

SCE's Post-Filing 2026 Risk Assessment and Mitigation Phase (RAMP) Workshop

June 25, 2026

Agenda

Topic	Presenter	Time
Safety Message	Bryan Landry	10:30 – 10:35
Opening Remarks	Safety Policy Division	10:35 – 10:40
SCE Opening Remarks	Seema Turner	10:40 – 10:45
RAMP Overview	Gary Cheng	10:45 – 10:55
Navigating the RAMP Narrative and Workpapers	Daniel Komula	10:55 – 11:10
Climate and Environmental and Social Justice Pilots	Bryan Landry	11:10 – 11:20
Break		11:20 - 11:30
Public Safety	Ted Gribble / Nicole Kraus	11:30 – Noon
Hydro Dam Failure	Matt Muto	Noon – 12:30 PM
Lunch		12:30 – 1:30
Wildfire	Tyson Laggenbauer	1:30 - 2:30
Q/A & Closing Remarks	SCE Team	2:30 – 3:00

Stress less, sleep better and live more mindfully

For our safety message, we want to begin by reminding this group to focus on their personal well-being because how we feel directly affects how we think, act, and stay safe.

SCE provides employees with access to the Calm app.

Calm can help you tackle stress, get a good night's sleep and feel more present in your life. It's one of the most popular apps worldwide – and it's available at no cost to you as part of your benefits. With the convenience of an app, you can use Calm whenever it fits your schedule to work on whatever's most important to you.



Relieve stress and anxiety

Explore practical tools, breathing exercises and quick courses designed to help you manage symptoms of stress and anxiety and help to settle them in the moment.



Sleep better

Relax and fall asleep more easily with soothing sleep stories read by celebrities, meditations, natural sounds and exclusive music selections.



Live more mindfully

Get daily mindfulness, wisdom and encouragement to quiet your mind, build healthy habits and nurture positivity with short, guided sessions and courses.



Signs of Burnout in the Public Sector (and What to Do Next)

<https://health.calm.com/resources/blog/signs-of-burnout-in-the-public-sector/>

Safety Policy Division Opening Remarks

SCE Opening Remarks

Energy for What's AheadSM



RAMP Overview

Energy for What's AheadSM



Regulatory Timeline

Dec. 18, 2025	Pre-RAMP Workshop Gathered input on preliminary RAMP risks, risk quantification, Tranching, Wildfire Power Law White Paper and Climate Pilot Selection and Integration Approach
May 15, 2026	RAMP Filing RAMP Application – 10 Risk Chapters, 5 White Papers ¹ and supporting workpapers ²
June 25, 2026	Post-RAMP Workshop Provide guidance on navigating the RAMP application and deep dives on Public Safety Not Attributable to Asset Failure, Hydro Dam Failure, and Wildfire
TBD	SPD Evaluation Report Commission staff evaluates SCE's RAMP Filing
May 14, 2027	2029 GRC Filing SCE submits GRC Filing – informed by RAMP.

[1] ESJ Pilot Study was submitted on May 15th. The ESJ Pilot White Paper will be filed on July 15

[2] Workpapers were served on May 27th.

2026 RAMP Risks – Comparison from 2022 RAMP

2022 RAMP Risks	
1	Wildfire and PSPS
2	Contact with Energized Equipment
3	Underground Equipment Failure
4	Cyber Attack
5	Hydro Dam Failure
6	Seismic
7	Major Physical Security Incident
8	Employee Safety
9	Contractor Safety

2026 RAMP Risks	
1	Wildfire and PSPS
2	Overhead Equipment Failure 
3	Underground Equipment Failure 
4	Public Safety (Non-Asset Failure) ★
5	Cyber Attack
6	Hydro Dam Failure
7	Seismic
8	Major Physical Security Incident
9	Employee Safety
10	Contractor Safety



Definition updated



New standalone risk

Overhead Equipment Failure: 2022 RAMP focused on risk through post-failure outcomes such as Contact with Energized Equipment. The 2026 RAMP focuses on risk through underlying drivers of failure.

Underground Equipment Failure: 2022 RAMP focused on outcomes of uncontrolled release of energy from vault or manhole. The 2026 RAMP focuses on why underground failures occur by addressing the full population of underground equipment failures.

Public Safety (Non-Asset Failure): Differentiates public-contact events (vehicle hit pole, dig-ins, aircraft line strikes) from asset-failure risks.

2029 Baseline Risk Scores

Risk	Safety (\$M)	Reliability (\$M)	Financial (\$M)	Total Risk (\$M)
Wildfire	\$111 	\$396 	\$6,474 	\$6,981 
Cyber Attack	\$2 	\$1,669 	\$58 	\$1,729 
Overhead Equip. Failure	\$17 	\$1,303 	\$127 	\$1,447 
Underground Equip. Failure	\$6 	\$989 	\$42 	\$1,037 
Seismic	\$1 	\$914 	\$5 	\$920 
PSPS	\$2 	\$556 	\$78 	\$635 
Public Safety (Non-Asset)	\$57 	\$191 	\$29 	\$277 
Physical Security	\$17 	\$139 	\$5 	\$161 
Contractor Safety	\$84 	\$0 	\$0 	\$84 
Employee Safety	\$41 	\$0 	\$12 	\$53 
Hydro Asset Failure	\$1 	\$0 	\$1 	\$2 

- Wildfire represents SCE’s highest scoring risk, driven predominantly by financial consequences, and is also the top safety risk.
- Reliability-related consequences are the primary driver of total risk scores for the next highest risks – including Cyber Attack, Overhead Equipment Failure, Underground Equipment Failure, and Seismic.
- Safety-focused risks – including Contractor safety, Employee Safety, and Public Safety (Non-Asset Failure) – reflect lower total risk scores but remain critical to SCE’s operational priorities.

New 2026 RAMP Requirements

SCE's RAMP reflects cumulative requirements from the Risk-Based Decision-Making Framework Order Instituting Rulemaking (OIR).

Phase II	Phase III	Phase IV
✓ Monetization Framework ✓ Interruption Cost Estimate (ICE) calculator to estimate Value of Reliability (VoR) ✓ DOT to estimate Value of Statistical Life (VSL) ✓ Environmental and Social Justice (ESJ) Pilot	✓ New Tranching Approach ✓ Climate Pilot ✓ Tail Risk ✓ For Wildfire, use Power Law Approach or Provide an Explanatory White Paper ✓ Risk Scaling of Consequences ✓ Three Discount Rate Scenarios for Benefit-Cost Ratio (BCR) Calculations	✓ Mitigation Portfolios/Groups ✓ Portfolio Optimization ✓ Risk Reporting Units (RRU) ✓ Overall Residual Risk Reporting ✓ Consequence Distributions ✓ Data Templates/Reports

Navigating the RAMP Report

Energy for What's AheadSM



Where to find the RAMP Filing and Workpapers

[CPUC Open Proceedings](#) | [Open Proceedings](#) | [SCE](#)



[Outages & Safety](#)

[Save Money](#)

[Clean Energy & Efficiency](#)

[For Business](#)



CPUC OPEN PROCEEDINGS

[Regulatory Information / Open Proceedings](#)

Related Documents

[View & Search All CPUC Documents](#)

[View & Search All Regulatory Documents](#)

- [AB3264](#)
- [Advance Demand Flexibility OIR](#)
- [AMI 2.0](#)
- [SCE 2025 GRC](#)
- [SCE 2025 GRC Phase 2](#)
- [Woolsey Fire Cost Recovery](#)
- [2026 COC](#)
- [SCE 2021 GRC](#)
- [2024 WMCE](#)
- [2026 RAMP](#)

OPEN PROCEEDINGS

[FERC Open Proceedings](#)

[CEC Open Proceedings](#)

[Appellate Open Proceedings](#)

RELATED LINKS

[California Senate Bill 1210 \(2024 Skinner\)](#)

