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CPUC/ENERGY SAFETY
PUBLIC MEETING ON SAFETY

Tim O'Toole
Chair, SCE Safety and Operations Committee, SCE Board Director

Jill C. Anderson
Executive Vice President and Chief Operating Officer, SCE

David Heller
Vice President, Enterprise Risk Management & Insurance and General Auditor, SCE

SAFETY IS INTEGRATED INTO OUR BUSINESS THROUGH OUR VALUES AND MISSION

MISSION

SAFELY PROVIDE RELIABLE, CLEAN AND AFFORDABLE ENERGY TO OUR CUSTOMERS

VALUES

SAFETY	INTEGRITY	EXCELLENCE
RESPECT	CONTINUOUS IMPROVEMENT	TEAMWORK

SAFETY FOCUS AREAS

PUBLIC SAFETY	• Reduce risk of significant wildfires • Maintain/replace assets to avoid hazardous failures • Create awareness of potential hazards
WORKER SAFETY	• Avoid serious injuries and fatalities through enhanced data analytics, safety systems and programs • Better oversight of contractors to improve safety, quality and compliance
SAFETY CULTURE	• Evolve safety culture maturity • Improve leader ownership and accountability

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CORPORATE GOVERNANCE: SCE'S SAFETY AND OPERATIONS COMMITTEE (SOC)

BOARD OF DIRECTORS

SCE LEADERSHIP

Reporting of safety and operational issues

- **Audit and Finance Committee**
- **Compensation and Executive Personnel Committee**
- **Nominating and Governance Committee**
- **Safety and Operations Committee (SOC)**

EXAMPLES OF FOCUS AREAS

Evaluation of Risk Modeling in High Fire Risk Areas
SOC focused on continued evolution of SCE's risk assessments, risk models and process to identify high fire risk areas

Contractor Safety Oversight Policies and Practices
SOC emphasized improving contractor safety performance, with a review of contractor work methods and factors considered in determining whether to prescribe common practices for various types of work

Continued Reporting on Public Safety Incidents
SOC is committed to ongoing reviews of programs and practices that guard against serious injuries and fatalities to the public

SAFETY COMMUNICATION, ENGAGEMENT FROM FRONTLINE TEAM MEMBERS AND REPORTING ENVIRONMENT

EMPOWERING EMPLOYEES TO REPORT MISTAKES

Human and Organizational Performance (HOP) principles in daily operations and training, encouraging leaders and team members to feel empowered to report human errors without fear of retaliation, thereby enhancing safety and performance

ASSURING FIELD SAFETY

Equipping leaders and team members with skills to effectively communicate with customers and de-escalate threatening situations

Corporate Security provides awareness bulletins for field teams, 24/7 incident response and protection services in high-risk areas

PROVIDING WILDFIRE SAFETY IMPROVEMENTS

Internal roadshows held with field teams at service and switching centers to share updates and gather feedback on PSPS

Regular wildfire/PSPS forums with cross-functional leaders and leaders of field teams to collaborate on areas for improvement and help clear roadblocks

SCE CONTINUES TO SEE PROGRESS FROM ITS GRID HARDENING AND MITIGATION MEASURES SINCE 2018

6,610+ MILES
OF COVERED CONDUCTOR[1]

2.5 MILLION+
TRIMS AND REMOVALS IN HIGH FIRE RISK AREAS[1]

48
MILES UNDERGROUNDED SINCE 2021

1.5 MILLION+
INSPECTIONS IN HIGH FIRE RISK AREAS[1]

1,870+
WEATHER STATIONS

~200
HD CAMERAS

45 PSPS CIRCUITS TARGETED FOR SYSTEM HARDENING

62% incremental reduction in customer minutes of interruptions[2]

58% incremental reduction in frequency[2]

75% incremental reduction in customers impacted[2]

GRID HARDENING UPDATES ON MOST PSPS IMPACTED CIRCUITS THIS YEAR AS OF JULY 2025

Covered Conductor
210+ miles completed

140+ miles planned remaining[3]

Switches
61 switches planned[4]

Thousands of remote-controlled sectionalizing devices help segment and isolate portions of circuits (e.g., during PSPS events)

Faster grid protection settings (i.e., fast curve settings) in high fire risk areas enabled during elevated fire conditions

