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Witnesses:	M. Jocelyn T. Kedis

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Woolsey Fire Cost Recovery Application – Rebuttal Prudence of Operations – System Operations Testimony

Before the

Public Utilities Commission of the State of California

Rosemead, California
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SCE-12, Vol. 03: Woolsey Fire Cost Recovery Application – Rebuttal Prudence of Operations – System Operations Testimony

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I.

INTRODUCTION

Intervenors' testimony raises various critiques related to SCE's installation of weather stations and its Public Safety Power Shutoff (PSPS) protocol at the time of the Woolsey Fire. The record shows that SCE's developing weather station network and initial PSPS protocol were exactly where they should have been at that time.

Cal Advocates asserts that SCE "lagged about nine years behind [San Diego Gas & Electric Company (SDG&E)] in developing both a weather station network and a [PSPS] program."[1] As described in more detail in SCE-11, this criticism fails to recognize that each utility operates based on the unique needs of its service area and system. The comparison to SDG&E is particularly inapt given the vast differences in the service areas of SCE and SDG&E, as described in more detail below. Beyond arguing that SCE should have started earlier, Cal Advocates' critiques merely reflect the expected challenges of implementing significant systemwide operational measures that require multiple years to develop and refine, and do not show any imprudence.

Prior to 2018, the cornerstone of SCE's operational practices to mitigate wildfire risk was SCE's longstanding practice of blocking automatic reclosing on lines traversing High Fire Risk Areas (HFRAs) pursuant to SOB 322. SCE began evaluating enhanced operational mitigations in response to the evolving wildfire risk landscape revealed by the destructive 2017 wildfire season. By November 2018, SCE had already taken substantial steps to address the increased risk profile, including developing a Fast Curve program to implement "fast trip" settings for protection devices[2] and adopting a formal, systemwide PSPS protocol. SCE had also initiated a multi-year effort to build out a weather station network to provide enhanced situational awareness, installing 125 new weather stations by November 8, 2018.

This initial rollout of weather stations in HFRAs served as a pilot or testing phase to evaluate issues related to siting, installation, communications, data, and reliability, and informed future weather station installations. The weather stations installed as part of this initial rollout in 2018 were not sufficiently dense to inform PSPS decision-making on a systemwide basis, and these new stations had

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1 *See* CA-01, p. 6; *see also* CA-04 (comparing SDG&E and SCE in the years preceding 2018).

2 Fast Curve settings increased the speed with which a protection relay reacts to most fault currents, limiting total energy delivered to those faults and thereby reducing ignition risk. SCE began deploying Fast Curve settings on compatible devices in 2018, and these settings were remotely activated during Red Flag Warning conditions as set forth in SOB 322. *See* SCE-03, pp. 34–35; SCE-12, Vol. 1, Section V.A.

not been "online" long enough for the data to be validated and operationalized for effective localized use. Thus, SCE engaged IBM to provide a circuit-level forecasting tool to support systemwide PSPS decision-making, which was also informed by real-time observational feedback by field observers, including data from hand-held weather devices and observations of potential hazards. Intervenors' critique that SCE did not immediately operationalize real-time data from these initial weather stations fundamentally misunderstands the complex process of developing a weather station network to support PSPS.[3]

Intervenors' criticism of SCE's initial PSPS criteria is similarly unwarranted. While the complexities of SCE's service area, including size, topography, wind and weather patterns, presented unique challenges in establishing a consistent set of criteria for PSPS decision-making, SCE's initial PSPS criteria were reasonable and appropriate. SCE incorporated use of the Fire Potential Index (FPI) tool developed by SDG&E and established wind thresholds calibrated with feedback from local districts based on their experience and unique knowledge of their specific portions of SCE's service area. PSPS was intended to be a risk mitigation of last resort, and the initial wind thresholds established by SCE in 2018 reflected a reasonable balance between fire mitigation and public safety for this first season of SCE's systemwide PSPS protocol. SCE developed a robust set of procedures governing preparation for and execution of a PSPS event. SCE embedded execution of its PSPS protocol within its longstanding Incident Management Team (IMT) framework to provide effective structure, communication, and decision-making for PSPS.

The record amply demonstrates that SCE followed its PSPS protocol on the day of the Woolsey Fire. By day's end on November 8, 2018, SCE was monitoring approximately 50 distribution circuits for potential proactive de-energization, with more than 65,000 customers potentially impacted. The Big Rock Circuit was not being monitored because its forecast did not meet the required wind thresholds for PSPS at any point prior to ignition of the fire. SCE ultimately de-energized portions of five distribution circuits during the November 8–13, 2018 PSPS event.

