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California Energy Commission  
Docket Office, MS-4  
Re: Docket No. 19-OIR-01  
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Re: Southern California Edison Company's Comments on the California Energy Commission (CEC) Docket No. 19-OIR-01: Southern California Edison (SCE) Written Comments on Draft Staff Analysis of Potential Amendments to the Load Management Standards

Dear Commissioners:

SCE supports the CEC's effort to build the foundation for a statewide system that automates the provision of time-varying rate information to customers and third-party Automation Service Providers and enables automated control of electric devices in response to varying price signals. SCE has long supported successful demand response programs and Time-of-Use (TOU) pricing as tools to better manage daily energy demands, and recently SCE began the migration of residential customers to TOU rates. SCE currently offers real-time pricing options to a small number of customers and is looking forward to discussing new pricing options and technologies which benefit the customer while helping California achieve its ambitious climate and energy goals.

In these comments, SCE expresses support for the CEC's efforts to maintain the accuracy of the Market Informed Demand Automation Server (MIDAS) rate database. Additionally, SCE supports the use of a standard rate information access tool to support customers taking advantage of time-varying rates either on their own or through third party services. While SCE supports further exploration of calculating more complex rates based on wholesale market prices, SCE recommends a phased approach to development of new complex pricing products. SCE also recommends the CEC partner with IOUs to gather additional information about the costs and benefits associated with this effort. Finally, SCE recommends the CEC allow flexibility on the timing of program implementation, consider customer adoption and customer experience impacts, and include the impacts of real-time pricing into their long-term forecast. SCE

appreciates the CEC's consideration of the comments and recommendations below and looks forward to continuing to partner with the CEC on load management and real-time pricing design.

**I. SCE supports maintaining the accuracy of existing time-varying rates in the MIDAS rate database.**

Once the MIDAS database is implemented, it is important that customer decisions and automation tools are acting on accurate information. SCE supports the CEC's recommendation to update the MIDAS database whenever existing TOU rates change for bundled customers. While the automated update of these rates is ideal, it may not be possible or feasible given existing software/system constraints. A thorough analysis should be performed on the costs and level of effort required to automate rate updates into the MIDAS tool. If automation is found to be infeasible, SCE recommends that manual updates be required in order to maintain accuracy of the database for customers. It is likely that manual updates for bundled TOU rates would be sufficient because electric utility rates do not change frequently (typically 4 or fewer times a year). For customers participating in a CCA, further discussion would be required regarding who would need to be responsible for updating rates for these customers.

**II. SCE supports development of a standard rate information access tool to support third party services.**

Increasing customer participation by lowering barriers to entry for demand response and time-varying rate programs benefits all grid users. SCE supports the CEC's recommendation to enable access to time-varying rate information by customers and third parties because it maximizes the customer's ability to shift load based on varying price signals. By having access to this information, savvy customers can take direct action by programming devices to act at various trigger points based on pricing information received. Other customers may choose to make manual decisions based on notifications of the same information. Still other customers may rely on third party Automation Service Providers to control devices based on rate information and in order to achieve an outcome pre-determined by the customer. System upgrades would be required in order to enable this capability, and the costs and requirements of these upgrades would need to be further examined.

**III. Due to the complexity of calculating rates based on wholesale market prices at hourly intervals for a variety of geographic areas, SCE recommends a phased approach to launching the MIDAS database.**

SCE is encouraged by the CEC's effort to provide customers with an opportunity to leverage dynamic pricing. SCE's existing rate options include schedules or riders that layer day-ahead, or day-of, economic or reliability triggers that complement time-of-use pricing.<sup>1</sup> However, if asked to provide customers and their devices with dynamic prices based on wholesale market prices that change hourly or sub-hourly, thoughtful discussion on data architecture, secure information exchange protocols, interval data management, testing, and finally customer billing is still needed to determine how best to execute this vision.

