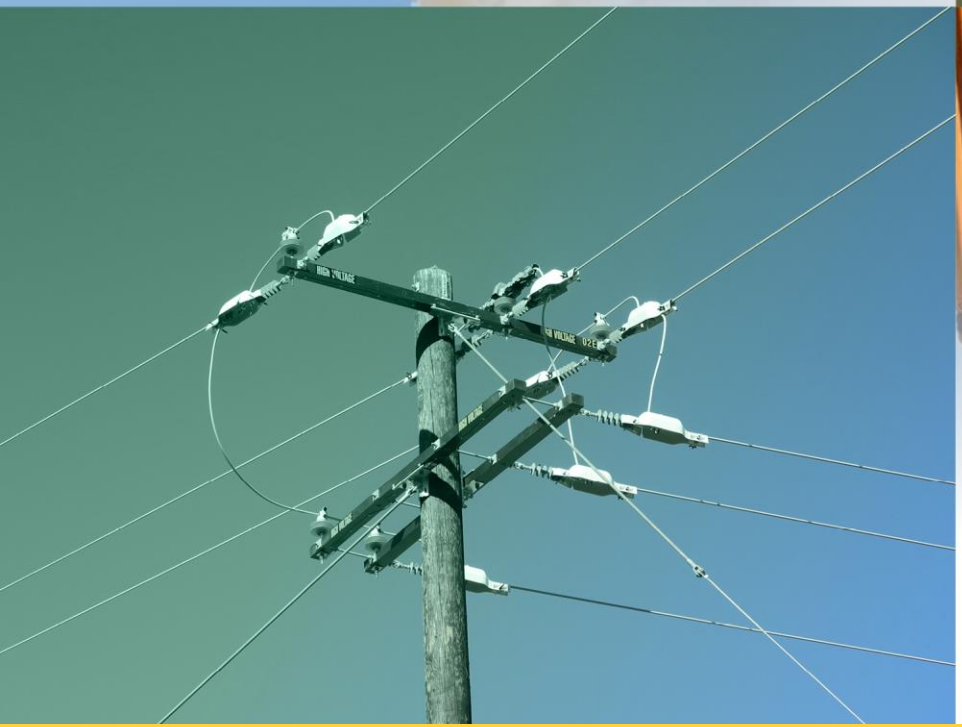
SOUTHERN CALIFORNIA EDISON®

GRID DESIGN & SYSTEM HARDENING

2022 WMP Technical Workshop

March 10, 2022



2022 WILDFIRE MITIGATION PLAN UPDATE

Energy for What's Ahead®

Agenda

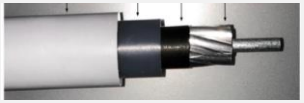
Presenter: Ray Fugere – Principal Manager, Wildfire Mitigation Strategy

Topics

1. 2021-22 Initiative Update and Long-Term Strategy
2. New Integrated Grid Hardening Strategy
3. New Technologies

2021-22 Initiative Update and Long-Term Strategy (1 of 2)

SCE maintains foundational system hardening activities while advancing key incremental focus areas each year based on risk assessment and prioritization

Activity	2021	Program to Date	2022 Target	Long-term Strategy
Covered Conductor 	**~1,500** circuit miles *(installed)*	**2,900+** circuit miles since 2018	**1,100** circuit miles	Install ~3,800 circuit miles in 2022-24 Scope may be adjusted with new Integrated Grid Hardening Strategy
Targeted Undergrounding	**~6** circuit miles *(installed)*	**~6** circuit miles since 2021	**11** circuit miles	Potential substantial scope increase with new Integrated Grid Hardening Strategy
Rapid Earth Fault Current Limiter (REFCL)	Studied three REFCL technologies to mitigate ground faults: Ground Fault Neutralizer (GFN), Resonant Grounded Substation (RGS) and Isolation Transformer (IT)		Develop plans for additional GFN locations and continue monitoring pilots	Plan to construct GFN at Acton and Phelan substations in 2023 Potential wider scale deployment
Branch Line Protection Strategy (Fuses) 	**350** fuses *(installed or replaced)*	**13,300+** fuses since 2018	**350** fuses	New installs target where only portions of the circuit extend into HFRA
Remote-Controlled Automatic Reclosers (RAR) and Remote-Controlled Switches (RCS)	**23** devices *(installed)*	**140+** devices since 2018	**15** devices	New installs target PSPS impacted circuits Thousands installed prior to the start of the wildfire mitigation program in 2018
Circuit Breaker Relay Hardware for Fast Curve	**95** relay units *(replaced or upgrade)*	**360** relay units since 2019	**104** relay units	Complete fast curve settings capability upgrades to identified circuit breakers in HFRA by 2024

2021-22 Initiative Update and Long-Term Strategy (2 of 2)

Activity	2021	Program to Date	2022 Target	Long-term Strategy
Tree Attachment Remediation 	**538** tree attachments *(remediated)*	**1,040+** tree attachments since 2019	**500** tree attachments	Expect to complete program by 2025
C-Hooks (transmission) 	**50** C-Hooks *(replaced)*	**50** C-Hooks since 2021	**10** C-Hooks	Replace all inventoried C-Hooks with hardware in SCE's current construction standard by 2022
Long Span Initiative (e.g., line spacers) 	**361** locations *(remediated)*	**361** locations since 2021	**1,400** locations	Evaluate timing of remediations; target higher risk spans not planned for covered conductor work by 2023
Vertical Switches 	**16** switches *(installed)*	**16** switches since 2021	**15** switches	Expect to complete in-scope by 2023
Microgrids	Negotiated contract with microgrid equipment vendor; attempted to obtain land needed for microgrid pilot		Seek approval for land easement	Pursue other opportunities if approval is not received 6/30/22. (Note: separate from microgrid control system pilots at schools)
Vibration Damper Retrofit 	**New activity for 2022:** Mitigate risk of wind-driven Aeolian vibration that may lead to conductor abrasion or fatigue over time (can reduce covered conductor's useful life from 45 years to an average of 25 years)		Retrofit vibration dampers on 100 structures	Expect to retrofit ~2,700 structures in total by 2026

