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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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| Order Instituting Rulemaking to Implement Electric Utility Wildfire Mitigation Plans Pursuant to Senate Bill 901 (2018). | Rulemaking18-10-007 |

**COMMENTS OF THE OFFICE OF THE SAFETY ADVOCATE (OSA)**

## I. INTRODUCTION

OSA, as a party to this proceeding, advocates to assist the Commission to hold public utilities accountable for their safe operation. The Governor and legislature approved legislation in late 2016 that created the OSA. The legislation mandates that OSA, among other things, advocate for improvements to public utility safety management systems, safety culture, and aging infrastructure.

Pursuant to the October 25, 2018 Order Instituting Rulemaking (R.) 18-10-007), the Office of the Safety Advocate (OSA) hereby files these Comments.

## II. MEANING OF PLAN APPROVAL

### A. The focus of approval should remain on the objective of the WMPs: minimizing the risk of catastrophic wildfire

While the question of decoupling approvals from costs is a valid and important one, its complexity should not consume this proceeding to the extent it detracts from the real objective of minimizing the risk of catastrophic wildfire.

The Utilities must do what is necessary to ensure the public's safety by reducing the risk of catastrophic wildfire, *irrespective of whether or not they have certainty of future cost recovery at the time*. The Utilities must not delay developing and implementing critical wildfire mitigation work, or any safety critical work, due to their perceived uncertainty of cost recovery. Doing so is inconsistent with the Commission's safety goal of "zero accidents"[1] and contrary to prudent safety management, and PUC 451.

### B. The Commission must adopt a "safety priority" policy

The Commission must send a clear message that safety is the top priority and adopt a "safety priority" policy for electric utilities similar to the one adopted following the San Bruno explosion for gas utilities, which states:

> "It is the policy of the state that the commission and each gas corporation place safety of the public and gas corporation employees as the top priority. The commission shall take all reasonable and appropriate actions necessary to carry out the safety priority policy of this paragraph consistent with the principle of just and reasonable cost-based rates."[2]

### C. Approval should only be viewed as a guide for risk mitigation efforts

#### 1. Past experience indicates that Utilities' strict adherence to the scope presented in Commission-approved safety plans may not maximize safety risk reduction.

Following the San Bruno pipeline explosion in 2010, the Commission required plans to enhance pipeline safety by California's gas transmission operators. These Pipeline Safety Enhancement Plans (PSEPs) involved work of a similarly unprecedented magnitude as the WMPs are for the electric industry. In SED's review of PG&E's PSEP Update – several years after approval of the original plan - SED learned that some high risk/high priority pipelines were excluded from risk mitigation because the utility did not proactively and timely seek to incorporate the new pipeline data it gathered after the original plan approval.[3] PG&E did, however, address lower risk/priority pipelines because it limited the scope of its compliance to only those segments of pipeline listed in its original filing.

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[1] Safety Policy Statement of the California Public Utilities Commission (July 10, 2014) .http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/VisionZero4Final621014_5_2.pdf .

[2] Pub. Util. Code § 963(b)(3).

[3] Safety and Enforcement Safety Review of PSEP Update for A.13-10-017, p. 28-29.

Risk is dynamic in nature. Incorporating new information and events often changes what is known about the risk. The WMPs offer a glimpse of mitigation measures that address a snapshot of risk at a single point in time (which may even be outdated by the time the filing is made with the Commission, let alone its review), so strict adherence to the scope presented in the WMP is not aligned with the dynamic nature of risk.

### 2. Flexibility in complying with the WMP's scope based on new information is necessary post-approval to ensure alignment with the WMP's risk reduction objective; Incorporating and avidly seeking new information should be a set expectation for Utility compliance with the WMPs.

The Commission's approach to approving the WMPs and the utilities' compliance with those plans should consider the dynamic nature of risk. WMPs are currently just a high level snapshot in time, yet risk is dynamic as explained above. Compliance with the WMP's cannot be static through strict adherence to a potentially outdated scope.

Some degree of flexibility with WMP implementation and compliance is necessary to accommodate for new information learned about utility assets, risk and effectiveness of all mitigation measures. The Utilities should continually incorporate and avidly seek this new information. The latter should be set as an expectation for utility compliance with the WMPs and for any prudency and reasonableness review that should take place at a later date. (e.g., general rate case). Such new information could pertain to near-miss data, asset property and characteristics, accidents, lessons learned, etc.

## D. Approval should only be viewed as a guide for risk mitigation efforts.

In addition to needing an approval and compliance approach that is flexible in order to account for the dynamic nature of risk, as discussed in the sections above, the current plans lack sufficient detail for a reasonably thorough review. Moreover, the expedited review time frame for the current plans is insufficient to reasonably determine their adequacy.

For the reasons stated above WMP approval should be viewed as a guide for risk mitigation efforts. Approval of a plan should not be interpreted as a checklist of work that must now be implemented in order to achieve compliance.

Compliance should consider the degree to which the utilities sought and incorporated information/data to inform wildfire risk and effective mitigation, in addition to the other items discussed in Sections 7 and 8.

## III. OVERALL OBJECTIVES AND STRATEGIES

Comments for PG&E's WMP

- **Issue – Infrastructure designed to withstand wind speeds up to 70 mph**

PG&E provided the following information in response to OSA's data request OSA PG&E – 01,Q1,

> "In response to this question, PG&E has calculated the percentage of its service territory subject to the enhanced wind loading standards as the geographic portion of its service area with peak wind speeds in excess of 50 mph as determined by the 1999 study "Extreme Wind Speed Estimates Along PG&E Transmission Line Corridors. Based on this definition and calculation methodology, approximately 94 percent of PG&E's service area is subject to some form of enhanced wind loading standard.
>
> For subparts (i),(ii) and (iii) below, the first percentage statistic (70 mph) applies to steel transmission structures and distribution facilities and the second percentage statistic (50 mph) applies to transmission wood and wood pole equivalent (Light Duty Steel Pole, Fiberglass, Reinforced Polymer, etc.).
>
> (i) Approximately 63 percent of PG&E's service area with peak wind speeds in excess of 70 mph is within Tier 2 of the High Fire-Threat District (HFTD). Approximately 47 percent of PG&E's service area with peak wind speeds in excess of 50 mph is within Tier 2 of the High Fire-Threat District (HFTD).
>
> (ii) Approximately 12 percent of PG&E's service area with peak wind speeds in excess of 70 mph is within Tier 3 of the HFTD. Approximately 9 percent

> of PG&E's service area with peak wind speeds in excess of 50 mph is within Tier 3 of the HFTD.
>
> (iii) Less than 1 percent of PG&E's service area with peak wind speeds in excess of 70 mph is within Zone 1 of the HFTD. Less than 1 percent of PG&E's service area with peak wind speeds in excess of 50 mph is within Zone 1 of the HFTD."

