
PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



April 26, 2022

Shinjini C. Menon
Managing Director, State Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, CA

Subject: Southern California Edison Company Advice Letter 4684-E

Dear Ms. Menon:

Southern California Edison Company (SCE) Advice Letter (AL) 4684-E and SCE AL 4684-E-A, which provide information regarding SCE's forthcoming Dynamic Rate Pilot (Pilot) pursuant to Decision (D.) 21-12-015, are approved as filed, effective March 7, 2022.

The appendix of this letter contains a discussion of the AL, protests by the Small Business Utility Association (SBUA) and Enel X North America (Enel X), SCE's reply to these protests, SCE's Supplemental AL 4684-E-A, and Energy Division staff's disposition on the protested issues.

If you have any questions, please contact Achintya Madduri at (415) 696-7350 or achintya.madduri@cpuc.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "PSM FOR".

Pete Skala
Interim Deputy Executive Director for Energy and Climate Policy/
Interim Director, Energy Division

cc: ED Tariff Unit
Achintya Madduri (ED)
Paul Phillips (ED)
Dan Buch (ED)
Jennifer L. Weberski (SBUA)
Sara Steck Myers (Enel X)

Appendix: Energy Division Technical Review and Analysis

Background

On November 19, 2020, the California Public Utilities Commission (CPUC) initiated Rulemaking (R.)20-11-003 to establish policies, processes, and rules to ensure reliable electric service in California in the event of an extreme weather event in 2021.

Ordering Paragraph (OP) 59 of Decision (D.) 21-12-015 (also referred to herein as the “Decision”), issued December 2, 2021, authorized SCE to use TeMix’s Retail Automated Transactive Energy System (RATES) platform for a three year (2022-2024) dynamic pricing pilot (Pilot) in SCE’s territory and granted SCE’s request for a budget of \$2.5 million. The Pilot is intended to assist in assessing the costs and benefits of real-time rates, including required infrastructure, manufacturer interest, and customer impacts. The Pilot will be administered by SCE under its Demand Response (DR) Emerging Markets and Technology program, authorized in D.17-12-003.

The TeMix proposal is consistent with ED staff’s Unified, Universal, Dynamic Economic (UNIDE) pricing roadmap, which was originally proposed by Energy Division (and presented in a May 25 workshop).¹ The Pilot will use the RATES™ platform developed by TeMix,² a software platform piloted by the California Energy Commission (CEC) Electric Program Investment Charge (EPIC) grant EPC-15-054 in SCE’s territory. TeMix proposed using the same platform for implementing a three-year dynamic rate pilot.

In OP 63 of the Decision, CPUC required SCE to submit a Tier 2 AL to address the following Pilot elements: (1) scope, (2) partners, (3) shadow bill implementation, (4) dates, and (5) tariff design.

SCE included the following details of the Pilot elements in AL 4684-E, which was filed on January 5, 2022:

1. **Pilot Scope:** The Pilot will combine real time pricing design and transactional subscription elements from both the RATES and UNIDE tariff concepts. The Pilot will also investigate how customer-based distributed energy resources can act as both flexible assets and grid interactive resources when these new pricing signals are transmitted to end use customers. So that these hypotheses are fully examined, the Pilot metrics will be structured to develop a series of empirical analyses to assess the costs and benefits of real-time dynamic rate communications, with the ultimate objectives of transferring the research investments from the 2016 CEC EPIC RATES pilot into flexible customer demand side opportunities that can accelerate solutions for system reliability for the summers of 2022 and 2023.

The Pilot will include eligible SCE retail customers as participants in the first phase. SCE will examine and pursue opportunities to identify and enroll residential, commercial, and industrial customers as appropriate with smart enabling price-responsive end-uses including

¹ D.21-12-015, Attachment 1, p. 10.