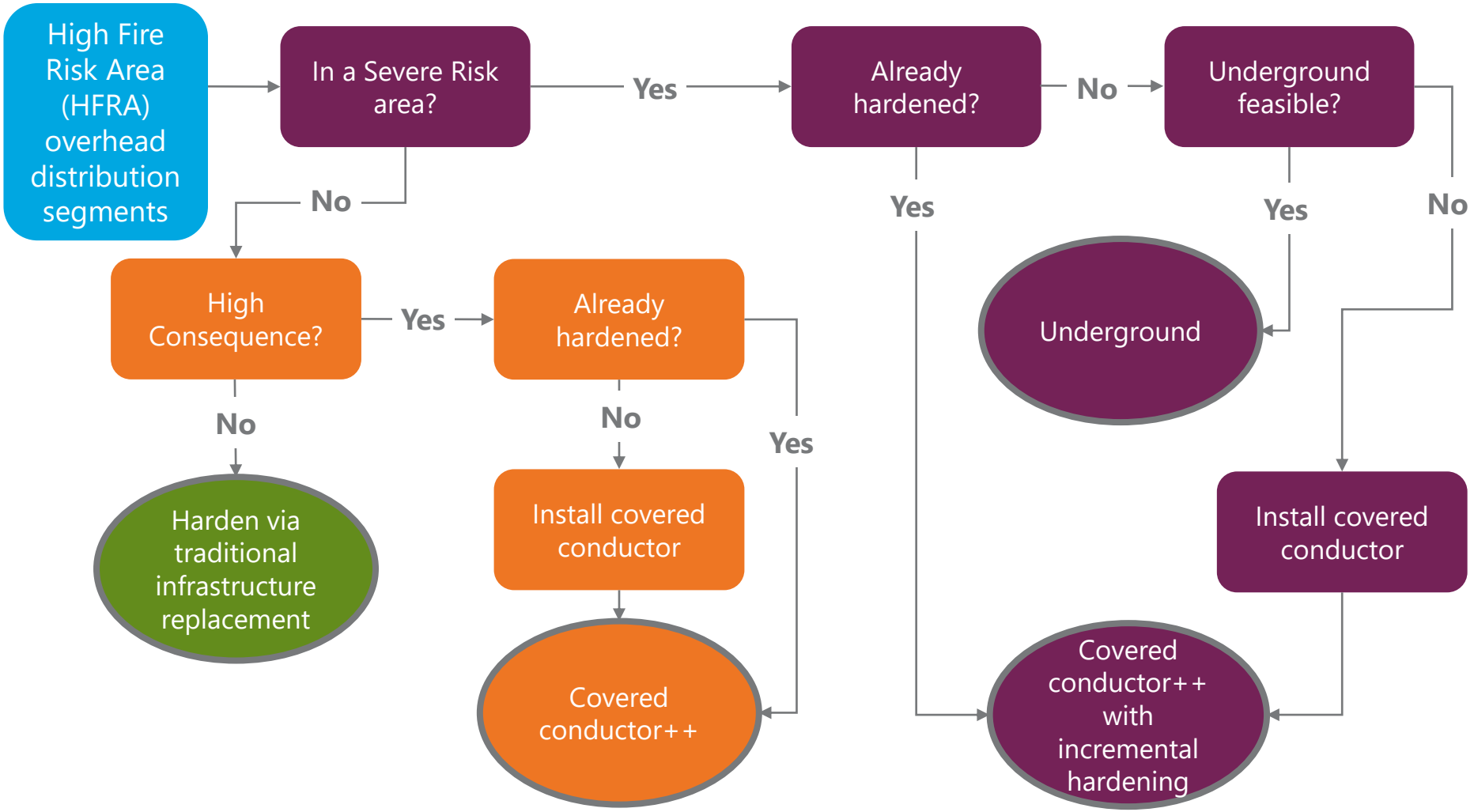
Other ongoing system hardening initiatives include: PSPS-driven hardening work, transmission open phase detection and legacy facilities

New Integrated Grid Hardening Strategy (1 of 2)

- SCE developed a new integrated grid hardening strategy and analysis that can be applied at each circuit segment and considers wildfire risk drivers and PSPS risk, and which mitigation or combination of mitigations cost effectively addresses those risk drivers
- Refined approach focuses on:
  - Portions of HFRA where ignition consequences are most significant (Severe Risk Areas, High Consequence Segments)
  - Deploying mitigations to address as many significant risk drivers in high-risk locations as reasonably possible (includes undergrounding, covered conductor and/or REFCL plus other mitigations)
- Impacts future scoping initiatives going forward

Total High Fire Risk Area (HFRA) Overhead Distribution Segments (Total of ~9,700 circuit miles, of which 30% is already hardened)	**Severe Risk Areas** (~1,900 circuit miles)	Areas that meet criteria including fire risk egress constrained locations, extreme high wind areas, extreme consequence areas, etc.
	High Consequence Segments (~5,000 circuit miles)	Segment that meets 300-acre consequence threshold or at risk of Public Safety Power Shutoff (PSPS)
	Other HFRA Segments (~2,700 circuit miles)	Segment that is not in a severe risk area and does not meet high consequence criteria

New Integrated Grid Hardening Strategy (2 of 2)



Covered conductor++: Installing covered conductor combined with fire-resistant poles installation, asset inspections, fast-curve settings for circuit breaker relays, along with vegetation management activities (as necessary) including hazard tree management, pole brushing and line clearing

New Technologies

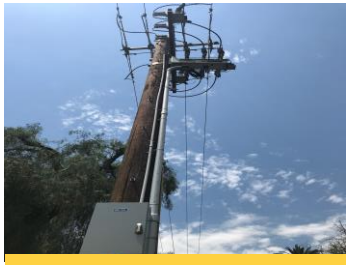
SCE continues to explore and pilot the following new technologies to improve system resiliency:

Incipient Fault Detection

Early Fault Detection (EFD) detects high frequency radio emissions which can occur from incipient failure, such as severed strands on a conductor, vegetation contact, or tracking on insulators

Fault Detection

Distribution Open Phase Detection (DOPD) detects one or more open phase (broken conductor) conditions to reduce risks associated with down-wire incidents



High Impedance Detection

High Impedance (Hi-Z) relays use protective elements to reduce the propagation of low-magnitude fault conditions (Hi-Z conditions) that can lead to ignition risk, such as downed conductor or arcing events

Asset Defect Detection Using AI/ML

Applies image recognition algorithms to speed up identification of potential asset defects. Detection algorithm will continue to improve over time with **artificial intelligence** and **machine learning**.

Fire Detection

Uses **satellite technology** and SCE's HD wildfire cameras to detect and map wildfire ignitions. Results in a more comprehensive view of fires that improves intelligence for more rapid and effective fire response.