On January 12, 2018 the Associated Press (AP) reported that California's wind speed record had been broken "SAN FRANCISCO (AP) — Scientists say a 199-mph (320-kph) gust that blasted a mountaintop at the Alpine Meadows ski resort last February was the strongest wind ever recorded in California."

PG&E does acknowledge on pages 29 and 30 of their WMP that high wind corridors due to topography and location is something being considered in their modeling for Risks and Drivers, but PG&E has not identified any areas in their territory that will be upgraded due to these conditions.

> "Topography can be an important risk factor for fire danger in certain areas within PG&E's service area. For example, lee-side mountain slopes can be prone to strong downslope winds under certain weather conditions, which can cause increased risk of wires down and/or contact between uninsulated conductors in that area, leading to potential wildfire ignition. Winds can also be funneled through canyons and mountain passes, resulting in similar effects."

Considering the effects of climate change and the extreme weather conditions that we are now facing in California, OSA recommends that PG&E investigate unique topography within their service territory. Specifically, within the Tier 2 & Tier 3 high fire risk areas that includes mountain ridges, canyons and other topographical features that create extreme wind corridors. Then utilize this information to develop targeted enhanced inspections and determine quickly if structural improvements are necessary for their most vulnerable assets. These inspections and considerations should be given to both overhead distribution facilities and transmission facilities.

Comments for SCE's WMP

- **Issue – At risk assets due to extreme high wind corridors**

OSA asked in a recent data request (OSA SCE – 01, Q10),

"Regarding your distribution infrastructure and your transmission infrastructure that is located within the boundaries of the Commission's High Fire-Threat District Map, what are the maximum wind speeds that these existing facilities have been designed to withstand?..."

The following is SCE's response,

"Table 1 below provides a breakout of the various design wind pressures and equivalent speeds currently used for SCE's distribution and subtransmission infrastructure. The maximum wind speed is based on a 24 lbs. wind pressure that equates to 97 mph. For bulk transmission infrastructure, SCE's maximum wind speeds have been based on either GO 95 wind speeds indicated below, project-specific weather studies, or ASCE 74 methods which include an 85 mph wind speed for the State of California. Generally speaking, SCE does not design any of its facilities for wind gusts greater than 100 mph."

On January 12, 2018 the Associated Press (AP) reported that California's wind speed record had been broken "SAN FRANCISCO (AP) — Scientists say a 199-mph (320-kph) gust that blasted a mountaintop at the Alpine Meadows ski resort last February was the strongest wind ever recorded in California."

Considering the effects of climate change and the extreme weather conditions that are part of the new normal in California, OSA recommends that SCE investigate unique topography within their service territory. Specifically, within the Tier 2 & Tier 3 high fire risk areas that includes mountain ridges, canyons and other topographical features that create extreme wind corridors. Then utilize this information to develop targeted inspections and determine if structural improvements are necessary for their most vulnerable distribution and transmission assets. These inspections and considerations should be given to both overhead distribution facilities and transmission facilities.

- **Issues – Limited ignition data was used to develop the drivers**

SCE states on page 24 of their WMP that "The limited quantity of ignitions associated with transmission infrastructure has limited the analysis performed based on historical ignitions." SCE does state later (on this same page) that…

> "Additionally, in its 2019 risk analysis (to inform the 2020 WMP), SCE will include an analysis of equipment that were not associated with reportable historical ignitions in HFRA, but that could potentially lead to an ignition, such as lightning arresters, poles, protective relays, switches, etc. SCE is also currently developing a fire consequence model at a circuit segment level, which will further inform the prioritization for various mitigations based on wildfire risk exposure."

OSA applauds SCE's plan to expand its analysis beyond historical ignition data to look at "potential" risks that could lead to an ignition. OSA recommends, given that SCE has a limited historical data set on transmission ignitions, that SCE request the transmission data from other utilities to enhance their data set and analysis. During the technical workshop held at the CPUC on February 27, representatives from each utility agreed to share their data with other utilities.

<u>Comments for PacifiCorp WMP</u>

- **Issue – At risk assets due to extreme high wind corridors**

OSA asked PacifiCorp in a recent data request the following question (OSA PacifiC – 01, Q1),

> "Regarding your distribution infrastructure and your transmission infrastructure that is located within the boundaries of the Commission's High Fire-Threat District Map, what are the maximum wind speeds that these existing facilities have been designed to withstand?... "

The following is a portion or PacifiCorp's response,

> "Rule 43.1, Heavy Loading, applies to facilities that are more than 3,000 feet in elevation and requires two concurrent weather cases be evaluated: wind pressure of 6 psf, projected onto a radial surface, equivalent to a 48 mph wind gust but this wind loading is additive to ½ inch radial ice. The net effect of these loads

results in more resilience when no ice is present yet the equivalent wind resilience is a function of the conductor diameter. If these diameters and wind resilience are calculated and summarized throughout PacifiCorp's California service territory that lies at or above 3,000 feet the median wind gust speed the facilities are designed to withstand is 72.8 mph without ice."

On January 12, 2018 the Associated Press (AP) reported that California's wind speed record had been broken "SAN FRANCISCO (AP) — Scientists say a 199-mph (320-kph) gust that blasted a mountaintop at the Alpine Meadows ski resort last February was the strongest wind ever recorded in California."