² See TeMix Opening Testimony at 1-2 and SCE Reply Testimony at 8-10.

electric vehicle charging, behind-the-meter batteries, and controllable loads that may have the enabling software to interface with TeMix. Due to the accelerated Pilot schedule, and the urgency to meet summer 2022 reliability needs, SCE intends to work with automated service providers (ASPs) that may have existing SCE customers available with installed communicating enabling technologies that are compatible with the TeMix RATES software messaging platform. This aggregated approach for customer enrollment through ASP engagement is expected to reduce the cost for individual customer outreach and enrollment processes, thereby expediting the fulfillment of the schedule milestones as indicated in the project schedule. SCE expects that customer enrollment may be a continuous process, and will be phased to ensure that there are minimal gaps in the data analysis and to capture any changes in customer participation over the term of the study.³

2. **Pilot Partners:** SCE will execute a service contract with TeMix to use the TeMix platform software service. The Pilot will use the TeMix RATES™ platform architecture, as piloted through a CEC EPIC grant in SCE’s service territory starting in 2018 with over 100 participating residential customers.⁴

SCE will also work with other stakeholders such as current ASPs, major electric vehicle (EV) manufacturers and/or smart charger service providers, solar/battery aggregators or service providers, and others with the capability to directly receive price tenders (binding offers to buy/sell future energy quantities at a specified price) from the TeMix RATES platform to optimize load flexibility (such as EV and storage charging and discharging schedules).

SCE will coordinate with Electric Power Research Institute (EPRI) to examine opportunities to engage various customer groups to receive the TeMix signals similar to what EPRI has done through existing CEC-EPIC research projects.

SCE also intends to collaborate with Lawrence Berkeley National Laboratory (LBNL) to leverage LBNL’s research with the California Load Flexibility Research and Development Hub (CalFlexHub).⁵ CalFlexHub was established by the CEC to conduct applied research and development and technology demonstration and deployment projects that develop and increase the use and market adoption of advanced flexible demand technologies and strategies as electric grid resources and facilitate integration of distributed energy resources. This collaboration is intended to allow SCE to coordinate price messaging protocols and develop an expeditious pathway for alternative messaging transport services that may result in additional customer eligibility for the Pilot (e.g., underserved rural areas and disadvantaged communities lacking Wi-Fi access).

In addition, there are other technology and software providers who already manage groups of SCE customers for demand management services and other value streams. These providers and other ASPs will be engaged to collaborate with SCE and TeMix and will be included in the project team as providers and advisors. Additionally, SCE will work to engage other innovative partners who have expressed interest in collaborating in the Pilot. SCE expects that these partners can provide consulting and technical services in the areas of market and grid operations, licenses for automated service platforms, economic reviews and system

³ See pp. 2-7 of SCE AL 4684-E.

⁴ See CEC EPIC grant EPC-15-054.

⁵ See CEC EPIC grant GFO-19-309.

impact analyses (e.g., avoided cost calculations), and the estimation of load shift impacts and energy reduction savings. To that end, SCE will form two technical advisory committees (TACs): (1) an internal TAC to expedite coordination for execution of the Pilot and share real time learnings with the SCE project team; and (2) an external TAC to oversee the Pilot’s design, deployment, and execution as well as assess evaluations and make recommendations to ensure that the Pilot is on track to meet its goals.⁶

3. **Shadow Bill Implementation:** While on the Pilot, customers will continue to be billed in accordance with their Otherwise Applicable Tariff (OAT). Concurrently, TeMix will configure the platform to calculate and provide monthly bill amounts based on the hourly price signals provided to customers participating in the Pilot. Any customer savings recognized from the hourly price signals compared to the customer’s OAT will be provided to the customer on at least an annual basis.⁷
4. **Pilot Dates:** The Pilot’s three-year timeline is defined in OP 63 of the Decision. SCE provided an illustrative timeline and said that the Pilot timeline is under development and may be subject to change.⁸
5. **Pilot Tariff Design:** SCE proposes to implement this Pilot without establishing a pilot tariff schedule because the Pilot will assess “the monthly bill impacts of the Pilot dynamic rate in comparison to a customer’s otherwise applicable tariff.” The subscription transactive price, which includes a customer-specific baseline energy quantity billed at an OAT to reduce bill/revenue volatility, will be further analyzed and developed in the Pilot. This dynamic price can be calibrated to reduce cost shifts while stabilizing utility revenues and customer bills. By using the appropriate mix of generation and delivery price signals for both day-ahead and/or real-time prices, the dynamic price tariff should align demand side management with capacity planning and other operational constraints that span the wholesale and retail delivery systems. TeMix will provide the technology platform, assist SCE in calibrating the price parameters, and assist in developing the subscription portion of the price for each customer. No tariff schedule is needed for this Pilot because customers will be billed based on their current SCE rate schedule. SCE will not implement billing system enhancements and participating customers will receive a shadow bill on the dynamic price rate.

