

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement
Electric Utility Wildfire Mitigation Plans
Pursuant to Senate Bill 901 (2018).

Rulemaking 18-10-007

**SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E)
2019 WILDFIRE MITIGATION PLAN PROGRESS UPDATE**

FADIA RAFEEDIE KHOURY
RUSSELL A. ARCHER
GARY Y. CHEN

Attorneys for
SOUTHERN CALIFORNIA EDISON COMPANY

2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770
Telephone: (626) 302-7214
E-mail: Gary.Chen@sce.com

Dated: **January 15, 2020**

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement
Electric Utility Wildfire Mitigation Plans
Pursuant to Senate Bill 901 (2018).

Rulemaking18-10-007

**SOUTHERN CALIFORNIA EDISON COMPANY’S (U 338-E)
2019 WILDFIRE MITIGATION PLAN PROGRESS UPDATE**

Southern California Edison Company (SCE) hereby submits its 2019 Wildfire Mitigation Plan (WMP) Progress Update pursuant to the Administrative Law Judge’s December 19, 2019 Ruling Requiring Updated Progress Reports – Wildfire Mitigation Plans. SCE’s progress update is updated through December 31, 2019 with preliminary data. SCE typically requires 30-45 days to verify and quality check its data and may provide a subsequent update to the progress update via a supplemental submission. If there are any changes, SCE does not expect them to be significant.

Respectfully submitted,

FADIA RAFEEDIE KHOURY
RUSSELL A. ARCHER
GARY Y. CHEN

/s/ Gary Y. Chen

By: Gary Y. Chen

Attorneys for
SOUTHERN CALIFORNIA EDISON COMPANY

2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770
Telephone: (626) 302-7214
E-mail: Gary.Chen@sce.com

January 15, 2020

Attachment

**SCE's 2019 Wildfire Mitigation Plan (WMP) Progress Update
as of December 31, 2019**

SCE's 2019 Wildfire Mitigation Plan (WMP) Progress Update

(All data is as of December 31, 2019)

WMP Activities Summary

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Evaluation of HFRA		PSPS		Operation Practices		Risk Analysis		Vegetation Management				
EVAL-1: Complete evaluation of non-CPUC HFRA for retention or exclusion		PSPS-1: De-Energization Notifications PSPS-1.1: Notifications to public safety agencies and local gov't PSPS-1.3: Notifications to the CPUC		PSPS-1.2: Notifications to Cal OES via State warning system PSPS-1.4: Enhance Emergency Outage Notification System		OP-1: Review and update Annual System Operating Bulletin 322 OP-2: Hire additional staff for Wildfire Infrastructure Protection Team		RA-1: Conduct risk analysis based on new expanded scope		VM-1: Hazard Tree Management Program (HTMP) VM-1.1: Perform tree specific threat assessments VM-1.2: Perform risk-based tree removals VM-2: Inspect and clear brush around poles		
Emergency Preparedness												
DEP-1: Customer Education and Engagement DEP-1.1: Conduct a direct mail campaign for HFRA DEP-1.2: Develop local gov't ed. and engagement meeting plan DEP-1.3: Execute local gov't ed. and engagement meeting			DEP-2: Emergency Responder Training DEP-2.1: Wildfire response training for new or existing responders DEP-2.2: Conduct Internal IMT Training around WF response and de-energization protocols			DEP-3: Bolster Incident Mgmt. & Support DEP-3.1: Determine positions that need enhanced staffing DEP-3.2: Train, exercise, and qualify new staff to meet identified need			VM-3: Achieve tree-to-line clearance distance of 12 feet in HFRA		VM-4: DRI quarterly inspections and removals VM-4.1: Perform all quarterly DRI inspections VM-4.2: Remove trees in accordance with Veg Mgmt program	
System Hardening					Situational Awareness			VM-5: LiDAR inspections of transmission (220kV and above) VM-6.1: Inspect vegetation adjacent to Distribution Circuit Miles VM-6.2: Inspect vegetation adjacent to Transmission Circuit Miles				
SH-1: Install 96 circuit miles of Covered Conductor		SH-2: Conduct evaluation of Undergrounding in HFRA		SH-3: Install at least 1,100 composite poles		SA-1: Install new additional weather units SA-2: Fire Potential Index Phase II. Enhance capabilities of FPI						
SH-4: Install 7,500 Current Limiting Fuses (CLFs)		SH-5: Install 50 Remote Controlled Automatic Reclosers (RARs)		SH-6: Update at least 150 existing RAR Settings		SA-3: Install additional HD Cameras SA-4: Procure and Install high performance computing cluster weather and fuels modeling system						
		SH-7: Circuit Breaker Fast Curve SH-7.1: Develop Engineering plan to upgrade Circuit Breaker relays and Settings SH-7.2: Conduct Circuit breaker upgrades and setting updates according to plan				SA-5: Develop Asset Reliability & Risk Analytics Capability						
Inspections												
IN-1: Distribution Enhanced Overhead Inspections and Remediation in HFRA IN-1.1: Complete visual inspection for all distribution circuits in HFRA IN-1.2: Remediate all conditions that create fire risk under distribution		IN-2: Transmission Enhanced Overhead Inspections and Remediation in HFRA IN-2.1: Complete visual inspection for all transmission circuits in HFRA IN-2.2: Remediate all conditions that create fire risk under transmission		IN-3: Perform quality review on transmission and distribution structures		IN-4: Infrared Inspection of hot spots on overhead distribution facilities and equipment IN-4.1: Inspect 50% of overhead lines in HFRA IN-4.2: Remediate conditions as required based on inspection results		IN-5: Infrared Inspection, Corona Scanning, and High Definition imagery of overhead transmission facilities and equipment IN-5.1: Complete infrared (IR), corona and HD image scanning of all overhead transmission lines in HFRA IN-5.2: Integrate remediation with EOI activities				
Alternative Technologies												
AT-1: Alternative Technology Pilots AT-1.1: Pilot installation of 50 CAL FIRE-exempt surge arrestor units AT-1.2: Pilot Meter Alarming for Downed Energized Conductor			AT-2: GSRP Wildfire Mitigation AT-2.1: Evaluate Distribution Fault Anticipation devices AT-2.2: Evaluate Beyond Visual Line of Sight Unmanned Aerial System			AT-3: Alternative Technology Evaluations AT-3.1: Evaluate Rapid Earth Fault Current Limiters/Arc Suppression Coils AT-3.2: Evaluate alternate fault detection technology AT-3.3: Evaluate fire retardant barrier for wood poles		AT-3.4: Evaluate substation-class electronic fuses AT-3.5: Evaluate branch line protection to include single phase reclosing		AT-4: Alternative Technology Implementation AT-4.1: Develop standard installation practices for aeolian vibration dampers AT-4.2: Develop standard installation practices for ridge pin construction for conductor rebuild AT-4.3: Update distribution overhead requirements for connector selection in HFRA		