Thank You

SOUTHERN CALIFORNIA EDISON®

RISK MODELING AND ASSESSMENT

2022 WMP Technical Workshop

March 10, 2022

2022 WILDFIRE MITIGATION PLAN UPDATE

Energy for What's Ahead®

Agenda

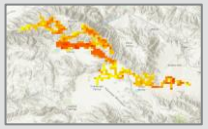
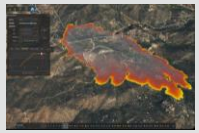
Presenter: Adam Dow – Principal Manager, Risk Management

Topics

1. Wildfire Risk Modeling Evolution
2. Risk Assessment and Modeling Advancements
3. 2022 Risk-Informed Look Ahead

Wildfire Risk Modeling Evolution

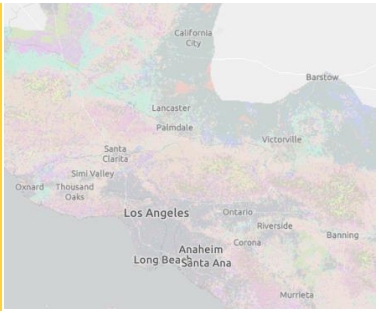
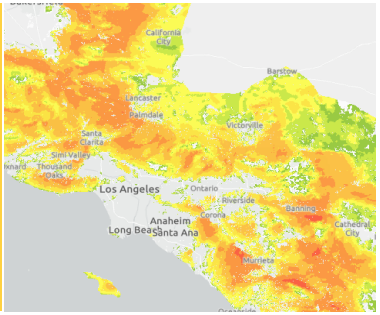
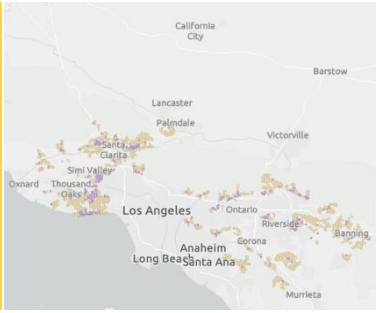
In 2021, SCE achieved several key milestones in enhancing our wildfire risk modeling capabilities, including:

2018 GSRP	SMAP / RAMP	2019 WMP	2021 GRC	2020-2022 WMP	2021 WMP Update	2022 WMP Update
• Fault-to-Fire Mapping • Mitigation-to-Fault Mapping • Mitigation Effectiveness / Cost Mitigation Ratios • High Fire Risk Area (HFRA) Definition	*System-wide* • Bowtie (Drivers, Outcomes, and Consequences) • Multi Attribute Risk Score (MARS) • Mitigation Risk Spend Efficiency (RSE)		*Circuit and Circuit Segment Level* • Asset risk prioritization to inform mitigation deployment • Probability of Ignition for Distribution assets • REAX Fire Propagation Algorithm	Fire Incident Analysis (FIPA) • Enhanced Mitigations and Tranching • RSE Calculation Enhancement • Began transition to Technosylva Fire Propagation Algorithm	• Probability of Ignition for Transmission and Sub transmission assets • Inclusion of PSPS reduction to circuit prioritization • PSPS Risk Modeling	• Fire Propagation refinements • Updated fuels model • 400+ additional wind & weather scenarios • Severe Risk Methodology and integration with population risks
					*Wildfire + PSPS Risk*	

Sept 2018 → Nov 2018 → Feb 2019 → Aug 2019 → Feb 2020 → Feb 2021 → Feb 2022

- Expanded **Weather Scenarios** for improved ignition risk analysis
- Enhanced **Fuel Regrowth Model** to understand speed and intensity in which wildfires may propagate
- Developed new **Severe Risk Methodology** to identify locations with heightened egress, wind, or extreme fire risk

Risk Assessment and Modeling Advancements

Category	Advancement	Detailed Benefits
Fuel Regrowth Model 	• **+19** custom fuel models • Fuel Regrowth projection **extended through 2030**	• Enhanced analysis of rapidity and intensity in which fires may propagate • Replication of local environments and impact • Recovery of fuels to better reflect local conditions in areas heavily impacted by extensive scarring (e.g., El Dorado, Apple, Bobcat)
Weather Scenarios 	**+ 400 scenarios** • 2021: 41 worst weather days • 2022: 444 worst weather days	• Better representation of wildfire conditions in North Coast and High Sierras. • Expanded weather days provide more capability to understand wildfire ignition risk (e.g., Santa Ana wind days, Sundowner Events).
Severe Risk Methodology 	Developed **Severe Risk Methodology**	More effective identification of locations that are: • Egress constrained; • At risk of extreme consequence wildfire; and/or, • High wind areas and subject to more frequent PSPS events.

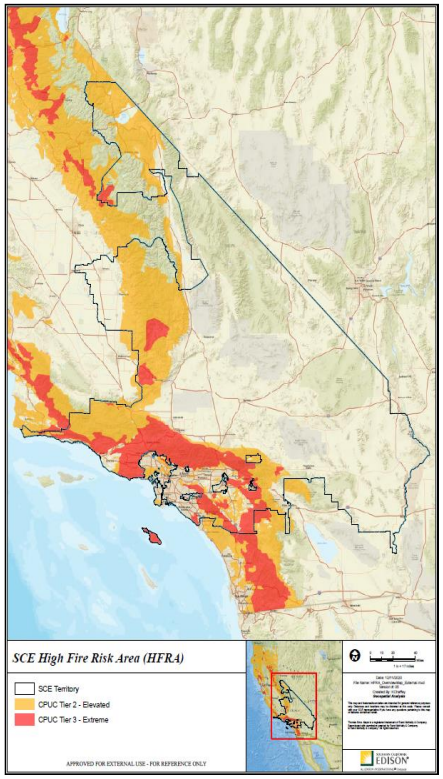
Risk Assessment and Modeling Advancements

Higher Resolution HFRA Risk Mapping

Risk model advancements enable a more data-driven and risk-informed methodology to conduct fire-threat assessments across its HFRA

Methodology drives Boundary Assessment to evaluate potential refinements to High Fire Risk Area (HFRA) to **better reflect utility ignition risk**

Boundary Assessment may result in recommendations to **add and remove areas from HFRA** designation



SCE is collaborating with CAL FIRE to capture risk of fires along the urban periphery

Risk Spend Efficiency (RSE)

RSE analysis and calculations expanded to **39 scored activities**, which incorporate 6 enabling activities

RSE provides an indicator of the risk reduction compared to the costs for that activity

Informs decision making process

- Evaluating alternative mitigations
- Selecting new programs for deployment
- Making changes to the scope of deployed programs

RSE Scored Activities	2021 WMP	2022 WMP
Situational Awareness	2	4
Grid Design & System Hardening	9	15
Asset Management & Inspections	6	7
Vegetation Management*	4	5
Grid Operations & Protocols	2	4
Data Governance	0	0
Emergency Planning & Preparedness	0	2
Stakeholder Cooperation & Community Engagement	1	1
Alternative Technology	0	1
Enabling Activities**	0	6
Total	24	45

** Vegetation Management counts shown include Line Clearing*
*** Enabling Activities are shown separately, but comprised of activities from Asset Management & Inspections (1), Vegetation Management (1), Data Governance (2), and Stakeholder Cooperation & Community Engagement (2)*

2022 Mitigations Informed by Risk Analysis

SCE's wildfire risk models provide critical analysis for decision-making and prioritization of wildfire mitigation activities. For example:

HARDENING THE GRID

Prioritization largely informed by Wildfire Risk Reduction Model (WRRM) considering both probability of ignition and consequence

SITUATIONAL AWARENESS

Utilize machine learning (ML) to advance our predictive modeling capabilities of potentially dangerous winds and elevated fire potential.