Considering the effects of climate change and the extreme weather conditions that are part of the new normal in California, OSA recommends that PacifiCorp investigate unique topography within their service territory. Specifically, within the Tier 2 & Tier 3 high fire risk areas that includes mountain ridges, canyons and other topographical features that create extreme wind corridors. Then utilize this information to develop targeted, enhanced inspections and determine if structural improvements are necessary for their most vulnerable distribution and transmission assets. These inspections and considerations should be given to both overhead distribution facilities and transmission facilities.

- **Issue – PacifiCorp's small conductor used for primary voltage in their overhead distribution system**

PacifiCorp's response to OSA's data request 01, question number 4 is as follows, "PacidfiCorp has 33.39 miles of conductor size #6 and smaller that is in service for their primary distribution system within the three designated high fire threat areas of the Commission's HFTD map."

Small conductors are problematic. They are more prone to breakage, which contributes to downed wires and faults. If a small conductor has been in service for a long time it is more likely to have developed pitting from arcing during lighting strikes. Also, aluminum conductors can experience corrosion issues especially in coastal areas.

Older smaller copper conductors become brittle and can break easily due to annealing causing them to lose strength over time.

OSA recommends that PacifiCorp prioritize the replacement of their existing small conductors located within the three HFRA areas Zone 1, Tier 2, and Tier 3 as a high-risk driver (the highest risk being given to Tier 3 small conductors) to insure their replacement as soon as possible.

- **Issue – Evacuation study for Happy Camp is needed**

Happy Camp is located on State Route 96 along the Klamath River and because of its location on the river and because it is in a thick forested area, it draws a lot of tourists in the summertime who are outdoor enthusiasts. With all the recreational attractions there, Happy Camp's population may increase dramatically during fire season. Happy Camp is also a high fire risk community and is also very isolated. It is located about 70 miles west of Interstate 5 and 100 miles northeast of Willow. Highway 96 is the only way in and out of the town to get to a more populated area. Also, highway 96 is a two-lane highway.

For these reasons OSA is recommending that PacifiCorp do a traffic simulation and evacuation study. PacifiCorp should find an expert to work with who can do an evacuation study to examine anticipated traffic conditions and evacuation times associated with various rates of evacuation responses and alternative management strategies that could be used in response to them and develop a workable plan. PacifiCorp needs to work with their jurisdictional representatives from Cal FIRE, the county's sheriff's department, and the California Office of Emergency Services (OES) to develop a plan. This should always be a consideration when determining if a PSPS is necessary in the area of Happy Camp. Additionally, there maybe other small, isolated communities in the PacifiCorp territory that need to be examined for evacuation issues.

- **Issue – Need for more SCADA controls**

OSA asked the following data question of PacifiCorp (OSA PacifiC – 01, Q3),

"Do you have the ability now, or will you have the ability after your proposed mitigations are implemented, to be able to change the settings of your SCADA from one centralized control center?  For instance, can you change the settings on your reclosers and deenergize your distribution circuits from one centralized location or is the architecture of your SCADA system decentralized and controls must be activated from multiple locations to be accomplished?  What other types of circuit protection/isolation devices do you own that can be controlled by your SCADA system and where are those controls located?

PacifiCorp gave the following response to this question,

"PacifiCorp currently has the ability to change any Supervisory Control and Data Acquisition (SCADA)-controlled equipment via a centralized system that can be controlled from any of PacifiCorp system operations centers.  PacifiCorp is able to remote enable and remote disable auto-reclosing, and remotely de-energize circuits via circuit breakers or circuit switchers.  This is only for equipment with SCADA capabilities.  Not all equipment that PacifiCorp operates is controllable via SCADA.  In the absence of SCADA capabilities, manual operations are required by PacifiCorp personnel at the location of each piece of equipment.  In addition to the functionality already stated, SCADA is also used to enable and disable inputs and set points of remedial action schemes and voltage control equipment such as load tap changers, capacitors, and reactors.  PacifiCorp does not currently have the capability to remotely control or change settings on distribution feeder reclosers.  Once the proposed mitigations are fully implemented, PacifiCorp will have the ability to remotely control and change settings on substation and recloser relays".

Having the ability to remotely control or change settings on distribution feeder reclosers is needed to ensure the public's safety during high fire threat days.  OSA recommends that these improvements to PacifiCorp's SCADA system be completed as soon as possible.

<u>Comments for Liberty's WMP</u>

- **Issue – Evacuation study for Tahoe is needed**

The cities that surround Lake Tahoe draw a lot of outdoor enthusiasts in the summertime.  With all the popular recreational attractions that Tahoe has, its population can increase dramatically during the summer months and fire season. Many people visit the Tahoe area because of its natural beauty, but Tahoe also attracts many tourists to its popular casino properties. With so much going on in Tahoe, there often are traffic jams on the limited access routes into and out of the Tahoe basin.

For these reasons OSA is recommending that Liberty do a traffic simulation and evacuation study. Liberty should find an expert to work with who can do an evacuation study to examine anticipated traffic conditions and evacuation times associated with various rates of evacuation responses and alternative management strategies that could be used in response to them and develop a workable plan. Liberty needs to work with their jurisdictional representatives from Cal FIRE, their county's sheriff's department, and the California Office of Emergency Services (OES) to develop an evacuation plan. Additionally, the evacuation issues should always be a consideration when determining risk factors and if a PSPS is necessary to insure public safety.

Comments for Bear Valley's WMP

- **Issue – At risk assets due to extreme high wind corridors**

OSA asked Bear Valley in a recent data request the following question (OSA BV – 01, Q1),

> "Regarding your distribution infrastructure that is located within the boundaries of the Commission's High Fire-Threat District Map, what are the maximum wind speeds that these existing facilities have been designed to withstand?..."