[1] Since 2018 in high fire risk areas and as of June 30, 2025
[2] Assumes the same weather conditions as 2023
[3] Planned for completion by 2026
[4] Planned for completion by end of 2025

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PRIORITIZING SAFETY AND AFFORDABILITY

WHERE TO DEPLOY MITIGATIONS

Intensiveness of mitigation depends on **level of risk** in specific area of SCE's system

SCE uses a mix of **qualitative** (fire scientist and risk expert opinion) and **quantitative** factors to determine the relative levels of risk in its service territory

Both **probability** and **consequences** are considered

WHICH MITIGATIONS TO DEPLOY

SCE prudently **balances** risk mitigation and cost effectiveness

Mitigation effectiveness, **deployment speed** and **benefit cost ratios** are major factors in mitigation selection

Portfolios of mitigations are designed to be complementary and provide multiple layers of defense

Continue to **test and research** more effective and affordable alternatives

RISK-INFORMED APPROACH TO UNDERGROUNDING WITH A FOCUS ON COST-EFFECTIVENESS

SCE'S INTEGRATED WILDFIRE MITIGATION STRATEGY

PURSUE UNDERGROUNDING IN HIGHEST RISK AREAS IF REASONABLE

TARGETED UNDERGROUNDING CRITERIA:

- Communities of elevated fire concern[1]
- High burn frequency
- Limited egress
- Wind speeds exceeding covered conductor PSPS thresholds
- Exceptionally high potential consequence (>10,000 acres)
- Operational feasibility

OTHER APPROACHES TO REDUCE COSTS OF TRADITIONAL UNDERGROUNDING

Execution improvements: Align undergrounding work with city/county infrastructure improvements; streamlined working hours to improve overall resource efficiency
Requirement updates: Relaxed paving and backfill requirements

Ground Level Distribution Systems (GLDS) & At Grade Duct Bank (AGDB)[2]

GLDS encases cables in inside cable tray ground assembly with a composite fill; AGBD installs conduits in precast cable trench filled with concrete

Remote Grids[2]

Stand-alone system (renewable generators, energy storage, backup fuel container and grid controllers) disconnected from main SCE grid; serves small, remote collection of customers

[1] Defined as smaller geographic areas where terrain, construction, and other factors could lead to smaller, fast-moving fires threatening populated locations under benign (normal) weather conditions
[2] Piloting or under development

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ASSET INSPECTION PROCESS FOR TRANSMISSION & DISTRIBUTION

ASSET INSPECTIONS IN HFRA

- Ground and Aerial High Fire Risk Informed Inspections
- Distribution Infrared Scanning
- Transmission Infrared and Corona Scanning

2019: Supplemented ground-based inspections with aerial inspections

2023: Started conducting single-visit 360 inspections for distribution assets combining ground and aerial checks

2025: Began single-visit 360 inspections for transmission pole assets

[1] IWMS = Integrated Wildfire Mitigation Strategy
[2] Exceeds GO 165 requirements of once every 5 years for distribution

GROUND & AERIAL INSPECTION INTERVALS

- Structures prioritized based on **probability of ignition** and **consequence**
- SCE's IWMS[1] Risk Framework used to determine **inspection scope frequency**
- Detailed inspections in HFRA performed at least **once every 3 years**[2] (more frequently in Severe Risk Areas, Areas of Concern, and some structures in High Consequence Areas)

Idle lines: SCE inspects and maintains idle **transmission** and **distribution** facilities at same interval as energized. SCE enhanced existing grounding standards for idle **transmission** and plans to complete grounding enhancements in HFRA by end of 2025.

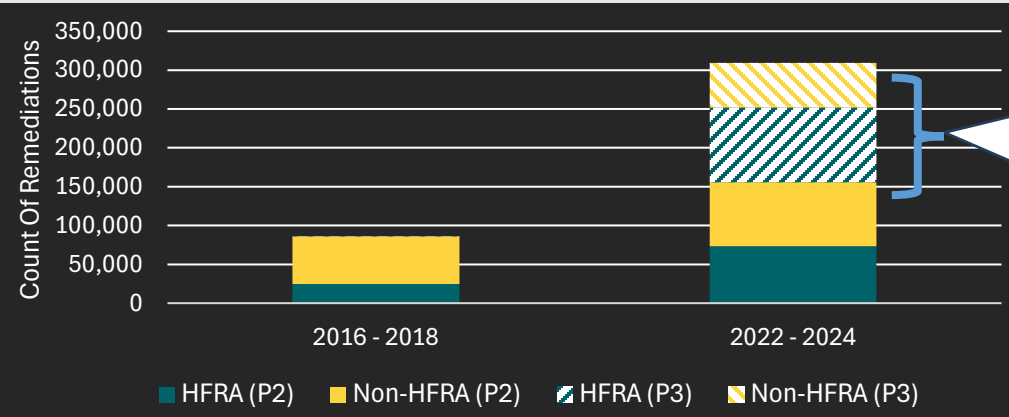
SCE continues to remediate idle **distribution** facilities in HFRA in 2025 and will complete remediation of top 50% riskiest locations in 2025.