Enhanced fire spread modeling and other weather modeling increase our situational awareness of weather, dry vegetation, and fire activity

HIGH FIRE RISK-INFORMED INSPECTIONS

Overhead transmission and distribution equipment inspections targeted to the highest-risk structures, as well as equipment in targeted areas based on emergent fire weather conditions.

- Risk evaluated for each structure in consideration of probability of ignition and consequence
- Additional inspections scoped pursuant to increased fuel-driven and/or wind-driven fire risk primarily due to elevated dry fuel levels

MANAGING VEGETATION

Inspect, trim, and remove trees to prevent vegetation from encountering electrical equipment and potentially sparking a fire.

- Tree Risk Index developed and will prioritize inspections for line clearing, hazard trees, and quality control
- Establishes methodology to classify locations with high vegetation contact risk – considers both probability and consequence

Thank You

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VEGETATION MANAGEMENT

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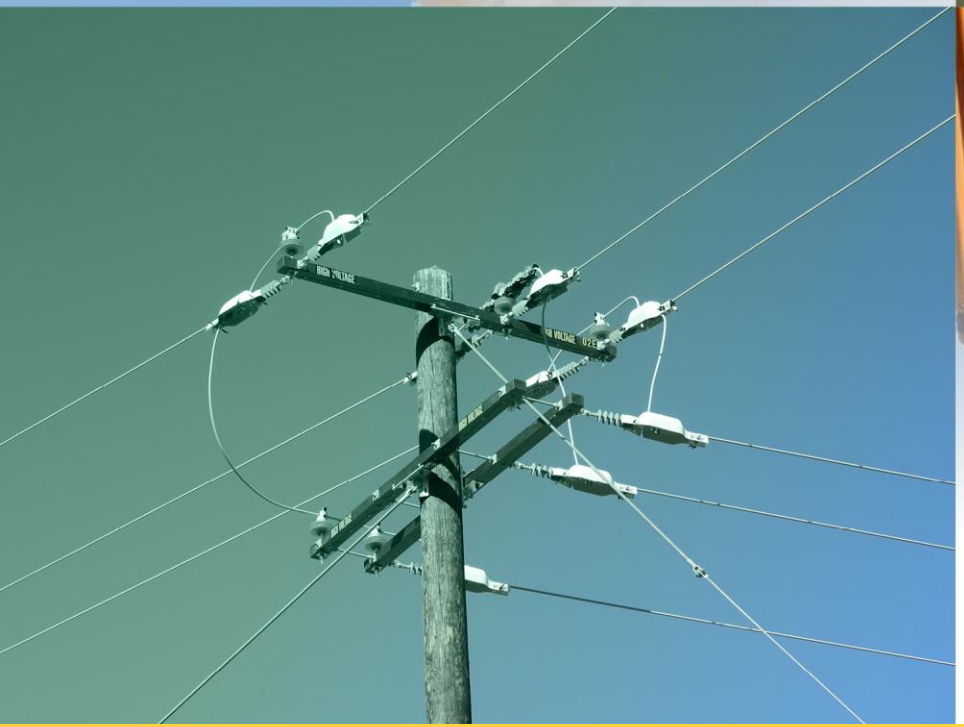


2022 WILDFIRE MITIGATION PLAN UPDATE

Energy for What's Ahead®

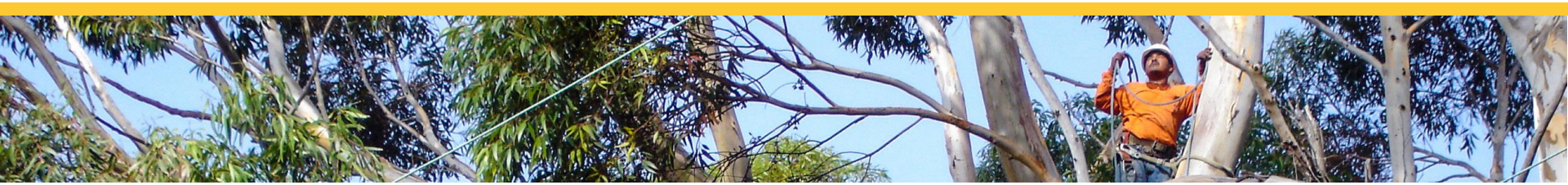
Agenda

Presenter: Melanie Jocelyn – Principal Manager, Vegetation Management

Topics

1. Vegetation Management Overview
2. Vegetation Management Strategy
3. Vegetation Management Inspections
4. 2022 Key Program Changes

Vegetation Management Overview



Overview

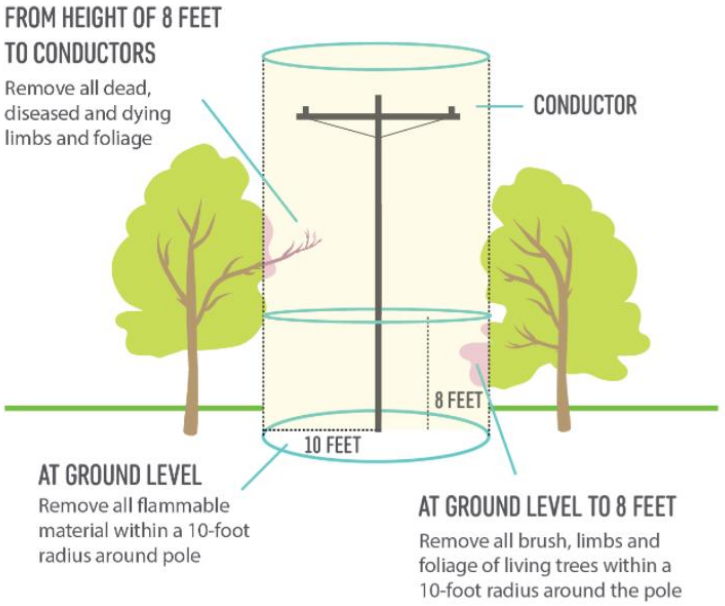
- Prevent risks to public safety and system reliability by managing vegetation in proximity to electric facilities
- Inspect and mitigate trees in HFRA for routine line clearing and expanded clearances
- Specific vegetation wildfire mitigation activities performed in HFRA include:
    - Hazard Tree Management Program (HTMP) to inspect 330 circuits and assess any trees with strike potential along those circuits
    - Dead and Dying Tree Removal Program to inspect 900 unique circuits and prescribe mitigation for dead and dying trees with strike potential along those circuits
    - Perform expanded pole brushing on 78,700 to 170,000 Distribution poles