The following is a portion of Bear Valley's response,

> "As stated in BVES' Wildfire Mitigation Plan, BVES service area is entirely:
>
> • Within the High Fire Threat District (HFTD) per General Order (GO) 95.
> • Above 3,000 feet in elevation; thereby requiring per GO 95 "Heady Loading District" strength requirements.

BVES constructs to GO 95 standards…

A. Wind: A horizontal wind pressure of 6 pounds per square foot of projected area on cylindrical surfaces, and 10 pounds per square foot on flat surfaces shall be assumed. Where latticed structures are used, the actual exposed area of one lateral face shall be increased by 50% to allow for pressure on the opposite face, provided this computation does not indicate a greater pressure than would occur on a solid structure of the same outside dimensions, under which conditions the latter shall be taken...

BVES has approximately 210.8 circuit miles of overhead facilities all of which are in the HFTD. Approximately 2.8 circuit miles are in the HFTD Tier 3 area and 207.9 circuit miles are in the HFTD Tier 2 area."

On January 12, 2018 the Associated Press (AP) reported that California's wind speed record had been broken "SAN FRANCISCO (AP) — Scientists say a 199-mph (320-kph) gust that blasted a mountaintop at the Alpine Meadows ski resort last February was the strongest wind ever recorded in California."

Considering the effects of climate change and the extreme weather conditions that are part of the new normal in California, OSA recommends that Bear Valley Utilities investigate the unique topography within their service territory. Specifically, within the Tier 2 & Tier 3 high fire risk areas that includes mountain ridges, canyons and other topographical features that create extreme wind corridors. Then utilize this information to develop targeted, enhanced inspections and determine if structural improvements are necessary for their most vulnerable distribution and transmission assets. These inspections and considerations should be given to both overhead distribution facilities and transmission facilities.

## IV. RISK ANALYSIS AND RISK DRIVERS

Comments for PG&E's WMP

- **Issue – PG&E's #6 copper conductor used for primary voltage**

The Liberty Consulting Group report describes a second issue with PG&E's primary overhead distribution facilities. This information is also found on page 96 of their report,

> "The second legacy issue of particular safety concern arises from the large amount of small size obsolete conductor remaining on PG&E's system. PG&E has 113,000 circuit miles of primary voltage overhead distribution conductor. A large portion (22,206 miles, or 19.6 percent) takes the form of #6 copper (Cu) conductor. This conductor was once popular, but is now recognized as obsolete, due to its small size. Such a small conductor becomes more subject to breakage as it ages. Three factors contribute to breakage risk. First, over many years of service, conductors will experience numerous situations of arcing together. High winds or lightning strikes are principal causes of arcing. These occurrences cause small pits in the conductor. Larger conductors can withstand this type of pitting without losing as material an amount of strength. Second, small copper wire anneals at lower fault current levels than does a larger conductor. Annealed copper becomes brittle and loses its strength. Third, a small conductor has a relatively low rated breaking strength."

OSA received a data request response from PG&E that states that the utility still has 1,959 circuit miles of #6 copper conductor remaining within the Tier 2 of the Commission's HFTD map and 754 circuit miles of #6 copper conductor in their Tier 3 areas of the HFTD map (see PG&E's response to OSA's data request OSA_001-Q04). OSA recommends that PG&E prioritize the replacement of their existing small #6 copper conductor located within the Tier 2 and Tier 3 high fire threat areas with the highest ranking available in their circuit hardening prioritization methodology and do it on an expedited construction schedule.

- **Issue PG&E's construction schedule for system hardening is too long**

PG&E states in their WMP that the build-out for their system hardening plans will take 10 years.

> "PG&E expects completing the 7,100 circuit miles to take approximately 10 years due to the constraints on available qualified personnel and materials. The most significant potential barriers to completing the planned system hardening are limitations on the supply of necessary materials needed for the volume of work, particularly covered conductor, and the supply of adequately-trained personnel necessary to perform the work in the field."

OSA believes this schedule can be shortened and recommends that PG&E do everything it can to partner with manufactures around the world to accelerate material productions. PG&E should also either hire quality control engineers or contract with QC consulting companies where needed to do onsite inspections of materials being produced. Having someone on site at the manufacturing facilities will not only help with QC but will also help expedite the orders. Additionally, to increase the availability of a skilled workforce PG&E needs to complete this work, PG&E should work with trade schools and/or develop in-house training programs to gain the skilled workforce needed to harden the areas PG&E has identified in Tiers 2 and 3 of the HFTD map that still need to be addressed.

- **Issue – PG&E notifications for PSPSs and their timeline**

PG&E stated on page 105 of their WMP,

> "If a PSPS event is forecasted, PG&E will also attempt to send notifications to all potentially impacted customers when and where possible, before, during and after a PSPS event. Notifications will be made through various channels including IVR, text and/or email. When and where possible, PG&E will attempt to notify critical facilities such as hospitals, emergency centers, fire departments, water plants, water utilities/ agencies, schools, and telecommunications providers (critical facilities) in advance of residential customers before an event occurs to help inform their preparedness efforts."

In the above paragraph from PG&E's WMP, PG&E has stated that they will "attempt" to send notifications to all impacted customers and will "attempt" to notify critical facility owners. There is no reassurance in these statements that PG&E is putting in a high-level effort to reach impacted customers. It is understandable that PG&E cannot track daily who is moving into and out of their territory, but hospitals, emergency centers, fire departments, water plants, water utilities/ agencies, schools, and telecommunications providers rarely move from their locations and reliable contacts can easily be established.

OSA recommends PG&E dedicate staff to the task of updating contact data bases that not only include contact information, but also include other important information like whether the customer is a senior citizen dependent on refrigerated daily medications. Other homes may have family members on medical equipment that require power to operate. PG&E needs to know who their most at risk customers are and what is the best way to reach them.

Regarding hospitals, emergency centers, fire departments, water plants, water utilities/ agencies, schools, and telecommunications providers, PG&E representatives should be meeting with and coordinating with these organizations throughout the year to discuss wildfire preparedness efforts and PSPS preparedness efforts.