[3] CA-04, pp. 11–12; EPUC Testimony, p. 34.

II.

SCE PRUDENTLY ENHANCED ITS OPERATIONAL PRACTICES FOLLOWING THE 2017 WILDFIRE SEASON TO ADDRESS INCREASING FIRE RISK

Cal Advocates' testimony compares SCE's initial rollout of weather stations and initial systemwide PSPS protocol in 2018 to those of SDG&E, which had initiated such efforts nearly a decade prior.[4] This comparison is inapt given these operational measures take years to develop and mature, as Cal Advocates acknowledges. SCE was differently situated than SDG&E at the time of the 2007 wildfires and thereafter, and reasonably concluded at that time that the known risks of PSPS, including the impact to public safety, outweighed its potential benefits, which were untested at that time. In fact, SDG&E was the sole electric utility in California to pursue PSPS following the October 2007 wildfires—an effort that Cal Advocates strongly opposed[5]—and SCE is not aware of any other utility in the country having such a program prior to 2018.

In response to the destructive 2017 wildfire season, SCE developed and implemented enhanced operational practices, including a multi-year effort to build out a weather station network across SCE's 50,000-square-mile service area and adoption of a formal, systemwide PSPS protocol. Cal Advocates critiques various aspects of SCE's initial PSPS protocol, but the record supports that SCE implemented a well-designed, initial version of its PSPS protocol. SCE further strengthened implementation of its PSPS protocol by embedding it in its longstanding Incident Command (IC) framework to ensure a clear chain of command and effective decision-making around this operational mitigation of last resort. SCE adhered to its PSPS protocol on the day of the Woolsey Fire. The Big Rock Circuit did not meet the requirements for monitoring pursuant to SCE's PSPS protocol and was appropriately not de-energized.

A. SCE's Weather Station Network Was Necessarily a Work in Progress at the Time of the Woolsey Fire

Intervenors' testimony acknowledges that SCE made significant progress in 2018 installing weather stations to support enhanced situational awareness but criticizes that these initial weather stations were not

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4 *See generally* CA-04.

5 *See, e.g.*, A.08-12-021, Joint Response by the Consumer Protection and Safety Division and the Division of Ratepayer Advocates in Support of August 5, 2009 Joint Motion Seeking Temporary Restraining Order Against San Diego Gas & Electric (Aug. 17, 2009) at pp. 3–4 (arguing, in support of a temporary restraining order to prevent implementation of SDG&E's PSPS program prior to a final Commission decision, that "SDG&E's shut-off plan poses a very real threat to … lives" and "would create many more disastrous consequences than it purports its shut-off plan would prevent").

yet operationalized for PSPS decision-making by SCE.[6] Cal Advocates also asserts unfavorable comparisons to SDG&E's weather station network at the time.[7] These criticisms are without merit given the complex and extended process required to build a weather station network from the ground up.[8]

The development of SCE's weather station network was always understood to be a multi-year effort, as set forth in SCE's 2018 GSRP and subsequent Wildfire Mitigation Plans.[9] Given that SDG&E's weather station network had been developing over nearly a decade as of November 2018, it is not particularly noteworthy that SDG&E had more weather stations and was further along in operationalizing use of its real-time weather station data at that time. By contrast, SCE's efforts were necessarily and appropriately in the preliminary stage.

To develop a weather station network sufficiently dense to provide granular weather data and support operational decision-making, SCE was targeting to install two weather stations on each of its approximately 1,300 distribution circuits that traversed HFRAs over the longer term, depending on the length, location and presence of existing public stations, resulting in a total of more than two thousand weather stations.[10] As part of its first rollout of weather stations in 2018, SCE installed 125 weather stations

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[6] *See, e.g.*, CA-04, pp. 8, 11 (acknowledging that SCE had installed 125 new weather stations but criticizing that SCE did not use these "for its PSPS decisions"); EPUC Testimony, p. 34 ("Q. Did SCE invest in monitoring equipment to assist and improve its ability to implement a PSPS? A. Yes. SCE installed weather station equipment to monitor weather conditions during fire events. The weather equipment was installed in 2018 before the Woolsey Fire, but the weather station that would have monitored the Big Rock circuit was not operational.").