[FERC Standards of Conduct](#)

[SCE Tariff Books](#)

[Advice Letters](#)

Feedback

Chapter Structure

Section	Content
1. Executive Summary	- What the risk is, why it matters, and how SCE defines it - Pre and Post mitigation risk score summary - Key Changes since 2022 RAMP
2. Risk Assessment	- Risk bowtie visual, including driver and consequence details - Tranching - Risk Reporting Units (if applicable)
3. and 4. Controls and Mitigations	- Existing or new programs that SCE plans to implement to manage the risk - Each control/mitigation mapped to relevant risk bowtie components
5. Foundational Activities	Enabling programs that support controls/mitigations
6. Proposed Plan	- Recommended mitigation portfolio with estimated scope and spend (2029-2032) - Pre and post risk scores - BCR results and strategy rationale
7. Alternative Plans	- Two alternative mitigation portfolios with estimated scope and spend (2029 – 2032) - Pre and post risk scores - BCR results and strategy rationale
8. Lessons Learned, Data Collection, and Performance Metrics	- Lessons Learned from prior RAMP filings and SPD evaluations - Data sources, gaps, and limitations - Leading / Lagging performance metrics
9. Addressing Party Feedback	- How SCE addressed CPUC staff and intervenor feedback (if any) - Changes made – or rationale for not adopting recommendations

Workpaper Guide

Category	Example Workpapers	Where to Find (Zip file)
Risk Modeling	- Budget-constraint portfolio optimization results and workpaper - Sensitivity Analysis for Risk Averse Scaling applied to Wildfire - Discount Rate calculations - Value of Reliability calculations - Value of Statistical Life calculations	“Chapter 2 Workpapers”
Risk-Specific Analysis	- Mitigation effectiveness tables - BCR Calculation Files including Heat Maps (for asset-based risks) - Financials - Overall Residual Risk - Risk Inputs - Consequence Distributions - Engineering and Technical Studies	Individual Risk Chapter Folders
Whitepapers	- Tranching - Climate Pilot - Environmental & Social Justice White Pilot Study - Wildfire Power Law	“Chapter 2 Workpapers”
CPUC Data Templates and BCR Files	- CPUC Data Tables 1- 7 4-year and annual BCR Files for Wildfire, Overhead Equipment Failure, Underground Equipment Failure, and PSPS Risks at the RRU level 4-year BCR Files for ALL RAMP risks at the Tranche level.	“CPUC Data tables and BCR File” “Chapter 2 Workpapers” for the BCR file for all RAMP risks

SCE 2026 Data Request Process

Please send all data requests to Case.Admin@sce.com

SCE will be sending a weekly email to the service list that contains the following information for public data request responses:

- ✓ Originator Party
- ✓ Set Name
- ✓ Question No.
- ✓ Received Date
- ✓ Response Date
- ✓ Link to a Public Response
- ✓ Question and Answer
- ✓ Risk/ Issue Chapter
- ✓ Category
- ✓ Questions Pending

Data Requests Received as of 6/24/2026

Date Received	Data Request Set Name	Originator Party	# of Questions	# of Sub-Parts	Topic(s)
1/16/2026	SPD-SCE-2026RAMP-001	SPD	26	47	Power Law and Tranching Whitepapers
3/11/2026	SPD-SCE-2026RAMP-002	SPD	11	24	Power Law and Tranching Whitepapers
4/7/2026	SPD-SCE-2026RAMP-003	SPD	4	4	Public Safety Risk Not Attributable To Asset Failure
6/4/2026	SPD-SCE-2026RAMP-004	SPD	59	177	Multiple
6/5/2026	SPD-SCE-2026RAMP-005	SPD	99	164	Multiple
6/11/2026	SPD-SCE-2026RAMP-006	SPD	18	45	Wildfire and PSPS
6/11/2026	SPD-SCE-2026RAMP-007	SPD	4	23	Hydro Asset Failure
6/17/2026	SPD-SCE-2026RAMP-008	SPD	10	26	ESJ White Paper
6/18/2026	SPD-SCE-2026RAMP-009	SPD	6	17	Hydro Asset Failure
Totals to Date			237	527	

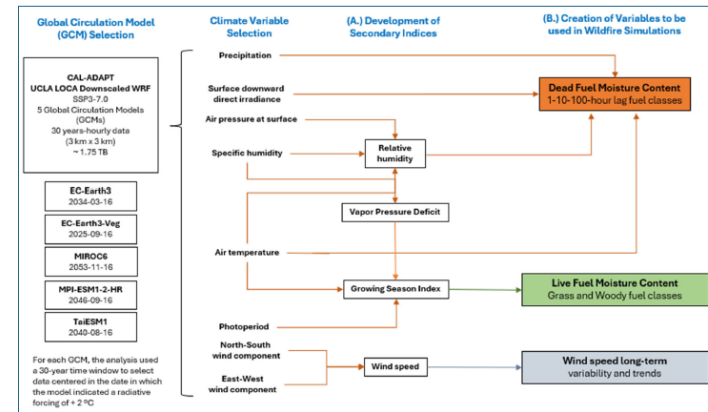
Climate and ESJ Pilots Overview

Climate Pilot

- Piloted methodology to integrate forward-looking climate projections into the RDF to assess how forward-looking climate conditions impact utility risk.
- Applied Intergovernmental Panel on Climate Change (IPCC)-aligned structured confidence framework (evidence and agreement) to characterize robustness of climate-risk linkages to utility risks.
- Selected RAMP risks, namely **Wildfire associated with Utility Assets** and **Hydro Asset Failure** due to high evidence and agreement regarding the linkages between these risks and associated climate drivers.
- Developed modeling methods to integrate available downscaled climate data from California Fifth Climate Assessment into existing risk modeling tools.
- Incorporated the resulting pilot information (e.g., climate adjusted distribution of consequences) into SCE's risk assessment for those risks.
 - **Wildfire** – Developed climate informed WIM
 - **Hydro** – Developed full range of uncertainty, which can be used to develop climate informed mitigations
- Identified gaps and Lessons Learned for potential future climate-risk integration

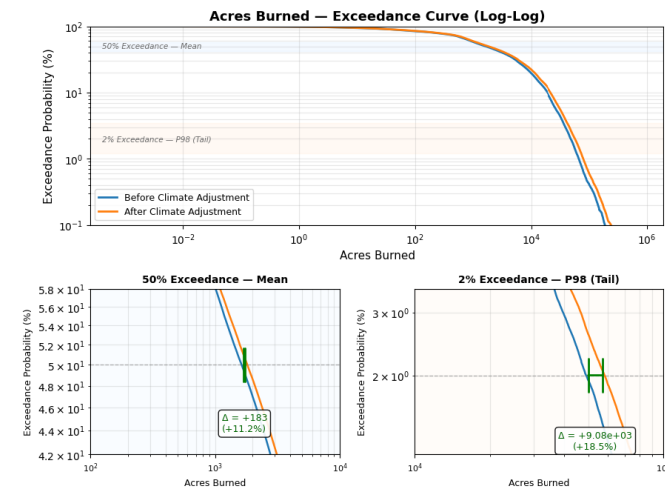
Lesson Learned 5: Climate Model and Dataset Selection Is Often Constrained by Risk-Model Input Requirements

Fig. 3-1 Illustration of data flows from GCM selection through the derivation of fuel moisture and wind inputs used in wildfire simulations within SCE's FireSight 8 model