Regarding updates to the MIDAS rates database, SCE feels that updating existing TOU rates several times a year for seasonal and factor changes could be a feasible exercise.<sup>2</sup> However, if rates based on California Independent System Operator (CAISO) wholesale market prices are required, a secure and accurate automated process needs to be developed to pull the CAISO market prices, incorporate those prices into rate formulas, and calculate any additional non-market price factors into the overall rate that the customer would be seeing and paying. It is unclear if the CEC or the IOUs would develop, own, maintain, and fund this system. Building such a system would need cross-agency coordination between information technology (IT) teams who would need to coordinate system and process buildout, integration, and testing.

If CAISO market prices are leveraged, SCE is unclear what frequency of price-plus-rate calculations and updates would be needed to transmit a customer's total price to the MIDAS system. It is also unclear how quickly this system could pull in this data and conduct any additional calculations and then transmit these prices in time for the CEC to provide customers and their devices the ability to make decisions and manage load on the transmitted price. Regardless of whether the MIDAS database includes wholesale prices or not, discussions would be needed on handling any problems with data that may occur, such as a missing data field or an incorrect price that goes out to the customer. Day-ahead pricing is usually fairly timely and accurate and may allow enough time to calculate a rate, but day-of and real-time pricing may not

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<sup>1</sup> SCE also offers non-residential customers a temperature triggered day-ahead, generation supply, Real-Time Pricing (RTP) price option.

<sup>2</sup> Even if existing TOU rates are used, system upgrades are still expected – for example, an existing system would need to be updated to provide the customer's rate identification number.

be available in enough time for the customer or device to receive ahead of time and properly take action. At this time, SCE recommends that the initial phase of the CEC's dynamic price program use existing TOU rates, and then eventually transition to day-ahead *hourly* market prices instead of day-of sub-hourly prices to allow for sufficient lead time needed to process and transmit prices.

Staff conducted analyses of options for maintaining the accuracy of the MIDAS rate data and recommends that the utilities automate updates to the MIDAS Rate Database each time a new rate or rate modification is approved. Updating rates involves a partially manual process, as the number of and type of rate offerings change periodically. Although SCE is open to streamlining and/or automating this process, rate information that will ultimately be billed to the customer would require manual oversight and testing upon each rate change to ensure the accuracy of what is being presented to the customer. This is a standard practice at SCE any time rate changes are implemented in our billing system.

Although SCE does not expect any major billing system changes if MIDAS leverages existing TOU rates, significant system upgrades would be needed to accurately and timely bill a customer if rates based on wholesale market prices were used. Today, SCE's meter data management system aggregates usage at certain time intervals, usually set blocks of hours and peak periods, and then this is transferred to the billing system, which then calculates against a *static table of pre-defined rate factors* that do not change on an hourly basis every day. Billing with this new, more dynamic price structure would require significant upgrades to multiple systems and would need to be researched further to provide an accurate estimate on the costs and time needed to automate this so customers can be properly billed. Interval time periods would be more granular because each day would have a different set of rates that could vary by location. This would result in not one rate table being referenced, but thousands of variations of tables, all of which would need to be stored for several years for potential customer re-billing and compliance purposes. Providing location-based rates for multiple customer types at hourly intervals leads to a large volume of rates that need to be managed and stored. SCE recommends that the CEC take a pilot approach that minimizes the customer classes and variations in locational prices that are in scope in order to ascertain customer interest as well as to validate the reliability of rate reporting while minimizing costs and system impacts.

If dynamic rates based on wholesale market prices are used, customers may require price and load information to be shown more transparently on their bill. As such, the design and format of the bill itself would need to be modified to properly present usage and relevant prices to the customer. As a result of these outstanding items, further time is needed to properly assess the scope of this effort and prepare for a successful implementation. Given that the timing of these efforts overlaps heavily with other significant rate proceedings, such as Net Energy Metering, a launch in 2023 may prove challenging.

The MIDAS platform is envisioned as a critical aspect of the Load Management Rulemaking (LMR) future design that will take significant development, testing, and market collaboration. SCE recommends that the CEC “walk before running” with a more immediate “proof of concept” demonstration occurring in two steps (this approach was first outlined in Joint Investor Owned Utilities (IOUs) comments to the CEC workshop in March 2020).

