**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE**

**STATE OF CALIFORNIA**

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| Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339 and Resiliency Strategies. | R.19-09-009 |

# SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) RESILIENCY PROPOSAL AND RESPONSE TO ADMINISTRATIVE LAW JUDGE'S RULING


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## I.

## INTRODUCTION

Pursuant to the December 20, 2019 Assigned Commissioner Scoping Memo and Ruling (Scoping Memo) and the Administrative Law Judge (ALJ) E-Mail Ruling issued on December 30, 2019 (December E-mail Ruling), Southern California Edison Company (SCE) provides its Resiliency Proposal and Responses to the Questions identified in the December E-mail Ruling.

## II.

## SCE PROPOSAL FOR RESILIENCY ACTIVITIES

SCE appreciates the opportunity to provide stakeholders with an overview of its microgrid-related activities and resiliency strategy deployment plan for 2020, with a particular focus on strategies to mitigate the frequency, impacts, and duration of wildfire and Public Safety Power Shutoff (PSPS) events. In addition, SCE appreciates the Commission modifying the scope of Track 1 of this proceeding to focus on actions the investor owned utilities (IOUs) can take in 2020 to make the California electric grid more resilient. Broadening the Track 1 objectives of this proceeding to include resiliency strategies in addition to microgrids will allow California to

address wildfires with a more holistic approach of mitigation activities that can be deployed in 2020. In this proposal, SCE discusses microgrid deployment efforts that conform with the definition of a microgrid provided by Senate Bill (SB) 1339 as well as other activities that would enable load to be served during a wider grid outage. SCE discusses its 2020 PSPS Microgrid Pilot, in-flight microgrids and microgrid-related activity, pilots and demonstrations, customer-requested microgrids in SCE's service territory, and other resiliency strategies that are focused on the mitigation of impacts from wildfires and PSPS events.

While Track 1 of this proceeding is focused on deploying resiliency planning in areas that are prone to outage events and wildfires, with the goal of putting some microgrid and other resiliency strategies in place in 2020,[1] it will be important for future tracks of this proceeding to consider the long-term value microgrids can offer so as to enable a holistically designed grid of the future. SCE appreciates the opportunity to provide a comprehensive narrative on its PSPS resiliency efforts for 2020. Please note however, that SCE will also discuss several of the activities discussed herein in a February 7, 2020 filing in the Wildfire Mitigation Plan (WMP) proceeding, likely with greater detail than is discussed herein.

SCE views PSPS resiliency as (i) reducing the frequency of PSPS events, (ii) reducing the number of customers affected by those events, and (iii) reducing the duration of those events or lack of access to emergency electricity during those events. While SCE recognizes the potential of microgrids to help achieve these goals, other activities such as grid sectionalization, grid hardening, and establishing community resource centers (CRCs), all discussed herein, will also help SCE to achieve its PSPS resiliency goals, and may be the most cost-effective long-term solutions.

## A. SCE's 2020 PSPS Microgrid Pilot

SCE is currently piloting an approach to determine where on SCE's grid multi-customer microgrids have the best potential to be a cost-effective solution to mitigate the impacts

[1] *See* Scoping Memo, p. 3.

associated with wildfires and PSPS events. A microgrid deployed as part of this pilot would serve all customers within a defined a portion of a circuit, and would be designed to provide power for the expected duration of PSPS events in that location. SCE has evaluated potential microgrid locations in PSPS-impacted circuits based on key criteria related to customer impact and feasibility of deployment by the 2020 wildfire season. As of the date of this filing, SCE has narrowed a list of potential microgrid deployment locations to six locations and is developing technical requirements for each candidate. SCE will then seek cost and technical feasibility information from vendors, which SCE expects to receive in February 2020. After receiving that forthcoming information, SCE will be able to determine which microgrid opportunities, if any, are appropriate to pursue in 2020, with the goal of making final selections in March. If a microgrid is infeasible or cannot be deployed at a reasonable cost, SCE will seek to deploy a feasible alternative PSPS mitigation strategy, which may include microgrid-related resiliency activities, such as temporary back-up power provided to multiple customers on a portion of a circuit during PSPS events. In this filing, SCE discusses the details of this approach, including: (1) Objectives of the PSPS Microgrid Pilot; (2) Expected Learnings from Pilot Deployment; (3) Microgrid Candidate Selection Approach for Pilot; and more specific details on resiliency activities SCE is able to share at this time in Section C below.

A microgrid is one solution among many possible options to mitigate customer impacts from PSPS events. As discussed further below, SCE is simultaneously engaged in a number of different activities that have the objective of reducing the frequency of PSPS events or reducing the number of customers impacted during a de-energization event. Each circuit has unique challenges and opportunities, and SCE anticipates that the optimal solution set may vary from circuit to circuit across the system. Part of the goal of this PSPS Microgrid Pilot is to better understand how the microgrid solution fits within the larger context of PSPS mitigation strategies. In Section C.1, SCE discusses its circuit-specific evaluation and planning approach to

PSPS mitigation that will evaluate each circuit individually and determine the appropriate mitigation solution(s).

### 1. Objectives of the PSPS Microgrid Pilot

SCE is deploying the PSPS Microgrid Pilot to achieve two primary objectives:

- Demonstrate accelerated deployment of microgrid solutions to provide near-term benefits to customers to mitigate the impacts of PSPS; and
- Demonstrate microgrid control and communication capabilities that will allow SCE to, over time, incorporate advanced, clean, renewable technologies, including customer-owned distributed energy resources (DERs), and minimize (and eventually eliminate) the use of fossil fuel for microgrids.

SCE recognizes there may be a tradeoff between these two objectives, in that an advanced fully renewable microgrid will likely require lead time beyond 2020. Therefore, SCE envisions the following approach. For the initial microgrid deployments, SCE will focus on solutions that can be deployed as quickly as possible, with an online date of fall 2020. However, SCE intends that these initial microgrid solutions be designed in such a way that they may be upgraded in the future, or removed as necessary when other mitigation solutions have been implemented. Specifically, to the extent that fossil-fueled generation is required to enable initial operation by fall 2020, SCE intends that this generation will be replaced in subsequent years with clean technology when cost-effective. Initially, this is likely to include in-front-of-the-meter (IFOM) solar and storage. SCE will also explore integration of customer-side resources (e.g., solar and storage, controllable loads). Incorporating control and optimization of customer-side resources introduces a number of additional challenges and complexities, but where appropriate, such resources may eventually be incorporated into microgrid solutions. Alternatively, SCE recognizes that in some instances, ongoing or future efforts pursuant to its Wildfire Mitigation Plans may mitigate the need for PSPS and thus the need for Microgrid or Microgrid-related resiliency solutions to address PSPS, as discussed in more detail below.