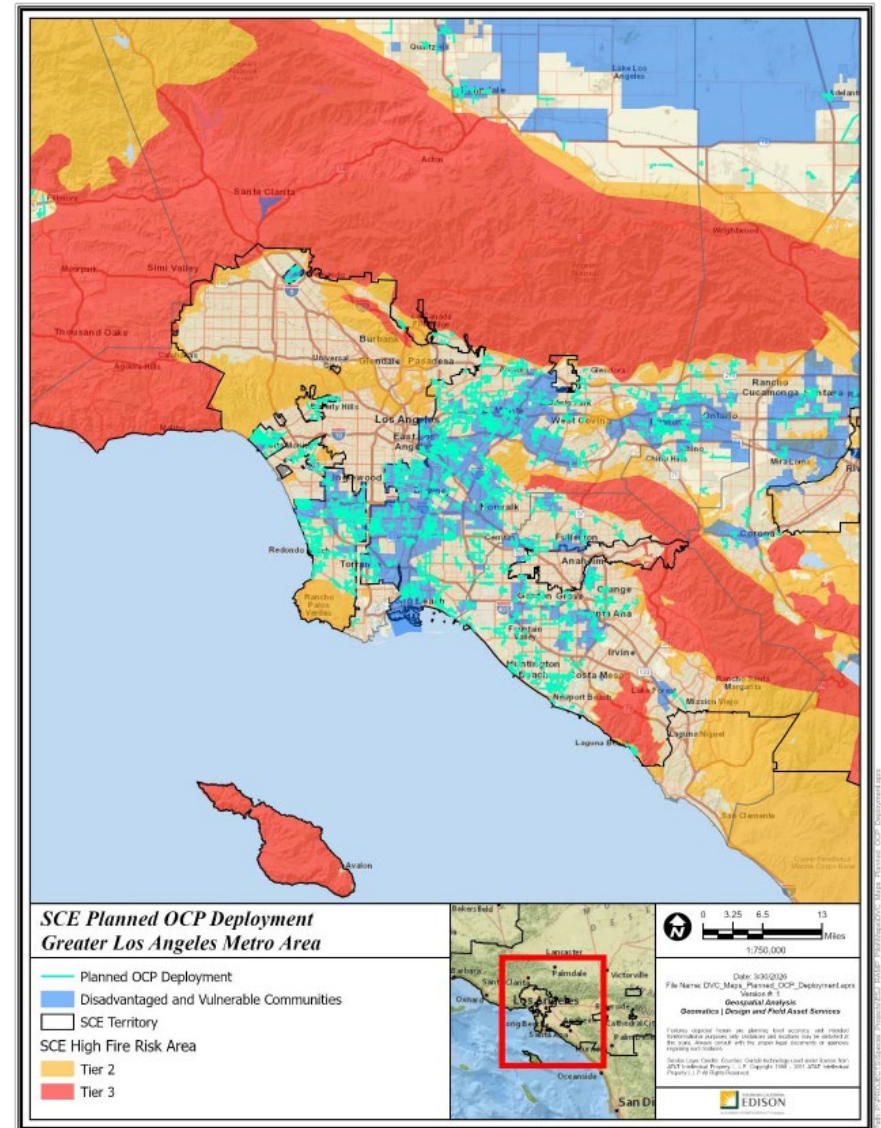
Lesson Learned 7: Climate Change May Alter the Shape of Consequence Distributions

Figure 3-2: Wildfire Integrated Model (WIM) - Wildfire Acres Burned Exceedance Curves Before and After Climate Adjustment⁹¹



Environmental and Social Justice Pilot

- Evaluate how equity considerations could be incorporated into RDF risk assessment and mitigation evaluation using risks
 - **Wildfire associated with utility assets**
 - **Public Safety Power Shut Off**
 - **Overhead Equipment Failure**
- Selected RAMP risks that best align with each of the Commission's Action items, specifically,
 - **Wildfire associated with utility assets**
 - **Public Safety Power Shut Off**
 - **Overhead Equipment Failure**
- Identified DVCs using CalEnviroscreen and statutory criteria
- Conducted spatial overlay analysis of:
 - Risk exposure
 - Mitigation deployment (see example of OCP-DVC overlay to the right)
- Compared DVC vs. non-DVC risk levels and mitigation benefits using RAMP outputs
- Supplemented with literature review (e.g., public health impacts of wildfire smoke,)
- Incorporated targeted stakeholder engagement to capture community impacts and barriers
- ESJ integration is feasible for spatially explicit risks, but limited for system-wide risks (e.g., PSPS programs).



Break

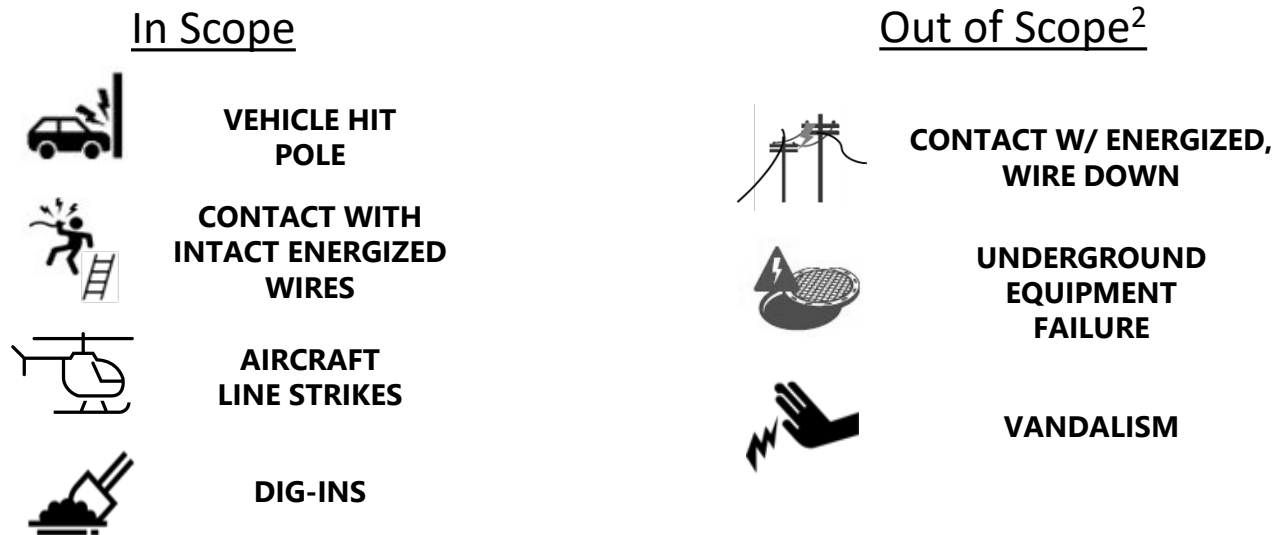
Energy for What's AheadSM



Public Safety Not Attributable to Asset Failure

Public Safety – Risk Overview

- In the 2026 RAMP, SCE has created a separate Public Safety chapter to focus on safety incidents resulting from third-party interaction with SCE assets, independent of intrinsic asset failure¹
- SCE facilities, energized or not, can be hazardous to the public when unexpected contact occurs
- Controls and mitigations in this chapter focus more on influencing human behaviors and/or removing the hazard, rather than preventing or mitigating the consequences of asset failure