WORK ORDER REMEDIATION AND PRIORITIZATION

REMEDIATION PRIORITIZATION

- Majority of remediations identified through inspections
  - January 2019: SCE increased inspection from ~65k to over 200k a year in HFRA and added aerial inspections
  - June 2019: GO 95 required P3s to have a compliance due date
- Remediations prioritized in accordance with GO 95, Rule 18
  - Compliance due notifications increased from ~100k to ~300k with ~150k being P3 with little to no safety and/or reliability risks
- Due date assignment considers several factors including impacts to wildfire, public risk, and extent of damage

AVERAGE NUMBER OF COMPLIANCE NOTIFICATIONS BY YEAR



Little to no safety and/or reliability risk but draws resources away from higher risk-reducing work

ADDRESSING OBSTACLES

- SCE strives to complete all remediations by compliance due date; however, factors outside SCE's control such as access, permits, environmental restrictions may result in non-emergent repair work going past compliance due date
- Weekly reviews of past due maintenance and escalation of third-party constraints
- Unsuccessful attempt to get regulatory relief on remediating no/low-risk notifications by GO95-compliant due dates
- Approximately 10,000 notifications past due related to customer notifications and joint pole and another 1,300 refer to no access

INSPECTIONS AND MAINTENANCE QUALITY ASSURANCE

SCE's Transmission & Distribution QA/QC program uses a risk-informed approach to drive continuous improvement by identifying inspections and maintenance non-conformances with SCE standards or GOs.

The QA/QC program determines causes of non-conformance and drives corrective actions to improve performance. Corrective action plans may include changes implemented to inspection processes and training to continuously improve inspection programs based on QA/QC findings.

QA/QC FINDINGS

- QC findings are used for performance scoring to measure ability of employees and contractors to accurately identify and classify potential safety and reliability risks.
- Corrective actions may be taken.
- Findings identified during quality reviews are remediated.

CONTRACTOR QUALITY ASSURANCE

- Contractors are required to have quality programs, and it is considered during bid reviews.
- Contractors are required to follow SCE policies and procedures and provide proper training for their employees.
- SCE performs quality reviews of contractor work and those not meeting SCE expectations are put into a control stage to improve performance.

IMPACTS OF FAST CURVE SETTINGS

- SCE enables fast curve (FC) on distribution lines when elevated fire conditions are present
  - Historically, while FC enabled May - November, it may vary due to yearly weather conditions
- FC detects fault conditions more quickly, opens protective devices faster and reduces energy released, decreasing likelihood of a fault resulting in an ignition
  - Between 2021 and 2024, circuits in HFRA enabled with FC have ~25% fewer ignitions resulting from faults
- The majority of circuits with FC enabled in 2024 had fewer outages and a decrease in the circuit SAIDI compared to historical circuits between 2015 – 2017
  - Reductions can be attributed to SCE's wildfire mitigation efforts, including covered conductor, vegetation management enhancements, and inspection and maintenance activities

CONTINUOUS IMPROVEMENT THROUGH LESSONS LEARNED AND BENCHMARKING

UPDATED DESIGN STANDARDS

Next Generation covered conductor that fully seals around electrical connections and has a slimmer design that reduces cost

Alternative undergrounding methods reduces structures, trench depths and conduits; piloting directional boring, a trenchless method of installing underground

Avian-safe transformers features designs with no top bushing and side-mounted insulated elbow connections to reduce incidents with wildlife

ENHANCED ENTERPRISE SYSTEMS

Palantir Foundry improves our ability to build a more complete picture of the grid and our operations feedback by integrating multiple data sources

Arbora advances our vegetation management by combining digital inspection and reporting tools and uses technology-driven forecasting and planning