Vegetation Management Strategy

- Focus on enhancing risk-based prioritization to evolve VM program strategy and planning
- Reduce or eliminate risk of vegetation-to-conductor contact through traditional and alternative long-term sustainable practices
  - Continue work towards achieving enhanced clearances for full annual cycle maintenance
  - Remove trees that cannot maintain clearance for a full annual cycle
  - Remove trees that are “fall-in” and "blow-in" risks (Hazard Tree Management Program and Dead and Dying Tree Program)
  - Conduct supplemental inspections in areas of elevated risk
  - Perform independent risk-informed quality control inspections to validate program objectives are being met
- Improve customer and community engagement including updates to communications for planned work, increased local agency discussions, and surveying to obtain customer feedback
- Invest in an integrated software platform that will help streamline scheduling and processing of work, improve data management, and facilitate advanced analytics

Vegetation Management Inspections

- **Routine Line Clearing** inspects for vegetation encroachments to identify the clearance needed to mitigate potential ignition risks.
    - Annual inspection schedule; additional supplemental patrols as appropriate.
- **Pole Brushing** inspects and removes vegetation at the base of distribution poles to reduce the probability of ignition and/or fire spread due to a spark or contact from failed equipment.
- **Hazard Tree Management** entails detailed assessment of trees outside utility rights-of-way, but still within the Utility Strike Zone. Trees that present safety or reliability risks are mitigated.



- The **Dead and Dying Tree Program** inspects and removes dead, dying, or diseased trees affected by drought conditions and/or insect infestation.
- **LiDAR** is the preferred inspection methodology for determining vegetation encroachments caused by sag and sway/line dynamics on bulk transmission lines.
    - The feasibility of performing additional LiDAR inspections on distribution is being evaluated.

2022 Key Program Changes

Key Program Changes
(2021 vs. 2022)

- In 2022, **Tree Risk Index (TRI)** will be used to inform planning, scheduling, and oversight activities to prioritize highest risk areas.
  - 2022 Vegetation Program Applications include: Hazard Tree Mitigation, Quality Control, and Line Clearing Inspections
- Consolidating vegetation programs into a single digital tool to streamline work management – will lead to efficiencies and better portfolio visibility
- Recalibrated scope of pole brushing program using advanced risk analysis that considers fire propagation potential and other variables
- **Enhanced Supplemental Patrols** – Expanded use of LiDAR acquisition in Distribution for patrols and enhanced fire season readiness (e.g., AOCs and Canyon Patrols)
  - Evaluation of general remote sensing capabilities (e.g., LiDAR and satellite imagery) for targeted routine inspection work
- **Integrated Vegetation Management (IVM)** – the practice of promoting desirable, stable, low-growing plant communities that will resist invasion by tall growing tree species using appropriate, environmentally-sound, and cost-effective control methods
  - Currently working on pilots for tree growth regulator, planting, grazing, and post-fire restoration projects

Thank You

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PUBLIC SAFETY POWER SHUTOFF (PSPS)

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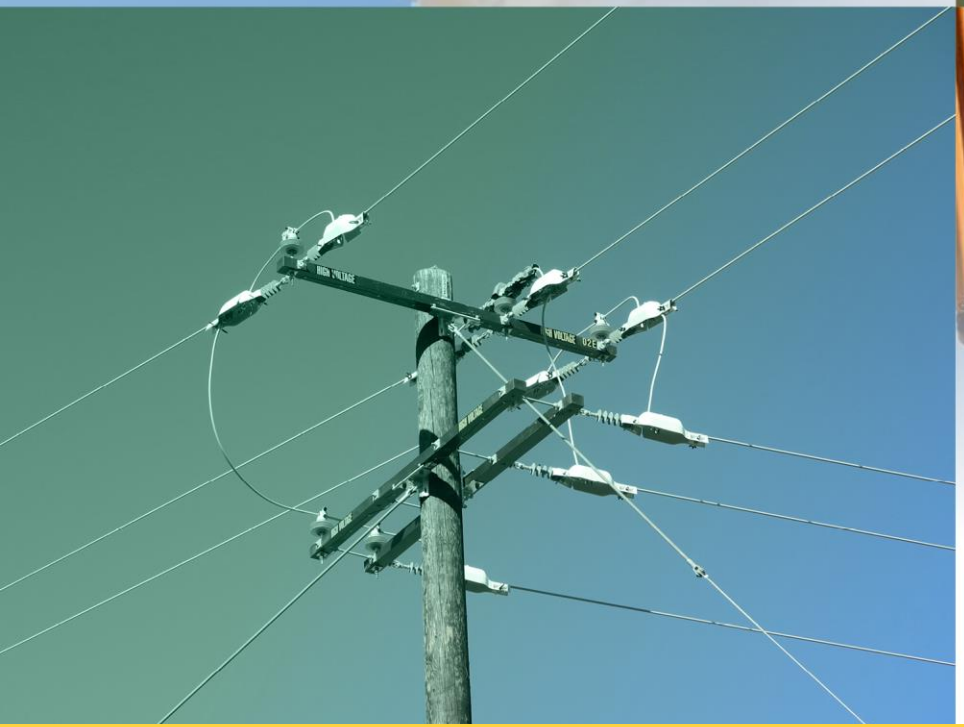

2022 WILDFIRE MITIGATION PLAN UPDATE

Energy for What's Ahead®

Agenda

Presenter: Tom Brady – Principal Manager, Wildfire and PSPS Response

Topics

1. 2021 PSPS in Review
2. 2021-2022 PSPS Mitigation Activities
3. 2022 Planning Summary

2021 In Review

45%

Reduction in PSPS duration as a result of 2021 mitigation measures

~1,500

Miles of covered conductor deployed; **700** miles of expedited grid hardening

81,000

Customers removed from scope through exceptions and switching protocols

73%

Reduction in PSPS duration for the most frequently impacted circuits (FICs)*

72%

Reduction in scope on FICs*

49%

Reduction in event frequency on FICs*

*January '21 event is considered part of 2020 season as it was driven by 2020 weather and fuel conditions and managed with 2020 tools and capabilities

2021 In Review

6,741

Critical Care backup batteries deployed since program inception

2,706

Customers visited Community Resource Centers or Community Crew Vehicles

8.8/10

Satisfaction rating from CRC/CCV visitors who responded to our survey

100+

Virtual meetings with our communities and partners in 2021

1,600

CBOs received monthly information from SCE to share

124

Public safety partners met with us to discuss concurrent emergency policies

*January '21 event is considered part of 2020 season as it was driven by 2020 weather and fuel conditions and managed with 2020 tools and capabilities

2021 In Review

ACTIVATION STATS	PSPS Activations	# Customers De-energized	# Circuits De-energized	Customer Minutes of Interruption (CMI)
2020 Fire Season	13	~348k	584	~388M
2021 Fire Season	9	~85k	124	~105M
IMPROVEMENT	↓31%	↓76%	↓79%	↓73%

The event data shown here is based on current, non-final numbers as of February 23, 2022. SCE is in the process of reviewing the data.