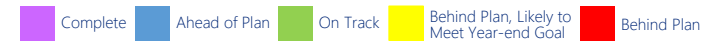
2019 WMP Activity Status vs Goal

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

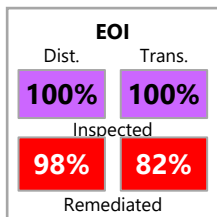
Operational-Related Activities

<p>Local Gov't and Agency PSPS Notifications</p> <p>Complete</p>	<p><u>PSPS – De-Energization Notifications: Public Safety Agencies and Local Government (PSPS-1.1)</u> Volume vs 2019 Goal: Sent notifications for each of the 16 events to date in 2019 Key Takeaways: Public Safety Partners and local officials are notified of potential PSPS De-energization's 3 days in advance and are provided with more detailed circuit information such as type of customer (critical care, essential service, etc.) and period of concern.</p>	<p>HFRA Boundary Evaluation</p> <p>Complete</p>	<p><u>Evaluation of HFRA (EVAL-1)</u> Volume vs 2019 Goal: Evaluation complete; PFM filed on 8/19/2019 Key Takeaways: The technical review of non-CPUC HFRA evaluation results was completed and the non-CPUC HFRA boundary Petition for Modification (PFM) was filed in August 2019.</p>
<p>State PSPS Notifications</p> <p>Complete</p>	<p><u>PSPS – De-Energization Notifications: Cal OES via State Warning System (PSPS-1.2)</u> Volume vs 2019 Goal: Sent notifications for each of the 16 events to date in 2019 Key Takeaways: During a PSPS event, SCE conducts daily conference calls with Cal OES and submits daily reports to the State Warning Center regarding circuits in scope and potentially impacted customers.</p>	<p>Wildfire Risk Analysis</p> <p>Complete</p>	<p><u>Expansion of Wildfire Risk Analysis (RA-1)</u> Volume vs 2019 Goal: To evaluate wildfire risk at a circuit segment level. Conducted a risk analysis incorporating 2018 fire ignition data, additional system information, and consequence modeling Key Takeaways: SCE has a Wildfire Risk Model to inform granular wildfire risk. The Ignition Module has been enhanced through the incorporation of granular asset characteristics. The Fire Propagation Module leverages data and fire modeling developed by Reax Engineering. The Fire Consequence Module evaluates the consequence of conditional burns based on analysis of population and structure density within each perimeter.</p>
<p>CPUC PSPS Notifications</p> <p>Complete</p>	<p><u>PSPS – De-Energization Notifications: CPUC (PSPS-1.3)</u> Volume vs 2019 Goal: Sent notifications for each of the 16 events to date in 2019 Key Takeaways: This Activity is triggered by a PSPS event where SCE is required to submit ESRB-8 documentation to confirm it met the requirements outlined by the CPUC.</p>	<p>SOB Review and Update</p> <p>Complete</p>	<p><u>Review and Update Annual System Operating Bulletin 322 for Non-CPUC HFRA (OP-1)</u> Volume vs 2019 Goal: Review and update to SOB 322 (operating Procedures regarding the operation of subtransmission and distribution voltage lines traversing high fire areas) complete Key Takeaways: Revised SOB 322 to include more details on operating restrictions during elevated fire weather threats, blocking transmission reclosers, fast curve settings, operations during PSPS events, lessons-learned from actual PSPS events, and best practices from other utilities.</p>
<p>Emergency Notification Enhancements</p> <p>Complete</p>	<p><u>Enhance Emergency Outage Notification System (PSPS-1.4)</u> Volume vs 2019 Goal: PSPS messaging will be delivered in English plus the five primary additional languages within SCE's service area Key Takeaways: In Language Solution implemented 11/25/19. PSPS messaging will be delivered in English plus the 5 primary additional languages within SCE Service Territory.</p>	<p>Hire Additional Meteorologist</p> <p>Complete</p>	<p><u>Hire Additional Staff for Wildfire Infrastructure Protection Team (OP-2)</u> Volume vs 2019 Goal: Hired one additional meteorologist Key Takeaways: Completed hiring of one additional meteorologist for the Wildfire Infrastructure Protection Team.</p>

