed a long-standing preference for using a six-year short-run/long-run approach for calculating MGCC in GRC 2s. D.92-06-020, Sec. 6.3.1 (SCE 1992 GRC 2), D.96-04-050, Sec. 5.4.1 (SCE 1995 GRC 2).

<sup>8</sup> In both the CEV and C&I pilots, PG&E proposes to include a flat revenue neutral adder "to retain parity relative to base rate schedules." PG&E GRC Phase 2 Supplemental Testimony, filed March 29, 2021, p. 1-52. For more information see section C in Cal Advocates Prepared Testimony in Response to Pacific Gas & Electric Supplemental Testimony on Commercial & Industrial Real Time Pricing Pilot and Research for Other Customer Classes filed May 28, 2021.

<sup>9</sup> Presentation slide 34, available on the CPUC website at

<https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442469346>.

<sup>10</sup> For more information see Public Advocates Office's Proposal for a Successor to the Current Net Energy Metering Tariff, filed March 15, 2021, in R. 20-08-020.

take advantage of RTP. Cal Advocates recommends Energy Division study the NEM proceeding record to see the problems with how to value customer energy exports to the grid.

A more specific concern with this element of UNIDE is the proposal to enable contracts between DER service providers and a load-serving entity (LSE) or distribution operator for responding to UNIDE based on the embedded capacity value.<sup>11</sup> Cal Advocates is very concerned with double payment and double counting of the capacity value. If the RTP price signal already includes an embedded capacity component, then any capacity contract could provide a double payment. It is unclear how such a contract would work because the provider (and its participants) already would be responding to and benefiting from its response to the capacity signal in the RTP rate. The RTP rate itself would be providing a price signal for the customer to respond to so it is not clear why contracts with DER providers based on the embedded capacity value would be necessary to also induce a response to the price. Furthermore, Energy Division stated that, to the extent the UNIDE includes an embedded capacity value, the CEC could look at metering data and factor it into the load forecast to produce a lower forecast. If capacity contracts were allowed for providers (and their participants) through UNIDE, this would lead to double counting of the same expected response if the LSE were able to count the contract for RA purposes. Cal Advocates recommends these double counting concerns be addressed in Energy Division's written proposal.

#### ***Step 5: Offer a subscription option***

Energy Division proposes a fixed price based on average load shape and energy quantity to protect customers against bill volatility and to ease customer transition and stabilize revenue recovery for distribution operators and LSEs. A subscription option could enable more customer participation, but Energy Division should address questions on how the fixed monthly price will be calculated based on the interval of time of day in its written proposal. Would the fixed monthly price be based on an average of prices in all hours of the day in each month? Second, what would the subscription price methodology be for "smoothing" the price of electricity? It is not clear how the subscription option would adjust varying energy prices across a given month to provide a single monthly price to customers.

#### ***Step 6: Introduce transactive features – ability to lock in price in advance***

Energy Division proposes to eventually introduce transactive features so customers can lock in a price in advance. At this time, Cal Advocates does not have any specific comments for this component.

### **Additional Areas of Consideration**

Cal Advocates raises the following additional areas of consideration for Energy Divisions' written UNIDE proposal and the proposed rulemaking. These areas include gauging ratepayer interest, implementation logistics, potential interference with existing DR programs and TOU pilots, and transmission rates.

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<sup>11</sup> Presentation slide 47, available on the CPUC website at <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442469346>.

### ***Customer Interest***

A preliminary and crucial step for the proposed rulemaking is consideration of customer interest. Due to the variability and increased burden a RTP rate can present to customers, interest likely varies significantly between customer classes. Consideration of interest is especially important given the historically low rates of customer participation in many RTP programs across the country.<sup>12</sup> For example, based on load impact studies in 2016 and 2019, SCE's RTP program enrollment has decreased significantly and is expected to decline to as few as 70 customers by 2030.<sup>13</sup> The decrease in enrollment is largely due to the increasing high bills during hot summers.<sup>14</sup> It is important to gauge how many participants would be interested in a program like UNIDE before designing and implementing an elaborate and potentially costly billing structure.

In PG&E's RTP track of its GRC Phase 2, PG&E presents an evaluation of dynamic pricing options currently offered by SCE, SDG&E, Commonwealth Edison (ComEd), Oklahoma Gas & Electric (OG&E) and Griddy (located in Texas).<sup>15</sup> Based on this study<sup>16</sup> and other reasons, PG&E argues that more research is needed to determine the best approach for expanding existing residential rate options.<sup>17</sup> In the same proceeding, PG&E proposes to conduct an in depth study into customer preferences for residential and agricultural customers. Cal Advocates recommends Energy Division consider the findings of the evaluation of dynamic pricing options currently offered in the United States and wait for the results from PG&E's customer preferences study to determine whether all rate classes would be a good fit for UNIDE. The proposed rulemaking should allot several opportunities for stakeholder workshops to discuss methods for gauging customer interest and whether this program is appropriate for all customer classes.