[7] *See* CA-01, p. 7 ("By the time of the Woolsey Fire, SCE had about one utility-owned weather station per 342 circuit-miles of overhead distribution lines, whereas SDG&E had about one utility-owned weather station for every 36 overhead distribution circuit miles."); CA-04, pp. 1–8.

[8] While SCE had long ago installed 23 weather stations for customer billing and energy demand variability purposes, these weather stations did not have any application to weather forecasting or real-time weather data and were not sited or suitable for PSPS purposes, as acknowledged by Cal Advocates. CA-04, p. 4 & n.19.

[9] *See, e.g.*, A.18-09-002, SCE-01, pp. 93–95 (describing initial efforts to install up to 850 weather stations in HFRAs from 2018-2020); SCE 2019 Wildfire Mitigation Plan, pp. 15, 61 (describing weather station program as multi-year effort and identifying weather stations installed in 2018 and planned for 2019), (2019 Wildfire Mitigation Plan); SCE 2020-2022 Wildfire Mitigation Plan (dated Feb. 7, 2020), p. 3 (explaining target of "an average of two weather stations per circuit in our HFRA by 2024, at a pace of 375 weather stations annually"), (2020-2022 Wildfire Mitigation Plan).

[10] *See* SCE 2020-2022 Wildfire Mitigation Plan (dated Feb. 7, 2020), p. 3 (describing a initial target of "an average of two weather stations per circuit in our HFRA by 2024, at a pace of 375 weather stations annually"), 2020-2022 Wildfire Mitigation Plan. In its 2018 GSRP, SCE described installing up to 850 weather stations in HFRAs from 2018-2020. A.18-09-002, SCE-01, p. 93.

before November 8, 2018.[11]

As this was a new and ambitious undertaking, SCE faced typical challenges in the rollout of its weather stations, which SCE was diligently working to address in 2018. SCE's weather stations collected data in 10-minute, hourly, and daily increments with data fields varying by increment, and automatically transmitted data every 10 minutes. In order to transmit and receive this data on a continual basis, communications technology is required and this is a significant aspect of the development process. SCE considered the use of SCADA and broadband, but both were not feasible. For this reason, SCE's initial weather station network relied upon cellular service, and because cellular service can be intermittent in remote locations, SCE initially faced communications challenges. Of the 125 weather stations installed in 2018, 13 were deemed non-operational due to inconsistent communications and other issues.[12] Communication challenges were to be expected in remote locations, which is also where there was a need for weather stations, and SCE was working diligently to address them. These communication challenges were ultimately resolved in 2019 when SCE executed a contract for satellite service for its weather stations. In 2018, SCE was reasonably focused on resolving communication problems with its existing cellular service providers.

Cal Advocates' critiques of "maintenance and recordkeeping problems" related to weather stations are unwarranted.[13] Due to the urgency with which SCE sought to enhance its situational awareness capabilities following the 2017 wildfire season, SCE began its rollout of weather stations without waiting for approval for their inclusion in SAP, and SCE's Business Resiliency team tracked the weather stations in an Excel spreadsheet. Cal Advocates' testimony confirms that SDG&E also used an Excel spreadsheet to manage its weather stations as of 2018.[14] Intervenors also point to the non-operational SCE weather stations as suggestive of imprudence.[15] Not so. SCE's initial rollout of weather stations was the testing and validation phase of what would later evolve into a mature weather station network capable of supporting a

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[11] This equated to an average of 2 to 3 weather stations installed per week during that time frame. Cal Advocates' testimony indicates that SDG&E installed 21 weather station in its first year of installations. *See* CA-04, p. 2, Table 1.

[12] As of November 8, 2018, 9 of these 13 weather stations appeared to be successfully communicating data.

[13] CA-04, pp. 9–10.

[14] *See* CA04SA-0177 (SDG&E response to CALPA-SDGE-A2410002-004, Question 6) (affirming that SDG&E used an Excel spreadsheet "to keep track of its weather stations for maintenance, inspections, and troubleshooting").

[15] *See* CA-04, pp. 9–10; EPUC Testimony, pp. 34–36.

systemwide PSPS protocol.[16] SCE appropriately addressed non-operational weather stations through replacement or repair over SCE's longer-term development process.

In 2018, the density of weather stations was not yet sufficient to support PSPS decision-making. There was an insufficient amount of historical data to support station-level forecasting (at least a year's worth of historical data is needed for machine learning), and the data from the developing weather station network was not yet validated or effectively operationalized. To validate data, SCE needed to ensure that the equipment was operating correctly, that the communications network supporting transmission of weather station data was operating consistently, and that the data collected was sufficiently accurate and reliable to support PSPS decision-making.