2019 WMP Activity Status vs Goal



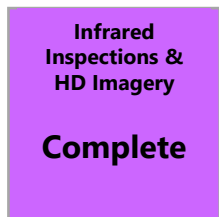
Inspection-Related Activities



Enhanced Overhead Inspections (IN-1 & IN-2)

Volume vs 2019 Goal:

Distr. 100% of structures inspected/98% of notifications remediated
 Trans. 100% of structures inspected/82% of notifications remediated
Key Takeaways: Remediation goals were not achieved in 2019 due to various reasons, pushing past due notifications into 2020. Goal is to ensure all past due notifications are scheduled and remediated by the end of Q2 2020 putting Transmission and Distribution into compliance.



Infrared Inspection, Corona Scanning, and High Definition Imagery of Overhead Transmission Facilities and Equipment: Complete IR, Corona and HD Image Scanning of All Overhead Transmission Lines in HFRA (IN-5.1)

Volume vs 2019 Goal: 6,788 of 6,788 miles planned of overhead transmission lines have been flown utilizing IR and corona scanning.
Key Takeaways: All flying has been completed for 2019. In total, 6,788 miles were flown. 6,126 miles were flown in Phase 1, between 2/1/19 and 6/28/19. 662 miles were flown in Phase 2, between 10/14/19 and 11/2/19.



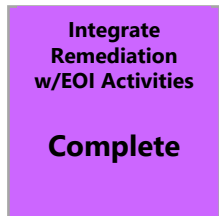
QC HFRA Inspections (IN-3)

Volume vs 2019 Goal: 17,109 of 7,500 structures inspected
Key Takeaways: The Quality Control group performed field validations of 17,109 EOI inspections completed by Distribution and Transmission work crews as part of the EOI effort. The inspections were performed in the HFRA between December 21, 2018 and August 2, 2019.



Infrared Inspection of Hot Spots on Overhead Distribution Facilities and Equipment (IN-4.1)

Volume vs 2019 Goal: 4,962 of 4,532 miles scanned
Key Takeaways: Distribution IR Scanning program was activated on 6/19 and completed scanning 4,962 circuit miles. The results of the IR scanning produced 81 findings. The project is 100% complete. Completed on 12/17/19.



Infrared Inspection, Corona Scanning, and High Definition Imagery of Overhead Transmission Facilities and Equipment: Integrate Remediation with EOI Activities (IN-5.2)

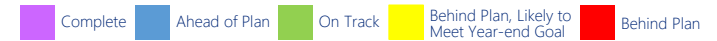
Volume vs 2019 Goal: Working to integrate remediation with EOI work.
Key Takeaways: Any Priority 1 conditions or notification items are immediately evaluated and remediated. Priority 2 and 3 notifications will go through internal validation prior to being entered into SAP with a completion date based on HFRA Tier compliance timelines.



Infrared Inspection of Hot Spots on Overhead Distribution Facilities and Equipment: Remediate Conditions (IN-4.2)

Volume vs 2019 Goal: SCE to remediate distribution IR findings based on established remediation timeline criteria.
Key Takeaways: All E1P1 notifications have been either completed or made safe in the field. All E1P2 notifications that were due in 2019 were completed with the exception of one notification that was rescheduled due to weather and subsequently completed on 1/6/20.