2021-22 PSPS Mitigation Activities

2021 Improvements Tied to Mitigations

- Customer Minutes of Interruption (CMI) **reduced by 45%**
- Customers de-energized **reduced by 44%**
- Circuits de-energized **reduced by 33%**

2021 Achievements

- Expedited grid hardening reduced the need for PSPS on the 72 FICs through:
  - Installing covered conductor
  - Increasing circuit segmentation
  - Adding weather stations
  - Updating switching/ operational protocols
- Updated covered conductor wind-speed de-energization thresholds from 31mph (sustained)/46 mph (gust) to 40/58 mph

2022 Activities

- Currently planned for 2022:
- ~1,100 miles of new covered conductor
- Ongoing circuit exceptions review
- 15 Overhead Remote-Control Switches (RCS)/ Remote Automatic Reclosers (RAR)
- RCS conversion of existing switches, new underground RCS installations, and new RAR installations
- 150 weather stations
- Evaluate additional circuits that were de-energized during the 2021 Thanksgiving event for grid hardening activities.

January '21 event is considered part of 2020 season as it was driven by 2020 weather and fuel conditions and managed with 2020 tools and capabilities

2021-22 PSPS Mitigation Activities

2021 COMMUNITY CARE RESOURCES

64 **COMMUNITY RESOURCE CENTERS (CRC)**
Contracted and available based on potential shutoff locations. Location and hours listed online before shutoffs

8 **COMMUNITY CREW VEHICLES (CCV)**
Can be deployed rapidly for remote locations. Location and hours listed online before shutoffs

Thanksgiving Day, 2021

7 **RESILIENCY ZONE SITES**
Enable backup power generation at certain essential sites in remote communities

9 **RESILIENT CRCs**
CRCs that have or are in the process of installing a transfer switch and/or have a backup generator

2021 Achievements

- Deployed 6,021 Critical Care backup batteries (CCBB)
- Added CRC survey in QR code format to enable onsite feedback from visitors

2022 Activities

- Support increased deployment of CRCs/CCVs
- Target 2,750 new CCBB deployments
- Continue rebate program for portable batteries/ generators
- Launch in-event battery loan pilot
- Increase accessibility and resources offered to AFN customers

2022 PSPS Planning Summary

USE **PSPS** ONLY WHEN NECESSARY **TO PROTECT PUBLIC SAFETY** UNDER SIGNIFICANT FIRE-RISK WEATHER CONDITIONS

Reduce the Use of PSPS	• Continue grid hardening and circuit exception activities • Evaluate 2021 most-impacted circuits for grid hardening prioritization
Execute PSPS Events Effectively	• Develop ~500 additional machine-learning weather models • Complete end-to-end process and system automation • Conduct monthly trainings and exercises to prepare for activation
Mitigate the Impacts of PSPS	• Build out CRC availability through staffing and logistics • Continue to refine customer care programs • Expand programs and outreach for AFN customers
Inform Partners and Customers	• Improve customer and partner notification accuracy and timeliness through automation • Build customer resiliency through distribution of 2022 preparedness newsletter • Continue community and partner meetings
Improve Post Event Reporting	• Fully automate in-event/post-event data flows for more accurate and timely reporting

Thank You

SOUTHERN CALIFORNIA EDISON®

ASSET MANAGEMENT AND DATA GOVERNANCE

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2022 WILDFIRE MITIGATION PLAN UPDATE

Energy for What's Ahead®

Agenda

Presenters: Ray Fugere – Principal Manager, Wildfire Mitigation Strategy
Angie Torres – Principal Manager, IT Project Management

Topics

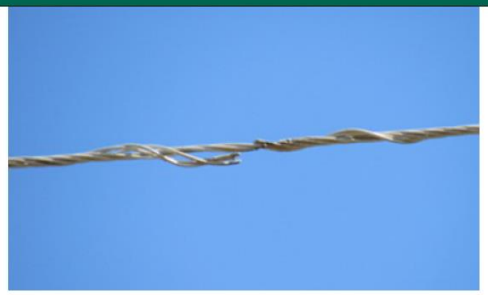
1. Asset Management & Inspections
2. New Inspection Approaches Piloting in 2022
3. Data Governance

Asset Management & Inspections Overview

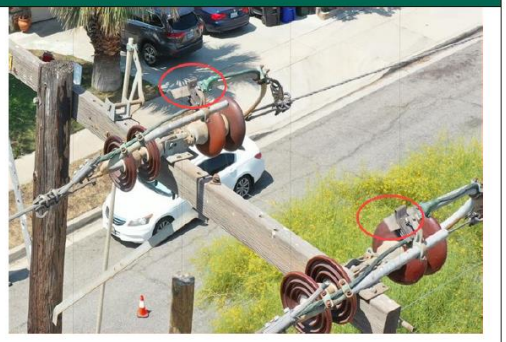
SCE inspects its overhead transmission, distribution and generation equipment annually in High Fire Risk Areas (HFRA) to identify potential safety hazards

- Perform High-Fire Risk-Informed (HFRI) ground and aerial inspections on **~150,000 (53%) distribution assets and ~16,000 (43%) transmission assets**
- Continue to obtain a **360-degree view** of our equipment, where possible
- Perform **grid patrols annually on all** transmission and distribution assets
- Perform any needed maintenance, repair or replacement

Damaged Primary Conductor on a 12kV Circuit

Distant	At Close Range
	

Distribution Switchblade Alignment Issue (Drone Capture)

Distant	At Close Range
	

Asset Management & Inspections Overview

In 2022, risk analytics continue to inform the scope of SCE's Transmission and Distribution High-Fire Risk-Informed inspection programs in HFRA

Step 1
Risk is evaluated for each structure

Step 2
Structure is then placed into the 4 x 4 matrix based on the risk score

Step 3
Scope is selected and inspections are performed on structures which comprise 97% of risk prior to fire season

Step 4
Quality Control inspectors perform field visits on a randomized sample of the risk structures to help ensure quality of inspections and completeness of findings

Probability of Ignition	Level 4	Level 3	Level 2	Level 1
Level 1	1.9% 0.2%	0.3% 1.1%	0.1% 3.3%	0.1% 10.1%
Level 2	4.7% 0.2%	0.8% 1.4%	0.5% 4.1%	0.4% 13.9%
Level 3	9.0% 0.2%	1.9% 1.6%	1.3% 5.8%	1.0% 18.0%
Level 4	41.7% 0.2%	12.8% 1.8%	12.0% 8.3%	11.3% 29.7%
	Level 4	Level 3	Level 2	Level 1