PARTICIPATING IN GLOBAL UTILITY COMMUNITY

Partnership with utilities from Australia, North America and South America in International Wildfire Risk Mitigation Consortium (IWRMC)

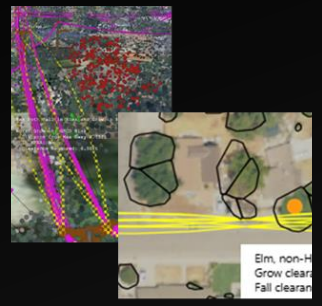
Key contributor to IWRMC Strike Tree Benchmarking & Practices Deep Dive Study

NEW TECHNOLOGIES AND INNOVATION WITH SAFETY IN MIND

Adopted Technology

5G FIELD AREA NETWORK

Enables quicker fault detection, automation of grid protection and monitoring by simultaneous connection to more devices



3D INTERACTIVE VEGETATION MANAGEMENT MODELS

Creates AI models to predict and address potential vegetation issues, enhances accuracy and efficiency of vegetation inspections

AI & DATA ANALYTICS FOR INSPECTIONS

AI integration optimizes planning and scheduling; AI-enabled inspections result in reduction of time per structure and manual review

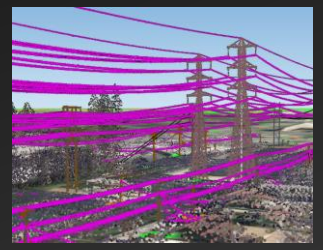
Technology Pilots

SOLAR POWERED REAL-TIME GRID MONITORING

Detects grid anomalies around a distribution pole, enhances PSPS restoration decisions by detecting potential wire downs even during circuit de-energization, deploying ~2,000 devices across 11 circuits

DISTRIBUTION WAVEFORM ANALYTICS

Collects data from digital fault recorders to perform advanced fault analytics and is scaling up the platform to support the Advanced Waveform Anomaly Recognition system (AWARE)



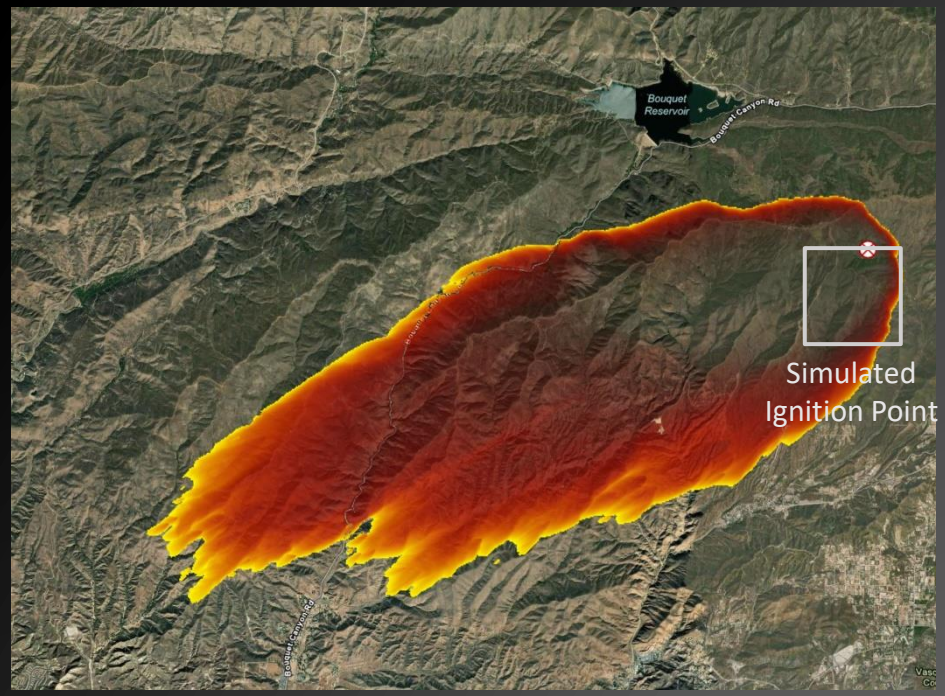
LIDAR TO DETERMINE CLEARANCES

Process LiDAR data to detect clearance distances between primary lines and buildings

RISK MODELING AND DECISION-MAKING FRAMEWORK

IMPROVEMENTS TO SCE'S WILDFIRE RISK MODELING:

- Wildfire risk modeling is in early stages compared to other perils (e.g., wind and hurricanes) and is among the most difficult perils to model
- Transitioning to updated versions of existing risk models (expanded consequence parameters including urban conflagration)
- Actively assessing novel and improved methods for modeling wildfire consequences as well as framework for assessment and comparison of multiple models to leverage diversity of inputs and approaches



SCE WILDFIRE RISK MODELING IMPROVEMENTS INFORM:

- Inspections and maintenance
- Vegetation management
- Grid hardening, such as covered conductor, REFCL and targeted undergrounding
- PSPS decision-making processes

FACTORS CONSIDERED IN MITIGATION SCOPING:

- Ability of mitigations to address specific risk drivers by location
- Criteria such as egress, access and functional needs, communities of elevated fire concern, etc.
- Cost, construction feasibility, speed of deployment and other factors

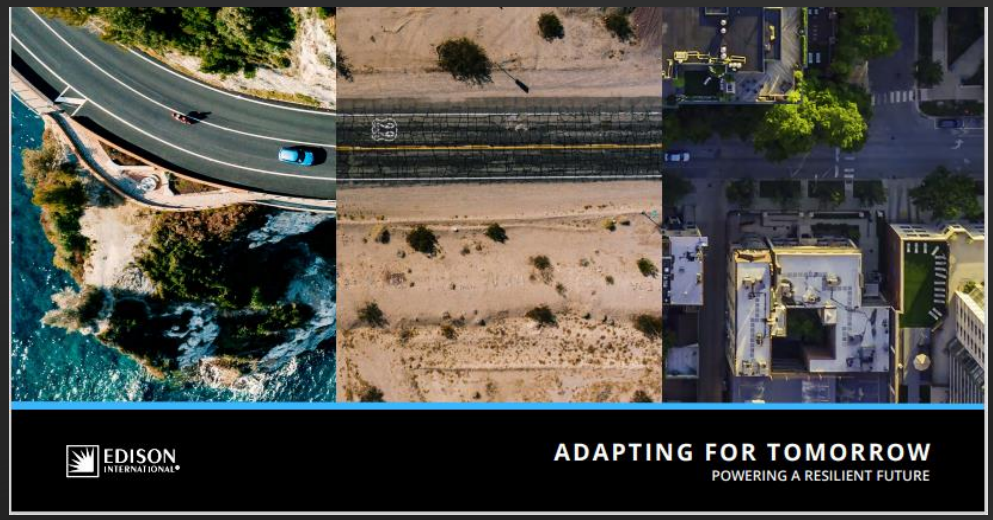
CLIMATE ADAPTATION STRATEGY

Climate-Informed Mitigation Strategy and Capital Planning

- Understanding long-term changes in climate to manage impacts on assets, operations, and service
- The results of the Climate Adaptation & Vulnerability Assessment were used to support a funding request in the 2025-2028 GRC to harden infrastructure against future climate events
- Integrate climate hazard overlays to focus on longer term planning horizons to inform future investments

Climate-Informed Risk Modeling

- Additional climate science-backed modeling scenarios
- Improved understanding of future conditions in SCE's service territory to validate mitigation strategies



PUBLIC SAFETY POWER SHUTOFFS

Assessing the trajectory of extreme weather and climate change requires ongoing recalibration of defenses against wildfires. In recent years, below average rainfall and extended periods of high winds have increased the risk of catastrophic wildfires.

In response to the increased risk, de-energization criteria have been updated to help prevent fires from utility equipment

Customers could potentially experience longer and more extensive PSPS events this year, including in areas that have historically not experienced PSPS

PSPS remains necessary to save lives and protect community members

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UPDATES TO PSPS PROGRAM

FPI AND WINDSPEED CRITERIA REFINEMENTS

- Refined application of windspeed discount factors
- Updated application of Fire Potential Index (FPI) when broader fire weather concerns are identified
- Refinements could result in 20-40% more PSPS activation days, and event sizes on average twice as large in 2025 assuming similar weather to 2024

NEW HFRA CIRCUITS

- Per SCE's Petition for Modification of HFTD Boundaries, 32 new circuits and 47,000 more customer accounts now considered HFRA
- Evaluating areas 620 feet outside of existing 200 feet HFRA buffer; up to 123,000 additional customer accounts may be affected