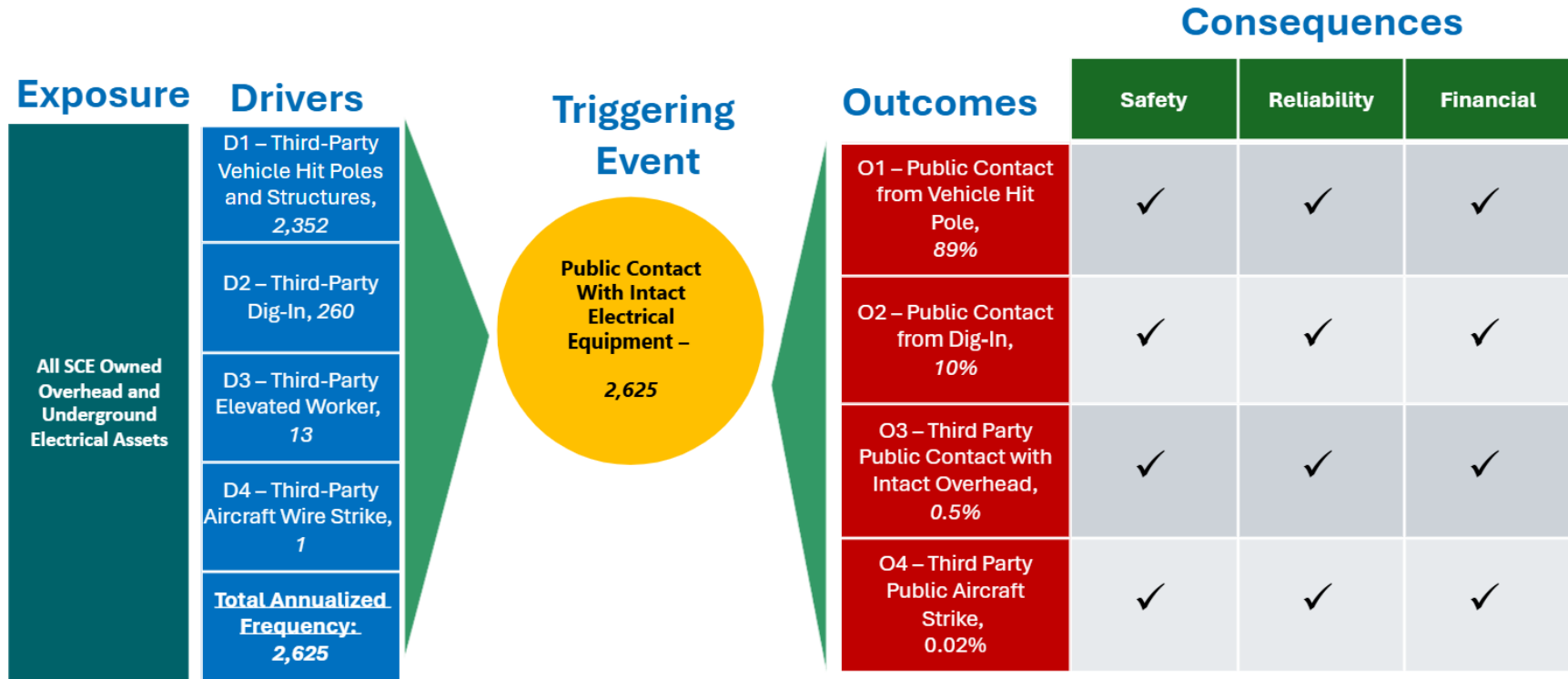


1: Public safety risk resulting from asset failure is addressed throughout the RAMP application in virtually all of the activities that SCE performs to inspect, maintain, and harden assets

2: Contact with Energized Wire Down and Underground Equipment Failure are covered in RAMP Chapters 5 and 6, respectively. Vandalism is not discussed in this RAMP filing, though is an ongoing area of exploration for SCE

Public Safety Bowtie

- The risk event occurs when third parties make unintentional contact with SCE assets that are functioning as designed
- While all modeled risk outcomes have potential consequences spanning safety, reliability, and financial dimensions, safety consequence is the primary driver of risk valuation



- Nearly 90% of all incidents involve vehicle hit pole, and these collisions often cause injuries to the vehicle occupant(s)¹, outages, and direct costs for emergency replacements
- Some vehicle hit poles also result in ignitions, but those consequences are accounted for separately in the Wildfire and PSPS chapter of this RAMP filing

Public Safety – Controls and Mitigations

- SCE's approach to public safety is multi-faceted, with core operations, maintenance activities, design controls and quality oversight intended to keep the system operating in compliance with GO 95, Rule 31.1.
- Mitigations outlined below are intended to account for undesired human behavior resulting in serious injury and/or interruption to the system

Control / Mitigation	Description
C1 - Public Outreach - Intact Contact	Education of the public and targeted safety messaging to higher-risk groups
C2 - Locate and Mark - Distribution	SCE complies with California state law by locating and marking its underground facilities following requests submitted via 811 calls or online to the Regional Notification Center
C3 - Vehicle Hit Pole (VHP) Program	A suite of mitigation measures designed to reduce the likelihood or severity of vehicle collisions with poles- <i>pilot program</i>
C4 - Aircraft Wire Strike Seminar	Periodic safety seminars hosted by SCE's Aircraft Operations team to educate local pilots and solicit feedback- <i>pilot program</i>
M1 - Underground Utility Protection Board	A detectable or durable protective barrier above underground facilities reducing chance of incidental contact
M2 - Enhanced Marking & Lighting	Enhanced marking and lighting beyond Federal Aviation Administration (FAA) recommendation to improve visibility and improve situational awareness

Proposed Plan Summary

- This plan continues to implement existing controls, while extending pilot programs for vehicle hit poles and wire strike seminars. This strategy reflects continued focus on growth and development of initiatives that improve consequence dimensions

Why BCRs below 1 are still prudent

- Public awareness campaigns are a prudent way to communicate risk in areas experiencing population growth or shifts due to migration
- Regulatory Mandate: controls such as 'Locate and Mark' are required by federal and state law

Public Safety - Vehicle Hit Pole Pilot

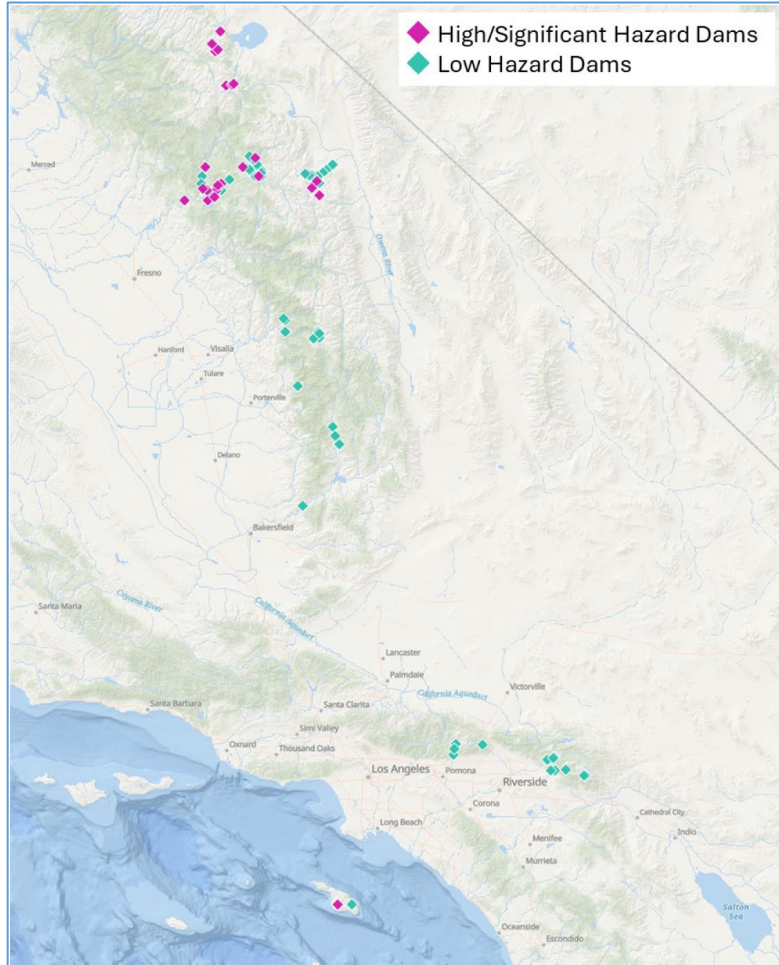
- In a recently launched pilot program, SCE deployed “crash cushions” on 6 poles selected based on frequency of historical hits and constrained ability to remove or relocate the pole in a short time period
- These cushions are designed to help absorb the energy of a collision, lessening the impacts to vehicle occupants and potentially reducing the likelihood of needing to replace the pole
- In early June 2026, SCE’s first post-installation incident involving the pole cushion mitigation pilot successfully resulted in **zero injuries** to members of the public, **no required pole replacement, no wires down, or associated outage**
 - The device has been rotated 180°, ready to absorb another collision as designed by the manufacturer