### 2. Expected Learnings from Pilot Deployment

SCE anticipates significant learning opportunities from this pilot. At minimum, SCE will develop technical knowledge associated with demonstrating and achieving the two primary objectives discussed above. These include lessons learned regarding accelerated deployment of a microgrid, designing a microgrid for the specific application of PSPS resilience, designing a microgrid to be expanded and modified over time (e.g., replacing generation), designing and operating a microgrid to minimize and eventually eliminate fossil fuels, designing and operating a microgrid to include customer-owned behind-the-meter (BTM) resources to be dispatched by the microgrid controller, and partnering with third parties on the development of microgrids. Finally, as discussed further below, there are several other in-flight activities related to microgrids, and therefore SCE intends to incorporate lessons learned from those activities into this pilot.

### 3. Microgrid Candidate Selection Approach for Pilot

As noted above, SCE considers the selection of a potential microgrid to address resiliency issues to be a pilot effort and therefore expects to update, modify, and refine the approach described below based on actual experience in 2020 and lessons learned. SCE will aim to incorporate feedback from SCE's customers, communities and local governments within SCE's service territory, and other parties to this proceeding, where appropriate. The following section outlines the candidate selection approach for the 2020 PSPS Microgrid Pilot:

a) Begin with high frequency PSPS circuits[2]

In 2018 and 2019, approximately 150 of SCE's distribution circuits experienced PSPS events. Of these, 62 circuits experienced two or more de-energization events. These 62 circuits form the initial microgrid candidate circuit list. Following the 2019 PSPS events, SCE implemented some permanent reconfigurations to some of these circuits such that

[2] SCE is initially looking at 2018 and 2019 high frequency PSPS circuits, however, over time plans to evaluate different weather scenarios to determine other potential high frequency PSPS circuits that need to be evaluated in conjunction with recently impacted circuits.

the PSPS-impacted locations are now served by 64 (rather than 62) circuits, growing the initial candidate list to 64 circuits.

b) Filter for locations that can safely remain energized during PSPS events

To mitigate PSPS events, SCE has determined that microgrid candidates must be in one of the following two types of locations: (1) a location within the high fire risk area (HFRA) that has underground service, or (2) a location outside of the HFRA that is served by an overhead line running through the HFRA. Using these characteristics, SCE aimed to identify locations where it is most likely a microgrid could help customers safely stay energized during PSPS events. SCE evaluated the initial list of 64 circuits for candidates that meet one of these two criteria. This initial screen eliminated 28 circuits from consideration.

c) Screen out locations that already have other mitigation solutions in flight or under development

Many of the candidate locations already have a mitigation either deployed or under development. Mitigations may include:

- New switching procedures utilizing the existing system. These switching procedures enable segments to be served by lines not impacted by PSPS, reducing the number of customers impacted by PSPS events.
- Deployment of additional sectionalizing equipment, to enable new switching procedures that reduce the number of impacted customers.
- Deployment of grid hardening infrastructure, to reduce the risk of wildfire ignition and reduce the frequency of PSPS events. Generally speaking, these grid hardening mitigations may include the following: accelerating minor repairs that would otherwise be scheduled according to a 12-month compliance obligation, replacing/upgrading assets to improve resiliency, remediating long spans, and deploying covered conductor.

SCE reviewed projects already planned and evaluated additional projects that could reduce the need for PSPS events, and screened out candidate locations accordingly. This screen eliminated an additional 11 circuits from consideration, leaving 25 circuits under

consideration. Some circuits have multiple potential microgrid locations, giving a total of 33 discrete candidate locations.

d) Prioritize candidate locations based on key criteria

SCE scored the remaining 33 candidate locations using the following criteria: number of low income customers served by the circuit, total number of customers served by the circuit,[3] total load on the circuit, number of PSPS de-energizations, and required grid modifications to enable a microgrid. To validate the weights applied in the ranking system, SCE performed a sensitivity analysis to consider different weightings for the criteria, creating a total of 77 discrete rankings. SCE analyzed these results to determine how frequently each location ranked in the top ten across the various scenarios. SCE found that a small number of circuits scored in the top ten consistently. In particular, the six circuits at the top of the original scoring system were the *only* six that scored in the top ten for at least 75% of the sensitivities. Therefore, SCE is confident that its approach to identifying the top circuits was reasonable.

e) Establish "short list" of microgrid candidate locations

From this ranked list of candidate locations, SCE then selected the top six candidates to be the "short list." As noted above, these candidates are on the only six circuits that scored in the top ten in at least 75% of the ranking scenarios. These are listed in Table A below. While SCE does not believe it will be feasible to deploy six microgrids as part of this 2020 Pilot, SCE has requested vendor proposals for all six locations. Given extremely limited information on the cost, technical feasibility, and deployment lead time for any particular microgrid candidate, SCE determined it would be prudent to seek proposals for a number of different locations to enable multiple alternatives and increase the likelihood of feasible projects. In determining the number of locations for which to seek proposals, SCE sought to balance the

[3] When SCE initially scored these 33 candidate locations SCE did not have the number of essential customers served by the circuit. At the time of this filing, that information is now known, and SCE includes that number in Table A below.

objective of evaluating multiple locations (to increase the likelihood of feasible candidates) with the desire to move promptly without creating excessive delays due to vendor development and SCE evaluation of a large number of proposals. SCE determined a shortlist of six candidates struck an appropriate balance. In its requests to vendors, SCE will note its preference for clean resources but a willingness to deploy fossil fueled resources if necessary, to meet the deployment target date.

f) Evaluate proposals and determine final microgrid locations

SCE will evaluate vendor proposals based on cost, customer benefit, technical viability, lead time, and other considerations that may arise. The final determination to execute contracts and deploy microgrid project(s) will depend on this evaluation. To the extent microgrid alternatives are infeasible or other PSPS mitigations prove to be more cost-effective, SCE will pursue deployment of an alternative feasible mitigation. One potential alternative to deploying a microgrid would be to deploy a microgrid-related resiliency solution such as temporary back-up power. This scenario may be appropriate where other grid mitigations (e.g., covered conductor) are planned in the near future but not in 2020. Under this approach, temporary generators would be deployed to provide backup power to a portion of a circuit during PSPS events. The generators would then be permanently removed when the grid mitigation is deployed. Assuming that multiple microgrid candidates are determined to be feasible and cost-effective based on the evaluation of vendor proposals, SCE plans to select one or more projects for deployment. SCE expects to receive vendor proposals in mid-to-late February and is targeting final decisions on microgrid projects with vendor contract execution in March.