While undertaking to build out its weather station network, SCE engaged IBM in 2018 to provide an advanced weather forecasting system to support PSPS decision-making. IBM provided twice-daily gridded forecasts for SCE's HFRA distribution circuits based on weather conditions analyzed and summarized geographically across entire circuits. SCE selected IBM because it was a leader in weather forecasting modeling and observational weather information at the time and marketed a superior product and advanced capabilities. SCE had an existing relationship with IBM, which facilitated rapid engagement. The IBM tool was intended to ensure a uniform systemwide source of data that could support execution of SCE's PSPS protocol across SCE's service area.[17]

Cal Advocates suggests that SCE did not utilize as many weather sources as SDG&E.[18] As discussed above, SCE used the IBM weather forecasting system in 2018. SCE also used weather information from NWS, WeatherBell, and publicly available resources to confirm weather trends and patterns. The record does not support Cal Advocates' assertion that SDG&E had operationalized the Santa Ana Wildfire Threat Index (SAWTI) while SCE did not. In fact, while SCE understands that the SAWTI was among the sources utilized by SDG&E for situational awareness and fire weather information, SDG&E stated in response to a Cal Advocates data request that it did *not* have specific grid protocols related to the SAWTI.[19]

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[16] As of January 2025, SCE had a total of 1,780 weather stations across its HFRAs, further demonstrating that SCE's weather station network was necessarily in its earliest stages in 2018.

[17] Cal Advocates notes that SCE began to have concerns regarding the IBM tool in August 2018. SCE attempted to resolve its concerns with IBM over the next few months, but when those efforts proved unsuccessful, SCE prudently engaged another vendor.

[18] *See* CA-04, pp. 4–6.

[19] *See* CA04SA-0159 (SDG&E response to Cal Advocates non-docketed data request, Question 4(c)) (affirming SDG&E had "not formalized any grid-related procedures based on the SAWTI rating.").

Similarly, SCE viewed the SAWTI as corroborating evidence of critical Santa Ana driven fire weather conditions, but it was not a specific input for operational decision-making given the SAWTI is limited geographically and focused only on fire weather events caused by Santa Ana winds.[20]

B. SCE's Design and Approach in Its Initial PSPS Program Was Reasonable

In response to the increased risk profile that the devasting 2017 wildfire season brought to light, SCE implemented its initial PSPS protocol in May 2018. Cal Advocates compares SCE's initial PSPS protocol to SDG&E's mature PSPS program and suggests that SCE's protocol was lacking as compared to SDG&E's.[21] This comparison is inapt. Most importantly, the actions of a single, differently-situated utility are not the standard upon which the Commission evaluates prudency. For the reasons set forth in SCE-11, it was reasonable for SCE not to have embarked on the development of a systemwide PSPS program until after the devastating 2017 wildfire season.

Beyond arguing that SCE should have started earlier, Cal Advocates' critiques merely reflect the expected challenges and realities of any initial PSPS protocol and do not show any imprudence. Development of a mature systemwide PSPS program is complex, takes a significant amount of time, and must be tailored to the unique risks and conditions of a utility's service territory. Cal Advocates acknowledges that SDG&E's PSPS program "evolved" extensively over time.[22] And even today, California utilities including SCE continue to refine and improve their PSPS programs. The record amply demonstrates that, as of November 2018, SCE had a well-designed initial PSPS protocol and was executing on its goal of achieving a fully mature PSPS program over time.

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[20] Cal Advocates' suggestion that Red Flag Warnings did not factor into SCE's PSPS decision-making at all is not accurate. *See* CA-01, p. 8; CA-04 pp. 16–17. While the data request responses cited by Cal Advocates affirmed that the presence of a Red Flag Warning was not a specific input with respect to monitoring and de-energization decisions for *a given circuit*, SCE affirmed that the issuance of Red Flag Warnings is indicative of the potential for fire weather conditions and was among the considerations for initiating PSPS events, as acknowledged by Cal Advocates. *See* CA-04, p. 28. The SCE PSPS events in October and November 2018 both involved Red Flag Warnings.