Hydro Dam Failure

Hydro Dam Failure - Risk Overview

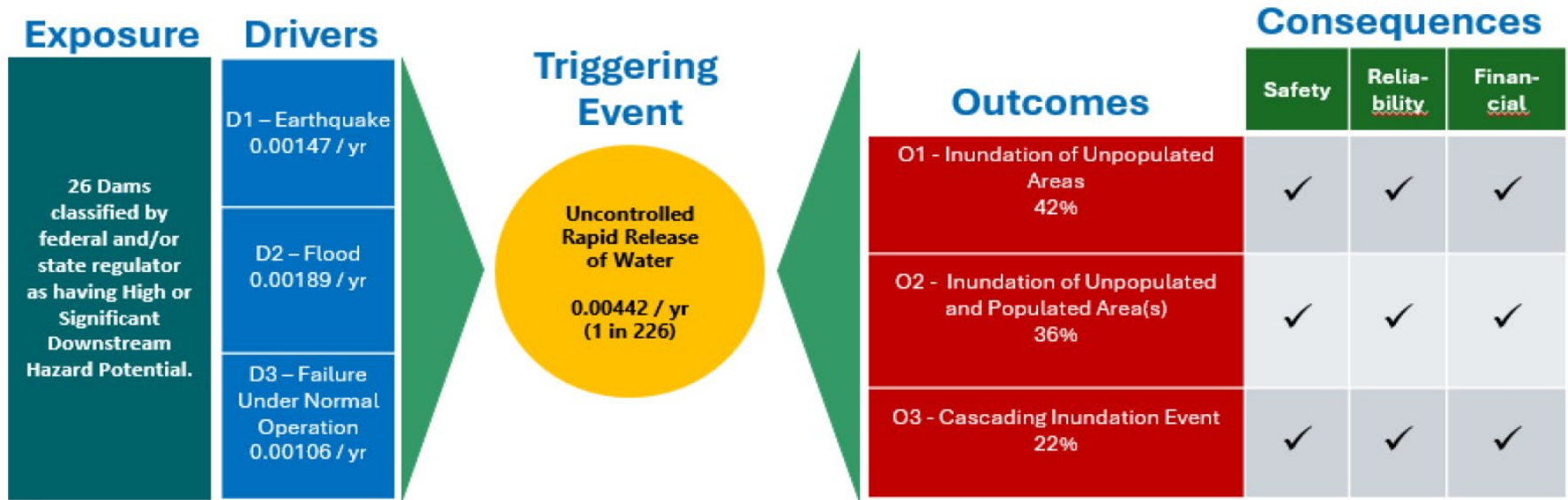
Location of SCE Hydro Assets



- SCE operates 81 hydro dams supporting 33 hydroelectric dams with a combined 1,153 megawatts (MW) of generating capacity
- Dams are located in remote mountainous areas, capturing high-elevation rain and snowmelt.
- Most were built in the 20th century – oldest: 1893 | Newest: 1986
- **In Scope:** 26 high and significant-hazard dams - as designated by FERC and/or California DSOD. Five are classified as “Extremely High-Hazard”.
- **Out of Scope:** Low Hazard Dams
- **Tranching:** Each of the 26 dams was modeled individually, reflecting unique structural, seismic, and hydrologic risk profiles of each asset.

Hydro Dam Failure Bowtie

The hydro dam failure bowtie maps causal pathways from initiating drivers to downstream outcomes and consequences.



Key Drivers (Initiating Events)

- Seismic activity (earthquakes affecting structural integrity)
- Extreme precipitation and flood loading
- Internal erosion, seepage, or embankment degradation
- Spillway or outlet structure failure
- Aging infrastructure & material deterioration

Potential Outcomes (Consequences)

- Uncontrolled release of reservoir water
- Downstream flooding and infrastructure damage
- Loss of life and public safety impacts
- Environmental impacts (habitat disruption, water quality effects)

Hydro Dam Failure – Controls and Mitigations

- SCE implements a layered control strategy spanning operations, maintenance, structural upgrades, and monitoring systems.
- These measures are largely driven by federal (FERC) and state (DSOD) dam safety requirements and industry best practices

Control / Mitigation	Description
CM1 – Hydro Operations	24/7 centralized monitoring; trained watershed personnel perform inspections, etc.
CM2 – Hydro Maintenance	Testing, inspection, repair of dams
C1 – Seismic Retrofit	Reinforce dams to withstand seismic loads
C2 – Dam Surface Protection	Install geomembrane liners to reduce seepage
C3 – Spillway Remediation	Repair / upgrade spillways to safely pass flood flows; expand capacity
C4 – Low Level Outlet	Controlled drawdown capability
C5 – Seepage Mitigation	Reduce internal erosion embankment dams
C6 – Instrumentation and Comm.	Remote monitoring instruments, public warning sirens, etc.
M1 – Dam Removal	Decommissioning

Proposed Plan Summary

- Maintains all existing control programs and includes targeted structural mitigations and decommissioning where appropriate. Strategy reflects dam-specific risk profiles and long planning horizons for hydro infrastructure investments

Why BCRs below 1 are still prudent

- Hydro Dam failures are low probability, high consequence events
- Regulatory Mandate: Controls are required by federal and state law. Non-compliance risks enforcement and license revocation.
- ALARP framework: FERC evaluates investments using multiple criteria beyond BCR – including best practice, societal concerns, and disproportionality.

RAMP Climate Pilot – Vermillion Valley Dam

While the climate change analysis did not materially change expected operating conditions at Vermillion Valley Dam (see chart on bottom, right) it did highlight that potential future, more intense (upper-tail) storm scenarios may warrant additional attention and should be used to inform robust mitigation design.

What SCE did in the Climate Pilot

- Selected Vermillion Valley Dam as the hydro pilot site because its construction is sensitive to flood hazard and a spillway retrofit project is already being planned.
- Evaluated how projected changes in temperature and precipitation could affect hydrologic loading and flood hazards due to a 72-hour Mid Latitude Cyclone (MLC) event at the dam.
- Developed a climate-informed Stochastic Event Flood Model (SEFM) to construct potential future magnitude–frequency relationships and annual exceedance probabilities for overtopping-related conditions.

Informing Mitigation Selection

- The hydro pilot showed a more direct and straightforward linkage between climate variables and risk drivers than the wildfire pilot, because temperature and precipitation directly influence hydrologic loading.
- While expected operating conditions are projected to remain stable, SCE used upper-tail outcomes to inform proposed mitigations designs to ensure that it can withstand potential future higher-consequence, lower-probability conditions.
- The pilot also highlighted the value of bundling future incremental mitigations with existing projects in remote hydro locations where practical, due to the significantly long lead time and expense associated with these types of retrofits (i.e., decades).