SCE plans to engage local governments and interested stakeholders in the communities where the microgrids are being proposed to discuss the planned pilot and receive feedback. In particular, SCE plans to discuss siting considerations, local impacts, benefits, and the overall timeline of the pilot. Additionally, to the extent SCE plans to deploy a microgrid

within areas where Community Choice Aggregators (CCA) also serve customers, SCE plans to engage with the CCA to discuss the project and opportunities for collaboration and coordination.

## B. SCE's Response to Specific Questions in December E-Mail Ruling

**Part I**

**1. What microgrid-related activities is the utility planning or proposing for 2020 and beyond?**
**2. In what venue, if any, has the planned activity been proposed or documented?**
**3. Has cost recovery for expenditures been requested and/or granted?**

**Part II**

**What additional Commission action or relief is requested for each microgrid-related resiliency activity described in Part I and why it is needed. If no additional action or relief is required, please explain why not.**

In response to the shared focus of SCE, its customers, intervenors, and this Commission, SCE is currently planning and evaluating microgrid-related activities, including both the PSPS Microgrid Pilot described above and additional solutions described below, that can be initially deployed and operational by fall 2020, with upgrades and improvements to occur in subsequent years. SCE will use the PSPS Microgrid Pilot to inform a potentially repeatable process SCE can employ beyond 2020. If the PSPS Microgrid Pilot is successful (e.g., the objectives are achieved at a reasonable cost compared to other potential mitigations), SCE anticipates that additional microgrids may be deployed in future years in locations where a microgrid is the optimal solution for the given circuit segment. As discussed above in the introduction to the PSPS Microgrid Pilot, SCE anticipates that microgrids may become one of a number of different solutions deployed to enhance resiliency and mitigate PSPS impacts, with various solution(s) deployed to different circuits depending upon the specific conditions and circumstances of that circuit. For each project that SCE describes below, it addresses and responds to each of the three questions posed in the December 30th ALJ Ruling, to the extent the information is available.

Following the Commission's Prehearing Conference in December, the Local Government Sustainable Energy Coalition (LGSEC) reached out to SCE to learn more about SCE's position on microgrids and the current projects and microgrid-related activities SCE is working on and to provide feedback, where feasible, on SCE's anticipated January filing. SCE appreciates the insightful and candid input it received from the LGSEC members during a conference call on January 15, 2020. In response to that feedback, SCE has incorporated specific details into this filing about the six microgrid candidate locations it is considering for its PSPS Microgrid Pilot and intends to engage in further stakeholder engagement following this filing.

***New Microgrid Activity***

**1. <u>PSPS Microgrid Pilot</u>**

The six candidate locations that SCE is currently evaluating for the PSPS Microgrid Pilot are within the counties of Los Angeles, Ventura, Riverside, and San Bernardino – all areas that experienced multiple PSPS events in 2018 and 2019. More specific information on the six candidate locations is provided in Table A below.

In partnership with third-party vendors who will install the microgrid components, SCE plans to both construct and operate the selected PSPS Microgrid Pilot microgrids and anticipates that any selected projects will both: (1) mitigate or avoid impacts from PSPS events in 2020 in the selected locations, and (2) provide valuable lessons for the future viability of microgrids within the State as envisioned by SB 1339. The PSPS Microgrid Pilot will be for in-front-of-the-meter (IFOM) microgrids. Initially, it is likely that the generation resources for these microgrids will be fossil fuel due to cost and urgency of deployment. However, SCE intends to eventually replace such generation with clean generation technologies when cost-effective to do so, and where feasible, will seek to incorporate capabilities to enable a microgrid controller to communicate with and dispatch customer-owned DERs to support microgrid operations.

## Table A: Six Microgrid Candidate Locations:

| Circuit | | Veterans | Chevelle | Purchase | Energy | Buckhorn | Impala |
|---|---|---|---|---|---|---|---|
| | Location | Unincorporated LA County Near Sylmar | Unincorporated San Bernardino County near Rialto and Fontana | Unincorporated Riverside County (Cabazon) | Unincorporated LA County (near Chatsworth) | Fillmore, CA | Fontana, CA |
| | Peak demand (kVA) | 82 | 8,161 | 3,157 | 1,844 | 896 | 670 |
| | Connected Load (kVA) | 495 | 16,500 | 7,325 | 6,075 | 1,000 | 1,175 |
| Questions from 12/30 ALJ email | 1. Year | 2020 | | | | | |
| | 2. Location (County) | Los Angeles | San Bernardino | Riverside | Los Angeles | Ventura | San Bernardino |
| | 3. Magnitude of expenditure | TBD | | | | | |
| | 4. What type of activity? | | | | | | |
| | 1. Research | No | | | | | |
| | 2. Construction | SCE or third-party vendor | | | | | |
| | 3. Operation | SCE | | | | | |
| | 5. What type of microgrid? | | | | | | |
| | 1. In-front-of-the meter | Yes | | | | | |
| | 2. Behind-the-meter | No | | | | | |
| | 3. Nameplate capacity, technology, and fuel source of generation | TBD | | | | | |
| | 4. Nameplate capacity and duration, technology, and fuel source of storage | TBD | | | | | |
| | 6. What type of benefits? | | | | | | |
| | 1. How many customer accounts are involved by customer type? | | | | | | |
| | Total | **15** | **2332** | **137** | **482** | **1*** | **186** |
| | Agricultural | 0 | 1 | 0 | 1 | 0 | 0 |
| | Commercial | 14 | 24 | 129 | 21 | 0 | 1 |
| | Mixed | 0 | 29 | 4 | 17 | 0 | 4 |
| | Other Public Authority | 1 | 5 | 3 | 2 | 0 | 3 |
| | Residential | 0 | 2273 | 0 | 441 | 1* | 178 |
| | Other | 0 | 0 | 1 | 0 | 0 | 0 |
| | | | | | | *Master meter with ~280 sub-metered customers | |
| | 2. What, if any, are expected community benefits of the project? | Mitigate outages due to PSPS or other causes | | | | | |
| Key Sites and Locations from 12/30 ALJ email | 1) Customers with access and functional needs | Not available | | | | | |
| | 2) Medical baseline customers | 0 | 53 | 0 | 0 | 10 | 1 |
| | 3) Police stations | 0 | 0 | 0 | 0 | 0 | 0 |
| | 4) Fire stations | 1 | 0 | 0 | 0 | 0 | 0 |
| | 5) Schools (e.g., educational facilities) | 0 | 1 | 0 | 0 | 0 | 0 |
| | 6) Water and waste water facilities | 0 | 0 | 3 | 2 | 0 | 0 |
| | 7) Community centers | Not available | | | | | |
| | 8) Senior centers | | | | | | |
| | 9) Disadvantaged and hard to reach communities | | | | | | Includes DAC |
| Other customer attributes | Low income customers | 0 | 328 | 0 | 35 | 86 | 30 |
| | Critical care customers | 0 | 7 | 0 | 0 | 1 | 0 |
| | Essential customers | 3 | 0 | 2 | 1 | 0 | 0 |

The data in Table A is based on as-built circuit configuration data as of January 21, 2020. SCE notes that the geographic area and customer diversity that a potential microgrid may serve are subject to change.