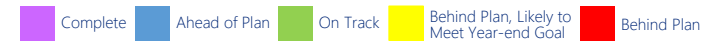
2019 WMP Activity Status vs Goal



System Hardening Activities

<p>WCCP</p> <p>388%</p> <p>Circuit Miles Installed</p>	<p>WCCP (SH-1)</p> <p>Volume vs 2019 Goal: 372 of 96 circuit miles installed</p> <p>Key Takeaways: Completed installation of 372 circuit miles of covered conductor through December.</p>	<p>RARs</p> <p>110%</p> <p>RARs Installed</p>	<p>Install 50 Remote Controlled Automatic Reclosers (RARs) (SH-5)</p> <p>Volume vs 2019 Goal: 55 of 50 RARs installed.</p> <p>Key Takeaways: Installed and fully commissioned 55 RARs through December. Exceeded target of 50 RARs installed and commissioned through December 2019</p>
<p>Underground Work in HFRA</p> <p>Complete</p>	<p>Evaluation of Undergrounding in HFRA (SH-2)</p> <p>Volume vs 2019 Goal: Undergrounding Selection methodology was established, with initial scope selection completed in support of 2021 execution.</p> <p>Key Takeaways: Developed selection methodology to identify scope for consideration for wildfire undergrounding. Through this process, identified ~45 circuit miles of potential scope for additional feasibility review, in support of 2021 GRC scope amount of six miles.</p>	<p>RAR Settings</p> <p>101%</p> <p>RARs Updated</p>	<p>Update At Least 150 Existing RAR Settings (SH-6)</p> <p>Volume vs 2019 Goal: 151 of 150 updated RAR settings</p> <p>Key Takeaways: Met 2019 goal of updating RAR settings.</p>
<p>Composite Poles</p> <p>129%</p> <p>Poles Installed</p>	<p>Composite Pole Installation (SH-3)</p> <p>Volume vs 2019 Goal: 1,421 of 1,100 poles installed</p> <p>Key Takeaways: Installed 1,421 composite poles through December vs. target of 1,100. Exceeded target of 1,100 composite poles due to acceleration of 2020 scope</p>	<p>Circuit Breaker Fast Curve</p> <p>Complete</p>	<p>Circuit Breaker Fast Curve: Develop Engineering Plan to Upgrade Remaining Circuit Breaker Relays and Update Settings (SH-7.1)</p> <p>Volume vs 2019 Goal: CB relays and update settings</p> <p>SH-7.1.A: 60 Substations with 300 circuits scoped</p> <p>SH-7.1.B: 45 Substations with 68 circuits being scoped</p> <p>Key Takeaways: All job walks completed, projects scoped and updated into IWP for design/execution.</p>
<p>Fuses</p> <p>104%</p> <p>Fuse Locations Completed</p>	<p>Current Limiting Fuses (SH-4)</p> <p>Volume vs 2019 Goal: 7,765 of 7,500 fuse locations completed</p> <p>Key Takeaways: Met target of 7,500 in August.</p>	<p>Circuit Breaker Fast Curve</p> <p>Complete</p>	<p>Circuit Breaker Fast Curve: Execute Circuit Breaker Relay and Settings Upgrades according to plan (SH-7.2)</p> <p>Volume vs 2019 Goal: All projects have commenced engineering design, engineering contracts have been issued to the regional engineering vendors who are currently working on the design.</p> <p>Key Takeaways: There are no overdue projects as of 12/31/19 and therefore the 2019 goal is complete. Construction dates are being scheduled for 2020.</p>

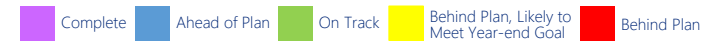
2019 WMP Activity Status vs Goal



Situational Awareness Activities

<p>Weather Stations</p> <p>113%</p> <p>Weather Stations</p>	<p><u>Weather Stations (SA-1)</u> Volume vs 2019 Goal: 357 of 315 Weather stations complete Key Takeaways: Lessons learned from 2019 PSPS events have driven SCE's decision to install more weather stations next year than the 375 originally planned for 2020. Planning is in progress for 2020 installations</p>	<p>HPCC Modeling System</p> <p>Complete</p>	<p><u>Procure and Install High Performance Computing Cluster Weather and Fuels Modeling System (SA-4)</u> Volume vs 2019 Goal: 1 out of 1 HPCCs operational Key Takeaways: Goal of 1 HPCC installed was completed. Second backup HPCC will be moved from PSSC Labs to the Alhambra Data Center on January 27th.</p>
<p>FPI Phase 2</p> <p>Complete</p>	<p><u>Fire Potential Index Phase 2: Enhance Capabilities of FPI (SA-2)</u> Volume vs 2019 Goal: Enhanced capabilities of FPI by increasing granularity, adding historical climatology data, and expanding to cover all of SCE's service territory. Key Takeaways: Fire Potential Index (FPI) Phase 2 consisted of the FPI being calculated at the circuit level across its HFRA below 6,000 feet.</p>	<p>Analytics</p> <p>Complete</p>	<p><u>Develop Asset Reliability & Risk Analytics Capability (SA-5)</u> Volume vs 2019 Goal: Complete implementation of advanced analytics platform and tools. Key Takeaways: Completed demo of fire simulation software. High-Performance Computer Cluster is now analyzing historical fire. SCE has developed an Asset Risk Model to prioritize wildfire activities, including the deployment of covered conductor. SCE will continue to enhance and improve the maturity of this model, its ignition modeling, and the ability to reduce risk at the asset level.</p>
<p>HD Cameras</p> <p>147%</p> <p>Cameras Installed</p>	<p><u>HD Cameras (SA-3)</u> Volume vs 2019 Goal: 91 of 62 HD cameras installed Key Takeaways: At conclusion of this initiative in 2020, SCE will have reached 90% coverage of its Tier 2 and Tier 3 HFRA.</p>		