As for the first step, the IOUs are already engaged in collaborative research with the CEC and other partners to test various technologies to communicate to smart devices such as thermostats, Electric Vehicle supply equipment (EVSE), water heater controls, and other equipment already available in the market. The outcomes of this research should inform the CEC’s technology designs for the MIDAS platform as well as the development of a market-based approach to a secure and open communication protocol.

A second step would be for the CEC to develop a small-scale statewide demonstration project that would include assessing the enabling technologies, secure communication strategies, and market preferences to gain more empirical information to support the CEC’s LMR. This and parallel research activities from all three IOUs would help the CEC leverage the coordinated activities of the IOUs’ demand response research technology (DRET) programs as well as the development of new dynamic pricing tariffs and digital rate concepts in those projects. The IOUs also collaborate with the ongoing advanced studies and activities within the CEC’s Electric Program Investment Charge (EPIC) research projects and other informative studies such as the CalFlexHub, which will ensure that the learnings and developments funded by IOU customers through the EPIC program are focused and delivered as soon as possible to inform the design and development of the MIDAS portal.

**IV. SCE recommends that further discussions be had with the IOUs to provide a more accurate estimate of costs.**

SCE appreciates the CEC's initial attempt to provide cost estimates for this effort. The costs to launch and maintain this effort should be factored into the decision on how to proceed and expand the program. SCE recommends that cost-effectiveness be a guiding principle in the use and rollout of wholesale market prices. An effort that comes at significant costs and has low customer uptake risks de-prioritizing other efforts that can provide a greater impact in attempting to address load management issues.

A Marketing, Education and Outreach (ME&O) campaign would be needed to encourage customer adoption of this optional rate through rebates, incentives and other offers, help customers make the best use of the tools/data available through education, and retain customers by promoting a positive customer experience. Table 3 of the Draft Staff Analysis allocates \$750,000 for customer education for utilities statewide. In contrast, the campaigns for SCE's Summer Discount Plan (SDP) and Smart Energy Program (SEP) have average annual budgets of \$2.1 million and \$530k respectively to both encourage enrollment as well as educate or remind customers about the program. It is likely that costs to promote the features of this program will significantly exceed the amount currently estimated.

Furthermore, as stated in Section I, SCE estimates that there will be several system modifications that will be required to launch this effort, even if existing TOU rates are used. If new rates are required to reflect wholesale market prices, significant system changes would be required. These include not only providing automated rates to MIDAS and the calculations to update those rates for additional rate factors, but also updating the meter data management system, billing system, and print bill. If sub-hourly data is desired, this would lead to a change in customer meter software and possibly hardware, as well as a change in how data is collected. There would also be ME&O costs for promoting this offer to customers and educating them, as well as for other potential items that may influence enrollments, such as rebates, incentives, or additional customer notifications. Initial conversations with SCE's IT team highlight that this will be a complicated set of system enhancements. As an example, the system costs for SCE to launch the new time-of-use rates for residential customers in 2017-2018 were approximately \$3.5 million. The Load Management Standard effort is significantly more complex if wholesale market prices are used, however Table 3 of the Draft Staff Analysis only estimates \$3.75 million for billing system development and implementation for this program statewide across all utilities.

It is probable that SCE's billing system development and implementation costs alone would cost significantly exceed the current \$3.75 million estimate. In summary, the costs to launch this effort with new rates are significant, and the costs shown in Chapter 8 of the Staff Analysis are understated. SCE recommends that CEC staff consult directly with one or more IOUs to determine cost estimates based on real assessments of program implementation.

V. **Benefit estimation included in the economic analysis may be optimistic and SCE recommends that the CEC work with IOUs to provide a more accurate estimate of benefits.**