Regarding additional Commission action or relief for each microgrid-related resiliency activity described above, SCE is seeking none in this proceeding at this time, but reserves the right to provide further feedback after reviewing Staff's January 21 proposal, the submissions of Pacific Gas and Electric (PG&E) and San Diego Gas & Electric (SDG&E), and intervenors' comments on all the proposals. The PSPS Microgrid Pilot has not previously been discussed in

any formal venue at the California Public Utilities Commission (CPUC) or before other agencies. Because the efforts SCE intends to undertake with this Pilot relate to wildfire mitigation efforts in 2020, SCE intends to seek cost recovery in Track 3 of SCE's 2021 General Rate Case (GRC) proceeding.

***In-Flight Microgrid and Microgrid-Related Activities, Pilots, and Demonstrations***

In addition to SCE's new PSPS Microgrid Pilot, SCE discusses several of its in-flight activities related to microgrids below. While these projects are all in various stages of development, SCE has leveraged learnings from these activities to inform SCE's approach in the aforementioned PSPS Microgrid Pilot. As these activities are not specific to mitigating impacts from PSPS events, SCE anticipates gleaning additional lessons learned that can further inform SCE's approach to deploying microgrids beyond 2020, with a broader focus on resiliency.

**2. <u>Fort Irwin Microgrid</u>**

In Resolution E-4840, issued June 15, 2017, the Commission authorized SCE to develop and implement a microgrid demonstration project with the Department of Defense at the United States Army National Training Center in Fort Irwin, California (Fort Irwin). Fort Irwin is served exclusively by a 30-mile transmission line in San Bernardino County and experienced three major outages exceeding twenty hours prior to 2017. Because these outages were concerns to the base's energy resilience and mission-critical activities, Fort Irwin requested the assistance of SCE "to develop and install a micro-grid system to provide a reliable source of energy during prolonged power outages to allow N[ational] T[raining] C[enter]'s critical training mission to continue unabated for thirty days or more."[4] Via Advice Letter 3510-E, SCE sought to expand its normal functions under SCE Tariff Rule 2 (Added Facilities) to support the construction of the microgrid, as well as to control various aspects of the generation connected to the microgrid when in island mode.[5]

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[4] Resolution E-4840, p. 3.

[5] *Id*. p. 1.

With its approval of Advice Letter 3510-E, the Commission confirmed that the Fort Irwin microgrid resources will include renewable generation, but additional, emissions-compliant fossil fuel generation may be required when on-site renewable generation is unavailable or insufficient to power critical loads during microgrid islanding. Resolution E-4840 also approved SCE's proposed Microgrid Demonstration Project, under which Fort Irwin or a third-party will be responsible for implementing the required generation, and SCE will construct the microgrid's infrastructure (conductors, switches, communication, controls, etc.).[6] In addition, Resolution E-4840 confirmed that "the equipment SCE intends to install in support of the microgrid will be at the customer's expense and is comprised of behind-the-meter 'added facilities' as described in SCE's Rule 2, Subsection H [Tariff]."[7]

SCE believes that the objectives developed for the Fort Irwin microgrid project illustrate SCE's commitment to achieve the goals of this Microgrid and Resiliency Strategies proceeding. Specifically, SCE aims to:

- Gain knowledge about the design, installation, operation, control and management of microgrid systems;
- Study the role of the utility, if any, in the provision of microgrid services, including installation as added facilities, control, and when such services are appropriate;
- Gauge the extent to which microgrids may be replicated and scalable (possible with modifications) to develop potential energy resilience and renewable energy solutions for other Department of Defense facilities and/or other retail customers;
- Improve knowledge regarding the scope and mix of energy resources required to support the microgrid, including the extent to which on-site renewable generation may reliably support load requirements;
- Study the interaction between energy storage and microgrid systems if possible, and developing best practices for the implementation and operation of such systems; and

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6 SCE Advice Letter 3510-E, pp. 6-7 and Resolution E-4840, Ordering Paragraph 1.

7 Resolution E-4840, p. 5.

- Explore the role that "added facilities" installed under Rule 2.H may play in enabling the modern electricity grid.[8]

In its Advice Letter 3510-E, SCE estimated the Fort Irwin microgrid project would be constructed and placed in service in the fourth quarter of 2019. Although implementation of the Fort Irwin microgrid has been delayed, some of the delays have provided valuable lessons to SCE. For example, there are persistent sensitivities and complexities around the issuance of requests for proposals to vendors given the ever-increasing regulatory, legal, and safety concerns related to cybersecurity and protecting or disclosing data involving critical infrastructure. The Fort Irwin microgrid is now slated to become the test site for the Control and Protection for Microgrid and Virtual Power Plants Electric Program Investment Charge (EPIC) III Demonstration Project, referenced further below. The schedule for this EPIC project calls for field deployment of the microgrid controller in first quarter of 2023, thus furthering adjusting the operational date of Fort Irwin to 2023.

### 3. EPIC III Control and Protection for Microgrid and Virtual Power Plants Demonstration Project (Control and Protection MG)

The purpose of this Control and Protection Microgrid project is to evaluate control and protection schemes for microgrids and virtual power plants (VPPs) at the distribution level. This will include assembling a microgrid testbed in the lab environment, using a real-time simulator and performing hardware-in-the-loop testing. This testbed will demonstrate new control schemes in a lab environment and be used for the design and testing of multiple microgrid projects. The current plan is to perform the field demonstration using the Fort Irwin Microgrid, but the engineering work performed here will also support and/or inform the Smart City EPIC III Demonstration Project discussed below, potentially the 2020 pilot microgrids, and future not-yet-identified microgrid projects.

The objectives of the Control and Protection MG project are to demonstrate how a utility could use customer and utility-owned DERs to operate an SCE owned/operated microgrid, and to

[8] *See* Resolution E-4840, pp. 6-7.

identify control and protection schemes that can ensure the safe and reliable operation of distribution systems with microgrids and VPPs. Such methods could also support system operations under high renewables penetration and highly variable grid topology. This demonstration project is currently in its planning phase, however, SCE intends that it will entail both construction and operation, including the installation of controls and equipment for its field demonstration. SCE will use a third-party vendor to support development and installation of the microgrid controller, but SCE intends to be responsible for the microgrid operation after the controller is installed.