% of Structures
% of Risk

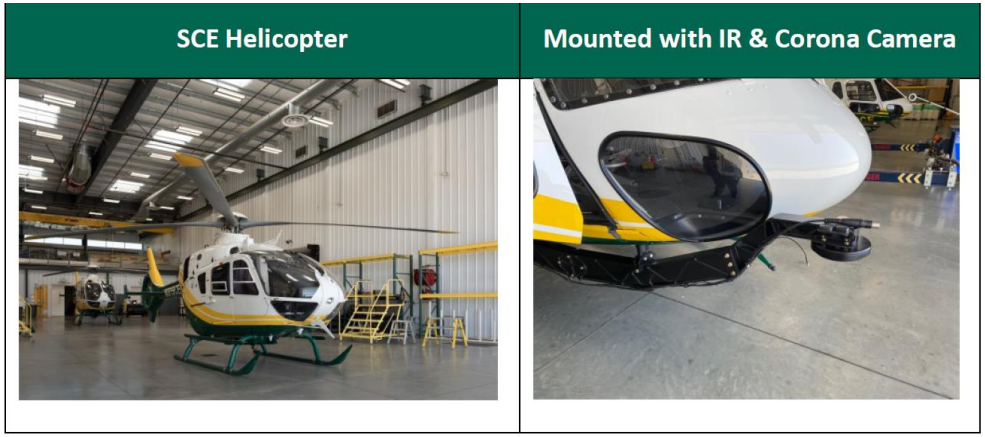
Consequence

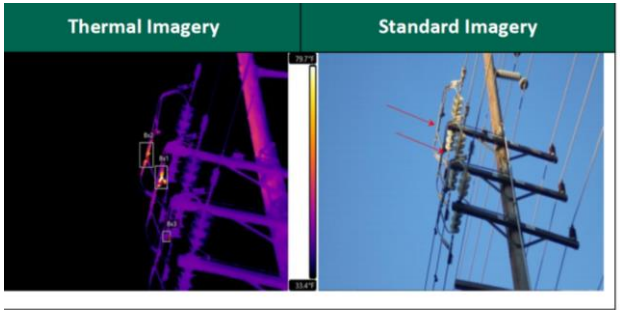
Legend: Inspection Frequency
Red = Every Year
Green = Every Three Years

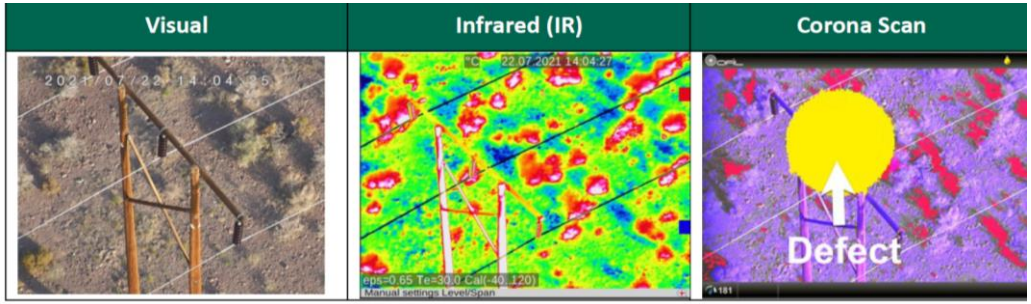
Asset Management & Inspections Overview

In 2022, SCE will continue to perform infrared inspections and corona scans in HFRA

- **Infrared Inspections (IR) and Corona Scans** can act as leading indicators of asset failure by detecting thermal differences not visible to the human eye
- **2022 Scope**
  - Inspect distribution overhead lines not inspected in 2021 (~4,400 circuit miles) in HFRA utilizing IR
  - Inspect 1,000 circuit miles of transmission OH lines in HFRA utilizing IR and corona scans

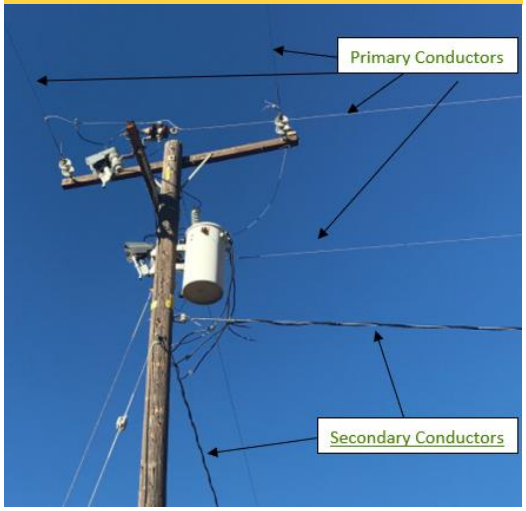






New Inspection Approaches Piloting in 2022

Secondary conductor ignitions



Risks to be mitigated:

- CPUC-reportable ignitions in HFRA related to secondary conductors

2022 target:

- Inspect and trim vegetation around 700 secondary structures and tape connectors on ~3,000 secondary structures

Transmission wire down

Risks to be mitigated:

- Transmission wire down events throughout SCE service area

2022 target:

- Inspect 75 spans with LineVue[1], inspect 50 splices with X-Ray, and obtain five conductor samples, in order to replace or remediate conductor and/or splices that have higher probability to fail

1. LineVue determines the deterioration of the steel core cross-sectional area of the conductor steel core and detects any localized breaks or corrosion pits on the steel wires and loss of zinc galvanized layer.

Data Governance Overview

SCE's Data Governance platform projects, **Ezy Data** and **WiSDM**, provide foundational capabilities to enable many of SCE's wildfire mitigation initiatives

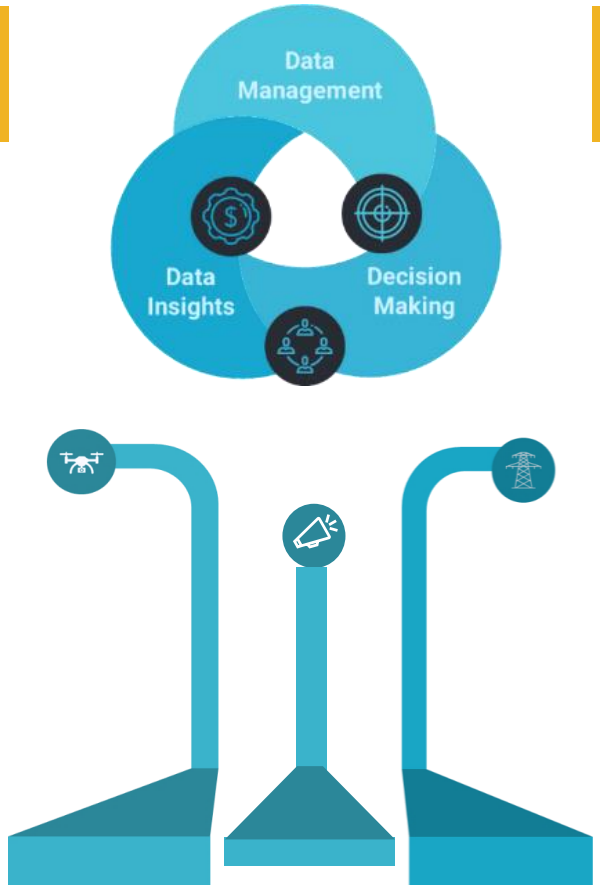
Ezy Enterprise Data (EzyData)
Google Cloud Platform (GCP)