2019 WMP Activity Status vs Goal



Vegetation Management Activities

<p>Enhanced Veg. Mgmt</p> <p>104%</p> <p>Trees Assessed</p>	<p>Perform Tree Specific Threat Assessments (VM-1.1)</p> <p>Volume vs 2019 Goal: 129,485 of 125,000 trees</p> <p>Key Takeaways: New assessor resources were obtained for Q3-Q4, team met the goal of 125,000 removals by year-end 2019.</p>	<p>DRI Inspection</p> <p>13,015</p> <p>Trees Identified</p>	<p>Perform All Quarterly DRI Inspections (VM-4.1)</p> <p>Volume vs 2019 Goal:</p> <ul style="list-style-type: none"> Quarterly DRI Inspections on track 13,015 trees identified for removal in 2019 YTD <p>Key Takeaways: Continued historical program for inspections (repeating approximately every 3 months) of areas identified by the CA Tree Mortality Task Force to identify trees that are dead, diseased, or dying.</p>
<p>Enhanced Veg. Mgmt</p> <p>79%</p> <p>Trees Removed</p>	<p>Perform Risk-based Tree Removals (VM-1.2)</p> <p>Volume vs 2019 Goal: 5,917 of 7,500 trees</p> <p>Short of plan by 1,583 (21%)</p> <p>Key Takeaways: Permitting issues resulted in a revised forecast of approximately 4,500 trees to be removed, as communicated in September. While the team did not meet the SB901 goal of 7,500 removals, the team did meet the revised forecast by year-end 2019.</p>	<p>DRI Removals</p> <p>97%</p> <p>% Active Inv. < 180 days</p>	<p>DRI Tree Inspections & Removals (VM-4.2)</p> <p>Volume vs 2019 Goal: >96% of active inventory removed less than 180 days old</p> <ul style="list-style-type: none"> 13,015 trees identified for removal in 2019 YTD 13,627 trees removed in 2019 YTD Year-end outlook tracking to ~50% of ~30,000 WMP metric forecast <p>Key Takeaways: Continued historical program for removal of trees identified as dead, diseased, or dying. Easing of drought conditions has reduced the volume of trees requiring removal (30,000 originally forecast based on historical average).</p>
<p>Poles</p> <p>160%</p> <p>Poles Cleared</p>	<p>Inspect and Clear Brush Around Poles (VM-2)</p> <p>Volume vs 2019 Goal: 159,545 of 100,000 poles</p> <p>Key Takeaways: Contractor continued to add resources throughout the year to complete work on increased pole population. The team met, and exceeded, the goal of 100,000 poles by year-end 2019.</p>	<p>LIDAR</p> <p>156%</p> <p>Circuit Miles Inspected</p>	<p>LiDAR Inspections of Transmission (220kV and above) (VM-5)</p> <p>Volume vs 2019 Goal: 1,559 of 1,000 circuit miles flown</p> <p>Key Takeaways: The team met, and exceeded, the goal of 1,000 miles by year-end 2019.</p>
<p>Annual Pruning</p> <p>Complete</p>	<p>Achieve Tree-to-line Clearance Distance of 12 Feet in HFRA (VM-3)</p> <p>Volume vs 2019 Goal: Obtain clearance distance of 12' in HFRA</p> <p>Key Takeaways: The New standard (12' at time of trim) for distribution voltages piloted in Q1 and Q2. Implementation across HFRA for pruning took place, and tree-specific exceptions were evaluated to ensure required clearance distance maintained. Hired "notification consultants" to provide direct customer interaction and worked with local governments. The team met, and exceeded, the goal by year-end 2019.</p>	<p>QC HFRA Inspections</p> <p>Dist. 505% Trans. 218%</p> <p>Circuit Miles Inspected</p>	<p>Inspect Vegetation Adjacent to T&D Circuit Miles (VM-6.1 & VM-6.2)</p> <p>Volume vs 2019 Goal: Inspected vegetation adjacent to 2,271 of 450 distribution circuit miles and 870 of 400 transmission circuit miles</p> <p>Key Takeaways: Independent QC of annual pruning implemented across territory. Evaluated clearance distance achieved post-pruning. The team met, and exceeded, the goal of 850 total circuit miles by year-end 2019.</p>