This EPIC III project has a budget of $3.8M, which includes costs associated with (1) design and creation of a lab-based microgrid test bed which is intended for application across multiple microgrids, (2) Grid Data Center Quality Assurance testing, and (3) field demonstration elements. Some of the approved funds will be spent on installing SCE-operated controls and equipment on Fort Irwin's distributed energy resources, and these costs are separate from those costs that will be covered by Fort Irwin under a Rule 2/Added Facilities arrangement. While the microgrid project will still be behind-the-meter, as originally proposed in SCE's Advice letter, the specifications for the energy storage system (capacity, technology and fuel source of generation) are still being evaluated and developed. While the objectives laid out in SCE's Advice Letter related to the original Fort Irwin microgrid project are still applicable, SCE further intends that this EPIC III project will provide the following benefits:

- Demonstrate microgrid control system capabilities to support behind & front-of-the-meter microgrids during planned and unplanned islanding events;
- Improve visibility, control and operations to reliably and safely integrate utility and customer-owned DERs; and
- Improve grid resiliency and reliability through the use of microgrids.

SCE filed Application A.17-05-005 for approval of its 2018-2020 Triennial Investment Plan for the Electric Program Investment Charge and the application was approved via Decision D.18-01-008, issued January 16, 2018. Cost recovery for these expenditures has been approved for the first two years of budget, but only $50,000 has been allocated to-date. The CPUC has

issued a Proposed Decision regarding the last year of budget, which is not yet final. Given that this project is being pursued in A.17-05-005, SCE is not requesting any additional Commission action or relief for this project at this time.

**4. Smart City EPIC III Demonstration Project**

As part of the EPIC III Smart City Demonstration Project, SCE is looking to partner with a city to deploy a front-of-the-meter microgrid that supports a significant portion of the city's essential facilities (e.g., fire and police stations, community and senior centers, and emergency shelters) in the event of planned and unplanned power outages using SCE-owned energy storage and customer-owned DERs. SCE has not yet selected a partnering city for this demonstration project, and is open to all proposals, with a focus on Disadvantaged Communities.

The Smart City project is expected to demonstrate how a utility could use customer- and utility-owned DERs to operate a front of-the-meter microgrid to enhance resiliency while maintaining safety and reliability through minimally disruptive islanding and reconnection. This demonstration project is currently in its planning phase, with an expectation that a partner city would be identified in first quarter 2020. This EPIC III project has a budget of $4.2M. While the location, nameplate capacity, duration of storage if any, technology, and generation resources are yet to be finalized, the project will entail both construction and operation, including the installation of controls and equipment for its field demonstration. SCE will use a third-party vendor to support development and installation of the microgrid controller. SCE aims to include utility operation of both SCE-owned and customer-owned DERs, including storage. SCE expects the realization of several benefits through this project, including:

- Increase grid and customer resiliency by deploying a front-of-the-meter microgrid to power critical loads of the city's essential facilities leveraging customer-owned DERs and SCE-owned energy storage during outages;
- Evaluate SCE-owned energy storage project to support microgrid operation using black-start and islanding capabilities;
- Assess electric vehicles for energy storage usage during microgrid operations;
- Potential to inform future customer service energy programs and resources based on microgrid learnings during the demonstration; and

- Leverage distributed control architectures and improve planning processes to support city planning, communications, and integration of DERs.

SCE filed Application A.17-05-005 for approval of its 2018-2020 Triennial Investment Plan for the Electric Program Investment Charge, and the application was approved via Decision D.18-01-008, issued January 16, 2018. Cost recovery for these expenditures has been approved for the first two years of budget, but only $50,000 has been allocated to date. The CPUC has issued a Proposed Decision regarding the last year of budget, which is not yet final. Given that this project is being pursued in A.17-05-005, SCE is not requesting any additional Commission action or relief for this project at this time.

**5. Solar + Storage Customer Resiliency Pilot**

SCE's Solar + Storage Resiliency Pilot at San Jacinto High School is experimenting with the ability for a large behind-the-meter solar and storage system to provide partial resiliency and islanding capability for the customer, and community, by way of opening its facility in the event of an emergency.

This project entails retrofitting the high school's existing solar + storage system for islanding and would enable a behind-the-meter microgrid with a 928 kilowatt (kW) Direct Current (DC) solar generating system and a 400 kW Alternating Current (AC) energy storage installation with an automatic transfer switch. Development of this demonstration project began in fourth quarter of 2018 and SCE expects it will be completed by fourth quarter 2021. San Jacinto High School is located in Riverside county, and the project is intended to benefit the San Jacinto school district. Specifically, the San Jacinto High School gym would open to the public and serve as a shelter for the community should the San Bernardino Emergency Operation Center call an emergency in partnership with the American Red Cross. Other benefits of this project include demonstrating an ability to retrofit existing solar + storage to provide islanding capability. The statement of work for this project includes construction work to: 1) add an Automatic Transfer Switch; 2) update the software on the solar and battery inverters and 3) train school staff. Construction for the San Jacinto high school retrofitting project is tentatively slated

for mid-February 2020 before testing can begin. This pilot location is expected to be operational once SCE conducts the first test after the equipment is installed. Additional testing will occur several times throughout 2020 to determine how many hours the battery is able to island in different seasons and weather conditions.

In its 2021 GRC, SCE requested funds to support a customer resiliency program based on the results of this pilot. The total request is for $10M, of which $2M is set aside for a battery back-up system program to serve low income customers. SCE is currently funding this pilot with $202,000 out of SCE's operations and maintenance budget and will record these costs in the Wildfire Mitigation Plan Memo Account that was authorized in D.19-05-038, issued on June 4, 2019. Given that funding will be covered in SCE's 2021 GRC (A.19-08-013), SCE is not requesting any additional Commission action or relief for this project at this time. SCE is exploring the possibility of a second site in a Disadvantaged Community HFRA, which SCE would likely fund in a similar manner.

**Customer-requested Microgrids**

In this section, SCE discusses several microgrid projects that have been requested or initiated by SCE customers. SCE notes that it may not be aware of all resiliency solutions or microgrid projects that SCE's customers have connected behind their meters in our service territory. SCE's customers are able to invest in many resiliency solutions, as they see fit, including backup generation. Below, SCE discusses some of the BTM microgrids requested by SCE's customers, but cannot provide the level of detail requested in the December E-Mail Ruling, because much of the requested information is yet to be determined or confidential customer information. SCE provides in narrative form below the information available at the time of this filing. At this time, SCE does not intend to request any additional relief or action from the Commission with respect to any of the customer-requested microgrids.