The staff's economic analysis shows that residential behind-the-meter battery owners would save \$81 million in charging costs. SCE cautions that this estimate may be based on optimistic assumptions which could overstate the benefits. First, in calculating the benefits or costs savings associated with charging, the study assumes that all residential batteries will be perfectly charged during the hours with higher renewable energy on a daily basis. However, according to the most recent SGIP Impact Evaluation Commissioned by the CPUC (2018)<sup>3</sup>, the Round Trip Efficiency (RTE) is on average 80 percent. It is not clear if a higher RTE was utilized to obtain the savings estimate; if so, SCE would like to understand how this higher RTE would be achieved. In addition, it is unclear whether actual customer behavior will match simulations regarding optimal battery charging and whether customers would prefer (or not) to override existing settings. Hence, relying on simulated data might overestimate the benefits from optimized charging behavior. Finally, the report mentions a Net Present Value of cost reduction of \$34.60 per MWh leading to \$81 million in savings over 15 years. SCE is not clear what assumptions were utilized to obtain this figure. In order to understand these estimated savings, SCE would appreciate clarification of (i) the forecast of locational marginal prices (LMP) for the next 10 years in the assumption window; (ii) the charging/discharging profile utilized (i.e., hour/s-of-day); and (iii) storage penetration/amount of storage per LMP location.

VI. **SCE agrees with the timing for tariff applications but recommends flexibility for the timing of program implementation.**

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<sup>3</sup> 2018 SGIP Advanced Energy Storage Impact Evaluation available at [https://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Public\\_Website/Content/Utilities\\_and\\_Industries/Energy/Energy\\_Programs/Demand\\_Side\\_Management/Customer\\_Gen\\_and\\_Storage/SGIP%20Advanced%20Energy%20Storage%20Impact%20Evaluation.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Demand_Side_Management/Customer_Gen_and_Storage/SGIP%20Advanced%20Energy%20Storage%20Impact%20Evaluation.pdf)



SCE supports filing an application in 2023 because it provides sufficient time to properly research and determine the optimal program design. However, launching a program for aggregators at the same time as filing the application likely would not be feasible, as aggregators likely would be dependent on many of the billing system changes that would be required to implement a tariff option including rates based on wholesale market prices. As mentioned in Section I, significant changes are required to properly bill this program, and they likely would not be ready by 2023.

**VII. SCE recommends that the CEC consider customer adoption and customer experience impacts.**

Maintaining a positive customer experience is of critical importance to the success of this effort. Recent events in Texas with high wholesale prices highlight the risks that customers who enroll thinking that they will save money could, in fact, end up paying significantly more.

SCE recently partnered with the Electric Power Research Institute (EPRI) to conduct a survey with both current and recent real-time pricing customers, as well as residential and small business customers not on real-time pricing, to gauge interest in the potential program design and learn more about customer preferences. One key finding was that despite customers expressing interest in having their devices receive information directly, 49% of residential customers and 51% of small business customers still wanted to be notified by email ahead of time in case they needed to override the changes or make additional adjustments. Customers also expressed a greater likelihood of participating in the program if they could receive day-ahead notification of prices so they could plan the following day accordingly. Customers also preferred fewer time intervals – for example, customers preferred the price change every two hours versus every hour.

Similar to the implementation of time-of-use pricing, an educational campaign with multiple touchpoints for the customer would be needed so the customer understands how to enroll and properly manage devices. For example, residential customers would not know what \$ per kWh price point warrants shutting off an appliance or not without education, and they would likely need guidance on how to set the devices.

The new rate proposed represents a paradigm shift away from how customers are used to interacting with their energy usage. An experience that is as consistent and predictable as possible is integral to customer trust and satisfaction. Measuring and analyzing the customer

experience through an initial enrollment period will be necessary to mitigate negative experiences and adjust design elements as required. SCE recommends conducting a comprehensive cost evaluation on education, awareness, and experience to ensure the design of this rate encourages customer adoption and does not dissuade participation.

**VIII. The CEC should include the impacts of real-time pricing in their long-term forecast.**

The CEC's Integrated Energy Policy Report (IEPR) forecast serves as the main basis for the state's long-term planning analysis, such as the Integrated Resource Plan (IRP) proceeding which sets long-term procurement targets. Load modifying programs such as real-time pricing and time-of-use have been reflected in the IEPR forecast to account for the expected impacts on demand. Similarly, any expected impact from implementing the new load management program should also be incorporated into the CEC's long-term demand forecast to better inform the state's long-term planning efforts. This would help avoid additional procurement in the state and minimize costs for customers.

**IX. Conclusion**

SCE appreciates the review of these comments and looks forward to further working with the CEC on load management and real-time pricing issues.

Very truly yours,

/s/

Dawn Anaiscourt