2019 WMP Activity Status vs Goal

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Alternative Technology Activities

<p>Surge Arrestor Units</p> <p>100%</p> <p>Units Installed</p>	<p><u>Alternative Technology Pilots: Pilot Installation of 50 CAL FIRE-exempt Surge Arrestor Units (AT-1.1)</u></p> <p>Volume vs 2019 Goal: 50 Locations of 50 pilot locations installed</p> <p>Key Takeaways: All pilot units installed in Victorville District.</p>	<p>Fault Current Limiters/ Arc Suppression Coils</p> <p>Complete</p>	<p><u>Alternative Technology Evaluations: Evaluate Rapid Earth Fault Current Limiters/Arc Suppression Coils (AT-3.1)</u></p> <p>Volume vs 2019 Goal: Conduct assessment by end of 2019</p> <p>Key Takeaways: Assessment completed with a recommendation to proceed with a pilot install.</p>
<p>Meter Alarming</p> <p>Complete</p>	<p><u>Alternative Technology Pilots: Pilot Meter Alarming for Downed Energized Conductor (AT-1.2)</u></p> <p>Volume vs 2019 Goal: Completed pilot meter alarming for downed energized conductor</p> <p>Key Takeaways: Pilot is now operational system wide.</p>	<p>Fault Detection</p> <p>Complete</p>	<p><u>Alternative Technology Evaluations: Evaluate Alternate Fault Detection Technology (AT-3.2)</u></p> <p>Volume vs 2019 Goal: Conduct technology assessment by end of 2019</p> <p>Key Takeaways: Assessment completed with a recommendation to proceed with pilot installs.</p>
<p>Fault Devices</p> <p>Complete</p>	<p><u>GSRP Wildfire Mitigation: Evaluate Distribution Fault Anticipation Devices (AT-2.1)</u></p> <p>Volume vs 2019 Goal: Exceeded goal of 10 units.</p> <p>Key Takeaways: 54 of 60 units installed in field. 24 of the 54 installed units fully commissioned. Remaining units will be commissioned/installed Q1/2020.</p>	<p>Fire Retardant Pole Wraps</p> <p>Complete</p>	<p><u>Alternative Technology Evaluations: Evaluate Fire Retardant Barrier for Wood Poles (AT-3.3)</u></p> <p>Volume vs 2019 Goal: Evaluate use of wood pole with protective barrier</p> <p>Key Takeaways: Completed evaluation of new fire-retardant wrap for wood poles as an alternative to fire-resistant composite poles; published associated design standards. Implementing fire-retardant wrap based on positive testing.</p>
<p>Unmanned Aerial Systems</p> <p>Complete</p>	<p><u>GSRP Wildfire Mitigation: Evaluate Beyond Visual Line of Sight Unmanned Aerial System (AT-2.2)</u></p> <p>Volume vs 2019 Goal: Goal Completed; Final Advanced UAS Study report socialized</p> <p>Key Takeaways: Merge learnings from the Advanced UAS study with successes/lessons learned from the Aerial Inspection program and incorporate into a revised UAS Strategy presentation.</p>	<p>Fuses</p> <p>Complete</p>	<p><u>Alternative Technology Evaluations: Evaluate Substation-class Electronic Fuses (AT-3.4)</u></p> <p>Volume vs 2019 Goal: Conduct technology assessment by end of 2019</p> <p>Key Takeaways: Engineering evaluation is complete and determined to not move forward with this technology, evaluation work paper completed.</p>

2019 WMP Activity Status vs Goal

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Alternative Technology Activities (Cont.)

<p>Branch Line Protection</p> <p>Complete</p>	<p><u>Alternative Technology Evaluations: Evaluate Branch Line Protection to Include Single Phase Reclosing (AT-3.5)</u></p> <p>Volume vs 2019 Goal: Complete evaluation</p> <p>Key Takeaways: Evaluation paper completed. 8 pilot units installed.</p>	<p>Conductor Rebuild Standards</p> <p>Complete</p>	<p><u>Alternative Technology Implementation: Develop Standard Installation Practices for Ridge Pin Construction for Conductor Rebuild (AT-4.2)</u></p> <p>Volume vs 2019 Goal: Standards published and operational</p> <p>Key Takeaways: Installation practices updated for inclusion of ridge pin construction in high wind areas and is operational.</p>
<p>Vibration Dampers</p> <p>Complete</p>	<p><u>Alternative Technology Implementation: Develop Standard Installation Practices for Aeolian Vibration Dampers (AT-4.1)</u></p> <p>Volume vs 2019 Goal: Evaluate need for aeolian vibration dampers publish standards for use. Standards published for use of aeolian dampers with existing conductor.</p> <p>Key Takeaways: SCE is working with vendors on product evaluation for need and use of aeolian dampers with covered conductor.</p>	<p>Dist. Overhead Requirements</p> <p>Complete</p>	<p><u>Alternative Technology Implementation: Update Distribution Overhead Requirements for Connector Selection in HFRA (AT-4.3)</u></p> <p>Volume vs 2019 Goal: Design and Construction standards published for connector selection for use in HFRA</p> <p>Key Takeaways: The connector selection standards updated to require the use of CAL FIRE exempt bolted wedge connectors when working in HFRA.</p>