### 6. Port of Long Beach Microgrid

The Port of Long Beach (POLB) is developing a BTM microgrid, with Schneider Electric, that will ultimately serve two facilities – POLB's Joint Command & Control Center (JCCC), and an adjacent port tenant that is integral to port operations. The DERs will include a 300kW solar PV carport, 330kW/670kWh Stationary Battery Energy Storage System, a Mobile 250kW/22kWh Battery Storage System, and an existing 500 kW diesel generator and the POLB will install, operate, and maintain the low-voltage cable that will pass from the JCCC and Jacobsen Pilot Service.[9] SCE filed Advice Letter 3308-E, requesting a limited deviation from SCE's Tariff Rule 18, Section C to accommodate the POLB microgrid demonstration project. That request was approved by Commission Resolution E-5002, issued May 30, 2019.

The objectives of this POLB microgrid demonstration project are to provide resiliency and continuity of operations at the POLB by integrating renewable generation to provide electricity to POLB when in island mode.[10] The POLB microgrid demonstration project has not requested any funds from the Commission that would result in any additional costs to ratepayers.[11]

### 7. Montecito Microgrid

Montecito, a city in Santa Barbara county, is currently developing three BTM microgrids that will provide resilient power to the Montecito Fire District, Montecito Water District, and Montecito Union District. SCE has an advisory role with Montecito regarding their Microgrid efforts, including providing information on interconnection, DER tariffs, and DER programs.

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[9] *See* Resolution E-5002, issued May 30, 2019.

[10] "Island mode" or "Islanding" refers to "[a] condition on Distribution Provider's Distribution System [SCE in this case] in which one or more Generating Facilities delivers power to Customers using a portion of Distribution Provider's Distribution System that is electrically isolated from the remainder of the Distribution Provider's Distribution System." See SCE Interconnection Tariff (Rule 21) Section C.

[11] While the POLB microgrid demonstration project is projected to cost $7.12M, POLB has received a grant for $5M from the California Energy Commission for this project, and is expected to cover remaining costs.

Much of the information requested for this project is considered customer confidential and thus has been omitted. SCE understands the budget for this project is to be financed through donations and a Power Purchase Agreement between the city of Montecito and the project developer. This project has not been proposed in any regulatory venue and cost recovery is still being explored by the city and project developer.

#### 8. Lancaster Microgrid

To support the State of California's ambitious goals towards zero-net-energy (ZNE) and emissions reduction, the City of Lancaster, in Los Angeles county, is implementing the Lancaster Advanced Energy Community Project, funded by the California Energy Commission, to create scalable solutions to support communities to transition to ZNE and reduce emissions. A key component of this initiative is the development of microgrids for Lancaster's residential communities. Microgrid resources will consist of renewable (solar) generation and energy storage (battery and flywheel). SCE has an advisory role with Lancaster regarding their microgrids, including providing information on interconnection, DER tariffs, and DER programs. Partial funding of the project has been awarded via California Energy Commission grant.

### C. Other Resiliency Strategies to Mitigate Impacts of Wildfires and PSPS events

In this section, SCE discusses several of the resiliency strategies being deployed to mitigate the impacts of wildfires and PSPS events. SCE will be filing a more comprehensive plan for these activities on February 7, 2020 in the WMP proceeding.

#### 1. New PSPS Mitigation Approach: Circuit-Specific Evaluation and Planning

In 2020, SCE plans to implement a circuit-specific evaluation and planning approach for each circuit impacted by PSPS. This approach begins by prioritizing the circuits for mitigation, considering both the nature of PSPS outages as well as the types of customers impacted. Then, each circuit will be individually evaluated for potential mitigations. The outcome of this approach is a circuit-specific mitigation plan for each circuit impacted by PSPS.

For the 2020 PSPS Microgrid Pilot, the candidate selection process was based on this approach. The circuit evaluation process is described in further detail below.

a) For all PSPS-impacted circuits: Evaluation of grid hardening mitigations to reduce the frequency of PSPS events.

SCE will address potential outstanding deficiencies on a given circuit to improve the overall integrity of the circuit. This will further harden the circuit to better withstand the extreme weather conditions, thus enabling SCE to raise the circuit's PSPS wind speed threshold (i.e., the wind speed at which SCE would de-energize the line), further reducing the expected likelihood of PSPS events. The specific mitigations deployed to reduce PSPS events are typically the same as mitigations being deployed to reduce wildfire ignition risk. Generally speaking, these grid hardening mitigations may include the following: accelerating minor repairs that would otherwise be scheduled according to a 12-month compliance obligation; replacing/upgrading assets to improve resiliency; remediating long spans; and deploying covered conductor.[12] In the long-term, SCE plans to deploy such grid hardening technologies throughout the system. For this particular effort, the difference is (re)prioritizing targeted deployment to specifically benefit communities most impacted by PSPS. The specific types of mitigations, as well as the prioritization of circuit segments, may evolve as SCE's risk models evolve and are updated to improve the PSPS trigger calculations.[13]

b) For select locations: Evaluation of solutions to keep certain locations energized during PSPS events.

This evaluation applies to the same two specific types of location discussed in the PSPS Microgrid Project, namely: (1) a location within the HFRA that has underground service, or (2) a location outside of the HFRA that is served by an overhead line

[12] *See* Decision D.19-05-038 on SCE's 2019 WMP Pursuant to SB 901, filed on February 6, 2019, and SCE's Phase 2 Comments on WMP Workshops in Rulemaking R.18-10-007.

[13] For certain mitigations, including covered conductor, the analysis of the appropriate adjustment to wind trigger has not been finalized. These mitigations are expected to be incorporated into the wind trigger calculations once the analysis is complete.

running through HFRA. SCE will evaluate each PSPS-circuit for such locations. When locations are identified, SCE will evaluate a range of potential options, including the following:

- *Evaluate opportunities for switching procedures using the existing system.* Such procedures will reduce the number of customers impacted by PSPS events. (Note: this work is ongoing and already complete for most PSPS circuits.)
- *Evaluate opportunities to deploy lower-cost capital projects to reduce customers impacted*. For many circuits, SCE can reduce the number of customers that must be de-energized during an event by increasing the sectionalization[14] of the circuit. SCE will evaluate each PSPS-impacted circuit for such opportunities and will evaluate projects for cost-effectiveness. SCE has already deployed a number of assets to increase sectionalization;
- *Evaluate higher-cost capital projects.* Such projects could include deploying a microgrid, deploying temporary backup generation (to provide power to the entire circuit segment), or deploying a new underground circuit. SCE will evaluate the cost-effectiveness of such projects; given their high(er) capital cost, SCE expects that a small number of such projects will be deployed.

c) Evaluation of customer side solutions.