PG&E also needs to develop a notification timeline that allows for the earliest possible notifications to go out as soon as conditions present themselves for a possible PSPS especially for the critical facility owners who need much more time to prepare for the event. Water providers may need to move water into storage basins. Hospitals may need to move patients. Additionally, generators may need to be deployed. Early notification helps to ensure that a PSPS can occur safely.

Comments for SCE's WMP

- **Issue – SCE's small conductor used for primary voltage in their overhead distribution system.**

SCE's response to OSA's data request (OSA SCE – 01) is as follows, "SCE has roughly 700 circuit miles of small conductor installed for their primary distribution system in the HFRA as categorized below."

Small conductors are problematic. They are more prone to breakage, which contributes to downed wires and faults. If a small conductor has been in service for a long time it is more likely to have developed pitting from arcing during lighting strikes. Also, aluminum conductors can experience corrosion issues especially in coastal areas. Older smaller copper conductors become brittle and can break easily due to annealing causing them to lose strength over time.

OSA recommends that SCE prioritize the replacement of their existing small conductors located within the three HFRA areas Zone 1, Tier 2, and Tier 3 as a high-risk driver (the highest risk being given to Tier 3 small conductors) to insure their replacement as soon as possible.

- **Issue - SCE's construction schedule for system hardening is too long**

SCE states on page 52 of their WMP that the built-out for their system hardening plans will take five years.

> "… In 2018, SCE began deploying covered conductor in HFRA and installed 84 circuit miles as part of GSRP. SCE is targeting completing approximately 600 circuit miles by year-end 2020, focused on portions of nine at-risk circuits in HFRA."

OSA believes this schedule can be shortened and recommends that SCE do everything it can to partner with manufactures around the world to accelerate material production for covered conductors and poles. Additionally, SCE should either hire quality control engineers or contract with QC consulting companies where needed to do onsite inspections of materials being produced. Having someone on site at the manufacturing facilities will not only help with QC but will help expedite the orders. Also, to increase the available skilled workforce SCE needs to complete the work, SCE should work with trade schools and/or develop in-house training programs to gain the skilled workforce needed to harden the remaining areas SCE has identified in Tiers 2 and 3 of the Commission's HFTD map that still need to be addressed.

- **Issue - SCE PSPS notification timeline**

SCE has stated on page 66 of their WMP that their designated timeline for PSPS notifications is as follows, "2 days ahead of the forecast event, predictive models begin to improve in accuracy, and SCE activates its IMT. To the extent possible, SCE begins coordinating closely with local government and agencies (e.g., first responders) on a possible PSPS de-energization event."

Several essential service providers came forward in the de-energization workshop held in Calabasas, (1/9/2019) expressing concerns about late notifications for PSPS events. Local government and safety agencies have expressed the same concerns. A two-day notification is not enough time for these organizations to mobilize their staff and prepare for these events. SCE also states on page 66 that at,

> "4-7 days ahead of forecasted fire conditions in a HFRA, SCE meteorologists will begin predictive modeling to assess potential impacts to infrastructure that may require SCE to implement a PSPS de-energization event."

OSA recommends that both essential service providers and local government and safety agencies be immediately notified that there may be a PSPS event within the next 4 to 7 days to allow these two customer groups as much time as possible to prepare.

- **Issue - SCE PSPS definition of Critical Care Customers**

On page 68 of their WMP SCE states the definition of their critical care customers.

> "…critical care customers are those customers enrolled in SCE's Medical Baseline program whose physician has indicated that the medical equipment in use at the home is for life sustaining purposes and absent electricity for two or more hours the customer would be at risk. SCE considers these customers the most vulnerable of its medical baseline customers and therefore takes added measures to facilitate the safety of these customers."

These customers should absolutely be given the highest level of attention for insuring preparedness and outreach for notifications, but in addition to these customers there are other customers that may not be depending on medical equipment but may be more vulnerable than SCE's average residential customer. These may be customers who are senior citizens who live alone that rely on medications that must remain refrigerated to be usable, or they may be handicapped and need special assistance during a PSPS. OSA recommends that SCE develop a higher-level notification system for these customers that are also vulnerable to PSPS events. Local government agencies may be helpful in identifying the customers that would in to this category and may also be helpful in getting the PSPS notification information to them.

Comments for SDG&E's WMP

- **Issue – Construction schedule to harden remaining facilities is too long**

OSA commends all the hard work SDG&E has done over the years to develop effective wildfire mitigation programs. OSA has only one comment for the SDG&E WMP.

On page 34 SDG&E states in their WMP,

> "To date, the FiRM program is currently 24% complete having replaced over 7,000 poles and 350 miles of wire. SDG&E plans to continue this effort for the foreseeable future as there are still 1,100 miles of aged high-risk conductor remaining within the HFTD in SDG&E's service territory. At this current rate of reconductoring approximately 84 miles of high-risk conductor per year, it will take SDG&E approximately 13 years…".

OSA believes this schedule can be shortened and recommends that SDG&E do everything it can to partner with manufactures around the world to accelerate material production for covered conductor and poles. Additionally, SDG&E should either hire quality control engineers or contract with QC consulting companies where needed to do onsite inspections of materials being produced. Having someone on site at the manufacturing facilities will not only help with QC but will help expedite the orders. Also, to increase the available skilled workforce SDG&E needs to complete the work, SDG&E should work with trade schools and/or develop in-house training programs to gain the skilled workforce needed to harden the remaining areas SDG&E has identified in Tiers 2 and 3 of the Commission's HFTD map that still need to be addressed.

Comments for PacifiCorp's WMP

- **Issue – Most wildfires are started by lightning strikes in PacifiCorp's territory and plan to use steel structures**

PacifiCorp has stated in their WMP that they have a five-year plan to proactively replace wooden poles with steel structures. PacifiCorp has also said that the largest contributor to wildfires in their territory is lighting strikes which is discussed in their WMP on page 19. Lighting strikes were the cause of wildfires in PacifiCorp's territory in the years 2007 - 2017 62.81% of the time.