### ***Implementation***

In addition to customer interest, implementation of UNIDE and how these rates should be rolled out must be discussed. The utilities have provided some indication on the implementation costs associated with real time pricing rates. For instance, PG&E's proposed RTP pilot program for C&I customers is estimated to cost between \$7.7 and \$11 million.<sup>18</sup> These estimates build off the estimated program costs of \$3.6 to \$6 million for the DAHRTP-BEV pilot which will only be available to about 50 customers.<sup>19</sup> Coordination with the utilities will be necessary to accurately assess the costs associated with the implementation of UNIDE. Moreover, Energy Division should

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<sup>12</sup> Based on a study completed by PG&E and Electric Power Research Institute (EPRI). A total of 55 RTP schedules offered by regulated utilities in 41 utility jurisdictions were reviewed for this study. The full study is included in Chapter 5, Attachment A of PG&E's GRC Phase 2 Supplemental Testimony, filed March 29, 2021.

<sup>13</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 2-17.

<sup>14</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 2-17.

<sup>15</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 2-1. Study completed by PG&E and Electric Power Research Institute (EPRI). A total of 55 RTP schedules offered by regulated utilities in 41 utility jurisdictions were reviewed for this study.

<sup>16</sup> The full study is included in Chapter 5, Attachment A of PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021.

<sup>17</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 2-1.

<sup>18</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 1-50.

<sup>19</sup> PG&E's Commercial Electric Vehicle Day-Ahead Hourly Real Time Pricing Pilot Prepared Testimony, filed October 23, 2020 in A.20-10-011, p. 27.

coordinate with Community Choice Aggregation (CCA) and Direct Access (DA) providers. If UNIDE were to be offered to all customers, CCA/DA providers would have to create their own rate for customers. For context, over 50% of PG&E's C&I customers receive their generation supplies from CCAs.<sup>20</sup>

### ***Interference with existing DR programs and TOU pilots***

A RTP option would lead to changes in participation in certain existing event-based DR programs. Customers with the ability to respond in time to price signals may opt to participate in the real time option as opposed to an event-based program due to an overall decrease in energy bills. Moreover, RTP would appear to be more transparent since it eliminates the need for baseline calculations.

However, the effect on IOU's DR portfolios is arguably more important than any individual effect on a program. The Commission has long recognized that synergies and overlaps exist between DR programs which can introduce both positive and negative synergies.<sup>21</sup> The proposed rulemaking should explore the portfolio effects of introducing a RTP option to customers. If RTP pricing can achieve the load shifting behavior as intended, existing DR programs may prove to be more or less cost effective.

In addition to existing demand response programs, residential customers are still becoming accustomed to TOU rates.<sup>22</sup> Therefore, it is possible that the implementation of UNIDE could impact the roll out of residential default TOU rates. In PG&E's RTP track of its GRC Phase 2, PG&E states a new RTP rate would "[send] another, different message (e.g., encouraging them to opt-in to an RTP or other dynamic rate which does not have a static peak period), [and] could undercut the success of getting customers to accept the default TOU rate."<sup>23</sup> Cal Advocates agrees that residential customers should not be introduced to a RTP pilot until the completion of the default transition of Residential customers to TOU rates to avoid potential confusion regarding TOU and rate options. Furthermore, the impacts of TOU rates on demand management are unknown. It is possible that TOU rates are sufficient to generate demand response from certain types of customer classes without introducing additional dynamic rate options.<sup>24</sup>

In addition to potential overlap with existing TOU rates, a RTP residential rate may not be appropriate given the significant price volatility that is observed under PG&E's current pilot proposals for C&I and CEV customers. This would create substantial risk for residential customers who potentially would be less informed about how various real time conditions impact CAISO markets and would be less capable of shifting load to respond to real time price signals.

### ***Transmission rates***

In addition to designing a rate for distribution and generation functions, Energy Division staff should also consider transmission costs in its proposal. Currently utilities recover transmission costs

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<sup>20</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 1-32.

<sup>21</sup> D.08-04-050, Attachment A (DR Load Impact Protocols), p. 111.

<sup>22</sup> The default TOU transition is set to be complete in March 2022.

<sup>23</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 1-35.

<sup>24</sup> PG&E's Opening GRC Phase 2 RTP Supplemental Testimony filed March 29, 2021, p. 1-34.



predominantly through large non-coincident (non-time varying) demand charges that are a significant proportion of many non-residential customers' bill. Transmission costs do not necessarily have to be built into the RTP rate structure, but the UNIDE program should at least consider some kind of time-varying rate transmission rate rather than the existing non-coincident demand charges.

Energy Division should work with utilities and stakeholders to present time-varying transmission rates to the Federal Energy Regulatory Commission (FERC) because this is one area in rate design that is out of step with the Commission's policy of increasing the use of time-varying rates. If there are disagreements on the proper rate design approach, the current jurisdictional arrangement between the FERC and CPUC does allow the Energy Division to intervene in transmission owners rate cases to recommend to the FERC a transmission rate that is more consistent with the rest of the utilities' retail rate design. That rate design could be worked out in a Commission proceeding, where input from stakeholders could be sought, which the Energy Division could in turn present to the FERC as an intervenor. Introducing a time dimension into transmission rates potentially could have a much larger impact on the bills of customers who do have variable loads, and potentially could benefit from RTP, than implementing generation or distribution RTP itself.

### **Conclusion**

Cal Advocates appreciates the Energy Division's efforts to propose and implement RTP on a larger scale than currently exists. New technologies such as electric vehicles and battery storage potentially could benefit from such rates. Designing a meaningful and accurate RTP structure, however, requires careful study, especially in how capacity costs are allocated to individual hours. An initial first step requires gauging customer interest. Parties should keep in mind the proper RTP design still carries a risk of customers not accepting RTP and not signing up for such rates. Cal Advocates looks forward to collaboratively working with parties on these complex issues.