2019 WMP Activity Status vs Goal

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Emergency Preparedness Activities

Direct Mail Campaign Complete	<p><u>Customer Education and Engagement: Conduct a Direct Mail Campaign for HFRA (DEP-1.1)</u> Volume vs 2019 Goal: Reached approximately 1.5 million customers in HFRA through 2019 direct mailer Key Takeaways: SCE's Dear Neighbor letter has been sent to all customers in HFRA and in non-HFRA.</p>	IMT De-energization Training Complete	<p><u>Emergency Responder Training: Conduct Internal IMT Training Around Wildfire Response and De-energization Protocols (DEP-2.2)</u> Volume vs 2019 Goal: Conducted internal IMT Training around wildfire response and de-energization protocol Key Takeaways: Conducted initial training of 175 persons on PSPS Incident Management Teams; Have continued to train additional persons as needed and identified and will continue trainings as needed.</p>
Develop Local Meeting Plans Complete	<p><u>Customer Education and Engagement: Develop Local Government Education and Engagement Meeting Plan (DEP-1.2)</u> Volume vs 2019 Goal: Meeting plan developed Key Takeaways: Local Government Education and Engagement Community Meeting Plan has been developed and is the framework for SCE's execution.</p>	Enhance Staffing Complete	<p><u>Bolster Incident Mgmt. & Support: Determine Positions That Need Enhanced Staffing (DEP-3.1)</u> Volume vs 2019 Goal: Expanded teams to enable additional scalability and additional training sessions will be held for new personnel being added to the teams Key Takeaways: Stood up dedicated PSPS IMT and Task Force effective June 2019. Provided specialized training and exercises for all PSPS IMT members.</p>
Execute Local Meeting Plans 100% Cities Engaged	<p><u>Customer Education and Engagement: Execute Local Government Education and Engagement Meetings According to Plan (DEP-1.3)</u> Volume vs 2019 Goal: 145 of 145 (100%) community meetings Key Takeaways: SCE has met with all 145 cities in HFRA as of 12/31/2019.</p>	Train New Staff Complete	<p><u>Bolster Incident Mgmt. & Support: Train, Exercise, and Qualify New Staff to Meet Identified Need (DEP-3.2)</u> Volume vs 2019 Goal: Expanded teams to enable additional scalability and additional training sessions will be held for new personnel being added to the teams Key Takeaways: Stood up dedicated PSPS IMT and Task Force effective June 2019. Provided specialized training and exercises for all PSPS IMT members.</p>
WF Response Training Complete	<p><u>Emergency Responder Training: Wildfire Response Training for New or Existing Responders (DEP-2.1)</u> Volume vs 2019 Goal: Conducted wildfire response training for new or existing responders Key Takeaways: Conducted training sessions for initial design of PSPS Incident Management Teams; IMT staffing is being expanded from initial design and trainings will be held as necessary for the remainder of the year.</p>		

Appendix

Behind Plan Activities Details

2019 WMP Activities - Details (1/4)

Behind Plan Activities

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Status	Current Goal	Narrative
	VM-1.2: Perform risk-based tree removals 5,917 out of 7,500 removals complete (79%)	<p>Summary: Short of 2019 YE Goal by 1,583 (21%). Permitting issues have resulted in a revised forecast of approximately 4,500 trees to be removed, as communicated in September. Exceeded 4,500 revised outlook.</p> <p>Progress/Challenges:</p> <p><i>Progress:</i></p> <ul style="list-style-type: none"> Exceeded 2019 tree assessment goal reaching 129,485 total assessments (4,485 above goal) Increase in assessors/assessments, expedited customer notification process, increased tree crew counts and program staffing ramp up resulted in a >600% increase in the average monthly tree removal in Q4 Increased December removals to 1,874, which represents continued increases in month-over-month volume <p><i>Challenges:</i></p> <ul style="list-style-type: none"> Impediments included: weather, permitting issues, crew resources and customer authorization 5,917 of the 16,078 trees prescribed for removal were completed in 2019 Additional crew resources were limited, based on competing SCE work (including storm), and contract terms for price and duration of contract <p>Actions to Improve or Sustain Performance:</p> <ul style="list-style-type: none"> 2020 strategy applies lessons learned in 2019 and assigns work in potential accessible geographical locations Software redesign launching in January 2020 will improve reporting capabilities and ease of use