OSA is concerned that using steel structures in an area where there are so many fires started by lightning strikes may not be a good solution and recommends that other materials be considered. Additionally, OSA recommends that before the steel structures are purchased PacifiCorp meet with a lighting expert to determine if the steel structures, that PacifiCorp is proposing to use, will attract lighting strikes that could potentially ignite a wildfire.

- **Issue - PacifiCorp's construction schedule for system hardening has not been determined.**

PacifiCorp states on page 45 of their WMP that,

> "Site by site design schedules will be defined based on the completed scopes. Site priority will be defined by the project sponsor and the designated project manager who has yet to be identified. Schedules will tentatively be developed by March 28, 2019, pending assignment of a project manager."

PacifiCorp has outlined a number of systems hardening projects that it plans to execute, but no start dates or completion dates have been provided in their WMP.

OSA recommends that PacifiCorp either hire or designate someone within their organization to organize, manage, and direct their system hardening projects. This person should be responsible for all the public safety, system hardening projects that PacifiCorp is proposing and has the authority to make sure that these projects are the company's highest priority.

- **Issue - PSPS notifications**

PacifiCorp makes the following statement on page 66 of their WMP, "Known vulnerable customers (medical conditions, etc.) will receive additional outreach from the company requesting they evaluate the safety of their situations and consider a back-up plan in case of a shut off or any emergency outage."

PacifiCorp does not define in their plan who a vulnerable customer is and when they will be notified of a potential PSPS. Are these customers dependent on medical devices only, does this list include elderly people who live alone, people who depend on refrigerated medications, or people who are handicapped and need special assistance? Also, there is no clear statement about when these customers will be notified of a potential PSPS. It is implied from reading the WMP that it will be 48 hours before the de-energization event occurs. This may not be enough time for these types of customers to prepare.

OSA recommends that PacifiCorp work to expand their knowledge of who these vulnerable and medical baseline customers are in their territory, what their needs are, and maintain up to date records on them. Also, this population of customers should be notified as soon as possible of the potential of a de-energization event to allow them as much time as they need to prepare.

PacifiCorp also makes the following statement on page 66 of their WMP,

> "Public Safety Authorities, Local Municipalities, Emergency Responders - The company's Emergency Manager will notify the appropriate local agencies based on the PDZ that was activated."

PacifiCorp does not make clear when this group (public safety authorities, local municipalities, emergency responders) will be notified of a potential PSPS event. It is implied from reading the WMP that it will be 48 hours before the de-energization event occurs. This would not be enough time for these agencies to prepare for the event. Also, hospitals, nursing homes, and other similar facilities were not mentioned in the WMP for early notification or special outreach.

OSA recommends that PacifiCorp increase their weather monitoring program to be able to identify conditions that can trigger a PSPS at least 4 to 5 days ahead of the event.  As soon as this information is received, and it is determined that there is the possibility that a PSPS may occur, public safety authorities, local municipalities, emergency responders, hospitals, medical clinics, nursing homes, and schools should be notified.

Comments for Liberty's WMP

- **Issue – Mitigations for wildlife caused faults**

Liberty did not address in their WMP any design programs or any adjustments being considered for their design standards regarding wildlife caused faults.  Liberty also did not present or discuss incident fault data due to animal and bird caused faults. Additionally, Liberty's covered conductor program from now until 2023 is only reconductoring 7 to 14 miles of primary distribution facilities with covered conductors.

Almost all of Liberty's territory is within national forests and full of wildlife including large birds.  Although animal and bird caused fault data has not been provided or discussed in this WMP, Liberty most likely has a problem with wildlife caused faults. Although covered conductor is a good mitigation for reducing faults caused by animals, Liberty is currently only planning on installing 7 to 14 miles of it which is a very small amount as compared to Liberty's total territory.

For these reasons OSA recommends Liberty Utilities investigate other mitigation solutions to address animal and bird caused faults for both their electrical distribution facilities and their transmission facilities, such as, developing avian-safe design standards.  Standards used by other California utilities include avian-safe designs for transmission and distribution structures requiring framing poles with 60-inch horizontal and 40-inch vertical phase-to-phase and phase-to ground separations, extending center phase of a three-phase crossarm design, or by using covers to insulate potential phase-to-phase and phase-to-ground contact by avian species or other wildlife. Phase-to-phase and phase-to-ground separation distances are based on the dimensions of eagle's wing spans for utilities located in areas where eagle interactions and bird incidents may occur at distribution, transmission, and substation facilities. Additionally, there are different wildlife protection devices available on the market that can be investigated. Liberty should develop a wildlife facilities protection plan for their distribution facilities and transmission facilities located in Tiers 2 & 3 of the HFTD map.

- **Issue – No notification timeline provided for PSPS Events**

Liberty has described on page 35 of their WMP a four-step action plan for executing a PSPS shown in Table 4-7. This plan describes what steps Liberty will be taking when weather conditions develop that could lead to having to start de-energization procedures. For each step of the plan who will be notified at that stage of the plan. Liberty states that they will contact local governments and agencies that could be affected by the PSPS at stage one of the execution steps and throughout the process, but the plan does not say anything about contacting critical service providers, such as, water treatment plant owners, telecommunications providers, hospitals, nursing homes, or school districts. The action plan also does not distinguish between residential customer types either. For instance, there is no description of baseline medical customers or vulnerable customers described or is there any information how these types of customers will be tracked or contacted during the execution of their PSPS procedures.

Another missing component of Liberty's PSPS plan is that there is no established time line for when these four stages will take place. Will stage one be 5 to 6 days before leading into the PSPS activation or 4 to 5 days before? When will customers be notified especially their critical service providers? This is critical information for these different types of customers to have so that they will have enough time to prepare for the PSPS event.

<u>Comments on Bear Valley's WMP</u>

- **Issue – Evacuation study for Bear Valley is needed**

Bear Valley attracts many outdoor enthusiasts in the summertime. With all the popular recreational attractions that Bear Valley has to offer, its population can increase dramatically during the summer months and fire season. Bear Valley also has very limited access in and out of its service territory. There are only three 2-lane highways that are available for an evacuation.