See Map 3-6 Index stations used to develop future watershed 72-hour point precipitation-frequency relationship for the Mid Latitude Cyclone (MLC) storm types for the Vermillion Valley Dam Watershed

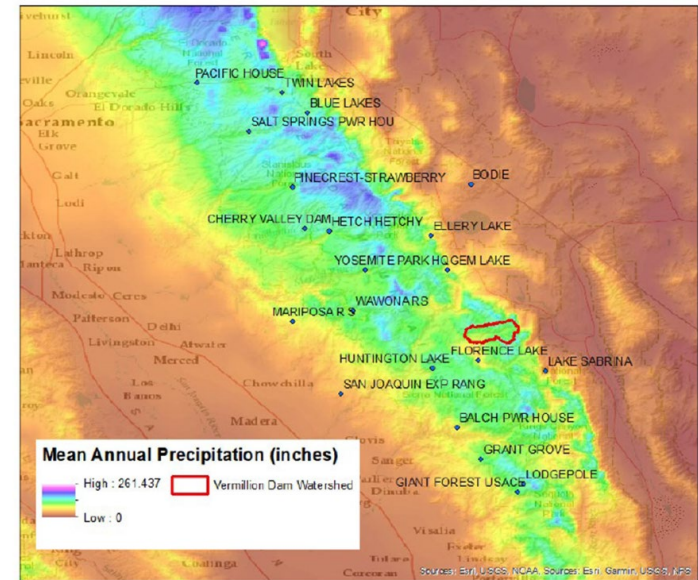
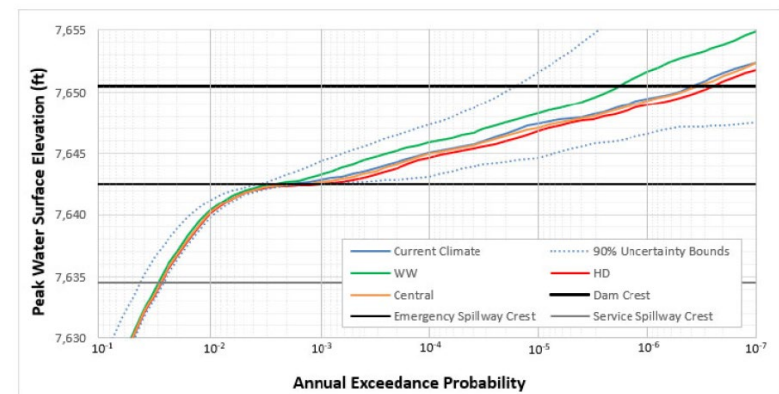


Figure 3-7: Vermillion Valley Dam Climate Informed 72-hour Storm Stochastic Event Flood Model (SEFM) in Comparison to Peak Water Surface Conditions based on Warm-Wet (WW) Scenario.



Lunch Break

Energy for What's AheadSM



Wildfire

Energy for What's AheadSM



Wildfire Risk Overview

SCE'S SERVICE AREA & HIGH FIRE RISK AREAS



50,000 SQ. MI.
of SCE service area across
southern, central and coastal
California

14,000 SQ. MI.
of high fire risk areas

51,000 MI.
of SCE overhead distribution
and transmission lines

14,000 MI.
in high fire risk areas



5M
customer accounts or 15M
residents in SCE's service
area

1.3M
customer accounts or
3.9M residents served by
circuits in high fire risk
areas

1.4M
power poles and towers

311,000
in high fire risk areas

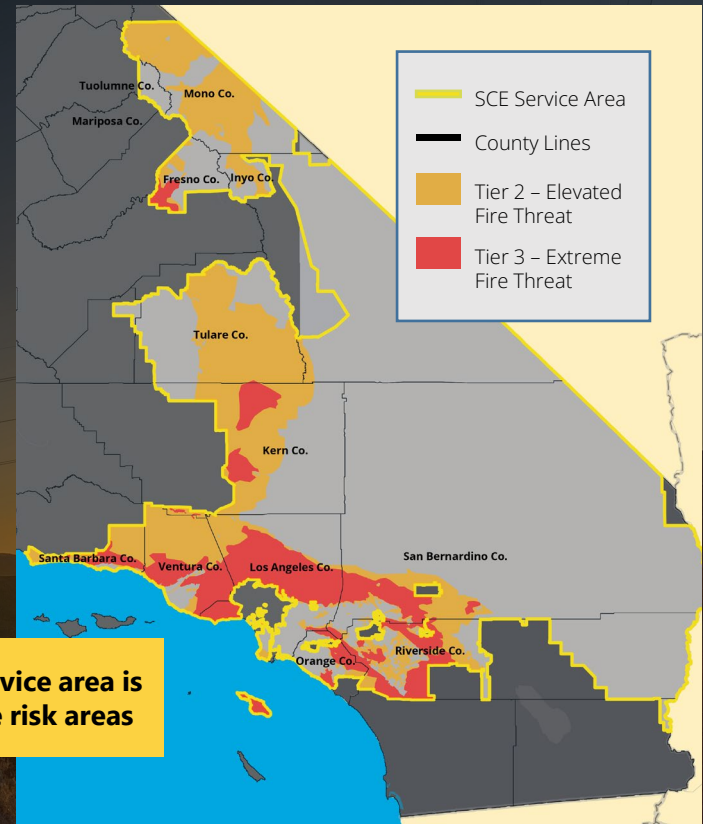
Counties with high fire risk area served by SCE

Fresno, Inyo, Kern, Los Angeles, Mono, Orange, Riverside, San Bernardino, Santa Barbara, Tulare, Ventura

Counties with no or limited high fire risk areas served by SCE

Imperial, Kings, Madera, Tuolumne

27% of SCE's service area is
in high fire risk areas



Core Enhancements to SCE's Wildfire Risk Model

Model Architecture & Methodology

- Introduction of a scaled, hybrid Wildfire Integrated Model (WIM) which combines physics-based fire spread modeling (FireSight 8) with a stochastic ignition data set (RMS Moody's) to capture a full distribution of wildfire outcomes
- Expanded modeling of extended-duration fire behavior, improving representation of large, long-duration burn events not captured in shorter-horizon models
- Explicit use of power-law scaling to better represent low-probability, high-consequence events beyond the historical record
- Retention of asset-level spatial resolution within a probabilistic framework to preserve decision-making relevance for targeted mitigation planning

Climate Integration

- Development of a climate-informed WIM (WIM- Climate), incorporating forward-looking wildfire dynamics under changing climate conditions based on the California Fifth Climate Change Assessment data.
- Use of scenario-based climate inputs and fuel adjustments to isolate climate-driven impacts

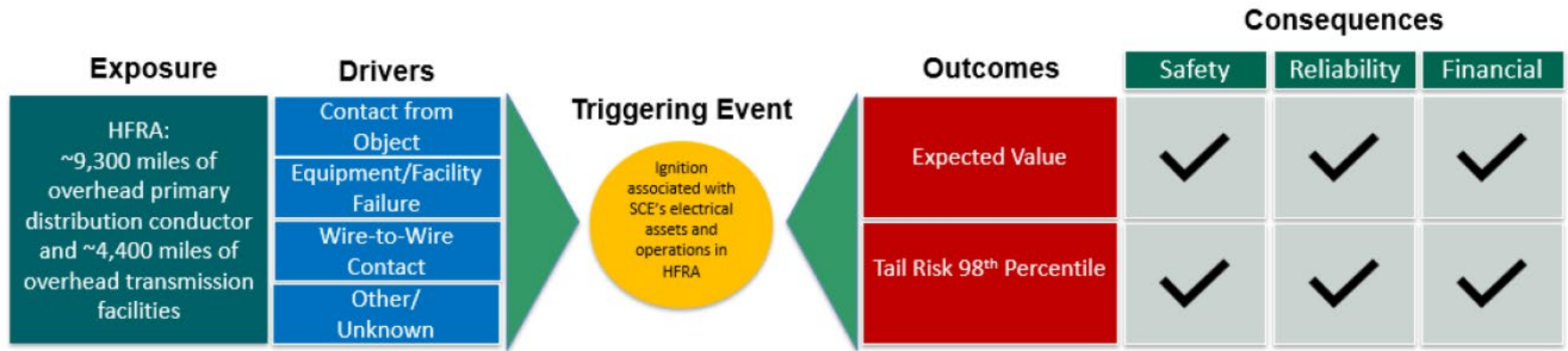
Risk Monetization & Framework Integration

- Direct integration of qualitative drivers (e.g., egress) into monetized risk values, eliminating parallel frameworks and improving transparency

Consequence & Exposure Modeling

- Expanded and refined consequence modeling inputs (e.g., buildings damaged vs destroyed, additional insured losses), including improving representation of wildfire impacts and loss drivers
- Integration of CalFire AB 2911 community-level egress areas
- Updated social vulnerability and non-residential critical infrastructure model to improve weighting