SBUA Protest

On January 25, 2022, Small Business Utility Advocates (SBUA) submitted a protest of AL 4684-E and requested Commission staff to direct SCE to file a supplemental to the AL to address the following concerns:

1. **AL 4684-E does not explain how SCE will study the enhancement of system reliability.** In its protest, SBUA stated that SCE does not explain how it will develop definitions and metrics to measure system utilization, or how SCE will demonstrate that those measurements will reasonably assess system reliability impacts. SBUA also stated that the prior RATES pilot allocated 60 percent of generation capacity costs to bulk generation and

⁶ See pp. 7-9 of SCE AL 4684-E.

⁷ Id. at 9.

⁸ See Figure 5 on pp. 9 of SCE AL 4684-E.

remaining 40 percent to three-hour ramp generation, and that SCE's AL did not have a discussion of the allocation of generation capacity costs.

SBUA stated that it is participating in an MGCC Study that is expected to propose a method to measure the scarcity of generation capacity on a day-ahead hourly basis in order to allocate MGCCs accordingly. This MGCC Study is being performed in partnership with PG&E, the Public Advocates Office, and other parties in compliance with D.21-11-017 (in A.20-10-011). A recent settlement in PG&E's Phase 2 General Rate Case (A.19-11-019) also proposes to use of those same methods for piloting certain residential and commercial rates. SBUA suggested that this study may result in the development of "evidence-based generation scarcity pricing curves."⁹

SBUA further stated that "there is little evidence that the proposed pilot will actually study the use of dynamic rates to enhance system reliability, as directed by CPUC."¹⁰

2. **The AL does not explain how non-marginal costs will be recovered.** In its protest, SBUA stated that dynamic pricing should be based on marginal cost rates. However, a substantial portion of SCE's rates are not marginal costs, but are allocated using the Equal Percent of Marginal Cost (EPMC) "scalar" method. If hourly rates are also increased to collect EPMC costs, then customers will receive incorrect pricing signals. For example, if the "correct" hourly cost during a period of resource scarcity is \$2 per MWh and the EPMC factor is 2.0, then a customer would be scaled up to \$4 per MWh. In addition to over-incentivizing load reduction, this methodology would also send an effective price signal for battery storage of \$4 per MWh, which would far exceed the price available to battery storage operators dispatched through the CAISO. SBUA pointed to the use of a revenue neutral adder adopted by PG&E in D.21-11-017 and the settlement in PG&E's Phase 2 GRC (A.12-11-019), noting that "SCE's relative silence on how it views this issue suggests that the outcome of this pilot would not lead to a potential design for a widely-available dynamic rate."¹¹
3. **AL 4684-E does not clearly describe eligibility requirements, which should be open to broad participation.** In its protest, SBUA stated that SCE does not clearly state what eligibility requirements will be included in the pilot scope. SBUA also stated that it is also unclear whether the pilot will be limited to SCE's bundled customers. Costs for SCE's demand response programs are recovered in distribution rates. As a consequence, SBUA asserts that SCE's pilot should include provisions for making dynamic rates available to customers of all LSEs on SCE's system. However, this will be challenging, as the LSE sets the generation charge component of the customer's bill.¹²
4. **The \$2.5 million budget is not justified.** In its protest, SBUA stated that the SCE AL does not provide any details regarding how the authorized budget of \$2.5 million is to be spent. SBUA also objected to the SCE AL's description of customer incentives, which SBUA states were neither estimated by SCE in its Reply Testimony, nor approved by CPUC.¹³

⁹ See pp. 2 of SBUA Protest.

¹⁰ *Id.* at 3.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.* at 4.