For these reasons OSA is recommending that Bear Valley do a traffic simulation and evacuation study. Bear Valley needs to find an expert to work with who can do an evacuation study and examine anticipated traffic conditions and evacuation times associated with various rates of evacuation responses and alternative management strategies that could be used in response to them and develop a workable plan. Bear Valley needs to work with their jurisdictional representatives from Cal FIRE, San Bernardino County's Sheriff's Department, and the California Office of Emergency Services (OES) to develop an evacuation plan. Additionally, the evacuation issues should always be a consideration when determining risk analysis and drivers when developing their WMP, and also, whether or not a PSPS is necessary to insure public safety due to evacuation issues.

- **Issue – Mitigations for wildlife caused faults**

Bear Valley did not address in their WMP any design programs or any adjustments being considered for their design standards regarding wildlife caused faults. Bear Valley also did not present or discuss incident fault data due to animal and bird caused faults. Finally, Bear Valley is planning to do two, three miles each, covered conductor pilot studies in the near future and replace their Radford 34.5 kV line with covered conductor.

Almost all of Liberty's territory is within heavily forested areas that are habitats for wildlife including large birds. Although animal and bird caused fault data has not been provided or discussed in this WMP, they most likely have a problem with wildlife caused faults. Although covered conductor is a good mitigation for reducing faults caused by animals, Bear Valley is currently only planning on installing limited amounts of covered conductor in their service territory.

For these reasons OSA recommends that Bear Valley investigate other mitigation solutions to address animal and bird caused faults for both their electrical distribution facilities and their transmission facilities, such as, developing avian-safe design standards. Standards used by other California utilities include Avian-safe designs for transmission and distribution structures require framing poles with 60-inch horizontal and 40-inch vertical phase-to-phase and phase-to ground separations, extending center phase of a three-phase crossarm design, or by using covers to insulate potential phase-to-phase and phase-to-ground contact by avian species or other wildlife. Phase-to-phase and phase-to-ground separation distances are based on the dimensions of eagle's wing spans for utilities located in areas where eagle interactions and bird incidents may occur at distribution, transmission, and substation facilities. Additionally, there are different wildlife protection devices available on the market that can be investigated. Bear Valley should develop a wildlife facilities protection plan for their distribution facilities and transmission facilities located in Tiers 2 & 3 of the HFTD map.

- **Issue – No notification timeline provided for PSPS Events**

Bear Valley has described on page 36 of their WMP a four-step action plan for executing a PSPS shown in Table 4-6. This plan describes what steps Bear Valley will be taking when weather conditions develop that could lead to having to start de-energization procedures. For each step of the plan who will be notified at that stage of the plan is stated. Bear Valley states that they will contact local governments and agencies that could be affected by the PSPS at stage one of the execution steps and also throughout the process, but the plan does not say anything about contacting critical service providers, such as, water treatment plant owners, telecommunications providers, hospitals, nursing homes, or school districts. The action plan also does not distinguish between residential customer types either. For instance, there is no description of baseline medical customers or vulnerable customers described or is there any information on how these types of customers will be tracked or contacted during the execution of their PSPS procedures.

Another missing component of Bear Valley's PSPS plan is that there is no established time line for when these four stages will take place. Will stage one be 5 to 6 days before leading into the PSPS activation or 4 to 5 days before? When will customers be notified especially their critical service providers? This is critical information for these different types of customers to have so that they will have enough time to prepare for the PSPS event.

## V. WILDFIRE PREVENTION STRATEGY AND PROGRAMS

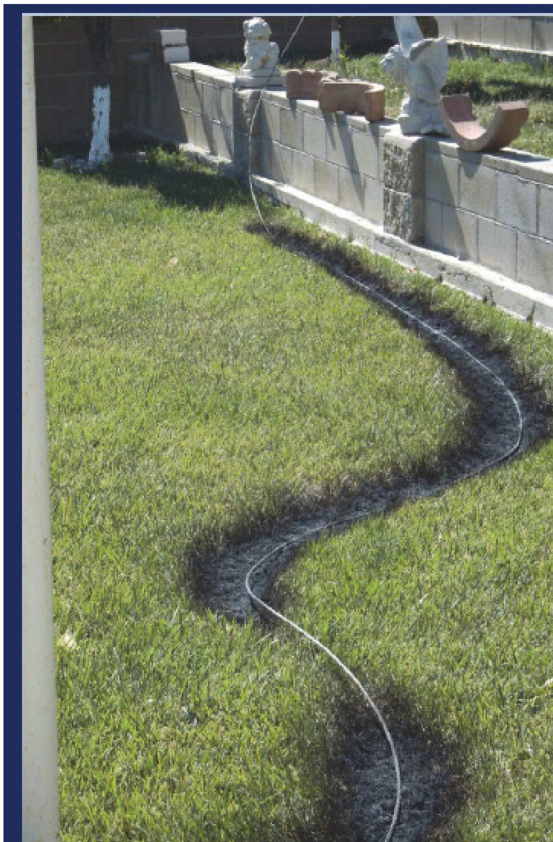
## VI. EMERGENCY PREPAREDNESS, OUTREACH AND RESPONSE

## VII. PERFORMANCE METRICS AND MONITORING

### A. See "8. Other Issues" below.

### B. Additional Commission Metrics need to be developed.

As one example, utilities should track the number of wires down, the number of wires down that remain energized, and response time to wires down. A response time metric of within 1 hour is unacceptable for wires down response criteria. Similar to CPUC General Order 112F for gas, utilities and the Commission should report and track response times in 5-minute increments.



Failure of #4 ACSR primary conductor

In the Liberty Consulting report on PG&E's 2014 GRC, Liberty reported:

> "In particular for PG&E, the percentage of downed energized conductors that occur (36 percent) makes rapid response essential."
>
> "Liberty considers the percentage of downed energized conductors to be high. Benchmarking data is not readily available in the industry, but we have experience with some other utilities. We know of several major utility systems (23 kV) where downed energized conductors are estimated to be fractions of one percent."
> Liberty found that PG&E experienced on average approximately 8 wired down per day.