Wildfire Risk Bowtie



Wildfire Drivers and Sub-Drivers That Could Cause an Ignition

Contact from Object	Equipment/Facility Failure	Wire-to-Wire Contact	Other/Unknown
- Vegetation (tree/limb fall-in, palm fronds, grow-in) - Animal/wildlife contact - Metallic/mylar balloons - Other foreign objects/debris (vehicle contact, wind-blown material)	- Conductor failure (primary/secondary) - Connectors, splices & clamps - Insulators & bushings - Poles & support structures - Transformers, capacitors & regulators - Switches, fuses & cutouts - Lightning arresters	- Conductor-to-conductor contact ("conductor slap") - Conductor clashing under high wind	- Cause undetermined/unknown - Third-party or contractor contact - Vandalism

Wildfire Risk - System Hardening

HARDENING ELECTRIC GRID & INFRASTRUCTURE



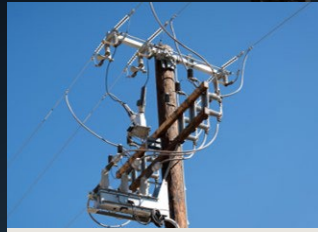
COVERED CONDUCTOR

Replacing bare wire with covered conductor to reduce faults and ignition risk from contact from objects as well as safely raise windspeed thresholds for PSPS in targeted areas. Approximately **7,110+** miles of covered conductor installed since 2018.



FIRE RESISTANT POLES & WRAPS

Installing mix of composite poles and wooden poles with fire-resistant wrap to reduce risk of damaged poles during an emergency. Expanding the deployment of fire-resistant wrap on structures.



PROTECTIVE DEVICES

Using faster grid protection settings to interrupt electric current more quickly when there's an electrical fault, remote-controlled sectionalizing devices to segment and isolate portions of circuits during PSPS events and deploying Rapid Earth Fault Current Limiter (REFCL) to instantly reduce energy released from a downed line.



TARGETED UNDERGROUNDING

Undergrounding in targeted high fire and based on risk criteria and feasibility, nearly eliminating wildfire and PSPS risks associated with electric facilities. Completed **90+** miles of undergrounding completed since 2021.



TRANSMISSION HARDENING

Expanding and evaluating strategies to address ignition risks on the higher voltage transmission system and increase system robustness.

Data as of 3/31/2026

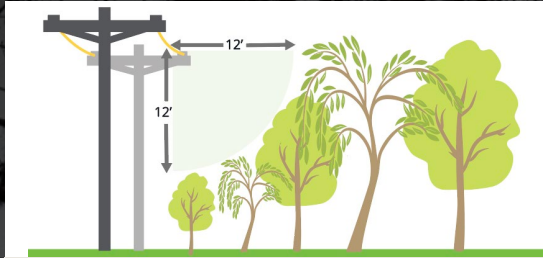
Wildfire Risk - Enhancing Operational Practices

ENHANCING OPERATIONAL PRACTICES



HIGH FIRE RISK ASSET INSPECTIONS & REMEDIATIONS

Inspect overhead equipment in high fire risk areas for repairs from the ground and aerially using drones, prioritizing the highest-risk structures. Each year, inspecting portions of transmission and distribution equipment that comprise about 99% of wildfire risk.



VEGETATION MANAGEMENT

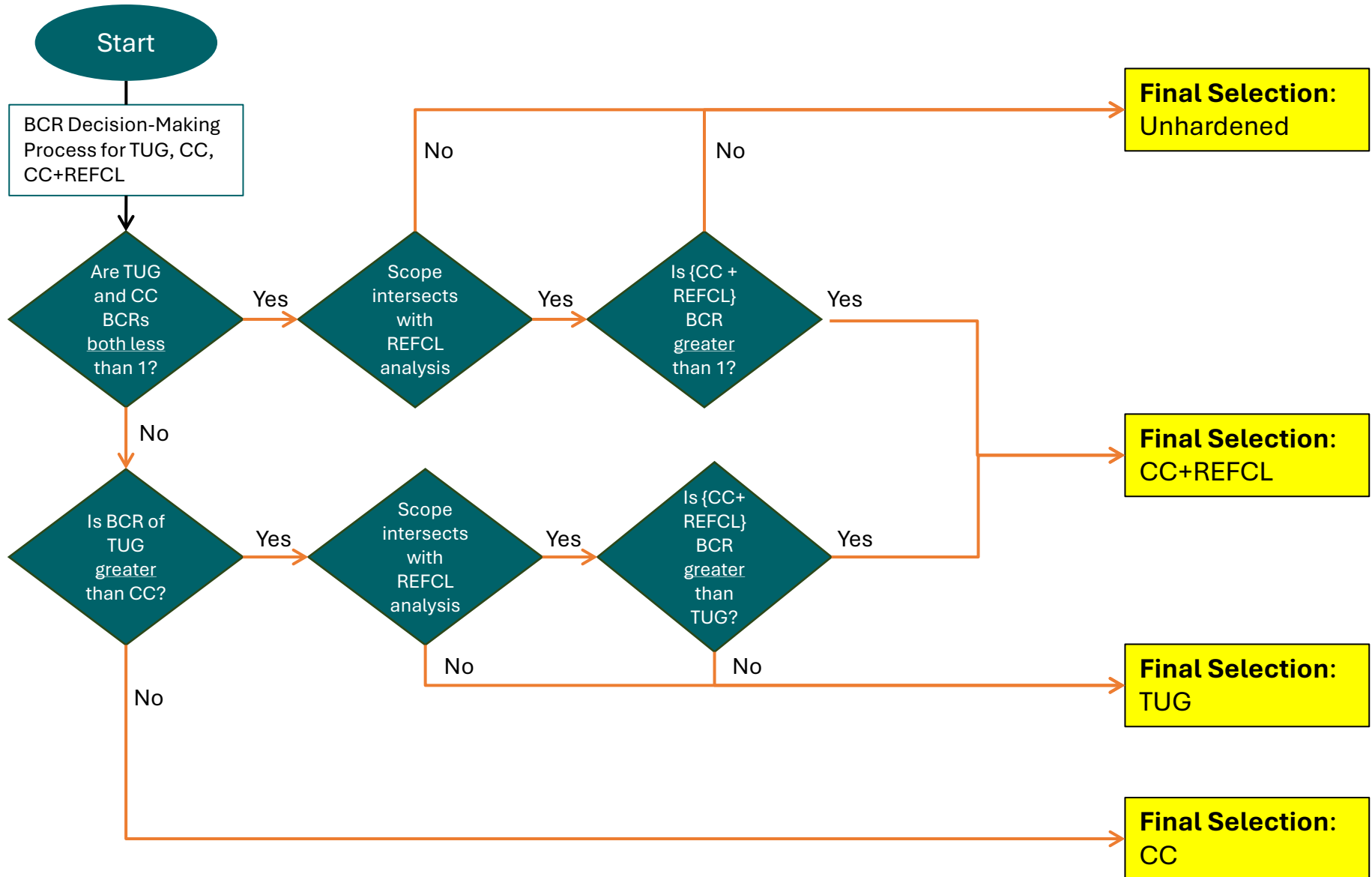
Inspect, trim and remove trees to prevent vegetation from coming into contact with electrical equipment and potentially sparking a fire. Tall trees beyond standard pruning zones that could potentially fall into power lines are also assessed and pruned or removed. SCE also removes palm trees that may come in contact with power lines.



PUBLIC SAFETY POWER SHUTOFFS

Use PSPS as an essential tool to mitigate wildfire risk during elevated fire weather conditions, such as strong winds, dry fuels and low humidity, by shutting off lines to prevent a spark from our equipment starting a significant wildfire.