5. **The AL does not discuss the evaluations.** SBUA stated that while SCE is not required to discuss the mid-term and final evaluations required by the Decision, “it is surprising that the AL provides no substantive discussion of the evaluation,” and that, “SCE will find it challenging to demonstrate the costs and benefits of real-time rates if the rates are not well-aligned with system costs and without clarity on how the shadow pricing relates to each component of the customer’s otherwise applicable tariff”¹⁴

ENEL X Protest

On January 25, 2022, Enel X North America, Inc. (Enel X) submitted a protest of AL 4684-E on the grounds that the Pilot described by SCE is not sufficiently detailed to comply and achieve the goals set for the Pilot by the Decision. Enel X requested that the CPUC direct SCE to file a supplemental advice letter prior to the launch of the Pilot to provide further additional details:¹⁵

1. **For Pilot Scope:**

- a. Specify the rate classes or schedules that would be eligible for the Phase 2 RATES Pilot;
 - b. Specify whether the total number of Pilot participants would be capped, either across the Pilot or for specific rate classes;
 - c. Specify whether Pilot eligibility is limited by interconnection permit, export-compensation permit, Demand Response (DR) program participation, or other factors;
 - d. Clarify whether the Pilot is intended to be limited to SCE bundled customers, or whether unbundled CCA or Direct Access customers could also participate;
 - e. Clarify whether SCE intends to extend the Pilot RATES offering beyond the 2022-2024 term authorized in D.21-12-015, alluded to as “Phase 1;” and
 - f. Specify how many distribution circuits will be included in the Pilot.
2. **For Pilot partners:** Describe how SCE intends to conduct Marketing and Outreach activities to enroll Pilot participants.
3. **For Shadow Bill implementation:** Specify whether Pilot participants will need to make a payment to SCE if their total RATES bills are higher than the Otherwise Applicable Tariff, or whether the Pilot will include a form of bill protection.
4. **For Pilot tariff design:**
- a. Specify the six-step “UNIDE” rate design and methodology that will be used as the basis for Pilot participation;
 - b. Specify how the Pilot subscription profile would be created, level of temporal granularity in the subscription, whether customers or Automation Service Providers (ASPs) would have control over the subscription amount, whether the subscription profile would be updated over time, and how associated subscription rate(s) would be set; and

¹⁴ See pp. 4 of SBUA Protest

¹⁵ See pp. 2 of Enel X Protest

- c. Specify whether SCE intends to adjust elements of the RATES tariff for different customer classes, to achieve revenue neutrality for a class-average customer from each class

SCE Reply to SBUA and ENEL X Protests

In its reply to the SBUA and ENEL X protests, SCE argued that the SBUA and ENEL protests do not provide a basis under General Order 96-B, Rule 7.4.2 for rejecting the Advice Letter. SCE stated that neither party argued that SCE failed to discuss each of the elements that the Decision directed SCE to address, and the Decision does not direct SCE to address the additional matters that these parties assert should be discussed in a supplemental advice letter. As such, there are no “material errors or omissions” in the Advice Letter that would warrant its rejection, and none of the other protest grounds identified by Rule 7.4.2 is applicable.¹⁶

SCE replied to the concerns raised in SBUA’s protest as follows:

1. **AL 4684-E does not explain how SCE will study the enhancement of system reliability.** SCE stated that it will be conducting comprehensive studies that assess the costs and benefits of real-time rates, including required infrastructure, and impacts to system reliability. SCE stated that these studies will evaluate flexible load management that is enabled by automation that allows customers to more actively participate in programs governed by dynamic electricity tariffs and thereby contribute to system reliability.¹⁷
2. **The AL does not explain how non-marginal costs will be recovered.** SCE noted that various theories recommend different approaches to the recovery of non-marginal costs, and because there is no one-size-fits-all approach to the recovery of non-marginal costs, SCE may explore, through the Pilot, options for the recovery of such costs that range from a fixed charge approach to blended approaches that tailor the recovery of non-marginal costs in the dynamic price rate.¹⁸
3. **AL 4684-E does not clearly describe eligibility requirements, which should be open to broad participation.** SCE noted that a number of Pilot eligibility factors need to be considered when enrolling participants. SCE expects to include a broad selection of bundled customers in the Pilot, and that the actual number of customers may be limited by the budgetary constraints of shadow bill payments for customer participation costs. These and other factors are currently under review, and SCE is in discussions with ASPs and TeMix to focus on key eligible customer groups that can participate in the Pilot by May 1, 2022.¹⁹
4. **The \$2.5 million budget is not justified.** SCE noted that SBUA’s contention that the Advice Letter does not justify the proposed \$2.5 million budget lacks merit because the