In parallel with the above efforts, SCE will evaluate customer side solutions. In addition, SCE is exploring further customer programs, including programs designed to provide generation to targeted facilities that provide support for a community. In particular, SCE is exploring the potential to provide back-up generation not just to create the Community Resource Centers (CRCs) described below, but to provide back-up generation for certain commercial and government customers that provide important services to the community. To the extent the grid-side mitigations described above are not feasible, SCE intends to deploy customer-side solutions to benefit those communities (as a supplement to other customer resiliency programs).

[14] Sectionalizing refers to adding switches to divide a circuit into additional segments, which can be isolated from each other. (Most circuits on SCE's system already have at least two segments.) Sectionalizing allows more surgical PSPS events, as one segment of a circuit may be de-energized while another segment remains energized. See sections A.2.e and A.2.f for further detail on how SCE has already deployed this strategy.

### 2. Income Qualified Critical Care Customer Battery Backup Incentive Program[15]

Among the most vulnerable customers during de-energization events like PSPS are those reliant on medical devices for life-sustaining purposes and who cannot afford certain critical items to support their resiliency during emergencies. To address these customers' needs, SCE determined that it would be appropriate to offer a full subsidy for a battery back-up solution for income-eligible, Critical Care residential customers. The intent of the program is to provide back-up battery power to these customers to facilitate 24 hours of resiliency.[16]

On October 2, 2019, Governor Newsom signed SB 167 into law, which authorizes electrical corporations to deploy back-up electrical resources or provide financial assistance for backup electrical resources to those customers receiving medical baseline allowances and who meet specified requirements.[17] After identifying the population of relevant vulnerable customers (e.g., Medical Baseline CARE customers), SCE modified its existing PSPS program. Specifically, SCE identified a preliminary count of eligible customers and the types of medical equipment customers use, and developed cost estimates. SCE expects implementation to occur in 2020 and will report on further progress in its 2020 WMP filing.

This program will deliver the back-up generators using a direct-install vendor selected through either a competitive bid process or by modifying the purchase order for one of SCE's multiple direct-install partners. The vendor would order, store as inventory, and install the equipment, and educate customers about the battery back-up solution, its operation and safe use. This program is expected to increase resiliency for vulnerable customers during de-energization events.

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15 *See* SCE's Advice 4120-E, Reports on Possible Off Ramps on 2019 Wildfire Mitigation Plans, p. 5.

16 Actual duration of battery backup is dependent on the type and number of medical devices connected to the battery. SCE is additionally proposing to make available Community Resource Centers to these customers to charge medical devices and batteries.

17 SB No. 167, Chapter 403, page 1 of chapter.

### 3. Customer Resiliency Equipment Incentive Pilot[18]

SCE is in the process of piloting a customer resiliency equipment incentive program that provides financial support to customers within HFRA willing to increase resiliency. This pilot effort is intended to inform the establishment of a customer resiliency equipment incentive program targeting customers that already have solar and storage, or will be adding such capabilities to their sites, and are willing to island, and redirect, the energy in the storage battery to a designated building on site for use during PSPS and/or other emergencies. Most customers that have these features at their sites are larger entities such as schools, local government facilities, and large retailers. The islanding allows the use of the designated building as a powered CRC in an HFRA.

SCE is currently in the process of setting up a pilot for this program based on two types of customers: one that has already installed solar and storage capabilities (retrofit design) and one that has solar and is in the process of adding storage (new design). The pilots are expected to provide valuable learnings associated with the complexity of the islanding design, costs, and participant willingness.

In planning the pilot, SCE anticipated customer interest to participate in this pilot would be high and customer identification and acceptance would be faster than it has been. While customers have shown interest, they are cautious given the responsibility associated with being an emergency resource center. SCE has also determined that identifying customers in the solar plus storage design stage allows SCE to assist with the islanding design early, potentially reducing costs. When initiating this pilot, SCE identified customers in its HFRA (primarily Tier 3) that have either solar and storage capabilities or just solar capabilities, and who have a large facility such as a gymnasium or community building that could accommodate customers during a PSPS or other emergency event.

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[18] *See* SCE's Advice 4120-E at p.6.

One customer with solar and storage, the aforementioned San Jacinto High School, elected to participate in the pilot as a resiliency center for emergencies, but not for PSPS events. Although the program will require the customer to make its facility available during a PSPS event, SCE and the customer agreed to pilot this capability in order to assess functionality, costs, and customer acceptance. SCE contracted with a vendor to complete a battery retrofit design and selected a third party to manage implementation. SCE is still engaging customers for a second pilot and is targeting customers that have solar and are in the market for storage in order to test a new battery design (which is different than the retrofit design described above). SCE also partnered with the American Red Cross to complete emergency training with site staff and plans to support the site during emergency events once the pilot is ready to be activated.

While this modified program includes complex processes, technology, and customer agreements, SCE anticipates that this program could be very beneficial to customers in HFRA during emergencies. SCE has received interest in the concept from other customers and it expects to refine the process as it moves forward with piloting the retrofit design and finalizes a second participant to pilot the new design.

**4. Community Resource Centers[19]**

In Section 4.6.5.6 of the 2019 WMP, SCE explained its plan to deploy Community Outreach Vehicles (branded Community Crew Vehicles (CCV)) equipped with back-up power so that customers can charge their personal mobile devices and receive information/updates from SCE about an extended outage, such as PSPS, that they are experiencing. These vehicles are proactively offered to County Offices of Emergency Services for deployment to impacted areas across SCE's service territory. Since that time, SCE has decided to augment its mobile Community Crew Vehicles by partnering with facilities around its service territory and establishing CRCs. These centers will provide customers improved convenience and access to services during a PSPS event, as well as water and snacks.

[19] *See* SCE's Advice 4120-E at p. 8.

When planning its customer outreach program for PSPS events, SCE anticipated that there would be weather events impacting various areas across its service territory simultaneously. During such events, logistical challenges could arise that would make deploying Community Crew Vehicles to all impacted areas a difficult task. In such cases, it was determined that having pre-established CRC agreements in place and established permanent structures could better serve customers in impacted areas. CRCs allow SCE to quickly and efficiently provide needed services to customers, especially during times of extreme weather conditions (e.g., when it is extremely hot or cold).