24/7 MONITORING AND ALERT SYSTEM

- Real-time monitoring capturing unexpected weather meeting PSPS de-energization thresholds outside of PSPS activations
- When necessary, circuits will be de-energized immediately, day or night
- In these rare, time-sensitive occurrences, customer notifications and website information will follow as soon as possible

INCREASED CUSTOMER SUPPORT

CUSTOMER SUPPORT OFFERINGS

- Expanded budgets for Critical Care Back-up Battery Program and battery and generator rebate programs
- Targeted support for school sites via temporary generation in conjunction with generator rebate offering
- New targeted battery storage program for customers with AFN
- Support for local governments for community resiliency
- Expanding In-Event Battery Loan Program with additional batteries
- Increasing Food Bank support

COMMUNITY RESOURCE CENTERS (CRCs) AND COMMUNITY CREW VEHICLES (CCVs)

- Increased CRC locations by 34% to 94 sites; also utilizing 8 CCVs
- Onboarding vendor to provide additional resources during large events

COMMUNITY OUTREACH FOR CUSTOMERS BEFORE PSPS EVENTS

STAKEHOLDER AND COMMUNITY ENGAGEMENT

- PSPS Working Groups & Advisory Board
- Access and Functional Needs (AFN) councils
- Safety fairs & Tribal community engagement
- Wildfire Safety community meetings
- Local governments and county officials
- Critical Infrastructure & Critical Facility meetings

CUSTOMER PROGRAMS

- AFN Nurture campaign
- Outreach for PSPS programs such as back-up power and generator rebates (supports well water customers)

EDUCATION AND OUTREACH

- Direct communications: HFRA newsletter, new HFRA customers, frequently impacted customers
- Increased Community Based Organizations by 25% to 93
- Surveyed customers with AFN, notification testing, MBL contact updates, Critical Facility/Critical Infrastructure updates

NOTIFICATION CADENCE
All customers notified 3 days ahead, when possible

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COMMUNITY OUTREACH FOR CUSTOMERS DURING / AFTER PSPS EVENTS

DURING

CBO SUPPORT

- Hotels
- Food and water
- In-event batteries
- Transportation

CUSTOMER CARE EMERGENCY RESPONSE

- Customer Care Branch including AFN Supervisor
- Secondary verification process to reach MBL customers when notifications fail
- Community Resource Centers, Resiliency Zones

DAILY BRIEFING CALLS

- CFCI customers
- County officials, CBOs, State officials

AFTER

IMMEDIATE FEEDBACK

- Debrief with AFN partners after each event
- Incorporate feedback into annual AFN Plan
- Complaints tracker for customer feedback