[21] Cal Advocates' attempt to compare SCE's PSPS protocol to SDG&E's "initial PSPS protocols" submitted in A.08-12-021 also falls flat given those criteria were not used for any de-energization event. *See* CA-04-SA (Appendix C Supporting Attachments), p. CA04SA-0186 (SDG&E response to CALPA-SDGE-A2410002-004, Question 10(a)) (explaining that the CPUC denied A.08-12-021 and the "criteria proposed in A.08-12-021 evolved based on advancements in fire weather research and subject matter expertise before any de-energization events occurred.").

[22] CA-04, p. 25 (explaining that by 2018—nearly a decade after SDG&E proposed its initial PSPS protocol—SDG&E's "PSPS protocols had evolved to emphasize a more comprehensive and flexible approach to de-energizations that consider[ed] a wider range of factors," including for example, "real-time observations rather than relying solely on predefined criteria") (internal quotations omitted).

Implementation of a systemwide PSPS program requires a wide-ranging series of actions. First, the utility must evaluate the risks and benefits of a systemwide PSPS program—something that SCE began to immediately study and assess following the 2017 wildfire season. As also described in SCE-11, these risks include impacts on critical infrastructure and essential services such as police and fire stations, emergency dispatch centers, water and sanitation facilities, traffic lights, transportation systems, hospitals, schools, nursing homes, and more. Additionally, a utility must develop the criteria upon which it will make PSPS-related decisions, as well as specific de-energization and re-energization procedures and protocols for customer and government agency outreach. This critical development, which had to be designed for the unique conditions and risks of SCE's 50,000-square-mile service area, includes: (i) mapping circuitry to ensure the scope of de-energization events is known and tailored as narrowly as possible; (ii) defining fire fuel conditions; (iii) identifying weather monitoring capabilities (including both present capabilities and future improvements); (iv) developing activation criteria (under what conditions will de-energization be implemented and what employees will oversee and monitor those decisions); (v) ensuring, and where necessary improving upon, circuit device operational control so that circuits are capable of being de-energized, whether by programming or manual operation; (vi) developing customer notification protocols; (vii) developing PSPS notification protocols specific to other service providers, including telephone, cellular, water, gas, cable television and fiber providers; (viii) developing community resource centers to assist customers during a PSPS de-energization event; (ix) developing re-energization protocols to address re-energization after the end of a PSPS event; (x) developing post-event reporting protocols consistent with regulatory requirements (including the identification of the number of impacted customers, length of a de-energization event, the method and timing of power restoration, and internal, external, and regulatory reporting requirements); and (xi) educating utility employees, local leaders, customers (residential, medical, emergency services, commercial, and industrial), and emergency services (police, fire, city emergency operations centers, hospitals and medical offices, and home-based medical customers) about PSPS. Thousands of SCE's employees were trained on the new operating and communication requirements to ensure that PSPS was well-understood to support effective deployment and compliance with regulatory requirements.

SCE began this PSPS development process immediately following the 2017 wildfire season. As part of this process, SCE reviewed lessons learned from its previously implemented Protective Outage Plan (POP). While POP provided a general framework upon which SCE could build, POP was a targeted plan that was geographically confined and limited in scope and duration, such that it could not be applied on a

systemwide basis. For example, given the narrow geographic scope of POP, SCE needed to develop just one set of wind thresholds and was able to monitor all circuits when specified weather conditions were forecasted to be met. That was not feasible for a systemwide PSPS protocol under which SCE needed to be able to address and prioritize its approximately 1,300 distribution circuits in HFRAs across its service area.

SCE identified the need for increased weather data early in its PSPS development process, and the prudence of SCE's efforts in this regard is addressed above. In addition to addressing the need for increased weather data, SCE had to develop specific criteria for implementing PSPS decisions. As described in SCE's opening testimony and acknowledged by Cal Advocates, SCE met with SDG&E in 2018 to discuss various wildfire mitigation strategies, including fire weather forecasting, weather analysis, and PSPS. These initial meetings with SDG&E provided valuable insights. SCE adopted use of the FPI tool developed by SDG&E, including the FPI levels of low/normal, elevated, and extreme. FPI is intended to give insight into fire risk and fuel conditions. While SDG&E's FPI was informed by real-time weather station data, for the reasons set forth above, it was not yet feasible for SCE to rely on its own fledgling weather station network for real-time data, and as such, SCE's FPI was forecasted.