2019 WMP Activities - Details (2/4)

Behind Plan Activities

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Status	Current Goal	Narrative
	IN 1.2: Remediate all conditions that create fire risk under distribution	<p>Summary: All distribution priority 1 (immediate risk of high potential impact to safety or reliability) notifications have been completed. The EOI distribution remediation program is off track due to past-due priority 2 (any other risk of at least moderate potential impact to safety or reliability) notifications. While all 2019 vegetation management work type notifications and most 2019 electrical crew work type notifications have been completed, there are approximately 110 electrical crew work type priority 2 notifications that are past due in 2020 due to weather and resource constraints. SCE is currently planning on remediating these past-due notifications in Q1 2020.</p> <p>Progress/Challenges:</p> <p><i>Progress:</i></p> <ul style="list-style-type: none"> • In 2019, SCE completed in excess of 49,000 EOI-specific priority 1 and priority 2 distribution-level remediation notifications • All vegetation management EOI notifications have been completed • All electrical crew EOI notifications in 6 of SCE's 8 regions have been completed • In SCE's remaining two regions, North Coast and Rurals, approximately 110 electrical crew priority 2 EOI notifications are past-due in 2020 <p><i>Challenges:</i></p> <ul style="list-style-type: none"> • Winter storms and end-of-year resource constraints such as, in some instances, resources that had to be reallocated to emergencies, including PSPS events, negatively impacted year-end completions. • In addition to the past-due notifications, there are over 600 notifications currently subject to a GO 95 exception, primarily due to delays caused by permits and customer issues. GO 95, Rule 18.B(1)(b) permits correction times to be extended under such reasonable circumstances. <p>Actions to Improve or Sustain Performance:</p> <ul style="list-style-type: none"> • The team is working to better align EOI remediation reporting with other programs • The team also plans to regularly generate reports showing new notifications in order to improve work tracking for remediation crews

2019 WMP Activities - Details (3/4)

Behind Plan Activities

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Status	Current Goal	Narrative
	IN 2.2: Remediate all conditions that create fire risk under transmission	<p>Summary: All transmission priority 1 (immediate risk of high potential impact to safety or reliability) notifications have been completed. The EOI transmission remediation program is off track due to approximately 320 priority 2 (any other risk of at least moderate potential impact to safety or reliability) notifications that are past-due in 2020, primarily due to weather constraints. Work for these past-due notifications has been scheduled for Q1 2020.</p> <p>Progress/Challenges:</p> <p><i>Progress:</i></p> <ul style="list-style-type: none"> All past due notifications have been scheduled for remediation <p><i>Challenges:</i></p> <ul style="list-style-type: none"> Weather restrictions (including rain, wind, and fog) generated helicopter and access restrictions In addition to the past-due notifications, there are approximately 85 notifications currently subject to a GO 95 exception. GO 95, Rule 18.B(1)(b) permits correction times to be extended under reasonable circumstances. SCE will need to coordinate remediation of past-due 2019 notifications with remediation of 2020 notifications in order to balance resources <p>Actions to Improve or Sustain Performance:</p> <ul style="list-style-type: none"> New tool will help with updating SAP with notifications completed in the field, increasing data accuracy and resolving close out issues In order to allow a holistic view of all remediation work (and to assist in balancing resources), the 2020 schedule will be integrated to show both past-due 2019 work and new 2020 work

2019 WMP Activities - Details (4/4)

Behind Plan Activities

■ Complete
 ■ Ahead of Plan
 ■ On Track
 ■ Behind Plan, Likely to Meet Year-end Goal
 ■ Behind Plan

Status	Current Goal	Narrative
	IN 4.2: Infrared Inspection of Hot Spots on Overhead Distribution Facilities and Equipment: Remediate Conditions	<p>Summary: SCE to remediate distribution IR findings based on established remediation timeline criteria. All E1P1 notifications have been either completed or made safe in the field. All E1P2 notifications that were due in 2019 were completed with the exception of one notification that was rescheduled due to weather and subsequently was completed on 1/6/2020.</p> <p>Progress/Challenges: Distribution IR Scanning has produced a total of 81 findings (23 E1P1s and 58 E1P2s). All E1P1 notifications have been either completed or made safe in the field. All E1P2 notifications without a valid GO95 exception were completed with the exception of one which was rescheduled due to weather. The notification was rescheduled and completed on 1/6/2020.</p> <p>Actions to Improve or Sustain Performance: Continuing to monitor results of IR Scanning and producing reporting which will give Regional visibility of all findings.</p>