Wildfire Risk - System Hardening Flow Chart



Wildfire Risk – Mitigation Plan Comparisons

	Proposed	Alternative 1	Alternative 2
Description	Targeted deployment based on BCR analysis	Maximize HFRA coverage by reducing TUG miles to cover the rest of HFRA with Covered Conductor	Deepen TUG coverage in highest tail risk areas that have already been hardened by Covered Conductor
TUG Scope (Miles)	189	120	227
CC Scope (Miles)	455	751	455
Estimated number of Unhardened Miles after execution of Plan	~236	0	~236
Estimated CC + TUG Spend (\$M)	\$1,357	Same as Proposed	\$1,527

Key Takeaways

- Alternative 1 costs approximately the same as the Proposed Plan but achieves less risk reduction.
- Alternative 2 has the largest modeled risk reduction but comes with challenges with respect to cost and execution feasibility. SCE will continue to carefully study the execution parameters, incremental costs and incremental risk reduction benefits ahead of the GRC.

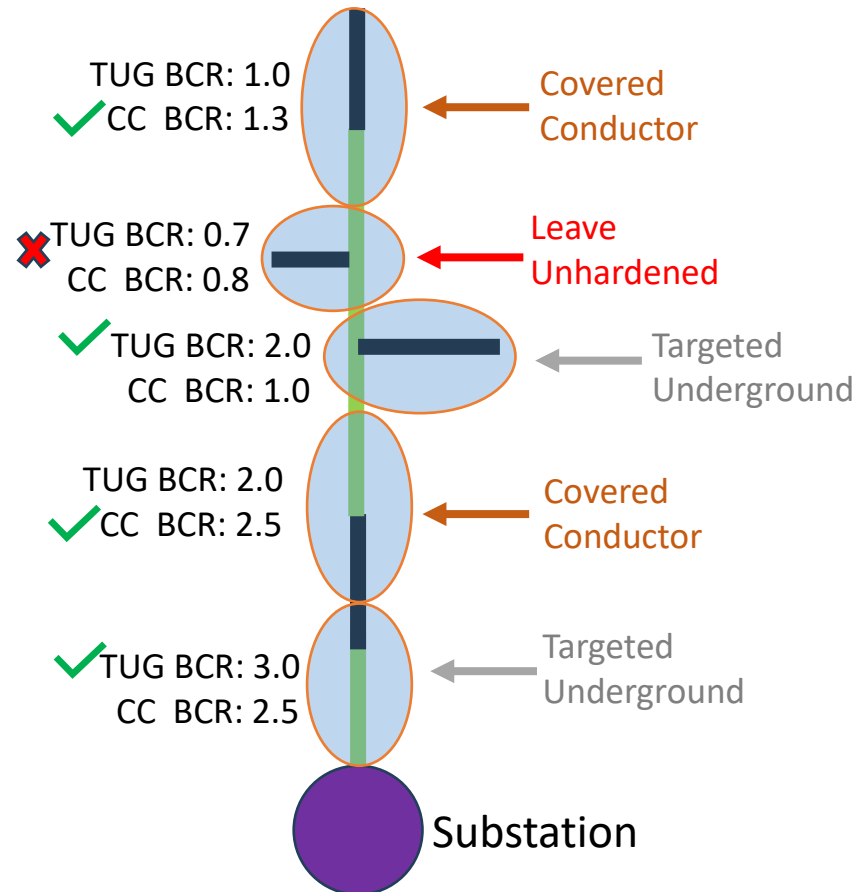
Wildfire Risk – Risk Reporting Unit

Legend

- Already Hardened Circuitry
- Unhardened Circuitry

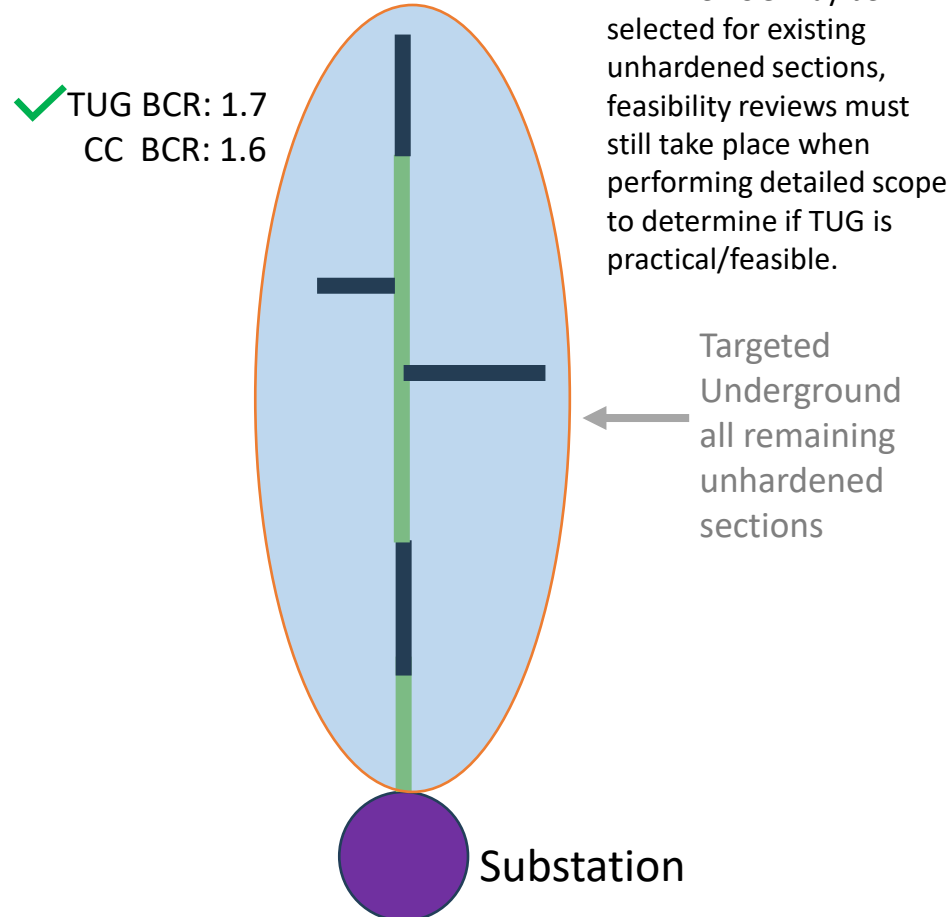
Polygon approach leaves sections of circuits unhardened and a mix of CC/TUG on a single circuit

Polygon



Circuit approach hardens the remainder of circuit and consistently applies CC/TUG across unhardened sections¹

Circuit



Wildfire BCR Methodology

$$\text{Covered Conductor (CC) BCR} = \frac{\text{Modeled Benefit from CC}}{[\text{Capital Cost for CC} + (\text{O\&M cost} - \text{O\&M Savings})]}$$

$$\text{Targeted Undergrounding (TUG) BCR} = \frac{\text{Modeled Benefit from TUG}}{[\text{Capital Cost for TUG} + (\text{O\&M cost} - \text{O\&M Savings})]}$$

- **Capital Cost:** Costs to plan, engineer, design and construct identified scope
- **O&M Costs:** Annual operating and maintenance costs associated with each mitigation (e.g., vegetation, inspections and maintenance)
- **O&M Savings:** Reduction in annual O&M costs of post-mitigation installation relative to those for existing bare conductor
- **Total Net O&M Costs:** (O&M costs minus O&M Savings)
 - For CC, the Total O&M is \$47K/mile¹
 - For TUG, the Total O&M is **negative** \$48K/mile (O&M savings is greater than O&M costs)²

[1] The O&M cost of bare is \$62K / mile and O&M savings estimated to be \$15K/mile. So Total Net O&M Costs is (62-15) = \$47K/mile

[2] O&M cost of TUG is \$7K/mile. O&M savings (from bare) is \$62 - \$7 = \$55. So Total Net O&M Costs is 7-55 = -\$48K/mile.