SCE could not simply "emulate[]" the entirety of SDG&E's PSPS protocol, as Cal Advocates suggests.[23] It was important that SCE's wind thresholds be appropriately calibrated to the unique risks and conditions of its service area, which is vastly different from SDG&E's. Whereas SCE's service territory covers 50,000 square miles across 15 counties (including both the most populous and the largest counties in the country), SDG&E's service territory is just 4,100 square miles (8 percent of SCE's) across two counties: San Diego County and the southern portion of Orange County. SCE's service area is not only large, but also incredibly diverse. Indeed, SCE's service territory includes both the highest and lowest points in the contiguous United States (Mount Whitney and Death Valley, respectively), which are located just 70 miles from one another. While a wind gust of 50 mph may be typical and non-problematic in one area, it may be highly problematic in another. For this reason, SCE established its initial wind thresholds for PSPS at the district level based on input and expertise from its field supervisors at individual districts based on their experience and unique knowledge of local conditions in their districts. Wind speeds that were historically known to bring significant outage activity within each district were utilized as PSPS thresholds. As of November 2018, SCE's PSPS protocol included established sustained wind and wind gust thresholds for all of its HFRA distribution circuits. As stated in SCE-03, the wind thresholds for the Big Rock Circuit were set

[23] *See* CA-04, pp. 22–27.

at 55 mph and 65 mph, respectively. While Cal Advocates is wrong to suggest that SCE should have emulated SDG&E's wind thresholds given the significant differences in the utilities' service areas, it is worth noting that these thresholds are in the range of the 45–65+ mph SDG&E wind speed criteria identified by Cal Advocates.[24]

FPI and wind speed and gust thresholds were the primary factors that determined circuit monitoring under SCE's PSPS protocol. While Cal Advocates suggests SCE's protocol differed materially from SDG&E's, this basic approach appears similar to SDG&E's approach to PSPS scoping in 2018 as described in data request responses attached to Cal Advocates' testimony, although SDG&E was able to leverage data from its mature weather station network as discussed above.[25] For SCE's November 5–13, 2018 PSPS event, an HFRA circuit was monitored if either the sustained wind speed *or* wind gust speed were forecasted to be within 5 mph of the thresholds for that circuit and FPI was forecasted to be 12 or greater, factoring in a safety buffer. If a circuit was selected for monitoring, SCE sent field observers to monitor and report back on conditions impacting the circuit. These field observers carried hand-held weather devices and provided on-site weather measurements and observations of potentially hazardous conditions, such as airborne debris or conductor/cross-arm movement. The decision to de-energize a circuit was based primarily on these live field observations. While Cal Advocates appears to question SCE's reliance on field observers,[26] live field observations are among the most reliable information about local conditions and potential hazards. SDG&E affirmed that it also relied on feedback from field observers in 2018 to evaluate the potential for conductor movement, vegetation impacts, or debris to inform de-energization decisions.[27]

SCE adhered to its PSPS protocol in the days leading up to, and day of, the Woolsey Fire. SCE closely monitored weather conditions.[28] The list of distribution circuits that were being monitored for potential de-energization consistent with SCE's PSPS protocol evolved throughout the event as SCE added and removed circuits from the monitoring list based on internal modeling and forecasts. At the end of the

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[24] *See* CA-04, p. 27, Fig. 1 (showing gust wind speeds of 45–65 mph for "high risk" and 65+ mph for "critical"). While not directly factored into SCE's initial thresholds, it also is worth noting that the wind thresholds for the Big Rock Circuit in effect for the November 8–13, 2018 PSPS event were in the range of wind loading criteria under GO 95 (8 pounds per square foot equating to 56 mph). *See* SCE-03, pp. 24, 28.

[25] *See* CA04SA-0189 (SDG&E response to CALPA-SDGE-A2410002-004, Question 11(a)) (explaining SDG&E's process of identifying facilities associated with "weather stations forecast to experience gusts at or above *a pre-defined threshold of concern*" as in scope for PSPS) (emphasis added).

[26] *See* CA-04, pp. 11–13.

[27] CA04SA-0191–CA04SA-0192 (SDG&E response to CALPA-SDGE-A2410002-004 Question 12(m) and (n)).