¹⁶ See pp. 2 of SCE Reply

¹⁷ See pp. 3 of SCE Reply

¹⁸ See pp. 3 of SCE Reply

¹⁹ See pp. 3 of SCE Reply

Decision already approved this budget.²⁰ SCE provided clarification that expenditures of this budget are currently in the process of being defined through negotiations with various parties, including TeMix, providing services in support of the Pilot. Other costs such as shadow bill preparation and payments, UNIDE facilities platform integration with ASPs, meter data and SCADA interface with SCE, project management, M&V, and other related activities are still being developed. SCE noted that the budget authorized for the Pilot is reasonable and will mitigate potential impact to participating ratepayers.²¹

5. **The AL does not discuss the evaluations.** SCE noted that the Decision does not require SCE to address evaluation in the Advice Letter and that SBUA's criticism provides no basis for CPUC to reject the Advice Letter. SCE provided clarification that the Pilot works on the broadly accepted principle that positive and contributory load response to an adequately designed price signal presents a low-cost alternative to deploying additional capacity on the system, be it for peak load or excess supply. The Pilot will thus focus on conducting evaluation studies to assess the load responsiveness to real-time rates, including required infrastructure, manufacturer interest, and customer impacts.²²

SCE replied to the concerns raised in Enel X's protest as follows:

1. **Pilot scope.** SCE argued that ENEL's contention that the Advice Letter fails to provide sufficient detail about the Pilot's scope is incorrect, as the Advice Letter addresses scope at length in compliance with the Decision. SCE also provided additional clarification regarding participant eligibility and noted that although there is no specific cap on the number of participants, the totals will be limited based on a customer's technological compatibility and estimated costs of shadow billing payments based on the participant mix. SCE also noted that participant eligibility is limited to SCE bundled service customers so that those energy costs can be tracked via a shadow bill. SCE expects that the scope of customers enrolled in this phase of the Pilot may include an aggregation of multiple circuits.
2. **Pilot partners.** SCE argued that the Advice Letter addresses Pilot partners at length, in compliance with the Decision. SCE clarified that it intends to enroll participants through ASPs rather than through direct marketing and outreach to minimize enrollment delays and marketing costs to meet the Pilot's start date of May 1, 2022.
3. **Shadow bill.** SCE clarified that the Pilot and shadow bill implementation will not increase any rate or charge, cause the withdrawal of service, or conflict with any other schedule or rule. The shadow bill process is designed to provide compensation for any incremental electricity costs that may be incurred as a result of customers participating in this Pilot while being billed on their OAT. There will be no additional charges to customers that may incur higher bills compared to their OAT.

²⁰ See D.21-12-015, p. 96 "(We grant SCE authorization to use TeMix's RATES platform for a three-year (2022-2024) dynamic pricing pilot in SCE's territory, and grant SCE its requested \$2.5 million for the pilot."); see also id., OP 60.

²¹ See pp. 4 of SCE Reply

²² See pp. 4 of SCE Reply

4. **Pilot tariff design.** SCE noted that it will be implementing the Pilot without establishing a unique or separate tariff schedule for participants, as those customers will remain on their OAT. The dynamic price signals provided to the ASPs and subsequent customers will be developed by TeMix, through the technology platform under contract to SCE. TeMix will develop the UNIDE/RATES Subscription Transactive Rate (STR) for the Pilot, which will use the day-ahead Hourly CAISO Locational Prices (LMPs) as well as the day-of 15-minute and 5-minute LMPs. Leading up to the Pilot's projected May 1, 2022 start date, SCE and TeMix will be developing the initial specification of the STR for the Pilot.