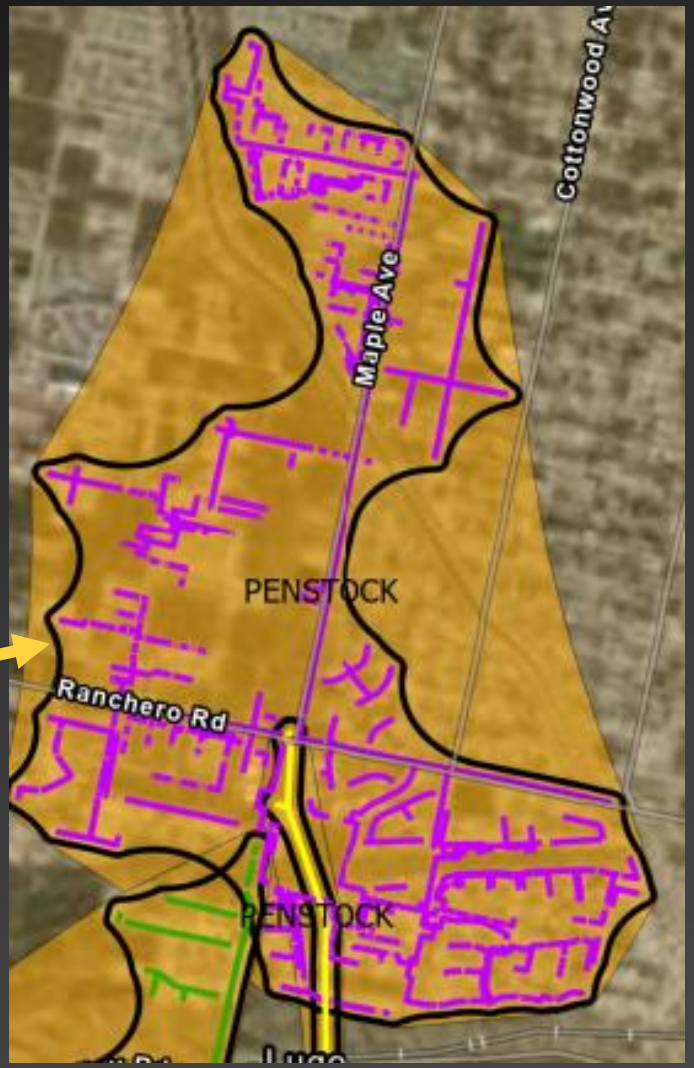
PROGRAM RESPONSE

- "Close the loop" to address customer questions
- In-language survey and PSPS tracker survey to assess customer needs, awareness

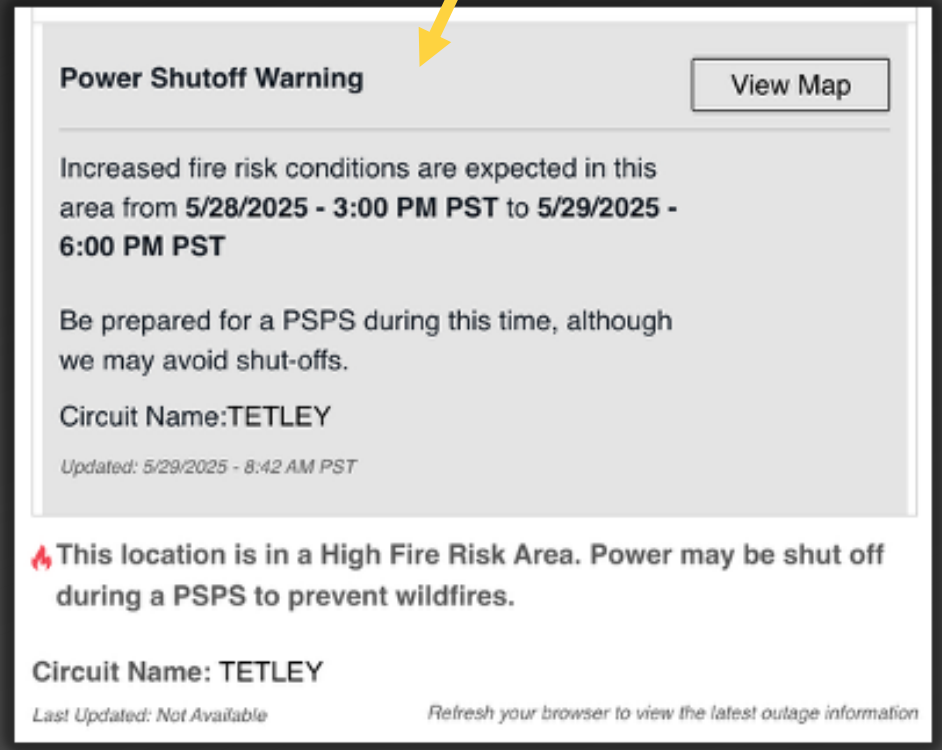
ENHANCEMENTS TO OUTAGE MAP

Clearer layout to outage map page for better visibility

Refined circuit boundaries to minimize visual overlap and confusion



Redesigned PSPS display panel on outage map provides near-real-time updates, showing circuit name and location linked to the searched service address.



IMPROVEMENTS ENHANCE 2025 PERFORMANCE

LESSONS LEARNED FROM 2024 FIRE SEASON

GAPS IN NOTIFICATION AUTOMATION CAUSED DELAYS

Although automation improved accuracy / timeliness of most notification processes, enhancements are in progress to reduce manual touchpoints

DATA ERRORS AFFECTED NOTIFICATIONS

Source data errors, including outdated customer information, increased potential for missed notifications

Automation Enhancements

Enhanced ~80 automation features for 2025 fire season across key operational workflows, enhancing forecast modeling accuracy and streamlining segment-level public safety partner notifications

Joint Utilities Working Group Updates

- AFN support framework, in partnership with AFN leaders, to reduce risk and ensure safety for electric dependent customers
- Process refinements for coordinating among utilities and communicating with customers on shared circuits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ON SAFETY
Thank you
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