[28] SCE-03, p. 63.

day on November 8, 2018, SCE was monitoring approximately 50 circuits for potential PSPS. Collectively, SCE deployed 54 field observers to observe conditions and monitor hazards at in-scope circuits. Ultimately, SCE de-energized portions of distribution circuits in Los Angeles, Orange, San Bernardino, and Ventura Counties during the November 8–13, 2018 PSPS event. Cal Advocates' criticism of SCE's initial wind thresholds seems particularly unwarranted given the November 8–13, 2018 PSPS event was only the second activation of SCE's PSPS task force under its systemwide PSPS protocol, and the first event where SCE de-energized distribution circuits/portions thereof.[29]

The Big Rock Circuit did not meet the criteria for monitoring at any point prior to ignition of the Woolsey Fire because its forecast sustained wind speeds and wind gusts for November 8 were not within 5 mph of the thresholds at any point during that period.[30] EPUC's claim that SCE "violated its PSPS protocols"[31] is unsupported by the record. As demonstrated above and in SCE-03, SCE adhered to its PSPS protocol in determining that the forecasted wind conditions for the Big Rock Circuit for November 8, 2018, did not meet thresholds for PSPS monitoring.[32] While EPUC cites a Ventura County weather forecast indicating wind gusts up to 70 mph,[33] SCE's PSPS protocol was appropriately tied to the circuit-level forecasts generated by IBM. Countywide forecasts could not reasonably support implementation of PSPS, which is intended to be a measure of last resort and therefore executed at a more granular level.[34]

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[29] In response to a data request from Cal Advocates, SDG&E explained that it "closely examined and adjusted [its PSPS] conditions to enhance safety and reliability" after its first PSPS shutoff in 2013, reflecting "an evolution in the understanding and management of the risks leading to de-energizations." *See* CA04SA-0187–CA04SA-0188 (SDG&E response to CALPA-SDGE-A2410002-004, Question 10(c)).

[30] Although the Big Rock Circuit did not meet PSPS monitoring criteria on November 8, 2018, SCE had implemented other mitigation measures on this circuit, including blocking automatic reclosing of the circuit breaker and automatic reclosers on the Big Rock Circuit pursuant to SOB 322. *See* SCE-03, pp. 35 & 65. Fast Curve settings were also active at the time for RAR 0104, the protection device on the Big Rock Circuit with Fast Curve settings at the time. SCE-03, pp. 34–35 & n.70.

[31] EPUC Testimony, p. 36.

[32] *See* SCE-03, p. 62; *see also* CA04SA-0020 (attachment provided by SCE in response to CalAdvocates-SCA-A2410002-009, Question 1 showing forecast wind speeds on November 8, 2018 of 36 mph sustained and 56 mph gust for the Big Rock Circuit).

[33] EPUC Testimony, p. 36.

[34] The Ventura County forecast referenced by EPUC appears to be from the Woolsey fire agency report, which was attached as Appendix A to SCE-02. While SCE's PSPS protocol was not tied to countywide forecasts, it is worth noting that the fire agency report indicates the wind speeds recorded by three RAWS near the Woolsey Fire ignition area during the time around ignition were well below 70 mph. *See* SCE-02, Appendix A (Woolsey fire agency report), pp. 38–40 (showing wind speeds ranging from 15 to 37 mph at various times between 2 and 3 p.m. on November 8, 2018, for the Simi Valley – Cochran, Cheeseboro, and Chatsworth RAWS).

EPUC is mistaken in suggesting it may have made a difference for PSPS if the one non-operational weather station within five miles of the Woolsey Fire ignition area had been operational on November 8, 2018.[35] The SCE weather station at issue was more than three miles from the ignition area and was not associated with the Big Rock Circuit. In any event, as described above, the initial rollout of weather stations in 2018 was not sufficient to support systemwide PSPS decision-making and SCE was not utilizing real-time weather station data at the time. Thus, even if this weather station had been reliably transmitting data, it would not have impacted PSPS on the day of the fire.[36] Intervenors also have not shown that the Big Rock Circuit would have been de-energized even if SCE's wind thresholds or weather station network were different as of November 2018.[37]

[35] EPUC Testimony, p. 34 (stating that the "weather station that would have monitored the Big Rock circuit was not operational").

[36] EPUC's claim that SCE did not "prioritize[] [weather stations] for repair or replacement" also is inaccurate. *See* EPUC Testimony, p. 34. As discussed above, this initial rollout of weather stations was a testing phase, and SCE appropriately replaced or repaired non-operational weather stations as part of its longer-term development process.

[37] For example, while SCE was monitoring approximately 50 circuits by the end of the day on November 8, 2018, only portions of three distribution circuits were ultimately de-energized on November 8–9, 2018. Cal Advocates also acknowledges that SDG&E initiated a PSPS event on November 8–9, 2018, but did not ultimately de-energize any of its lines during that event. *See* CA-04, p. 32.

III.