SCE Supplemental AL 4684-E-A

To provide further information regarding Pilot elements and to address Energy Division questions regarding: (1) Formula of Price Curves and Rationale for Shape Chosen, (2) Inflection Points for Curves and Rationale for those Inflection Points, (3) Revenue Targets for Each of the Component Curves, (4) Illustrative Prices, (5) Addressing "Revenue Neutrality", SCE filed Supplemental AL 4684-E-A on April 25, 2022, and included the following details:

1. **Formula for Price Curves and Rational for Shape Chosen.** SCE's chosen quadratic price curve was used as a means to recover fixed costs along the entire duration of the load curve as opposed to the typical applications of concentrated fixed cost recovery used in standardized TOU rate design. Concentrated recovery of fixed costs using a flat-adder threshold basis can cause steep cross-hour price differentials that are almost surely bypassed by resources that are acutely flexible and can create compounding effects on cross-hour load impacts on the grid. SCE believes that the formulas can be iterated upon but stressed that the continuity of recovery along the entire duration of the load curve.
2. **Inflection Points for Curves and Rationale for those Inflection Points.** SCE's inflection points were selected to enable fixed cost price signals for both Peak Load and Minimum Load conditions. The inflection points also provide a capacity signal that helps mitigate renewable curtailment by providing price-sensitive sink-resources a negative capacity price to soak-up excess renewable supply while maintaining some correlation to how the system experiences load through the course of the year.
3. **Revenue Targets for Each of the Component Price Curves.** Revenue targets will be assessed based on the revenue components authorized by the Commission for each revenue component included in the customer's OAT.
4. **Illustrative Prices.** SCE provided its confidential Illustrative Pricing Model to Energy Division on April 8, 2022, as a data request response.
5. **Addressing "Revenue Neutrality".** The customer's bill under the Dynamic Price Plus Subscription offering would approximate the customer's bill under the OAT, assuming the customer does not change from a pre-determined baseline of electricity usage. Revenue neutrality for the subscription portion of the customer's bill is achieved through the revenue neutral design of the OAT. Revenue neutrality for the dynamic price portion of the customer's bill is achieved by scaling the raw marginal cost curves by the Equal Percent Marginal Cost (EPMC) scalar for each revenue component from SCE's GRC. Non-bypassable costs and other costs associated with State and Commission programs and

policies will be included as a flat rate adder that equals the corresponding rate components currently contained in the customer's OAT and will be applied to each hour of the dynamic price curve. Grid related distribution costs as determined in SCE's GRC will be included as a flat rate (cents/kWh) in the total dynamic rate. Transmission-related costs will continue to be assessed based on the billing determinants as described in the customer's OAT and will be excluded from the Dynamic Price curve.

Discussion

After reviewing SCE AL 4684-E and Supplementary AL 4684-E-A, Energy Division finds SBUA's requests to require SCE to clarify details outside of the Pilot elements is not required pursuant to OP 63 of the Decision. The issues raised by SBUA, namely (1) enhancement of system reliability, (2) recovery of non-marginal costs, (3) eligibility requirements, (4) pilot budget, and (5) pilot evaluations, were not issues that CPUC required SCE to address in its advice letter, and are not proper grounds for protest under General Order (GO) 96-B, General Rule (Rule) 7.4.2. GO 96-B, Rule 7.4.2 provides that a protest to an advice letter may rest on grounds that: (1) the utility did not properly serve or give notice of the advice letter; (2) the relief requested would violate, or is not authorized by, statute or Commission order; (3) the analysis, calculations, or data in the advice letter contain material errors or omissions; (4) the relief requested is pending before the Commission in a formal proceeding; (5) the relief requested is inappropriate for the advice letter process; and/or (6) the relief requested is unjust, unreasonable, or discriminatory. SBUA has not identified any "material errors or omissions" in the advice letter that would warrant its rejection, nor sustained any contention that the advice letter fails to comply with the Decision. As such, Energy Division rejects SBUA's protest pursuant to Rule 7.6.1 of Commission GO 96-B.

Energy Division also finds Enel X's protest does not provide a basis for rejecting the SCE AL 4684-E under Rule 7.4.2 as the advice letter and supplemental advice letter discusses each of the elements that the Decision directed SCE to address. Since Enel X identifies no "material errors or omissions" in the advice letter, there are no grounds that warrant its rejection.

Energy Division finds that SCE's discussion of the Pilot price design offered in the supplemental AL 4684-E-A provides additional details regarding the formulation and design principles of the dynamic prices and will enable eligible customers and service providers to evaluate the benefits of participating in the Pilot.

Disposition

Energy Division hereby approves Advice Letter 4684-E and Supplemental Advice Letter 4684-E-A, submitted by Southern California Edison Company.