To date, SCE has established 13 CRCs, 11 of which are in Sears and Kmart locations and two of which are sites that county governments have made available to SCE. In addition to managing the existing CCVs and CRCs, SCE is exploring ways to further expand its CCV and CRC coverage to address larger scale / impact of PSPS events that require more flexibility. These include standing up CRCs that do not require a long-term agreement through ad-hoc "pop up" CRCs with county volunteer sites, and other flexible practices for existing contracted CRCs, such as quickly modifying the list of CRCs in agreement with retailers to meet PSPS needs. Past PSPS events have provided valuable learning opportunities and SCE is adapting to better meet customer needs. The additional centers will be beneficial to customers during PSPS events by providing basic services and information during PSPS events.

**5. Remote Controlled Automatic Reclosers Installations – Remote Controlled Switches[20]**

As described in Section 3.4.1.1 of its 2019 WMP, SCE deploys certain protective devices, such as remote-controlled automatic reclosers (RAR) and circuit breaker (CB) relays, on overhead systems in HFRA in accordance with SCE's System Operating Bulletin 322 and the operational restrictions contained therein. These protective devices are programmed to enable RAR/CB recloser blocking and fast curve settings in response to weather events such as Red

[20] *See* SCE's Advice 4120-E at p.13.

Flag Warnings declared by the National Weather Service, a Fire Weather Threat, a Thunderstorm Threat as declared by SCE's Incident Management Team, and other high wildfire risk conditions.[21]

At the onset of SCE's system hardening efforts, as described in Section 4.3.3.5 of its 2019 WMP, the goal was to install RARs, where feasible, just outside the HFRA boundaries to provide fast curve setting capabilities to reduce fault energy, PSPS sectionalization abilities, and reliability benefits by allowing SCE to maintain reclose functionality for portions of circuits outside of the HFRA. During the scoping effort, SCE identified several scenarios where RARs are not the best devices to achieve the desired outcome. For example, RARs are intended to protect lines and equipment downstream of where they are installed. For situations where a line is underground entering into HFRA and then rises to overhead, installation of an RAR at that transition point only mitigates fire risk for the overhead line downstream from the RAR. It would not effectively mitigate fire risk associated with the overhead equipment (disconnect switches, jumpers, overhead conductor) that is upstream to the RAR itself. Additionally, many circuits were primarily located outside the HFRA and only crossed into HFRA for a handful of spans. In these cases, the RAR would provide limited to no ability to de-energize conductors on portions of circuits traversing HFRA during a PSPS event.

In response to the issue described above, SCE installed a mix of overhead and underground remote-controlled switches (RCS) instead of RAR. These actions facilitated additional "sectionalization," which is key to eliminating energized conductors within impacted HFRA during a PSPS event. In these locations, fast curve protection settings were applied at the substation CB to provide fault energy reduction. In total, SCE's 2019 sectionalizing device scope

[21] RAR are protective devices for mainline conductor that can automatically interrupt faults. The RAR are programmed with special fast curve settings that can be remotely toggled to provide faster or more selective "fault clearing" to further reduce fire ignition risks and reduce service interruptions for SCE customers. Fast curve settings modify the relay fault detection curve, providing faster fault detection and interruption. These fast curve settings reduce the fault clearing time, reducing heat and arcing therefore reducing the possibility of ignition. This mitigation is primarily designed to be implemented during Red Flag Warnings or other high fire risk conditions.

was modified to include 92 devices – 25 new RCS, 53 new RAR and 14 relocated RAR. By installing RCS in lieu of RAR in locations where RAR was not the best device to achieve the desired outcome, SCE is able to both minimize the number of customers affected and eliminate energized conductors within the impacted HFRA during a PSPS event.

### 6. Protection and Isolation – Circuit Modifications to Limit Customers Affected by PSPS[22]

In Section 4.3.3.5 of its 2019 WMP, SCE described its protection and isolation plans to minimize fault energy, improve PSPS sectionalization abilities, and improve reliability, such as the work described above. SCE has identified additional opportunities to further sectionalize its circuitry. Because of the diverse geography of SCE's service territory, circuitry often traverses both HFRA and non-HFRA. Improving sectionalizing capabilities reduces the number of customers impacted during future PSPS events.

As a result of recent PSPS events, SCE identified opportunities to reassess and potentially modify circuit configurations to reduce the number of customers affected during a PSPS event. This can be accomplished by replacing small segments of bare conductor with covered conductor, small undergrounding projects, and/or adding switching devices (and potentially circuit ties) to allow for load transfers. These circuit modifications help minimize the impact to customers located in non-HFRA that are fed from circuits that also serve HFRA. In addition, there are potential opportunities to sectionalize and restore certain underground areas in HFRA that are fed from circuitry that also contains overhead facilities.

Once it was determined that additional circuit modifications could further improve circuit sectionalization, SCE began a scoping effort to identify locations in its system that would most benefit from installation of these modifications. To date, SCE has identified approximately 40 locations where additional circuit modifications will improve sectionalization capability within HFRA. Design and execution of this work has recently been initiated, and SCE

22 *See* SCE's Advice 4120-E at p.14.

currently estimates that approximately 23 of those locations will be completed by Fall of 2020, mitigating PSPS impacts for nearly 13,000 of SCE's customers. SCE is continuing its scoping efforts to identify other locations that could also benefit from circuit modifications and will continue to design and execute on these as additional locations are identified.

The scope of this effort is driven by a desire to reduce the number of customers impacted during future PSPS events. By modifying circuit configurations as described above, SCE can achieve this result.

**7. Updating and refining SCE's risk models that inform PSPS Decisions**

SCE's decision to initiate a PSPS event is informed by various models that consider the condition of the assets on a given circuit, current and forecasted wind speed, the moisture content of vegetation, the potential propagation of a fire, and other considerations. As SCE gathers more field data and experience, SCE continues to update and refine these models to improve PSPS decision-making, more accurately predicting the risk of ignition and being increasingly precise in executing PSPS events, ultimately resulting in fewer customer impacts.

SCE is not requesting additional Commission action or relief for the efforts described within this section on other resiliency strategies to mitigate impacts of wildfires and PSPS events at this time, but reserves the right to revise its position based on feedback from intervenors on its proposal and those proposals submitted by Pacific Gas and Electric and San Diego Gas & Electric. SCE currently plans to seek recovery for its proposed microgrid and microgrid-related activity in SCE's 2021 GRC Track 3 for 2020 costs, and in other WMP cost recovery filings post-2020. SCE will seek cost recovery for the other resiliency strategies discussed in Section C above in the WMP proceeding, in line with AB 1054 requirements. The purpose will be to review the prudency of SCE's spend and authorize associated rate changes.

## III.

## CONCLUSION

SCE appreciates the opportunity to file this proposal and response to the ALJ December E-mail Ruling and looks forward to continued opportunities to work with stakeholders to achieve the goals of this rulemaking in a manner that will advance the state's policy objectives and climate goals.

Respectfully submitted,

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