Repository for **Unstructured** data

- Implements AI/ML advanced analytics
- Real-time ingestion
- Increases efficiencies in analysis of imagery
- Improves remote sensing data quality

Enables **scalable, enterprise-capable** data science capabilities

- Eliminates reliance upon on-premises data centers with limited capability
- Visualization of Remote Sensing Data



Wildfire Safety Data Management (WiSDM)
Centralized Data Repository and Portal

Central warehouse for **Structured** data

- PSPS & Risk Events
- Grid hardening
- Situational awareness
- Vegetation management inspections
- Asset information

Portal for external **data sharing**

- Secure data sharing with internal & external stakeholders
- Accurate, efficient, and timely reporting
- Reporting & Analytics

SCE is leveraging an OCM approach that includes business process owners with a focus on data governance, process, and documentation standards to ensure process and tool adoption and adherence to standards

Increased Utilization of AI/ML in 2022 (EzyData)

Effective management of remote sensing imagery is crucial to the objectives of wildfire mitigation inspections & remediations

Achievements 2021

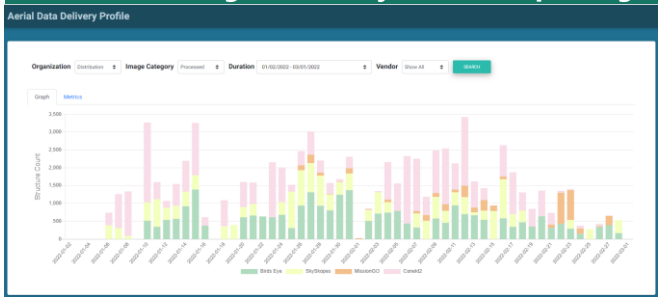
- Enabled cloud platform with automatic scaling & 24x7 access capability
- SCE-wide access to imagery data with fast search, retrieval, and visualization
- Near real-time data ingestion with quality checks, data management, and workflows to automatically process and organize data (>11 million images to-date)
- AI-supported asset defect detection

Plans for 2022

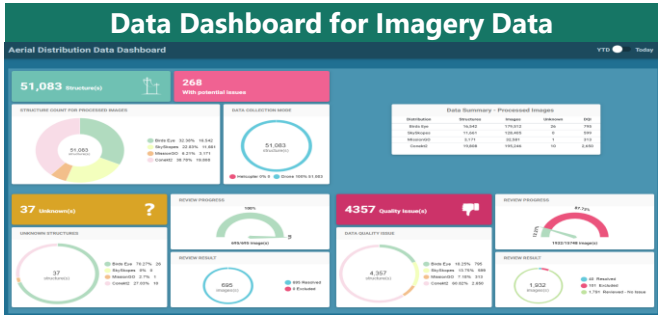
- Expand the use of AI/ML models for automated asset defect detection
- Enable enterprise AI platform for scalable AI/ML lifecycle management
- Integrate with inspection tools for image visualization & inspection workflows
- Enable LiDAR data management capability

AI/ML-Assisted Asset Defect Detection

Remote Sensing Data Analytics and Reporting



Data Dashboard for Imagery Data



Increased Wildfire Data Integration in 2022 (WiSDM)

Implement a centralized wildfire data repository and data portal to enable efficient reporting with comprehensive spatial & non-spatial data

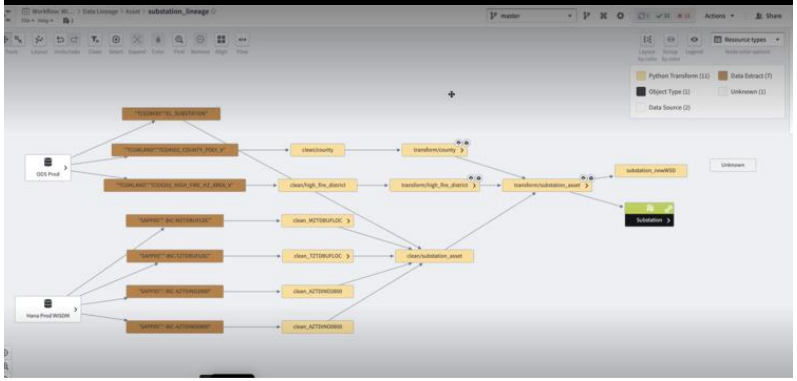
Achievements 2021

- Built future-forward architectural design
- Conducted data validation workshops
- Initiated the consolidation of SCE wildfire mitigation datasets

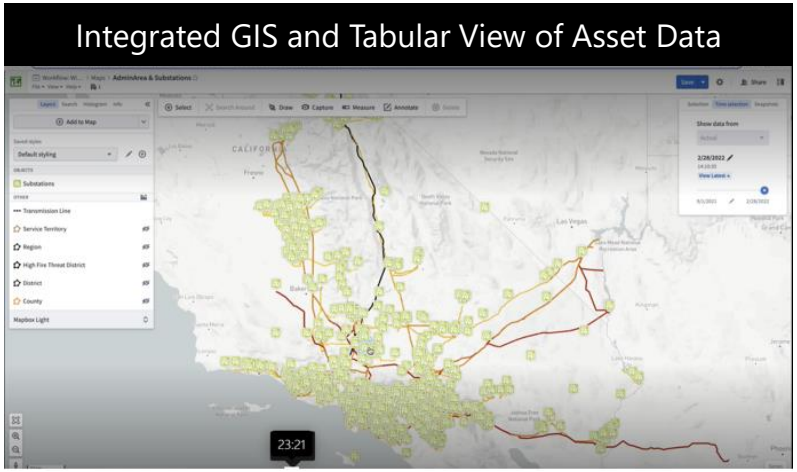
Plans for 2022

- Continue data validation workshops with users
- Consolidate wildfire data platform onto central repository
- Complete design of external data sharing portal

Automatic Data Ingestion and Consolidation from Multiple SCE Sources



Integrated GIS and Tabular View of Asset Data



Thank You