## VIII. RECOMMENDATIONS FOR FUTURE WMPS

### A. Best safety management practices must be adopted by the Utilities and incorporated into their WMPs to comply with the spirit of SB 901.

In order to: (1) achieve the "highest levels of safety" as aspired by SB 901,[4] (2) to safely and effectively manage the magnitude of work involved with the WMPs, and (3) to maximize their opportunity of risk reduction, the Utilities should be required to establish a framework for managing wildfire risk that is based on best safety management practices for similarly complex industries. These practices apply the notion of a "system" in which feedback loops are established to ensure continuous improvement. The transmission and distribution of electric power is a highly complex industry, and in the face of catastrophic wildfire risk in California, the Utilities are perfect candidates for these practices.

An example of such a system is explained by the framework developed for safety management of natural gas pipelines. Based on the Plan-Do-Check-Act (PDCA) model (depicted in the figure below), the natural gas pipeline industry, in collaboration with the federal regulator, developed a safety management framework for natural gas pipelines.[5] That framework was developed at the recommendation of the National Transportation Safety Board (NTSB) in response to catastrophic pipeline accidents, including

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[4] Pub. Util. Code § 8386 (c)(10) (B) (12).

[5] American Petroleum Institute (API) Recommended Practice 1173.

California's own San Bruno pipeline explosion. The best practice is being adopted by many gas pipeline operators, including the Commission's own regulated gas utilities.

At a minimum, the first safety management elements that the Utilities must be required develop and incorporate in their next set of WMPs, include:

- Quality Assurance Programs
- Management of Change Controls
- Incident Investigation and root cause analyses

## IX. OTHER ISSUES

### A. Process and Next Steps

#### 1. The Commission, utilities, parties, and the public, would benefit from keeping this proceeding open and establishing working groups for the next phase of this proceeding. During the next phase of the proceeding, OSA recommends that:

a. Working groups be established to address important aspect of wildfire mitigations programs.

b. These working groups should include:

    a. Effectiveness of mitigation measures.

    b. Root Cause Analysis working group.

    c. Best safety management practices.

    d. Others

c. One working group should be a "mitigation plan effectiveness" working group to consider various utility metrics and other metrics and data that may be applied to evaluate specific wildfire mitigation programs. As one example metric, the Commission should adopt a metric for number of wires down that remain energized.

d. One working group should be a "root cause analysis" working group to gather data on and evaluate the many attributes of ignitions.

e. Other parties may propose other working groups.

f. Working groups would benefit from workshops and recurring regular meetings.

g. Working groups should endure beyond the end of this phase of this proceeding, and extend to future phases and future WMP submissions, and approvals as part of this rulemaking.

h. Allow parties to comment, or alternatively set a schedule to allow parties time to reach a settlement on a format and structure for developing and scheduling working groups.

i. The Root cause analysis working group should explore:

    a. Metrics that adequately capture the range of root causes. Mitigation programs and corrective actions must be targeted to the nuts and bolts of the underlying root causes of ignitions that lead to wildfires.
    b. Conductor size, type, age, condition…
    c. Pole size, type, condition, loading, age, …
    d. Circuit voltage, type, configuration, condition, 3-wire, 4 wire, "unigrounded", …
    e. Splice type, condition, age, …
    f. Protection Equipment settings, type, age, …
    g. Evaluation of the most effective mitigations for all ignitions.
    h. Evaluation of the most effectiveness mitigations for ignitions that lead to wildfires.
    i. Evaluate if the most effective mitigations for all ignitions are the same as those for ignitions that lead to wildfires. For example, should mitigations reduce high energy electric faults, take priority over mitigations that reduce lower energy faults?
    j. Evaluate metrics that utilities can provide to show the effectiveness of corrective actions specific to specific root causes.
    k. Share experiences from utilities on what mitigations are most effective.
    l. Share experiences from utilities on what mitigations are less effective.
    m. Explore other factors that utilities have determined are significant to ignitions, or ignitions that result in wildfires.

n. Incorporation of SB 901 required electric utility safety culture assessments into utility wildfire mitigation plan submissions.

**B. WMPs must be certified, through signature, by senior executive officer of each Utility.**

Leadership commitment, beginning at the highest levels of any organization, is critical to the success of any significant effort. The Commission has recognized this when it required of itself and of the entities it regulates, that executive leadership certify, through signature, certain documents that impact safety.

A senior utility executive is required to verify, through signature, under penalty or perjury, the content of the Natural Gas Safety Plans (Gas Safety Plans) submitted by gas utilities to the Commission for annual approval.[6] The Gas Safety Plans are the top document conveying each gas utility's safety efforts.[7] Likewise, the Commission's own safety policy requires that Commissioners certify, through signature, that important regulatory decisions consider safety and/or their impact on furthering Commission objectives, which include safety.[8]

Similarly, the WMP's must be certified, through signature of a senior executive officer, as an endorsement and commitment to its content, and ensure that the utility meets its obligations to minimize the risk of catastrophic wildfire. The executive officer signing should have ultimate authority over the company's human and financial resources required to implement and maintain the WMPs.

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[6] General Order 112-F, § 123.3 states that "All information submitted by an utility pursuant to paragraph 123.2 shall be submitted with verification, under penalty of perjury, from a senior officer of the utility, at the level of Vice-President or above, stating that the facts contained in the information are true and correct to the best knowledge of that senior office."

[7] D.12-04-010 p. 19.

[8] Safety Policy Statement of the California Public Utilities Commission (July 10, 2014) .http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/VisionZero4Final621014_5_2.pdf .

### C. WMPs should require formal Commission Approval for the foreseeable future.

Approval of the WMPs requires an iterative process. Much work and review remains to be done for future WMPs. The process must be transparent and afford parties the opportunity for a thorough review and to provide meaningful comment. Therefore the approval process should remain in a formal Commission proceeding and not be delegated for Staff level approval in the foreseeable future.

Respectfully submitted,

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