INTERVENOR TESTIMONY DOES NOT SHOW THAT THE BIG ROCK CIRCUIT HAD AN UNUSUAL RISK PROFILE IN THE YEARS PRECEDING THE WOOLSEY FIRE

Cal Advocates' presentation of data regarding prior ignitions, outages, and wire down events during Red Flag Warning conditions does not show that the Big Rock Circuit had an unusual risk profile. Rather than showing any imprudence on SCE's part, the data Cal Advocates references regarding the Big Rock Circuit's performance during Red Flag Warning conditions supports SCE's showing that it provided safe and reliable service, even in the most challenging conditions.

First, Cal Advocates acknowledges that there were no ignitions associated with the Big Rock Circuit in the years prior to the Woolsey Fire.[38] Thus, Cal Advocates instead focuses on "five ignitions on nearby distribution circuits in this time period," one of which occurred during a Red Flag Warning event.[39] Ignitions associated with *other* circuits do not suggest any imprudence related to the Big Rock Circuit.

Second, Cal Advocates' testimony acknowledges that only *one* wire-down event occurred during Red Flag Warning conditions on the Big Rock Circuit in the years preceding the Woolsey Fire, hardly suggestive of specific risk unique to the circuit. Across SCE's system, wire down events during Red Flag Warning conditions are not common, but also are not exceptionally rare. In any event, the Woolsey Fire did not involve a wire down incident.

Finally, with respect to outages, Cal Advocates once again highlights events that occurred on *other circuits* unrelated to Big Rock Circuit.[40] For the seven outages specific to the Big Rock Circuit during RFW events that Cal Advocates highlights, three occurred during a single exceptionally-rare 12-day-long RFW event in December 2017.[41] Setting aside that extreme outlier event means that, out of 31 other RFW events in this time period, 27 (or 87 percent) had no outages. And, contrary to Cal Advocates suggestion,[42] across the 84 full or partial Red Flag Warning days on the Big Rock Circuit comprising a total of 89,526 RFW minutes, the Big Rock Circuit experienced a total of 1,272 minutes of outage time, or only around one

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38 CA-03, p. 21.

39 *Id.*, pp. 21–22.

40 CA-03, p. 25, Fig. 6.

41 Cal Advocates also counts in its list of outages one that occurred on February 7, 2016, which resulted from the wire-down event that Cal Advocates discussed earlier in its testimony.

42 CA-03, p. 24 ("In effect, one out of every twelve days during this period with a RFW led to a problem on the Big Rock Circuit.").

percent of the Red Flag Warning minutes. Far from highlighting anything unusual, Cal Advocates' testimony demonstrates the unremarkable fact that outages sometimes occur during Red Flag Warning conditions. By definition Red Flag days are windier than normal, increasing the potential for faults and outages as a result, particularly in light of SCE's SOB 322 pursuant to which SCE blocks automatic reclosing during Red Flag Warning conditions.

EPUC erroneously asserts that "SCE recorded at least two instances where the Subject Pole guy wires or conductors made contract [sic] with electrified cables on the Subject Pole during windy conditions."[43] There was only one such outage (in January 2017) prior to the Woolsey Fire.[44] The February 2016 outage referenced by EPUC did not implicate the Subject Pole, the subtransmission down guy at issue, or any guy wire at all.[45] As described in more detail in SCE-11 and SCE-12, Vol. 1, the data support that there was no pattern of problems related to the Subject Pole or repeat instances of slack guy wires of any type causing outages on the Big Rock Circuit.

[43] EPUC Testimony, p. 19.

[44] EPUC separately cites a data request response where SCE provided guy-related outage data on the Big Rock Circuit. *See* EPUC Testimony, p. 14, n.25. Apart from the January 2017 incident, the data show only one other such outage on the circuit as a whole. This other outage (in December 2017) did not involve the Subject Pole, occurred on a different portion of the circuit, and involved a span guy (pole to pole), which is distinct from a down guy (pole to ground). *See* EPUC Testimony, Appendix B, pp. 4–6 (SCE's response to CalAdvocates-SCE-A2410002-004, Question 1).

[45] *See* EPUC Testimony, Appendix B, p. 10 (SCE's response to CalAdvocates-SCE-A2410002-069, Question 2(a)). As explained in SCE's response to Cal Advocates' data request, the issue that caused the February 2016 outage related to facilities between SCE poles 4630681E and 4473428E, not the Subject Pole, which is numbered 4534353E.